

# HERITAGE IMPACT ASSESSMENT

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

**FOR THE PROPOSED VODACOM PTY LTD 22 KV POWERLINE,  
DINGLETON, GAMAGARA LOCAL MUNICIPALITY, NORTHERN CAPE**

**Type of development:**

Powerline

**Client:**

Eskom Holding SOC Limited

**Client info:**

Tshegofatso Nnene

**E – mail:**

[nnetm@eskom.co.za](mailto:nnetm@eskom.co.za)

**Developer:**

ESKOM MOU

**1World Consultants (Pty) Ltd**

P.O. Box 2311

Westville

3630

Tel: 031 262 8327

Fax: 086 726 3619

E-Mail: [adila@1world.co.za](mailto:adila@1world.co.za)



Report Author:

Mr. J. van der Walt

Project Reference:

HCAC Project number 2056

Report date:

October 2020

### APPROVAL PAGE

<b>Project Name</b>	Vodacom Pty Ltd 22 kV Powerline in Dingleton, Gamagara Local Municipality, Northern Cape
<b>Report Title</b>	Heritage Impact Assessment for the Proposed Vodacom Pty Ltd 22 kV Powerline in Dingleton, Gamagara Local Municipality, Northern Cape
<b>Authority Reference Number</b>	SAHRA Case ID 15036
<b>Report Status</b>	Draft Report
<b>Applicant Name</b>	Eskom Holdings SOC Limited

	<b>Name</b>	<b>Qualifications and Certifications</b>	<b>Date</b>
<b>Archaeologist</b>	Jaco van der Walt	MA Archaeology ASAPA #159 APHP #114	October 2020
<b>Paleontologist</b>	Prof Marion Bamford	PhD in Palaeobotany	October 2020

## DOCUMENT PROGRESS

### Distribution List

Date	Report Reference Number	Document Distribution	Number of Copies
16 October 2020	2056	1World Consultants to Eskom	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. 1World 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 1World exercises due care and diligence in rendering services and preparing documents 1World accepts no liability, and the client, by receiving this document, indemnifies 1World against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by 1World 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 1World.

The client, on acceptance of any submission by 1World and on condition that the client pays to 1World 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 1World 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 including identified alternatives on the environment 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

1World Consultants (Pty) Ltd was contracted by Eskom Holdings SOC Limited to conduct a heritage impact assessment of the proposed Vodacom Pty Ltd 22 kV powerline in Dingleton, Gamagara Local Municipality, Northern Cape. The project consists of a linear development of approximately 3km that was assessed both on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the development footprint. The study area is characterised by extensive mining and road developments and the power line will run between an existing Vodacom tower connecting into the grid next to the N14 provincial road following existing infrastructure like fences and service roads.

Finds were limited to a few Stone Age artefacts associated with a kopje (located outside of the impact area) that would have been a focal point for human activity in antiquity. It is on the north and north eastern side of this kopje and to the west of the proposed powerline that two sites (King 1 and King 2) were recorded by Morris (2005). The line is located away from these sites recorded by Morris and no impact will occur. The few artefacts recorded during the powerline survey are out of context and are scattered too sparsely to be of significance apart from mentioning them in this report. Therefore, 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.


In terms of the paleontological component, the area is indicated as of moderate to high paleontological sensitivity and an independent study was conducted by Prof Marion Bamford. The study concluded it is extremely unlikely that any fossils would be preserved in the chert breccias of the uppermost Ghaap Plateau Group (Transvaal Supergroup), or the ferruginised arenites of the Gamagara Formation (Olifantshoek Supergroup). There is a very small chance that trace fossils such as stromatolites may occur in the adjacent dolomites of the Campbell Rand Group and recommended a chance find procedure.

Despite the sensitive nature of archaeological resources in the greater area with specific reference to the proposed National Heritage Site Nomination of the Kathu Archaeological Complex that demonstrates the scientific and heritage significance of the area (Beaumont, 1990, 2004, 2013; Porrat et al, 2010; Herries, 2012; Chazan et al, 2012; Wilkins & Chazan, 2012; Walker et al, 2013; Walker et al 2014), the impact of the power line on heritage resources is considered to be low. The low impact rating is attributed to the disturbed character of the study area and the lack of significant heritage resources. It is therefore 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:

### **Recommendations:**

- Implementation of a chance find procedure for heritage and paleontological resources.

## 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>	16/10/2020

### 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 focusing on the Iron Age in 2012 and is a PhD candidate at the University of Johannesburg focusing 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

INDEMNITY AND CONDITIONS RELATING TO THIS REPORT .....	3
REPORT OUTLINE.....	4
Executive Summary.....	5
Declaration of Independence .....	6
a) Expertise of the specialist.....	6
ABBREVIATIONS .....	9
GLOSSARY .....	10
<b>1. Introduction and Terms of Reference:.....</b>	<b>11</b>
1.1. Terms of Reference.....	11
<b>2. Legislative Requirements.....</b>	<b>16</b>
<b>3. METHODOLOGY .....</b>	<b>17</b>
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 .....	18
3.5. Site Significance and Field Rating .....	20
3.6. Impact Assessment Methodology.....	21
3.7. Limitations and Constraints of the study.....	21
<b>4. Description of Socio Economic Environmental .....</b>	<b>22</b>
<b>5. Results of Public Consultation and Stakeholder Engagement:.....</b>	<b>22</b>
<b>5.1.1. Stakeholder Identification .....</b>	<b>22</b>
<b>6. Literature / Background Study:.....</b>	<b>22</b>
6.1. Literature Review (SAHRIS) .....	22
<b>6.1.1 Genealogical Society and Google Earth Monuments .....</b>	<b>23</b>
6.2. Background to the general area.....	23
<b>6.2.1. Stone Age .....</b>	<b>23</b>
<b>6.2.2. Iron Age .....</b>	<b>24</b>
<b>6.2.3. Anglo-Boer War .....</b>	<b>24</b>
<b>6.2.4. Cultural Landscape .....</b>	<b>24</b>
<b>7. Description of the Physical Environment .....</b>	<b>29</b>
<b>8. Findings of the Survey.....</b>	<b>30</b>
<b>9. Potential Impact.....</b>	<b>35</b>



<b>9.1.1. Pre-Construction phase .....</b>	<b>35</b>
<b>9.1.2. Construction Phase .....</b>	<b>35</b>
<b>9.1.3. Operation Phase: .....</b>	<b>35</b>
<b>10. Conclusion and Recommendations .....</b>	<b>36</b>
10.1. Chance Find Procedures.....	37
10.2. Reasoned Opinion.....	38
10.3. Potential Risk.....	38
<b>11. References.....</b>	<b>39</b>
<b>12. Appendices:.....</b>	<b>41</b>

<b>Table 1: Specialist Report Requirements .....</b>	<b>4</b>
<b>Table 2: Project Description .....</b>	<b>12</b>
<b>Table 3: Infrastructure and Project Activities .....</b>	<b>12</b>
<b>Table 4: Site Investigation Details .....</b>	<b>18</b>
<b>Table 5: Heritage Significance and Field Ratings .....</b>	<b>20</b>
<b>Table 6: Impact Assessment Table .....</b>	<b>35</b>

<b>Figure 1: Regional Setting (1:250 000 Topographical Map) .....</b>	<b>13</b>
<b>Figure 2: Local Setting (1: 50 000 Topographical Map).....</b>	<b>14</b>
<b>Figure 3: Aerial Image of the Proposed Impact Area .....</b>	<b>15</b>
<b>Figure 4: Tracklog of the Survey in Green.....</b>	<b>19</b>
<b>Figure 5: 1965 Aerial Image of the Study Area. The N14 was not yet Built at this Time with no Mining Activity ...</b>	<b>25</b>
<b>Figure 6: Historical Map Dating to 1974. Excavations are visible to the East of the Project Area and the N14 is still not Built .....</b>	<b>26</b>
<b>Figure 7: 1988 Aerial Image of the Study Area. By This Time the N14 was Built with Limited Mining Activity in the Surrounding Area.....</b>	<b>27</b>
<b>Figure 8: 2001 Topographical Map of the Study Area. Large-Scale Mining is now Visible with Roads within the Study Area .....</b>	<b>28</b>
<b>Figure 9: 2016 Aerial Image of the Study Area Indicating Widespread Mining and Service Roads in the Study Area .....</b>	<b>29</b>
<b>Figure 10: General Site Conditions in the Study Area .....</b>	<b>30</b>
<b>Figure 11: General View of the Study Area.....</b>	<b>30</b>
<b>Figure 12: General Site Conditions.....</b>	<b>31</b>
<b>Figure 13: General Site Conditions.....</b>	<b>31</b>
<b>Figure 14: General Site Conditions.....</b>	<b>32</b>
<b>Figure 15: General Site Conditions.....</b>	<b>32</b>
<b>Figure 16: Known Sites Recorded by Morris (2005) as well as an Observation Point Recorded During the Current Study .....</b>	<b>32</b>
<b>Figure 17: Dorsal View of Miscellaneous Flakes with Notched Artefacts on the Right .....</b>	<b>33</b>
<b>Figure 18: Dorsal View of Flake with Bladelike Proportions .....</b>	<b>33</b>
<b>Figure 19: Paleontological Sensitivity Map of the Area .....</b>	<b>34</b>

## 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:

1World Consultants (Pty) Ltd was contracted by Eskom Holdings SOC Limited to conduct a heritage impact assessment of the proposed Vodacom Pty Ltd 22 kV powerline south of Kathu at Dingleton, Gamagara Local Municipality, Northern Cape (Figure 1 -3). The report was completed as required by SAHRA to comply with Section 38 (1) and (3) of the NHRA, Act 25 of 1999 and as part of the 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 significant heritage resources were identified. General site conditions and features on sites were recorded by means of photographs, GPS locations and site descriptions. Possible impacts were identified and mitigation measures are proposed in the following report. SAHRA as a commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents, compiled in support of an Environmental Authorisation application as defined by NEMA EIA Regulations section 40 (1) and (2), to be submitted to SAHRA. As such the 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>	3 095.67 m Powerline Development
<b>Magisterial District</b>	Gamagara Local Municipality, Northern Cape
<b>Co-ordinate of the development</b>	Starting Point: 27°50'2.52"S & 23.014371° End Point: -27.841752° & 23.030918°

**Table 3: Infrastructure and Project Activities**

<b>Type of development</b>	Powerline
<b>Size of development</b>	3095,67 meters
<b>Project Components</b>	22 kV Powerline

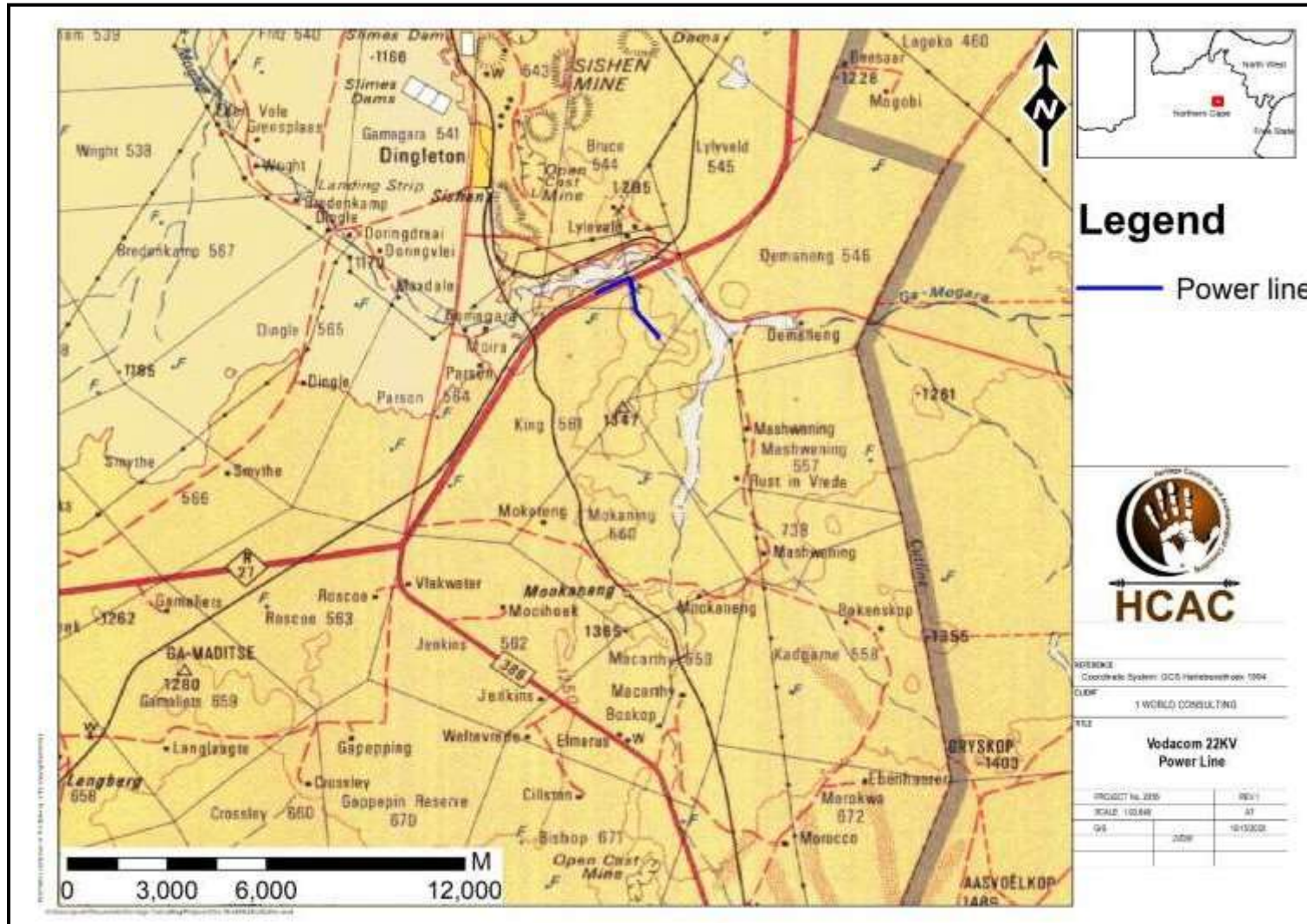


Figure 1: Regional Setting (1:250 000 Topographical Map)

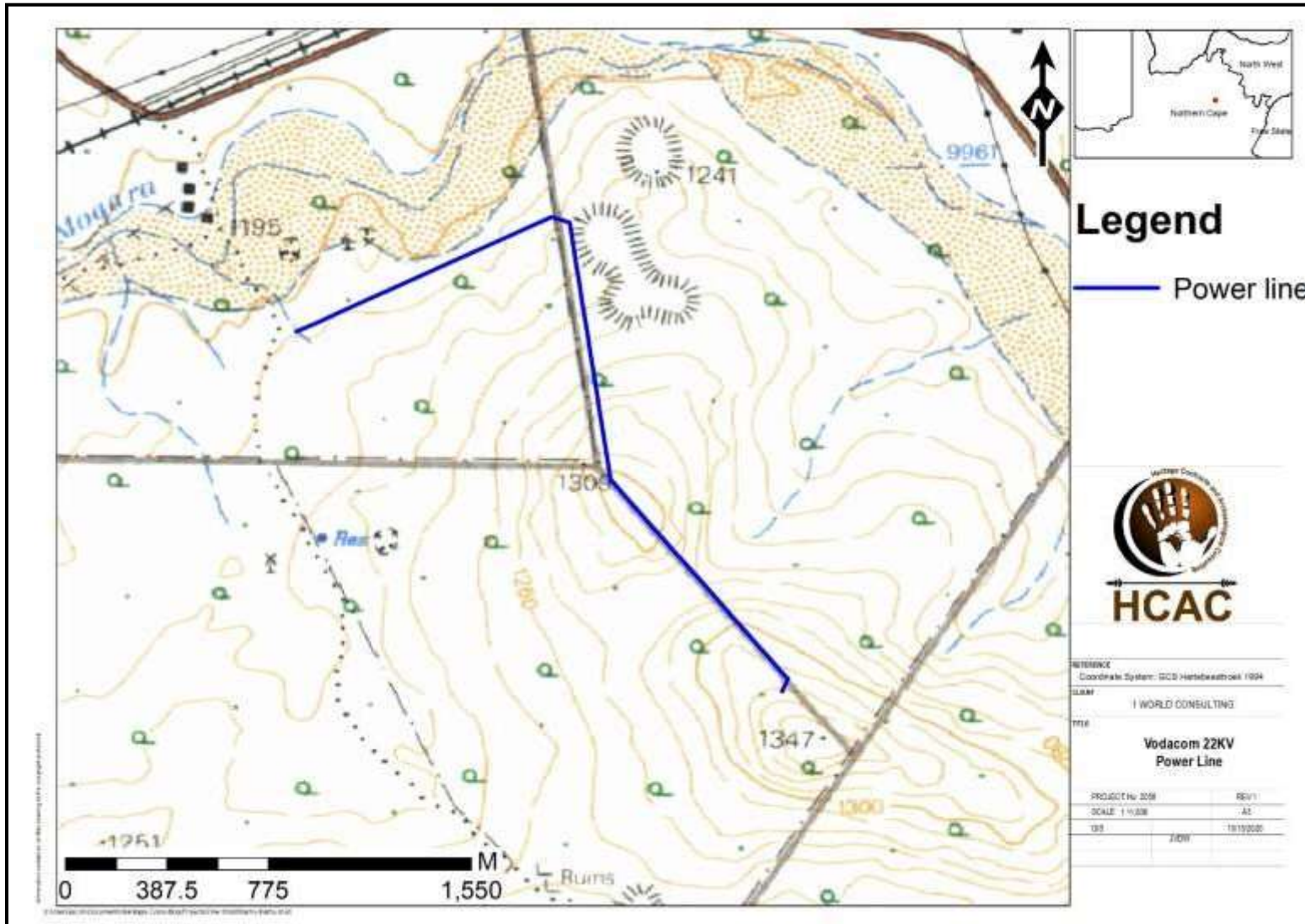


Figure 2: Local Setting (1: 50 000 Topographical Map)

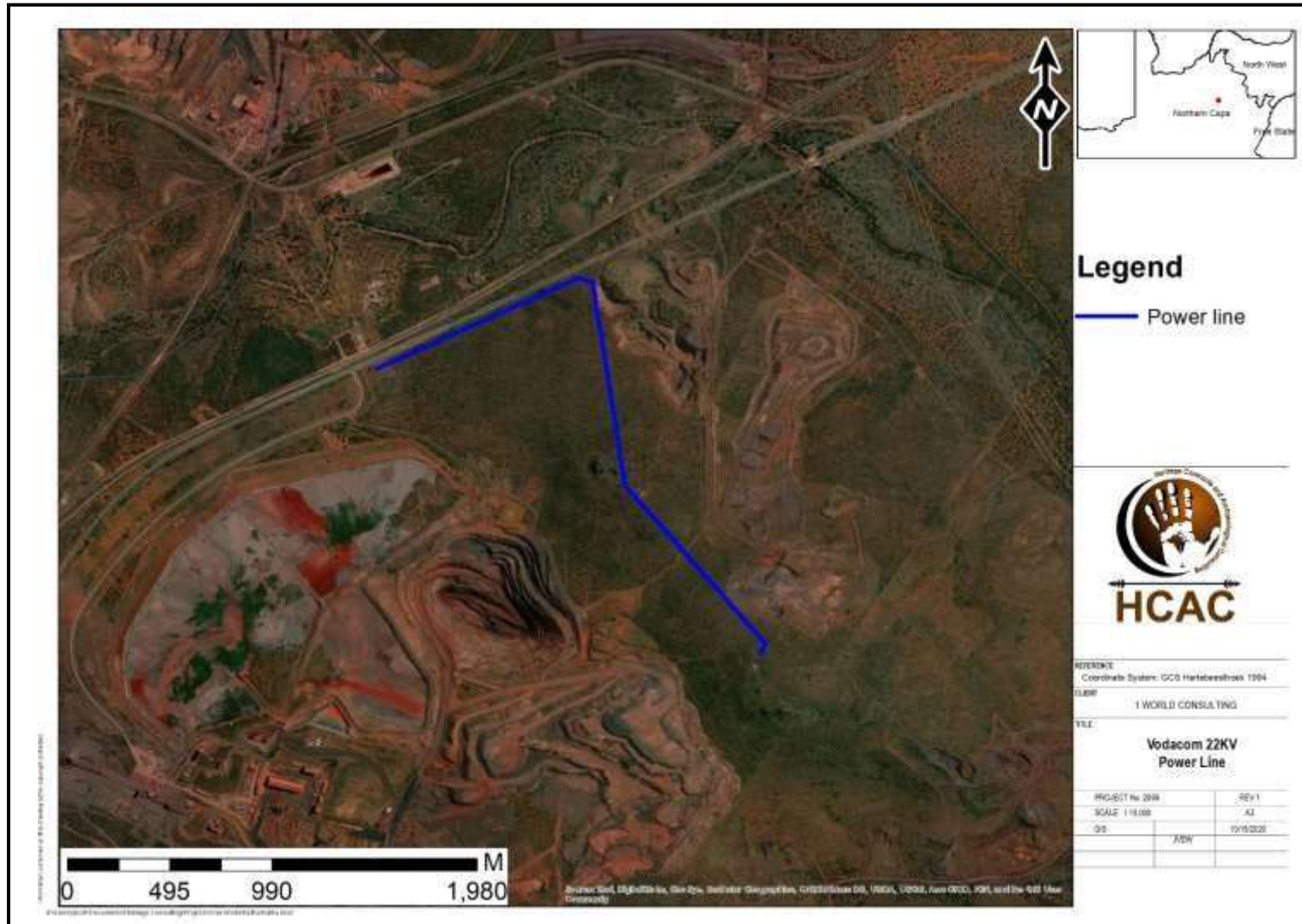


Figure 3: Aerial Image of the Proposed Impact Area



## 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).

### 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
<b>Date</b>	14 October 2020
<b>Season</b>	Summer- Sections of the line is overgrown limiting archaeological visibility and access to the proposed alignment. The area was however sufficiently covered to determine the heritage character of the area (Figure 4).

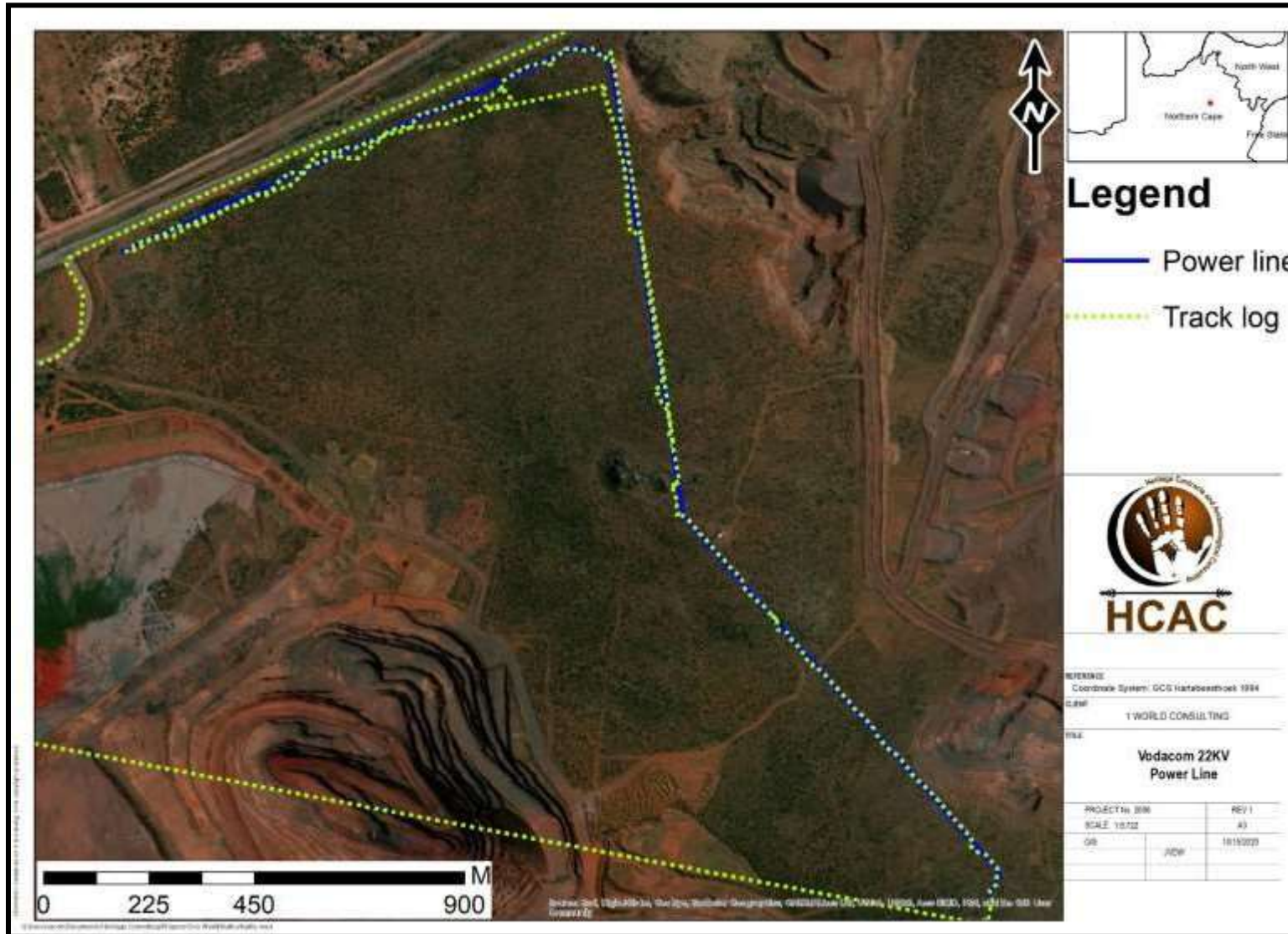


Figure 4: Tracklog of the Survey in Green

### 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.

**Table 5: Heritage Significance and Field Ratings**

<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

Gamagara Local Municipality comprises an area of 2 619 square kilometers. The municipal area of Gamagara consists of five towns: Kathu, Shesheng, Dibeng, Dingleton, and Olifantshoek, a large farming area and a considerable mining area. Kathu is the largest town within the municipality and is also the administrative center of the Gamagara Local Municipality. Gamagara Municipality has grown from 23 202 people in 2001 to 41 617 people in 2011 (Census 2011).

The single largest factor that has guided the development of the Gamagara area is the iron ore mine at Sishen. Not only does the mine provide jobs to thousands of people, but it was also the reason for the establishment of the town of Kathu. Youth unemployment in the area standing at 22,4%.

## 5. Results of Public Consultation and Stakeholder Engagement:

### 5.1.1. Stakeholder Identification

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

## 6. Literature / Background Study:

### 6.1. Literature Review (SAHRIS)

The following reports were conducted in close proximity to the study area and were consulted for this report:

Author	Year	Project	Findings
Birkholtz, P.	2019	Proposed Extension of Mining Activities and the Widening of a Haul Road on the Farm Lylyveld 545, near Kathu, Northern Cape Province.	No sites were recorded.
Van der Walt, J.	2019	Heritage Impact Assessment for the proposed Khumani Iron Ore Mine New Water Return Dam (WRD), pipelines and water containment facility, Sishen, Northern Cape	No sites of significance were identified.
Van der Walt, J.	2017	Heritage Impact Assessment Khumani Mine	No sites of significance were identified.
Kruger, N.	2015	Sishen Iron Ore Company (SIOC): Proposed Lyleveld North Waste Rock Dump Expansion and Lyleveld South Haul Road Extension Project, Sishen Mine, Northern Cape Province	2 Stone Age occurrences and 1 site attributed to mechanical weathering.
Morris, D.	2005	Archaeological Impact assessment of mining areas on the farms Bruce, King, Mokaning and Parson between Postmasburg and Kathu in the Northern Cape.	4 Cemeteries and Stone Age sites were identified.

Beaumont, P.	2005	Heritage Assessment for an EMPR amendment relating to a proposed crusher at Sishen Iron Ore Mine near Kathu in the Northern Cape province.	No sites were identified.
--------------	------	--	---------------------------

### 6.1.1 Genealogical Society and Google Earth Monuments

No known grave sites are indicated in the study area.

## 6.2. Background to the general area

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

### 6.2.1. 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 contains sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. For Cultural Resources Management (CRM) purposes it is often only expected/ possible to identify the presence of the three main phases. Yet sometimes the recognition of cultural groups, affinities or trends in technology and/or subsistence practices, as represented by the sub-phases or industrial complexes, is achievable (Lombard 2011). 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 larger study area has a wealth of pre-colonial archaeological sites (Morris & Beaumont 2004). Famous sites in the region include the world renowned Wonderwerk Cave to the north east of the study area and to the east of Kuruman. Closer to Kuruman two shelters on the northern and southern faces of GaMohaani (in the Kuruman Hills north west of the town) contain Later Stone Age remains and rock paintings. Rock art is known to occur at Danielskuil to the north east and on Carter Block (Morris 2008). Middle Stone Age material is on record around the study area.

Archaeological surveys have shown rocky outcrops and hills, drainage lines, riverbanks and confluences to be prime localities for archaeological finds and specifically Stone Age sites, as these areas were utilized for settlement of base camps close to water and hunting ranges and several Stone Age sites are known from the immediate area. According to Morris (2005) the Earlier Stone Age is represented by 11 known sites (Bruce, Kathu, Uitskoms, Sishen, Demaneng, Lylyveld and Mashwening); the Middle Stone Age by 5 sites (all in the vicinity of Kathu); and the Later Stone Age by 10 sites (one on King, one at Mashwening and eight at Kathu). Rock engravings have been identified from Sishen and Bruce (the Bruce site was salvaged and recorded by Fock & Fock 1984), as well as Beeshoek, to the south (Fock & Fock 1984; Morris 1992; Beaumont 1998). Specularite sources are known on Demaneng and Lylyveld, and were mined in Stone Age times at a site on Doornfontein to the south (Beaumont 1973; Beaumont & Boshier 1974) and at Tsantsabane to the east of Postmasburg (Beaumont 1973; Thackeray et al. 1983); numerous other specularite workings have also been recorded (Beaumont 1973).

Sotho-Tswana and Nguni societies, the descendants of the LIA mixed farming communities, found the region already sparsely inhabited by the Late Stone Age (LSA) Khoisan groups, the so-called 'first people'. Most of them were eventually assimilated by LIA communities and only a few managed to survive, such as the Korana and Griqua. This period of contact is referred to as the Ceramic Late Stone Age (De Jong 2010) and is represented by the Blinkklipkop specularite mine near Postmasburg and a cluster of important finds at Kathu Pan. Kathu Pan has been the subject of numerous heritage studies and is a notable heritage site (Beaumont 2004, Wilkins et al 2012). Additional specularite workings with associated Ceramic Later Stone Age material and older Fauresmith sites (early Middle Stone Age) are known from Lylyfeld, Demaneng, Mashwening, King, Rust & Vrede, Paling, Gloucester and Mount



Huxley to the north (Morris 2005).

Stone Age artefacts are often recorded at industrial sites similar to mine operations and the effects of heavy-duty earth moving machinery on the formation of lithic debitage at open-air Stone Age/Palaeolithic sites was examined by Bradfield and Van der Walt (2018) at a site close to Kathu. The experiment with heavy-duty machinery produced pseudo tools and most of the debitage produced mimics that occasioned by knapping and this could attribute to some of the debitage/ artefacts identified on industrial sites.

### **6.2.2. Iron Age**

Iron Age expansion southwards past Kuruman into the Ghaap plato and towards Postmasburg dates to the 1600's (Humphreys, 1976 and Thackeray, 1983). Definite dates for Tswana presence in the Postmasburg area are around 1805 when Lichtenstein visited the area and noted the mining activities of the Tswana (probably the Thlaping) tribes in the area. The Thlaro and Thlaping settled the area from Campbell in the east to Postmasburg and towards the Langeberg close to Olifantshoek in the north west before 1770 (Snyman, 1988). The Korana expansion after 1770 started to drive the Thlaro and Thlaping further north towards Kuruman (Shillington, 1985). Morris (2005) indicated that 3 Iron Age sites close to the study area are on record (Demaneng, Lylyveld and Kathu).

### **6.2.3. Anglo-Boer War**

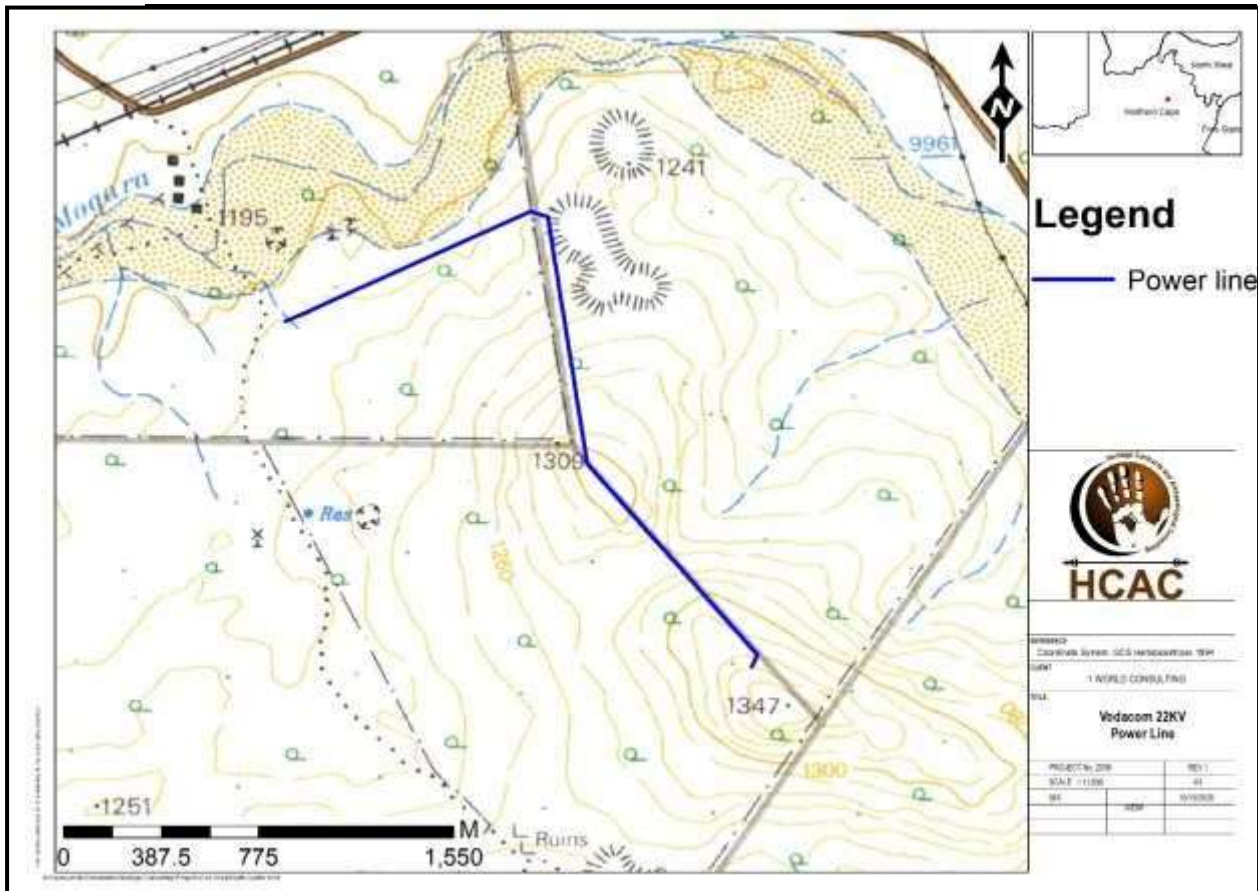
There are no battlefields or concentration camp sites close to the study area.

### **6.2.4. Cultural Landscape**

The Khumani mine was constructed from October 2006 (<http://www.assmang.co.za/content>), prior to this the area was undeveloped and characterised by sparse vegetation (Figure 5 – 8). Currently the area is characterised by intensive mining activities that altered the landscape from a pre-colonial landscape that consisted of widespread Stone Age occupation and also some evidence of Iron Age settlement.



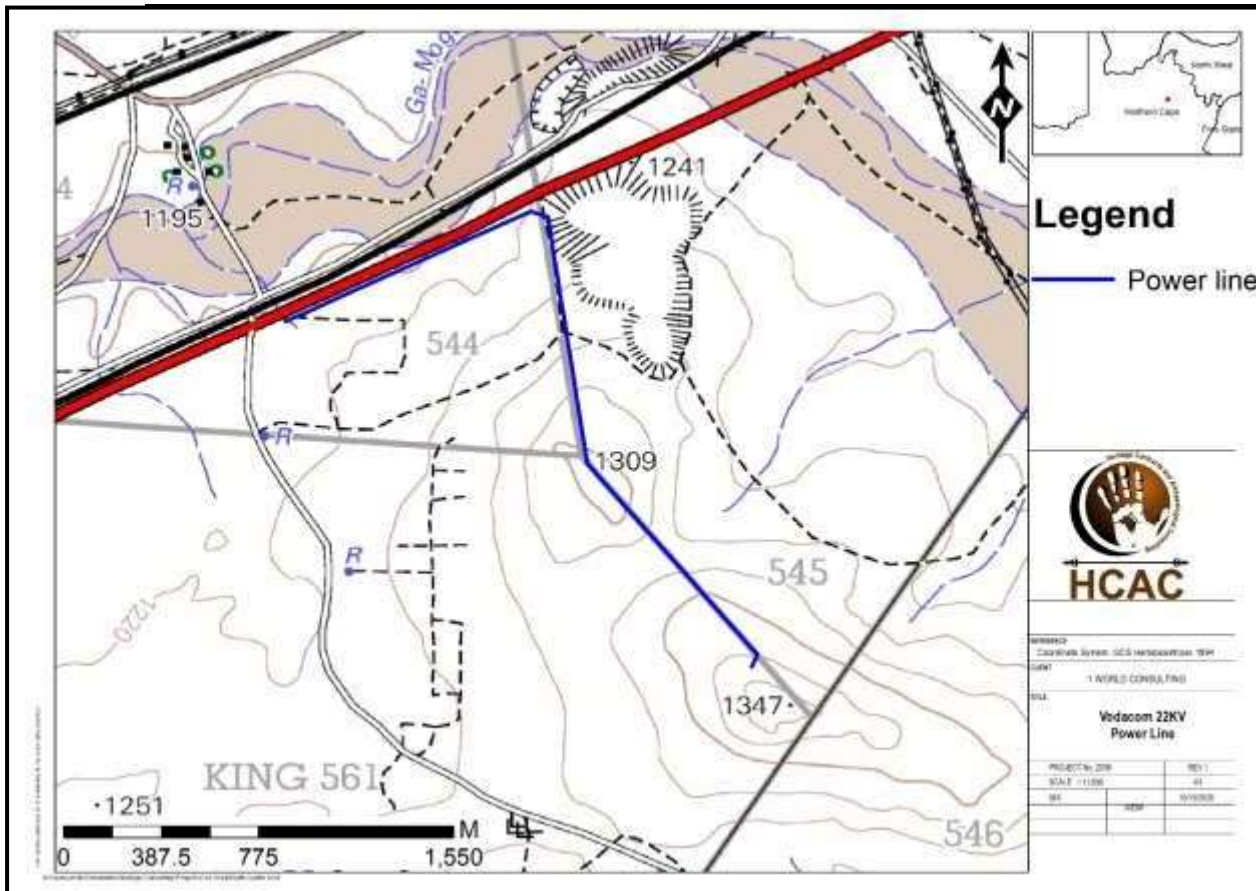
**Figure 5: 1965 Aerial Image of the Study Area. The N14 was not yet Built at this Time with no Mining Activity**



**Figure 6: Historical Map Dating to 1974. Excavations are visible to the East of the Project Area and the N14 is still not Built**



**Figure 7: 1988 Aerial Image of the Study Area. By This Time the N14 was Built with Limited Mining Activity in the Surrounding Area**



**Figure 8: 2001 Topographical Map of the Study Area. Large-Scale Mining is now Visible with Roads within the Study Area**



**Figure 9: 2016 Aerial Image of the Study Area Indicating Widespread Mining and Service Roads in the Study Area**

## **7. Description of the Physical Environment**

The study area consists of two kinds of topographical elements: undulating plains and hills or prominent rocky outcrops (Figure 10). The latter two being the most attractive in terms of human occupation in antiquity with archaeological visibility the lowest on the plains that are characterised by thornveld. For the most part the proposed alignment follows existing fences with service roads (Figure 11).

The vegetation and landscape are described by Mucina and Rutherford (*The Vegetation of South Africa, Lesotho and Swaziland*, South African National Biodiversity Institute, Kirstenbosch, August 2006) as Kuruman Mountain Bushveld. The geological forms in the study area is described as Transvaal, Rooiberg and Griqualand-West.



Figure 11: General View of the Study Area



Figure 10: General Site Conditions in the Study Area

## 8. Findings of the Survey

It is important to note that the survey focused on the proposed alignment only and was conducted over one day. The proposed powerline is situated between existing mining operations and the N14 provincial road following existing infrastructure like fences and service roads. These activities impacted on the study area and the northern section is highly overgrown with *Senegalia erubescens*. The proposed alignment traverses extremely rocky areas without Aeolian sand that mantle the lower lying areas with sparse grass cover and a few low bushes (Figure 12 & 13).

100 meters to the west of the proposed powerline is a small kopje that would have been a focal point for human activity in antiquity (Figure 14 & 15). It is on the north and north eastern side of this feature and to the west of the proposed powerline that two sites were recorded by Morris (2005) as indicated in Figure 16. The line is located well away from these sites and no impact is expected. A few (less than 2 artefacts per m<sup>2</sup>), probably Middle Stone Age artefacts were recorded at 23.024646 & -27.832919 (Figures 17 & 18). These are mostly made on jaspilite and chert and consists of miscellaneous flakes although one notched flake were recorded. These artefacts are out of context eroding down from the kopje where Morris (2005) recorded the Pleistocene sites and some Iron Age material from King Site 1 & King Site 2 (Figure 16). They were too few in number to be of significance but nonetheless serve to show that people were present in the area confirming that koppies were focal points on the landscape. They can be considered to be background scatter.



**Figure 13: General Site Conditions**



**Figure 12: General Site Conditions**

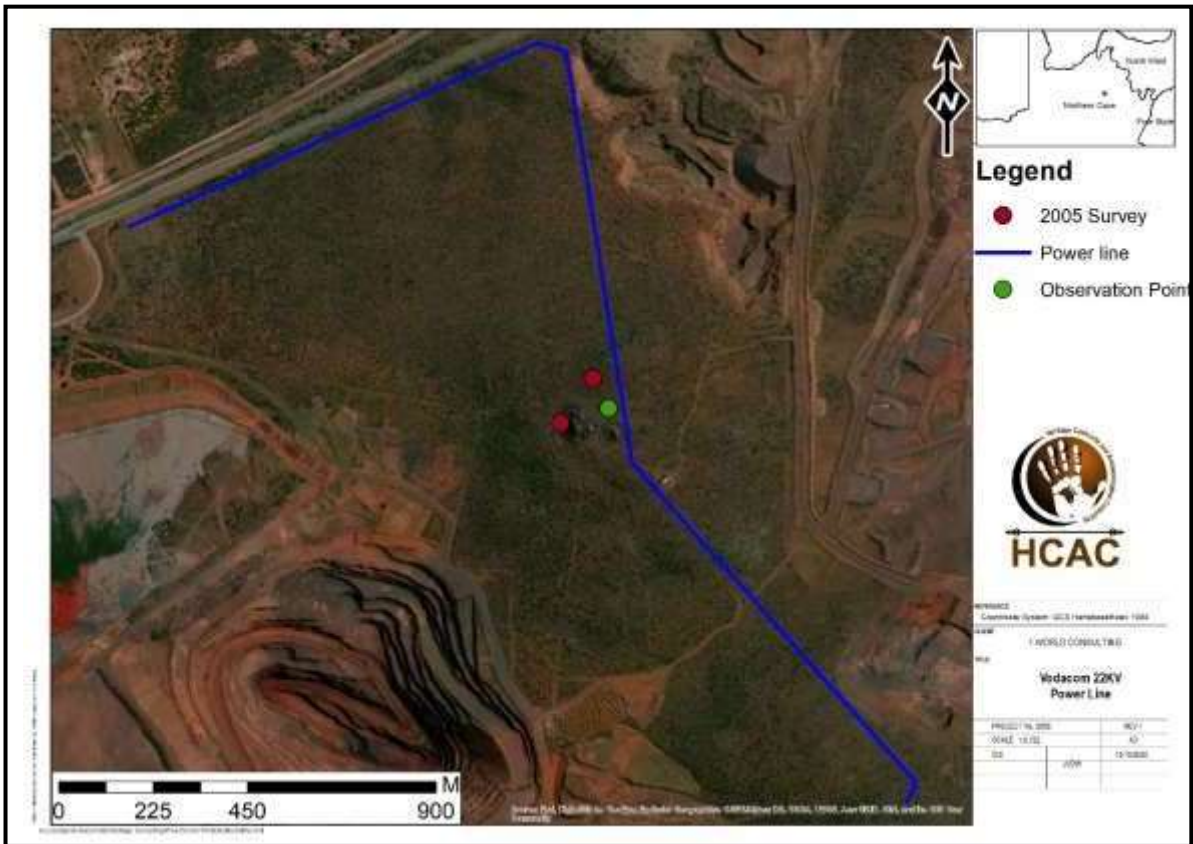




**Figure 14: General Site Conditions**



**Figure 15: General Site Conditions**



**Figure 16: Known Sites Recorded by Morris (2005) as well as an Observation Point Recorded During the Current Study**

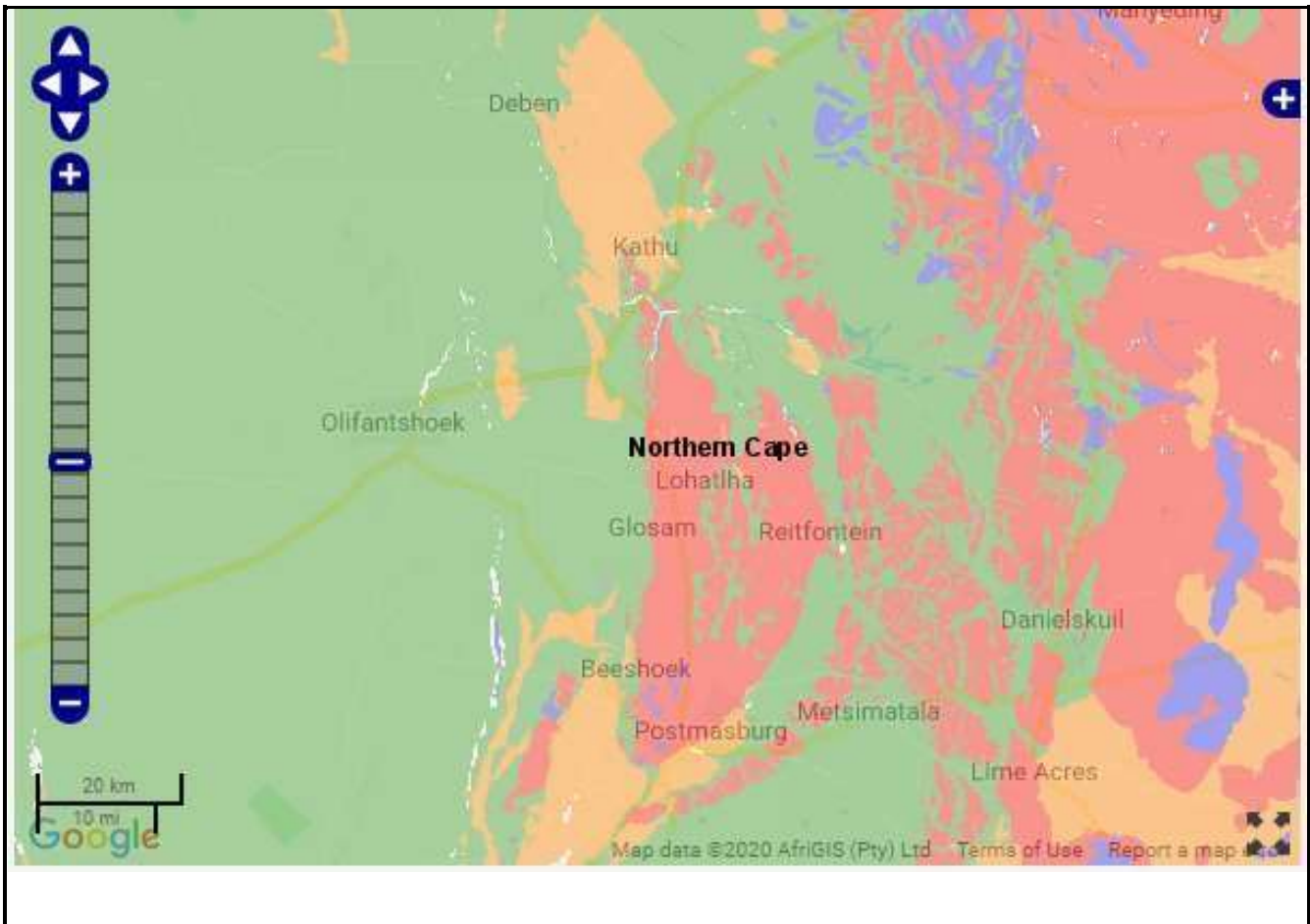


**Figure 18: Dorsal View of Flake with Blade-like Proportions**



**Figure 17: Dorsal View of Miscellaneous Flakes with Notched Artefacts on the Right**

Based on the SAHRA Paleontological sensitivity map the area is of paleontological sensitivity (Figure 19) and an independent study was conducted by Prof Marion Bamford for this aspect. The study concluded that the planned route lies on the chert breccias of the uppermost Ghaap Plateau Group (Transvaal Supergroup), and the ferruginised arenites of the Gamagara Formation (Olifantshoek Supergroup). Although indicated as very highly to moderately sensitive, respectively, the general interpretation by SAHRIS is not supported by the detailed geological mapping, and fossils are unlikely to occur in the site. Nonetheless, there is a very small chance that trace fossils such as stromatolites may occur in the adjacent dolomites of the Campbell Rand Group so a Fossil Chance Find Protocol should be added to the EMP: if trace fossils are found once excavations for pole foundations have commenced then they should be rescued and a paleontologist called to assess and collect a representative sample.



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 19: Paleontological Sensitivity Map of the Area**

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

## 9. Potential Impact

The chances of impacting unknown archaeological sites or burial 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, if any occur.

### 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 project during this phase.

**Table 6: 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	Yes
<b>Mitigation:</b> A chance find procedure must be incorporated for the project.		
<b>Cumulative impacts:</b> The study area is surrounded by mining developments and the proposed powerline development will not impact negatively on significant heritage resources and therefore the cumulative impact is low.		
<b>Residual Impacts:</b> If subsurface sites are destroyed this results in the depletion of archaeological record of the area. This cannot be quantified at this stage. However, if sites are discovered, recorded and preserved or mitigated this adds to the record of the area.		

## 10. Conclusion and Recommendations

The proposed Vodacom Pty Ltd 22 kV powerline located in Kathu, Gamagara Local Municipality, Northern Cape. The project consists of a linear development of approximately 3km that was assessed both on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the development footprint.

The following key findings apply:

- The proposed powerline is situated between existing mining operations and the N14 provincial road following existing infrastructure like fences and service roads. These activities impacted on the study area and the northern section is highly overgrown with *Senegalia erubescens*.
- No structures older than 60 years occur in the study area.
- 100 meters to the west of the proposed powerline is a small kopje that would have been a focal point for human activity in antiquity (Figure 14 & 15). It is on the north and north eastern side of this feature and to the west of the proposed powerline that two sites were recorded by Morris (2005) as indicated in Figure 16. The line is located well away from these sites and no impact is expected
- A few (less than 2 artefacts per m<sup>2</sup>), probably Middle Stone Age artefacts were recorded at 23.024646 & -27.832919 (Figures 17 & 18). These are mostly made on jaspilite and chert and consists of miscellaneous flakes although one notched flake was recorded. These artefacts are out of context eroding down from the kopje where Morris (2005) recorded the Pleistocene sites and some Iron Age material from King Site 1 & King Site 2 (Figure 16). They were too few in number to be of significance but nonetheless serve to show that people were present in the area confirming that koppies were focal points on the landscape. They can be considered to be background scatter. Therefore, 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.
- In terms of the palaeontological component, the area is indicated as of moderate to high palaeontological sensitivity and an independent study was conducted by Prof Marion Bamford. The study concluded it is extremely unlikely that any fossils would be preserved in the chert breccias of the uppermost Ghaap Plateau Group (Transvaal Supergroup), or the ferruginised arenites of the Gamagara Formation (Olifantshoek Supergroup). There is a very small chance that trace fossils such as stromatolites may occur in the adjacent dolomites of the Campbell Rand Group so a Fossil Chance Find Protocol should be added to the EMPr.
- No burial sites or graves were recorded. However, if any graves are identified they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation.
- No public monuments are located within or close to the study area.

Despite the sensitive nature of archaeological resources in the greater area with specific reference to the proposed National Heritage Site Nomination of the Kathu Archaeological Complex that demonstrates the scientific and heritage significance of the area (Beaumont, 1990, 2004, 2013; Porrat et al, 2010; Herries, 2012; Chazan et al, 2012; Wilkins & Chazan, 2012; Walker et al, 2013; Walker et al 2014), the impact of the power line on heritage resources is considered to be low. The low impact rating is attributed to the disturbed character of the study area and the lack of significant heritage resources. It is therefore 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:

### **Recommendations:**

- Implementation of a chance find procedure for both heritage and paleontological resources 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:

- 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 including burial sites, 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 / drilling activities begin.**

1. The following procedure is only required if fossils are seen on the surface and when drilling/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 (stromatolites, plants, insects, bone, coal) 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. 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 paleontologist for a preliminary assessment.
5. If there is any possible fossil material found by the developer/environmental officer/miners then the qualified paleontologist 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 paleontologist 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 paleontologist will be necessary. A final report by the paleontologist 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 previously unrecorded or unmarked graves of which surface indicators have been destroyed. These risks can be managed by monitoring the area during construction and the implementation of a chance find procedure as outlined in Section 10.1. The presence of graves should also be confirmed during social consultation for the project.

---

## 11. References

- Bamford, M. 2020. Palaeontological Impact Assessment for the proposed Vodacom 22kV line in Kathu, Northern Cape Province
- Beaumont, P.B. 1998. Report on preliminary fieldwork on the farm Beeshoek 448, Postmasburg District, Northern Cape. Unpublished report, McGregor Museum.
- Beaumont, P.B. 2004a. Wonderwerk Cave. In Morris, D. & Beaumont, P.B. Archaeology in the Northern Cape: some key sites. Kimberley: McGregor Museum.
- Beaumont, P.B. 2004b. Kathu and Kathu Townlands/Uitkoms. In Morris, D. & Beaumont, P.B. Archaeology in the Northern Cape: some key sites. Kimberley: McGregor Museum.
- Beaumont, P. 2005. Heritage Assessment for an EMPR amendment relating to a proposed crusher at Sishen Iron Ore Mine near Kathu in the Northern Cape province.
- Beaumont, P.B. & Boshier, A.K. 1974. Report on test excavations in a prehistoric pigment mine near Postmasburg, Northern Cape. South African Archaeological Bulletin 29:41-59.
- Chazan M., Wilkins J., Morris D., & Berna F. 2012. Bestwood 1: a newly discovered Earlier Stone Age living surface near Kathu, Northern Cape Province, South Africa. *Antiquity* 86: 331.
- Fock, G.J. & Fock, D.M.L. 1984. Felsbilder in Südafrika: Kinderdam und Kalahari. Köln: Böhlau Verlag. Morris, D. 1992. An archaeological impact assessment of a rock engraving site on the mining property at Beeshoek. Unpublished report to the National Monuments Council and Associated Manganese Mines of South Africa.
- Kruger, N. 2015. Sishen Iron Ore Company (SIOC): Proposed Lyleveld North Waste Rock Dump Expansion and Lyleveld South Haul Road Extension Project, Sishen Mine, Northern Cape Province Lombard, M. 2011. Background To The Stone Age Of The Kakamas/Keimoes Area For CRM Purposes. Unpublished report.
- Morris, D. 2000. Gamsberg Zinc Project environmental impact assessment specialist report: archaeology. Unpublished report to Anglo-American (McGregor Museum)
- Morris, D. 2002. Report on an archaeological impact assessment for Kumba Resources Ltd on properties south west of Postmasburg, Northern Cape. Unpublished report.
- Morris, D. 2005. Archaeological Impact assessment of mining areas on the farms Bruce, King, Mokaning and Parson between Postmasburg and Kathu in the Northern Cape.
- Morris, D. 2008. Archaeological and Heritage Impact Assessment on Remainder of Carter Block 458, near Lime Acres, Northern Cape. McGregor Museum.
- Morris, D. And Beaumont, P.B. 1994. Ouplaas 2: Rock engravings, Daniëlskuil. McGregor Museum 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) SAHRA Report Mapping Project Version 1.0, 2009
- Shillington, K. 1985. The Colonisation of the Southern Tswana, 1870-1900. Braamfontein: Ravan Press.
- Snyman, 1988. Daniëlskuil: van Griekwa-buitepos tot dienssentrum. Pretoria: HSRC South African Heritage Information System 2015



Thackeray, A.I., Thackeray, J.F. & Beaumont, P.B. 1983. Excavations at the Blinkklipkop specularite mine near Postmasburg, Northern Cape. *South African Archaeological Bulletin* 38:17-25.

Van Der Walt, J. and Bradfield, J., 2018. The effects of heavy-duty machinery on the formation of pseudo- knapping debitage in Stone Age cultural landscapes. *antiquity*, 92(366), pp.1429-1444.

Van der Walt, J. Heritage Impact Assessment Khumani Mine. Unpublished report

Wilkins, J. & Chazan, M. 2012. Blade production ~500 thousand years ago at Kathu Pan 1, South Africa: support for a multiple origins hypothesis for early Middle Pleistocene blade technologies. *Journal of Archaeological Science* 39: 1883-1900.

Wilkins, J., Schoville, B.J., Brown, K.S. & Chazan, M. 2012. Evidence for early hafted hunting technology. *Science* 338: 942-946

<http://www.assmang.co.za/content.asp?pg=7>

## 12. Appendices:

### Appendix A

#### 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:**

---

2020 – Present	<b>1World Consultants (Pty) Ltd (Heritage specialist)</b>
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 Booyendal Platinum Mine, Steelpoort, Limpopo Province. Principle investigator Prof. T. Huffman

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

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

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

### **Heritage management projects**

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

---

### **MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:**

- Association of Southern African Professional Archaeologists. Member number 159

#### Accreditation:

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

### **PUBLICATIONS AND PRESENTATIONS**

---

- A Culture Historical Interpretation, Aimed at Site Visitors, of the Exposed Eastern Profile of K8 on the Southern

terrace at Mapungubwe.

- J van der Walt, A Meyer, WC Nienaber
  - 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 Thabantsho 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]nalysis 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