

# HERITAGE IMPACT ASSESSMENT

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

## FOR THE PROPOSED PATRYSHOEK VODACOM MAST, NORTH WEST PROVINCE

**Type of development:**

Vodacom Mast

**Client:**

Tekplan Environmental Consultants

**Client info:**

Anton von Well

**E – mail:**

[tecoplan@mweb.co.za](mailto:tecoplan@mweb.co.za)

**Developer:**

Vodacom



**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](mailto:jaco.heritage@gmail.com)

Report Author:

Mr. J. van der Walt

Project Reference:

HCAC Project number 2017

Report date:

March 2020

**APPROVAL PAGE**

<b>Project Name</b>	<b>Vodacom Mast – Patryshoek</b>
<b>Report Title</b>	Heritage Impact Assessment for the proposed Patryshoek Vodacom Mast
<b>Authority Reference Number</b>	TBC
<b>Report Status</b>	Final Report
<b>Applicant Name</b>	Vodacom

	<b>Name</b>	<b>Qualifications and Certifications</b>	<b>Date</b>
<b>Archaeologist</b>	Jaco van der Walt	MA Archaeology ASAPA #159	March 2020
<b>Palaeontology</b>	Prof Marion Bamford	B.Sc. Geology (Hons), Ph.D. Geology,	March 2020

**DOCUMENT PROGRESS****Distribution List**

Date	Report Reference Number	Document Distribution	Number of Copies
13 March 2020	2017	Tekplan Environmental Consultants	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. 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 site plan identifying site alternatives;	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers	Section 8 and 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 <b>including identified alternatives on the environment</b> or activities;	Section 9
(k) Mitigation measures for inclusion in the EMPr	Section 10
(l) Conditions for inclusion in the environmental authorisation	Section 10
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 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 11

## Executive Summary


Tekplan Environmental was appointed by Vodacom to conduct an Environmental Authorisation (EA) Applications process for a proposed Patryshoek telecommunications mast located on Portion 75 of the farm Hartebeestfontein 445 JQ in the Madibeng Local Municipality area. HCAC was appointed to conduct a Heritage Impact Assessment to determine the presence of cultural heritage sites and the impact of the proposed development on these non-renewable resources. The size of the base station (fenced area) in which the mast and associated equipment will be placed will measure 8m x 10m (80m<sup>2</sup>). The impact 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 mast footprint. During the field survey no surface indicators of archaeological material (Stone or Iron Age) were identified. No standing structures over 60 years old or grave sites were recorded.

In terms of the palaeontological component an independent paleontological study was conducted by Prof Marion Bamford (2020) and concluded that the project will not impact any fossils. However, the site is indicated as very sensitive on the SAHRIS map so a Fossil Chance Find Protocol should be added to the EMPr. During the public participation process conducted by Tekplan Environmental for the project no heritage concerns were raised.

The impact of the project on heritage resources is considered to be low and it is recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- Implementation of a chance finds procedure (Archaeological and Palaeontological).

**Declaration of Independence**

<b>Specialist Name</b>	Jaco van der Walt
<b>Declaration of Independence</b>	<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"> <li>• I act as the independent specialist in this application;</li> <li>• 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;</li> <li>• I declare that there are no circumstances that may compromise my objectivity in performing such work;</li> <li>• 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;</li> <li>• I will comply with the Act, Regulations and all other applicable legislation;</li> <li>• I have no, and will not engage in, conflicting interests in the undertaking of the activity;</li> <li>• 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;</li> <li>• All the particulars furnished by me in this form are true and correct; and</li> <li>• 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.</li> </ul>
<b>Signature</b>	
<b>Date</b>	10/03/2020

**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**

<b>REPORT OUTLINE .....</b>	<b>4</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>5</b>
<b>DECLARATION OF INDEPENDENCE .....</b>	<b>6</b>
A) EXPERTISE OF THE SPECIALIST .....	6
<b>ABBREVIATIONS .....</b>	<b>9</b>
<b>GLOSSARY .....</b>	<b>9</b>
<b>1 INTRODUCTION AND TERMS OF REFERENCE: .....</b>	<b>10</b>
1.1 TERMS OF REFERENCE .....	10
<b>2 LEGISLATIVE REQUIREMENTS .....</b>	<b>15</b>
<b>3 METHODOLOGY .....</b>	<b>16</b>
3.1 LITERATURE REVIEW.....	16
3.2 GENEALOGICAL SOCIETY AND GOOGLE EARTH MONUMENTS .....	16
3.3 PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT: .....	16
3.4 SITE INVESTIGATION .....	17
3.5 SITE SIGNIFICANCE AND FIELD RATING .....	19
3.6 IMPACT ASSESSMENT METHODOLOGY .....	20
3.7 LIMITATIONS AND CONSTRAINTS OF THE STUDY .....	21
<b>4 DESCRIPTION OF SOCIO ECONOMIC ENVIRONMENTAL .....</b>	<b>21</b>
<b>5 DESCRIPTION OF THE PHYSICAL ENVIRONMENT:.....</b>	<b>22</b>
<b>6 RESULTS OF PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT: .....</b>	<b>22</b>
<b>7 LITERATURE / BACKGROUND STUDY: .....</b>	<b>23</b>
7.1 LITERATURE REVIEW (SAHRIS) .....	23
7.2 BACKGROUND TO THE GENERAL AREA .....	24
<b>8 FINDINGS OF THE SURVEY .....</b>	<b>28</b>
<b>9 POTENTIAL IMPACT.....</b>	<b>29</b>
<b>10 CONCLUSION AND RECOMMENDATIONS .....</b>	<b>31</b>
10.1. CHANCE FIND PROCEDURES.....	32
10.2. REASONED OPINION.....	33
<b>11 REFERENCES.....</b>	<b>34</b>
<b>12 APPENDICES:.....</b>	<b>36</b>
CURRICULUM VITAE OF SPECIALIST .....	36



**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 OF THE PROPOSED IMPACT AREA (GOOGLE EARTH 2019).....	14
FIGURE 4: TRACK LOG OF THE SURVEY IN GREEN .....	18
FIGURE 5. 2004 GOOGLE IMAGE OF THE STUDY AREA. THE AREA IS CLEARED OF VEGETATION. ....	26
FIGURE 6. 2008 GOOGLE IMAGE OF THE STUDY AREA. THE AREA FORMS PART OF A SERVICE ROAD. ....	26
FIGURE 7. 2018 GOOGLE EARTH IMAGE – INDICATING VEGETATION IN THE STUDY AREA. ....	27
FIGURE 8. GENERAL SITE CONDITIONS .....	28
FIGURE 9. GENERAL SITE CONDITIONS.....	28
FIGURE 10. GENERAL SITE CONDITIONS.....	28
FIGURE 11. GENERAL SITE CONDITIONS.....	28

**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 ASSESSMENT TABLE.....	30

**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 Tekplan Environmental Consultants to conduct a heritage impact assessment of the proposed Patryshoek Vodacom Mast Development. The site is located on Portion 75 of the farm Hartebeestfontein 445 JQ in the Madibeng Local Municipality area (Figure 1 -3). The report forms part of the Basic Assessment (BA) and Environmental Management Programme Report (EMPr) for the development.

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, no heritage sites were identified in the impact area. 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 Basic Assessment 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**

<b>Size of farm and portions</b>	Portion 75 of the farm Hartebeestfontein 445 JQ
<b>Magisterial District</b>	Madibeng Local Municipality area, Bojanala Platinum District Municipality
<b>1: 50 000 map sheet number</b>	2527 DB
<b>Central co-ordinate of the development</b>	25° 42' 00.10" S 27° 52' 41.00" E

**Table 3: Infrastructure and project activities**

<b>Type of development</b>	Vodacom Telecommunications Mast
<b>Project size</b>	8m x 10m impact area (80m <sup>2</sup> ) for a 30-meter lattice mast
<b>Project Components</b>	A container housing electronic equipment surrounded by a steel palisade fence

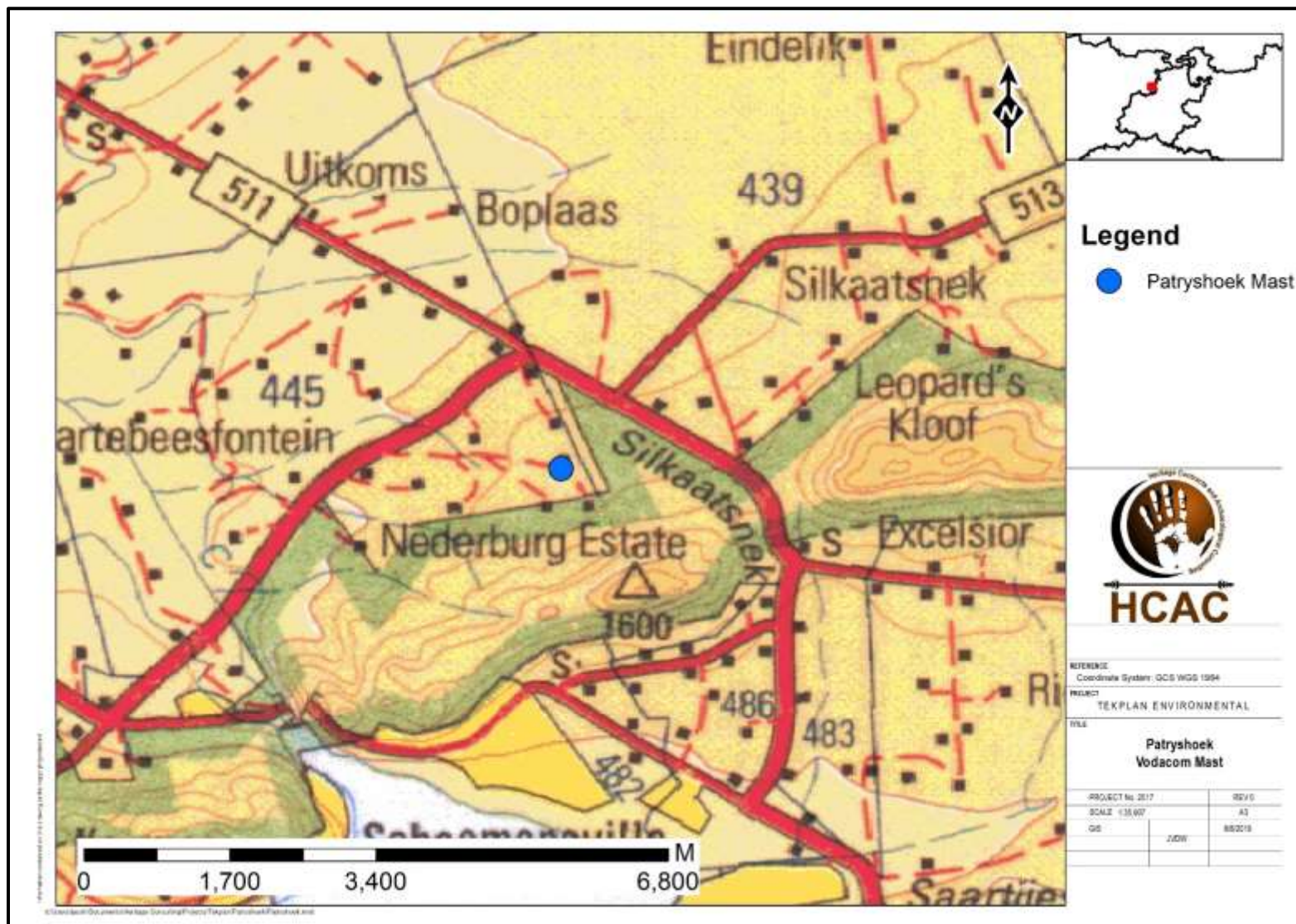


Figure 1. Provincial locality map (1: 250 000 topographical map).



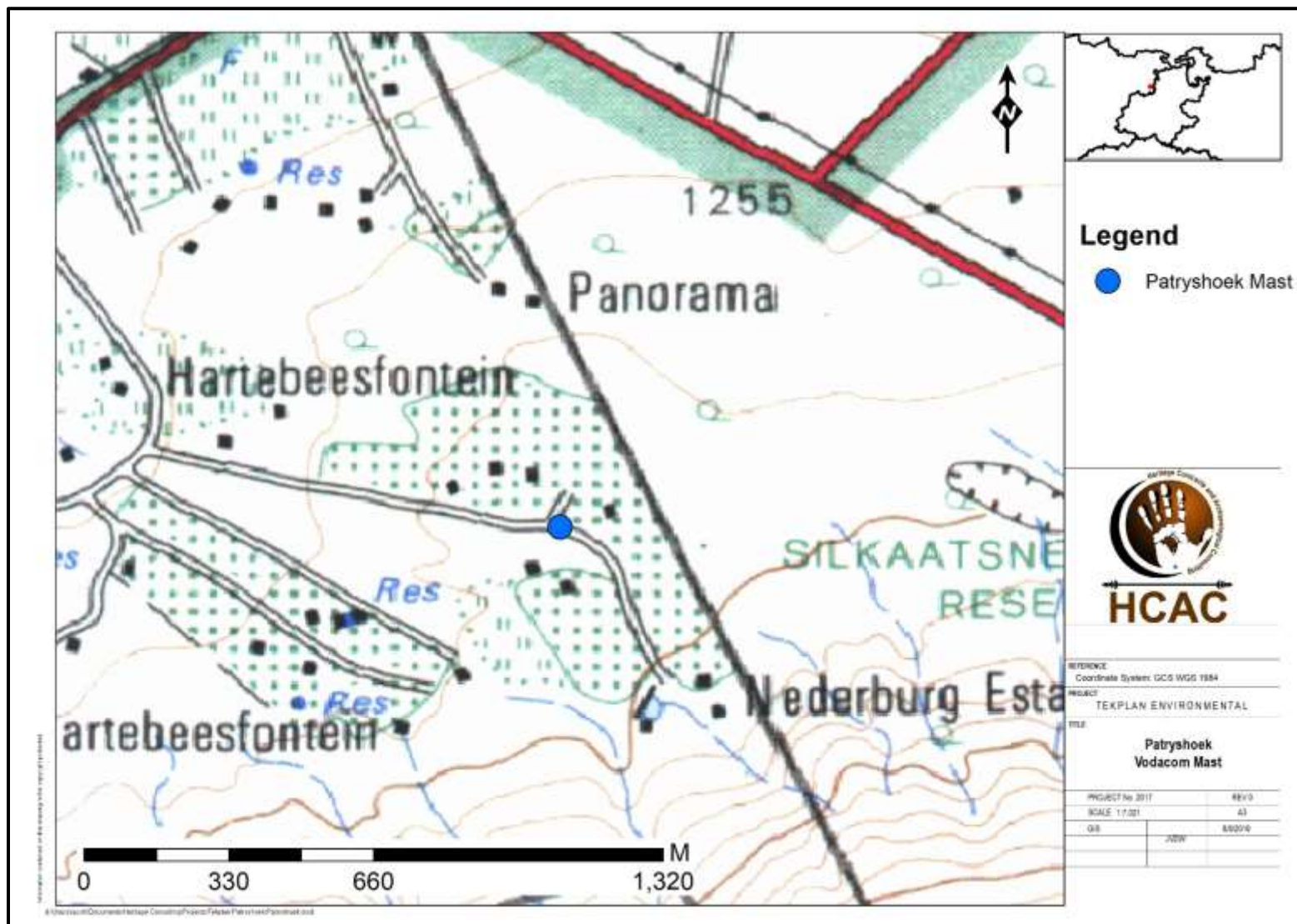


Figure 2: Regional locality map (1:50 000 topographical map).



Figure 3. Satellite image of the proposed impact area (Google Earth 2019).



## 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 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 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 fieldwork phase. The database of the Genealogical Society was consulted to collect data on any known graves in the area.

#### **3.3 Public Consultation and Stakeholder Engagement:**

Stakeholder engagement is a key component of any BAR 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 Basic Assessment Report (BAR).

Please refer to section 6 for more detail.

### 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	15 January 2020
Season	Summer – vegetation in the study area is low with good archaeological visibility. The impact area was sufficiently covered (Figure 4) to characterise the heritage character of the study area

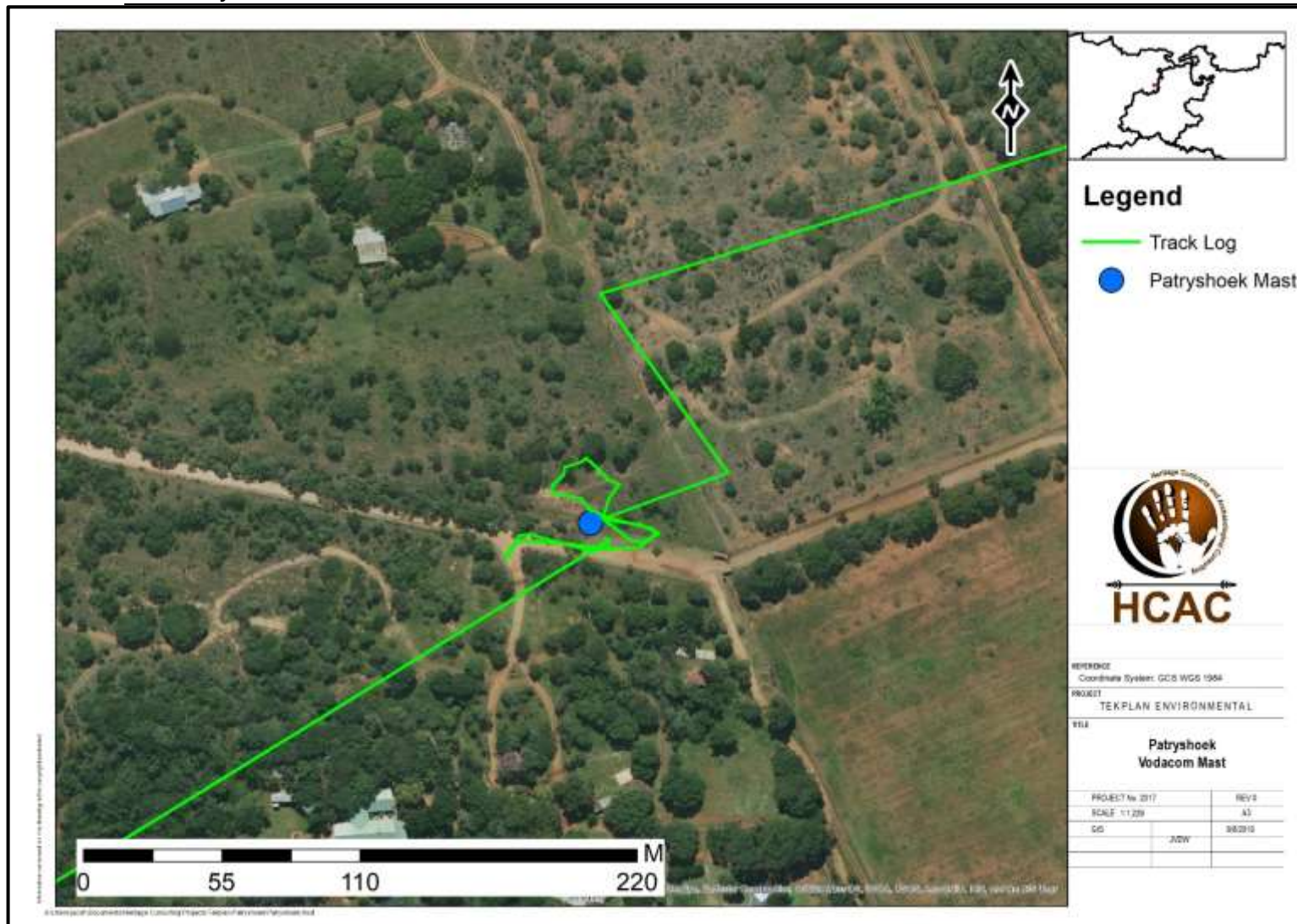


Figure 4: Track log of the survey in green

### 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.

<b>FIELD RATING</b>	<b>GRADE</b>	<b>SIGNIFICANCE</b>	<b>RECOMMENDED MITIGATION</b>
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 nature of heritage resources, the possibility exists that some features or artefacts may not have been discovered/recorded during the survey and the possible occurrence of 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 Environmental

According to StatsSA the Local Municipality of Madibeng has a total population of 477 381. It is highly rural, with 57% of its population residing in rural areas (tribal or traditional areas), about 28% residing in urban areas and about 15% residing in farming areas. Black Africans are the majority, with an 89% share of the Madibeng Municipality's population. The most commonly spoken language is Setswana.

More than half of the population is male (53%), with 47% constituting females. At age 85 and older, there were more than twice as many women as men. People under 20 years of age made up over a quarter of the population (33,5%), and people aged 65 and older made up 5% of the population.

Madibeng prides itself on a number of economic activities which play a significant role in the growth of the province and country as a whole, and which include agriculture, mining, tourism and manufacturing. Mining is presently predominant with Madibeng being the world's third-largest chrome producer and includes the richest Platinum Group Metals Reserve (situated on the Merensky Reef). Manufacturing is also a dominant sector with a wide variety of industries situated in the various industrial areas. Tourism is one of the strong contenders, if well explored in the area. The possible establishment of the tourism belt is being researched for economic expansion. The advantage of rail and road infrastructure spanning in all lucrative destinations will begin to bear necessary fruit for the prosperity of the people of Madibeng.

The municipality is characterised by high levels of unemployment. In Madibeng, the unemployment rate for those aged 15 to 24 is 38,2%, which is almost 10% more than the overall unemployment rate.

**5 Description of the Physical Environment:**

The proposed site earmarked for the Vodacom mast measures 8 x 10 meter located located on Portion 75 of the farm Hartebeestfontein 445 JQ in the Madibeng Local Municipality area, North West Province. The area earmarked for the proposed mast is located to the north of a gravel access road on a farm portion that is fenced. The study area is undeveloped although the construction of the road could have had an impact on the proposed mast loation.

**6 Results of Public Consultation and Stakeholder Engagement:****6.1.1 Stakeholder Identification**

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 (SAHRIS)

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

Author	Year	Project	Findings
Van Schalkwyk, J.	1997	A Survey of Cultural Resources in The Proposed De Rust Development Area, Northwest Province	Stone Tools and Iron Age site.
Van Schalkwyk, J.	1998	A Survey of Cultural Resources for The Lomond/ Scheerpoort Powerline, Broederstroom Area, West of Pretoria	No sites
Fourie, W.	2007	Heritage Impact Assessment Bushveld View Estate x 14, on Portion 67 and 66 the farm Hartebeesfontein 445 JQ, District Madibeng, North West Province	A Cemetery
Kusel, U.	2007	Cultural Heritage Resources Impact Assessment of Portion 92 De Rust 478 JQ Madibeng North West Province	No sites
Van der Walt, J & Fourie, W.	2007	Archaeological Impact Assessment Remainder of Portion 25 of the farm Welgegund 491 JQ, Hartbeespoort, Gauteng Province	No sites
Van Schalkwyk, J.	2007	Heritage Survey Report for The Proposed Development on A Portion of The Farm Zilkaatsnek 439jq, To Be Known as Mount Grace, In the Brits Magisterial District, North West Province	No Sites
Birkholtz, P.	2008	Phase 1 Heritage Impact Assessment Proposed Development of Portion 53 of the Farm Remhoogte 476-JQ, Madibeng Municipality, North-West Province	No sites
Birkholtz, P.	2008	Phase 1 Heritage Impact Assessment Proposed Sondela Residential Development on Portions 14 & 25 Of the Farm Rietfontein 485-Jq, Madibeng Local Municipality & The Bojanala Platinum District Municipality's Area of Jurisdiction, North West Province	No sites
Pelser, A, J. & Van Vollenhoven A, C.	2008	A report on a heritage impact assessment for the Buffelsfontein East & West expansion project on the farm Buffelsfontein 465 JQ, near Mooiooi, North West Province	Structure and Iron Age features.
Van der Walt, J.	2011	AIA for the proposed Magalies Crossing, North West Province.	No sites.
Van der Walt, J.	2016	Archaeological Impact Assessment – Kalkheuveld	Modern Dwellings
Van Vollenhoven, A.	2018	A Report on A Cultural Heritage Impact Assessment for the Development of Additional Tourism Facilities at the Existing Harties Cableway, North-West Province	No Sites
Van Vollenhoven, A.	2018	Letter for HIA exemption request: proposed rehabilitation of road P31/1 (R104), North West Province	No sites
Van der Walt, J.	2018	Heritage Impact Assessment Leeuwenkloof Vodacom Mast	No sites
Pelser, A.	2019	Phase 1 HIA Report for the proposed Kroon's Gourmet Chicken Hatchery on various Portions of the Farm Hartebeestfontein 445JQ Madibeng Local Municipality, Northwest Province	Structures, Ruins and graves.
Van der Walt, J.	2019	Heritage Impact Assessment Guinea Fowl Vodacom Mast	Stone Age sites



### 7.1.1 Genealogical Society and Google Earth Monuments

No known grave sites are indicated in the study area.

## 7.2 Background to the general area

### 7.2.1 Archaeology of the greater study area

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

#### 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.

The ESA is represented in the area by the Wonderboom site on the southern slopes of the Magaliesberg north of Pretoria. This site is characterised by numerous cleavers, hand axes, cores and flakes (Mason, 1958). The nearby Jubilee shelter has been excavated and provides a record from the Late Pleistocene to the 7th Century AD (Turner, 1986), an extended cultural sequence with assemblages' characteristic of the Middle Stone Age, Early Later Stone Age and Later Stone Age including assemblages from the Oakhurst and Wilton industries (Wadley, 1986). The Jubilee shelter provides evidence of hunter–gatherer occupation during three phases of agro pastoralist contact, beginning in 225 AD and characterised by cooperative contact, prior to the hunter-gatherers being either assimilated or dispersed to other areas (Wadley, 1996).

#### 7.2.1.2 The Iron Age

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

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

The Iron Age is characterised by the ability of these early people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living. The Broederstroom Early Iron Age site is located close to the study area and consist of around 250 years of occupation by iron and copper producers (Mason, 1981) and provided evidence on the role of cattle and the central cattle pattern in spatial arrangement of Early Iron Age sites (Huffman 1993). The copper smelting sites (Middle Iron Age) at Uitkomst and Ifafa from the 15<sup>th</sup>/16<sup>th</sup> Centuries were described by Mason (1962). The Late Iron Age in the area is characterised by extensive stone walled sites (Mason, 1986; Dreyer, 1995) of the Sotho-Tswana (Pistorius 1992). Rock engravings from the Magaliesberg include depictions of animals, shields, animal pens and settlements and are attributed to the Tswana people who occupied the area (Mason, 1986; Maggs, 1995).

### 7.2.2 Historical Information

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: 14; 116-119) In 1825 as a result of the Mfecane Mzilikazi of the Matabeles conquered the area and displaced the Tswana tribes that used to live in the area. Mzilikazi established his kraal north of the Magaliesberg in the vicinity of the present day Hartbeespoort Dam. (Steyn et al, 1978).

Broederstroom was founded in 1903 with the opening of a trading post in the area. The history of this area is mainly nestled in farming and commercial activities and this is emphasized by important 19th and early 20th century farm and store buildings located in this area (Marais –Botes 2011).

### 7.2.3 Anglo-Boer War

The Anglo-Boer War, which took place between 1899 and 1902 in South Africa, was one of the most turbulent times in South Africa’s history. Even before the outbreak of war in October 1899 British politicians, including Sir Alfred Milner and Mr. Chamberlain, had declared that should Britain's differences with the Z.A.R. result in violence, it would mean the end of republican independence. This decision was not immediately publicized, and as a consequence, republican leaders based their assessment of British intentions on the more moderate public utterances of British leaders. Consequently, in March 1900, they asked Lord Salisbury to agree to peace on the basis of the status quo ante bellum. Salisbury's reply was; however, a clear statement of British war aims. (Du Preez 1977).

During the War of 1899 to 1902 the Magaliesberg had strategic significance to both sides because of its closeness to Pretoria (and Krugersdorp) as well as the fact that the main access routes between Pretoria and the western part of the old *Zuid-Afrikaansche Republiek* (including the town of Rustenburg) passed through its valleys (Birkholtz 2007). As a result, a number of skirmishes and battles took place in the area, including the Battle of Dwarsvlei (11 July 1900), the First Battle of Silkaatsnek (11 July 1900), the Battle of Nooitgedacht (13 December 1900) as well as the Second Battle of Silkaatsnek (2 August 1900) (Van Vollenhoven & Van der Walt, 2002). Several historical structures, blockhouses etc older than 60 years occur in the greater area.

At the first Battle of Silkaatsnek General De la Rey’s Boer troops defeated the British army on 11 July 1900. (Bergh 1999: 54, 250) The Boer side however generally lost ground against the British 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. (Theron 1984: 273-279)

### 7.2.4 Cultural Landscape

The site under investigation is located north east of the Hartebeestepoort Dam, North West Province. The area surrounding the site was cultivated in the 1950’s (Figure 2) and part of the cleared area for the service road in 2004 and 2008 (Figure 5 and 6). Later vegetation encroached on the cleared area again (Figure 7) and today the area is located next to the service road. A few residential structures are visible and some parts of the greater study area are cultivated.



Figure 5. 2004 Google image of the study area. The area is cleared of vegetation.



Figure 6. 2008 Google image of the study area. The area forms part of a service road.



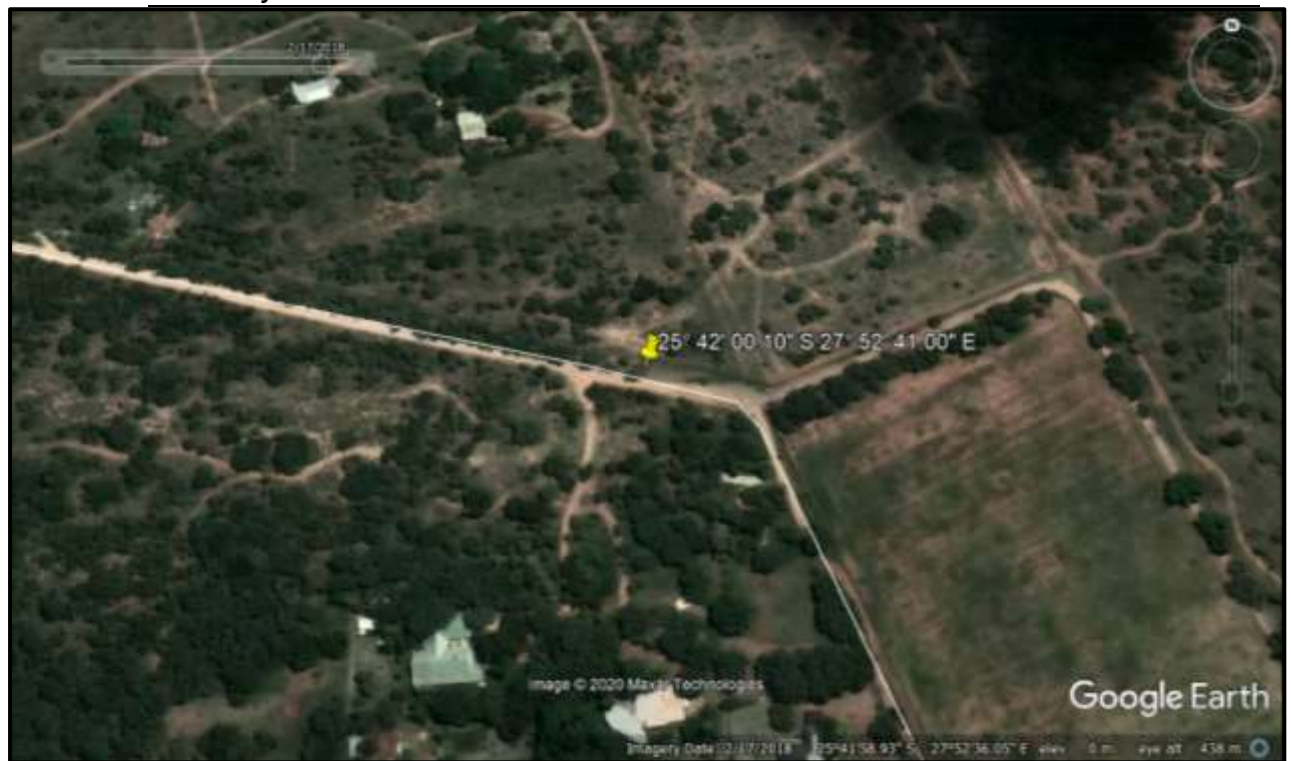


Figure 7. 2018 Google earth image – indicating vegetation in the study area.

## 8 Findings of the Survey

It is important to note that the survey was concentrated around the proposed development footprint of the mast and was surveyed over a period of one day. The study area is located on a farm with a nearby service road. The farm is fenced and a previous service road is visible cutting through the study area (Figure 8 to 11). Activities relating road construction could have impacted on surface indicators of heritage resources if ever present in the area and during the survey no heritage artefacts of significance or indicators of heritage sites were noted within the proposed impact area or immediate surrounds.



Figure 8. General site conditions



Figure 9. General site conditions



Figure 10. General site conditions



Figure 11. General site conditions

An independent paleontological study was conducted by Prof Marion Bamford (2020). The study concluded that the mast site lies on the shales and sandstones of the Magaliesberg Formation (Pretoria Group, Transvaal Supergroup). These are ancient transgressive shallow to deepwater sediments and most unlikely to preserve fossils, but very subtle trace fossils of microbes, called microbially induced sedimentary structures (MISS) have been reported from this formation on hard sandstone outcrops. Since the mast will be constructed on soils this project will not impact any fossils. However, the site is indicated as very sensitive on the SAHRIS map so a Fossil Chance Find Protocol should be added to the EMP. Based on this information it is recommended that no palaeontological site visit is required unless fossils are found by the responsible person and the palaeontologist notified (email, photographs) considers them to be of scientific interest (Bamford 2020).

The proposed mast will have a negligible impact on the surrounding cultural landscape. Visual impacts to scenic routes and sense of place are also considered to be low due to the other developments in the area as well as the small impact area of the proposed mast.

## **9 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.

### **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 Assessment table.

<b>Nature:</b> 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.		
	<b>Without mitigation</b>	<b>With mitigation (Preservation/ excavation of site)</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Low (2)	Low (2)
<b>Probability</b>	Not probable (2)	Not probable (2)
<b>Significance</b>	<b>16 (Low)</b>	<b>16 (Low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	No resources were recorded	No resources were recorded.
<b>Can impacts be mitigated?</b>	Yes, a chance find procedure should be implemented.	Yes
<b>Mitigation:</b> Due to the lack of apparent significant heritage resources no further mitigation is required prior to construction. A Chance Find Procedure should be implemented for the project should any sites be identified during the construction process.		
<b>Cumulative impacts:</b> Due to the lack of developments in the surrounding area and the very small impact area of the proposed mast the cumulative impacts of this development are considered to be acceptable.		
<b>Residual Impacts:</b> Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted but this cannot be quantified.		

## 10 Conclusion and recommendations

It is important to note that the survey was concentrated around the proposed development footprint of the mast. The impact area of the proposed mast is small, measuring 8 m x 10 m (80m<sup>2</sup>). The study area has been previously disturbed by cultivation and the presence of gravel roads and would have impacted on surface indicators of heritage features if these ever occurred. In terms of the national estate as defined by the NHRA the following key findings apply:

- In terms of the built environment of the area (Section 34 of the NHRA Act 25 of 1999), no standing structures older than 60 years occur within the impact area.
- Regarding the archaeological component of Section 35 no sites or features were identified.
- In terms of the palaeontological component an independent paleontological study was conducted by Prof Marion Bamford (2020) and concluded that, since the mast will be constructed on soils this project will not impact any fossils. However, the site is indicated as very sensitive on the SAHRIS map so a Fossil Chance Find Protocol should be added to the EMP. Based on this information it is recommended that no palaeontological site visit is required unless fossils are found by the responsible person and the palaeontologist notified (email, photographs) considers them to be of scientific interest.
- In terms of Section 36 of the Act no burial sites were recorded.
- 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.

Due to the lack of significant heritage resources in the development footprint the impact of the proposed project on heritage resources is considered low 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:

- Implementation of a chance finds procedure (Archaeological and Palaeontological) 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.

---

**Monitoring Programme for Palaeontology – to commence once the excavations for foundations begin.**

1. The following procedure is only required if fossils are seen on the surface and when excavations commence.
2. When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossil, MISS, stromatolites) should be put aside in a suitably protected place. This way the project activities will not be interrupted.
3. Photographs of similar fossil plants must be provided to the developer to assist in recognizing the fossil plants in the shales and mudstones (for example see Figure 1.5). This information will be built into the EMP's training and awareness plan and procedures.
4. Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
5. If there is any possible fossil material found by the developer/environmental officer/miners then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.
6. Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
7. If no good fossil material is recovered then no site inspections by the palaeontologist will not be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.
8. If no fossils are found and the excavations have finished then no further monitoring is required.

### **10.2. Reasoned Opinion**

The impact of the proposed project on heritage resources is low and any impact to accidental finds can be mitigated to an acceptable level and no further pre-construction mitigation is required based on approval from SAHRA. Furthermore, the socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures (i.e. chance find procedure) are implemented for the project.

### **10.3. Potential risk**

Potential risks to the proposed project are the occurrence of unknown and unmarked graves of which surface indicators have been destroyed. These risks can be mitigated to an acceptable level with monitoring and the implementation of a chance find procedure as outlined in Section 10.1.

## 11 References

- Bamford, M. 2020. Palaeontological Impact Assessment for the proposed construction of Skeerpoort Farm mast for Vodacom on Farm Bultfontein 475 JQ, Madibeng Local Municipality, North West Province. Unpublished report.
- Baker, S. 2016. Kalkheuvel West Field Report. Unpublished report.
- Bergh, J.S., (ed.) *Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies*. Pretoria: J. L. van Schaik Uitgewers. 1999.
- Birkholtz, P. 2008 Phase 1 Heritage Impact Assessment Proposed Development of Portion 53 of the Farm Remhoogte 476-JQ, Madibeng Municipality, North-West Province
- Coetzee, T. 2017 Archaeological Desktop Study for the application of a on portions 36, 37, 38, 39, 40. And 41 of the Farm Boekenhoutkloof 315 JR, Pretoria, North, Gauteng
- De Jong, R. 2002 Heritage Scoping for the extension of the SABRIX Quarry on the farm Boekenhoutkloof 315 JR,
- Du Preez, S. J. Peace attempts during the Anglo Boer War until March 1901. Magister Artium thesis in History. Pretoria: University of Pretoria.
- Huffman, T.N. 2007. Handbook to the Iron Age. The archaeology of pre-colonial farming societies in Southern Africa. Pietermaritzburg: University of KwaZulu-Natal Press.
- Kusel, U. 2007 Cultural Heritage Resources Impact Assessment of Portion 92 De Rust 478 JQ Madibeng North West Province
- Lombard, M. Wadley, L., Deacon, J., Wurz, S., Parsons, I., Mohapi, M., Swart, J. & Mitchell, P. 2012. *South African and Lesotho Stone Age sequence updated (I)*. South African Archaeological Bulletin 67(195): 120 - 144.
- Maggs, T., 1995. Neglected Rock Art: The Rock Engravings of Agriculturist Communities in South Africa. The South African Archaeological Bulletin 50, no. 162: 132-42.
- Mason, R. J., 1962. Prehistory of the Transvaal. Johannesburg: Witwatersrand University Press.
- Mason, R.J., 1981. Early Iron Age settlement at Broederstroom 24/73, Transvaal, South Africa. South African Journal of Science, 77(9), pp.401-416.
- Mason, R.J., 1986. Origins of black people of Johannesburg and the Southern Western Central Transvaal AD 350-1880. University of the Witwatersrand: Johannesburg.
- National Heritage Resources Act NHRA of 1999 (Act 25 of 1999)
- Massie, R. H. 1905. *The Native tribes of Transvaal. Prepared for the General Staff War Office*. London: His Majesty's Stationery Office.
- Rasmussen, R.K. 1978 Migrant kingdom: Mzilikazi's Ndebele in South Africa. London: Rex Collings
- Ross, R. A concise history of South Africa. Cambridge University Press. Cambridge. 1999.
- SAHRIS (Cited 17 May 2018)
- Turner, G., 1986. Faunal Remains from Jubilee Shelter, Transvaal. The South African Archaeological Bulletin 41, no. 144 (1986): 63-68.
- Van Schalkwyk, J. 1997 A Survey of Cultural Resources in The Proposed De Rust Development Area, Northwest Province
- Van Schalkwyk, J. 1999 A Survey of Cultural Resources at The Sites of Wucor Granite Mining and Thaba Romana Granite, Northwest Province
- Van Schalkwyk, J. 1998 A Survey of Cultural Resources for The Lomond/ Scheerpoort Powerline, Broederstroom Area, West of Pretoria
- Wadley, L., 1986. Segments of Time: A Mid-Holocene Wilton Site in the Transvaal. The South African Archaeological Bulletin 41, no. 144: 54-62.
- Wadley, L., 1996. Changes in the social relations of precolonial hunter–gatherers after agropastoralist contact: an example from the Magaliesberg, South Africa. Journal of Anthropological Archaeology, 15(2), pp.205-217.
- Wulfsohn, L. 1992. *Rustenburg at war. The story of Rustenburg and its citizens in the First and Second Anglo-Boer Wars. Second Edition*. Cape: CTP Book Printers.
- SAHRA Report Mapping Project Version 1.0, 2009

**MAPS**

Topographical Map. 1939. *South Africa. 1:50 000 Sheet. 2528CA Pretoria N. W. First Edition. Pretoria: Government Printer.*

Topographical Map. 1965. *South Africa. 1:50 000 Sheet. 2528CA Pretoria. Third Edition. Pretoria: Government Printer.*

Topographical Map. 1975. *South Africa. 1:50 000 Sheet. 2528CA Pretoria. Fourth Edition. Pretoria: Government Printer.*

Topographical Map. 1995. *South Africa. 1:50 000 Sheet. 2528CA Pretoria. Sixth Edition. Pretoria: Government Printer.*

Topographical Map. 2001. *South Africa. 1:50 000 Sheet. 2528CA Pretoria. Seventh Edition. Pretoria: Government Printer.*

**Electronic Sources:**

Google Earth. 2018. 25°42'42.18" S 28°05'16.59" E elev 1309 m. [Online]. [Cited 30 August 2018].

Google Earth. 2018. 25°42'55.35" S 28°05'10.21" E elev 1315 m. [Online]. [Cited 30 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:**

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

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

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

<b>Name of University or Institution</b>	: University of Johannesburg
<b>Degree</b>	: PhD
<b>Year</b>	: Currently Enrolled

**EMPLOYMENT HISTORY:**

2011 – Present:	<b>Owner – HCAC (Heritage Contracts and Archaeological Consulting CC).</b>
2007 – 2010 :	<b>CRM Archaeologist</b> , Managed the Heritage Contracts Unit at the University of the Witwatersrand.
2005 - 2007:	<b>CRM Archaeologist</b> , Director of Matakoma Heritage Consultants
2004:	<b>Technical Assistant</b> , Department of Anatomy University of Pretoria
2003:	<b>Archaeologist</b> , Mapungubwe World Heritage Site
2001 - 2002:	<b>CRM Archaeologists</b> , For R & R Cultural Resource Consultants, Polokwane
2000:	<b>Museum Assistant</b> , 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 Booyseendal 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 12<sup>th</sup> 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
- J'jnanalysis 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<br>E-mail: mlombard@uj.ac.za |
| 2. | Prof TN Huffman      | Department of Archaeology Tel: (011) 717 6040<br>University of the Witwatersrand       |
| 3. | Alex Schoeman        | University of the Witwatersrand<br>E-mail: Alex.Schoeman@wits.ac.za                    |