

HERITAGE IMPACT ASSESSMENT

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

FOR THE PROPOSED ESKOM ENTOKOZWENI AND TEKWANE NORTH SUBSTATIONS AND
132KV POWER LINE, CITY OF MBOMBELA MUNICIPALITY IN THE MPUMALANGA PROVINCE

Type of development:

Electricity supply project

Client:

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APPROVAL PAGE

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	Name	Qualifications and Certifications	Date
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Date	Report Reference Number	Description of Amendment
21 April 2021	2114	Assessment of alternatives

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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
(l) 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 10.1
(l) Conditions for inclusion in the environmental authorisation	Section 10. 1.
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 10. 5.
(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 10.3
(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 Basic Assessment Report
(q) Any other information requested by the competent authority	Section 13

Executive Summary

Eskom Holdings SOC Ltd (the applicant) appointed Setala Environmental (Pty) Ltd as the independent environmental assessment practitioner (EAP) to obtain environmental authorization for Eskom Entokozweni and Tekwane North Substations and 132kV Power Line. The proposed project is in the City of Mbombela Municipality in the Mpumalanga Province. HCAC was appointed to conduct a Heritage Impact Assessment (HIA) for the project and the study area was assessed on desktop level and by a non-intrusive field survey. Two alternatives were assessed, key findings include:


- Alternative 1 is an alignment sited in the field during the current site visit conducted by HCAC to avoid heritage sensitive areas, mostly being large cemeteries;
- The majority of Alternative 2 was authorised in 2015, but the EA expired, and some permutations of this route was investigated as part of this study. The HIA for this alignment recorded cemeteries, an Iron Age site and a homestead (Van Vollenhoven 2013);
- The study area is largely disturbed by township development and agricultural activities that would have impacted on surface indicators of heritage sites.
- Alternative 1 does not impact on any known heritage resources and is therefore the preferred alternative as Alternative 2 traverses several cemeteries.

The impact of the Alternative 1 on known heritage resources is 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.

Recommendations:

- Heritage walkdown of the recommended alternative and pylon positions prior to construction;
- If heritage resources are identified during the walk down, it is recommended that the line should be micro sited to avoid these features and allow for a sufficient buffer around the identified features;
- Implementation of a chance find procedure for the project.

Declaration of Independence

Specialist Name	Jaco van der Walt
Declaration of Independence	<p>I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 108 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations, that I:</p> <ul style="list-style-type: none"> • I act as the independent specialist in this application; • I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant; • I declare that there are no circumstances that may compromise my objectivity in performing such work; • I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity; • I will comply with the Act, Regulations and all other applicable legislation; • I have no, and will not engage in, conflicting interests in the undertaking of the activity; • I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority; • All the particulars furnished by me in this form are true and correct; and • I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.
Signature	
Date	30/03/2021

a) Expertise of the specialist

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

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

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ABBREVIATIONS

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 (old name)
DEFF: Department of Environment, Forestry and Fisheries (new name)
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
EMPr: 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, 2002 (Act No. 28 of 2002)
MSA: Middle Stone Age
NEMA National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID Notification of Intent to Develop
NoK Next-of-Kin
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency

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

GLOSSARY

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

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

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

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

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

Historic building (over 60 years old)

1 Introduction and Terms of Reference:

HCAC was appointed to conduct a HIA for the Eskom Entokozweni and Tekwane North Substations and 132kv Power Line located in the City of Mbombela Municipality in the Mpumalanga Province (Figure 1-1 to 1-4). The report forms part of Basic Assessment (BA) and Environmental Management Programme Report (EMPr) for the development.

The aim of the study is to survey the proposed corridor 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, several graves and cemeteries were recorded. General site conditions and features on sites were recorded by means of photographs, GPS locations and site descriptions. Possible impacts were identified and mitigation measures are proposed in the following report. SAHRA as a commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents, compiled in support of an Environmental Authorisation application as defined by NEMA EIA Regulations section 40 (1) and (2), to be submitted to SAHRA for commenting. Upon submission to SAHRA the project will be automatically given a case number as reference. As such the EIA report and its appendices must be submitted to the case as well as the EMPr, once it's completed by the Environmental Assessment Practitioner (EAP).

1.1 Terms of Reference

Field study

Conduct a field study to: (a) locate, identify, record, photograph and describe sites of archaeological, historical, or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed development.

Reporting

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

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

1.2 Project Description

The project comprises the proposed construction of an electricity supply project including two substations and a power line as described in Table 2 and 3.

Table 2: Project Description

Farm and portions	Farms Tekwane 573 JU, Porton 9; Nyamasaan 647 JU, R/E; Tekwane North, Erf 816 JU; Tekwane 573 JU, R/E; Tekwane 573 JU Portion 2; Tekwane 573 JU Portion 1
Magisterial District	City of Mbombela Municipality in the Mpumalanga Province
Central co-ordinate of the development	25°26'34.94"S 31° 8'49.71"E

Table 3: Infrastructure and project activities

Type of development	Electricity Supply
Size of development	6 km power line and two substations
Project Components	<p>The Application for Authorisation is for the construction of the following:</p> <ul style="list-style-type: none"> • Establish Entokozweni 132kV 2x20MVA substation. • Construct a 100m Loop-in to Entokozweni substation from the Pienaar T - Karino overhead 132kV line • Construct a 100m Loop-out of Entokozweni substation on the Entokozweni - Tekwane North overhead 132kV line • Establish Tekwane North 132kV 2x20MVA substation. • Construct a 6km overhead 132kV line from Entokozweni 132kV 2x20MVA substation to Tekwane North 132kV 2x20MVA substation.

1.3 Alternatives

To date, viable amendments to the route alignment as well as to the position of the Tekwane North substation have been identified for further investigation and the extent of the area assessed allows for siting of the development to minimise impacts to heritage resources. Alternative 1 is an alignment sited in the field during the current site visit conducted by HCAC to avoid heritage sensitive areas, mostly being large cemeteries. The majority of Alternative 2 was authorised in 2015, but the EA expired, and some permutations of this route was investigated as part of this study.

Alternative 1 does not impact on any known heritage resources and is therefore the preferred alternative as Alternative 2 traverses several cemeteries.

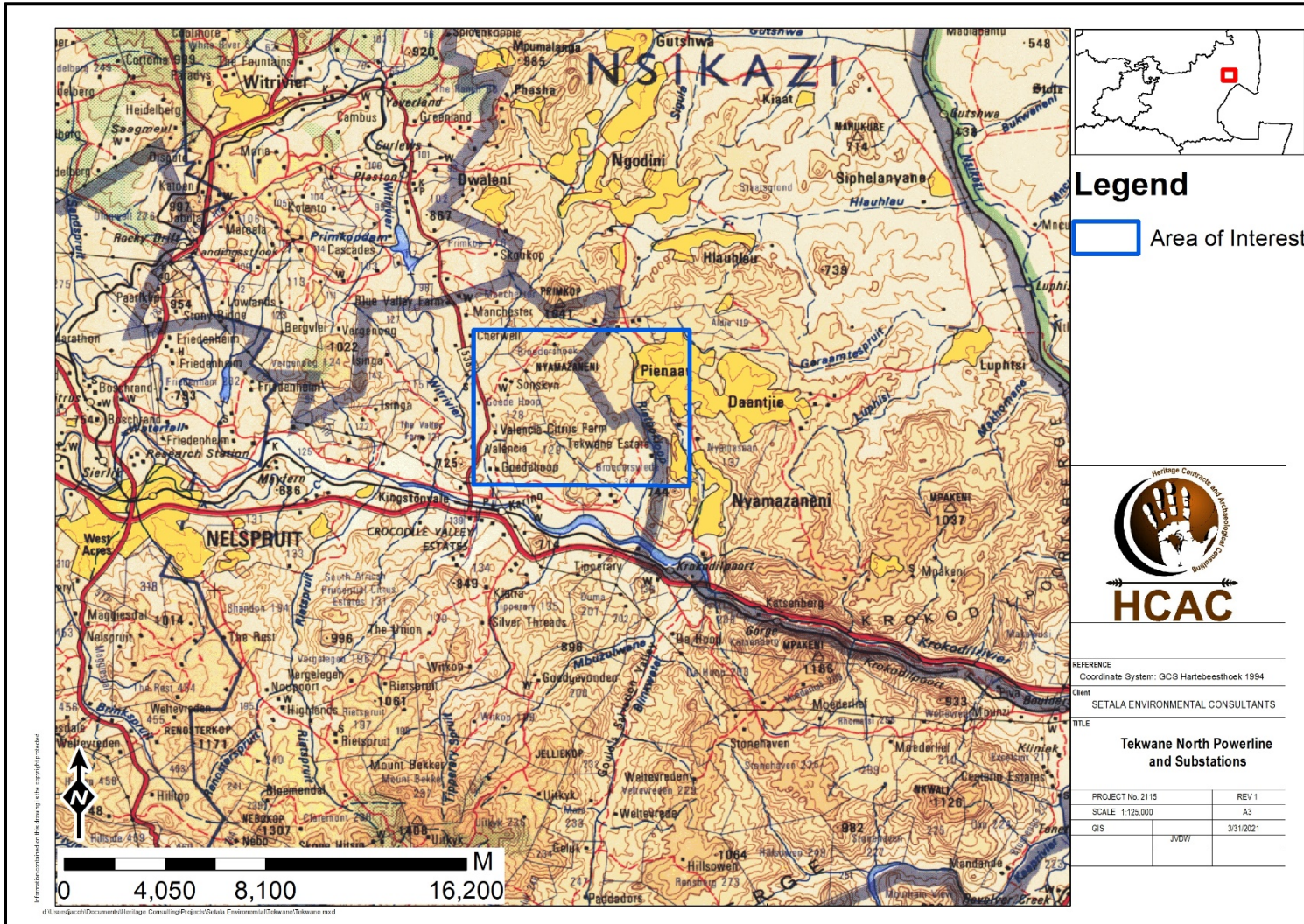


Figure 1-1. Regional setting (1: 250 000 topographical map).

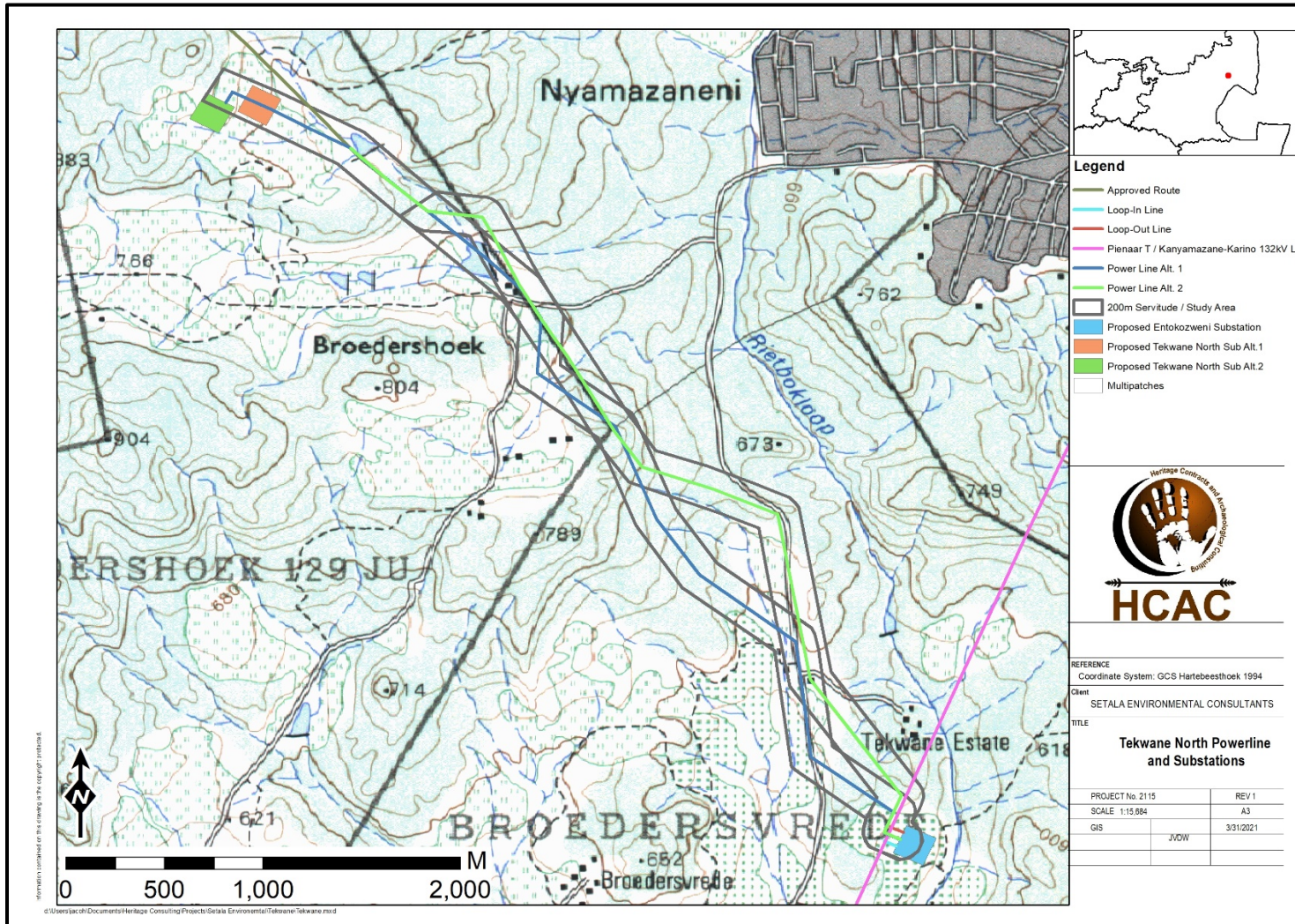


Figure 1-2: Local setting (1:50 000 topographical map) indicating the different alternatives.

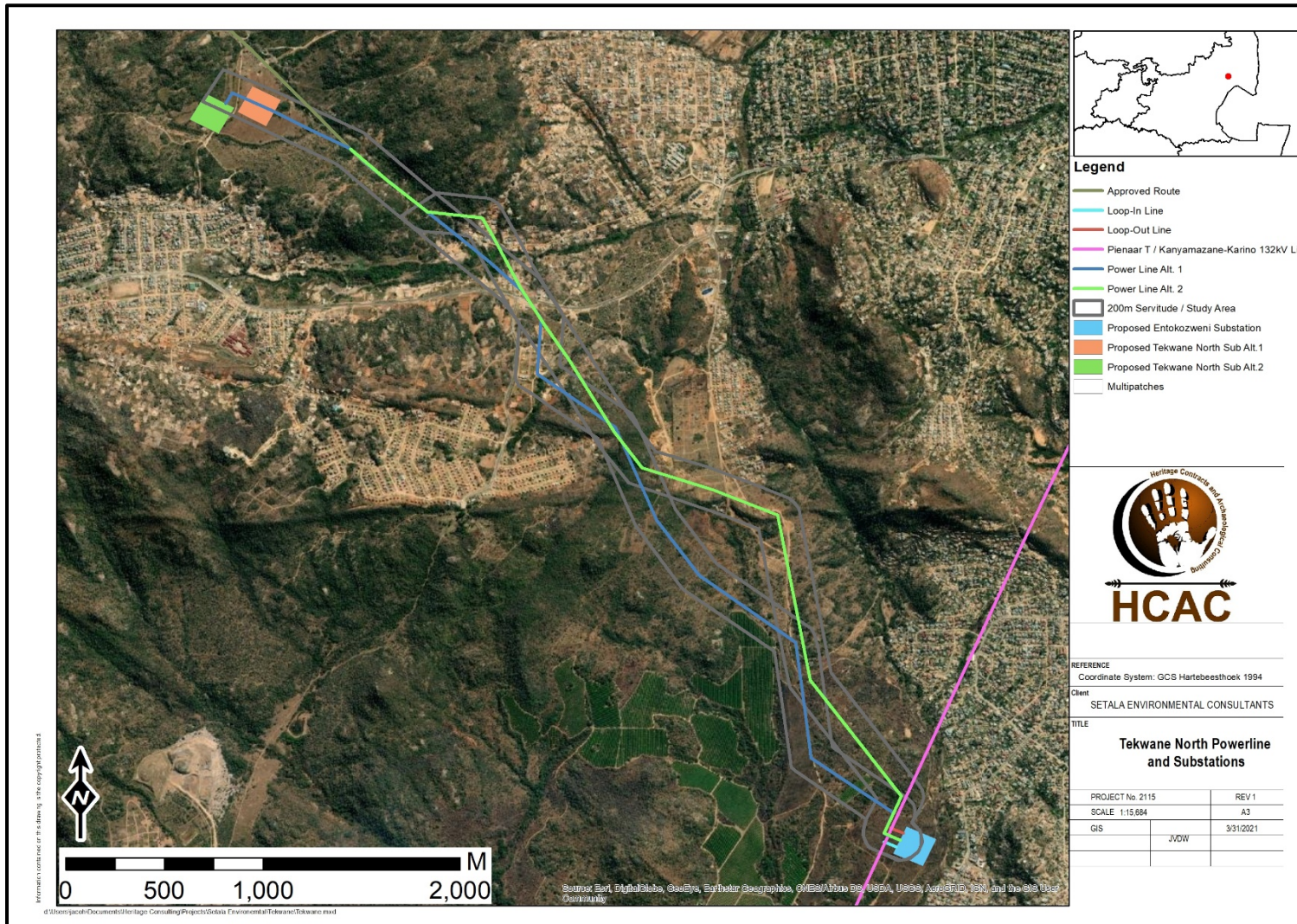


Figure 1-3. Aerial image of the development footprint.

2 Legislative Requirements

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

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

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

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

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

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

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

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

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

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

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

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

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

3 METHODOLOGY

3.1 Literature Review

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

3.2 Genealogical Society and Google Earth Monuments

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

3.3 Public Consultation and Stakeholder Engagement:

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

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

3.4 Site Investigation

The aim of the site survey was to:

- a) survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest;
- b) record GPS points of sites/areas identified as significant areas;
- c) determine the levels of significance of the various types of heritage resources recorded in the project area.

Table 4: Site Investigation Details

	Site Investigation
Date	29 March 2021
Season	Summer- Archaeological visibility was low due to dense vegetation after the rainy season. The fieldwork concentrated on focal points on the landscape that could contain cultural resources in order to recommend a preferred alternative to avoid heritage sites, therefore tracklogs of the survey are limited to the corridors and not overlain on the different alternatives (Figure 3-1).

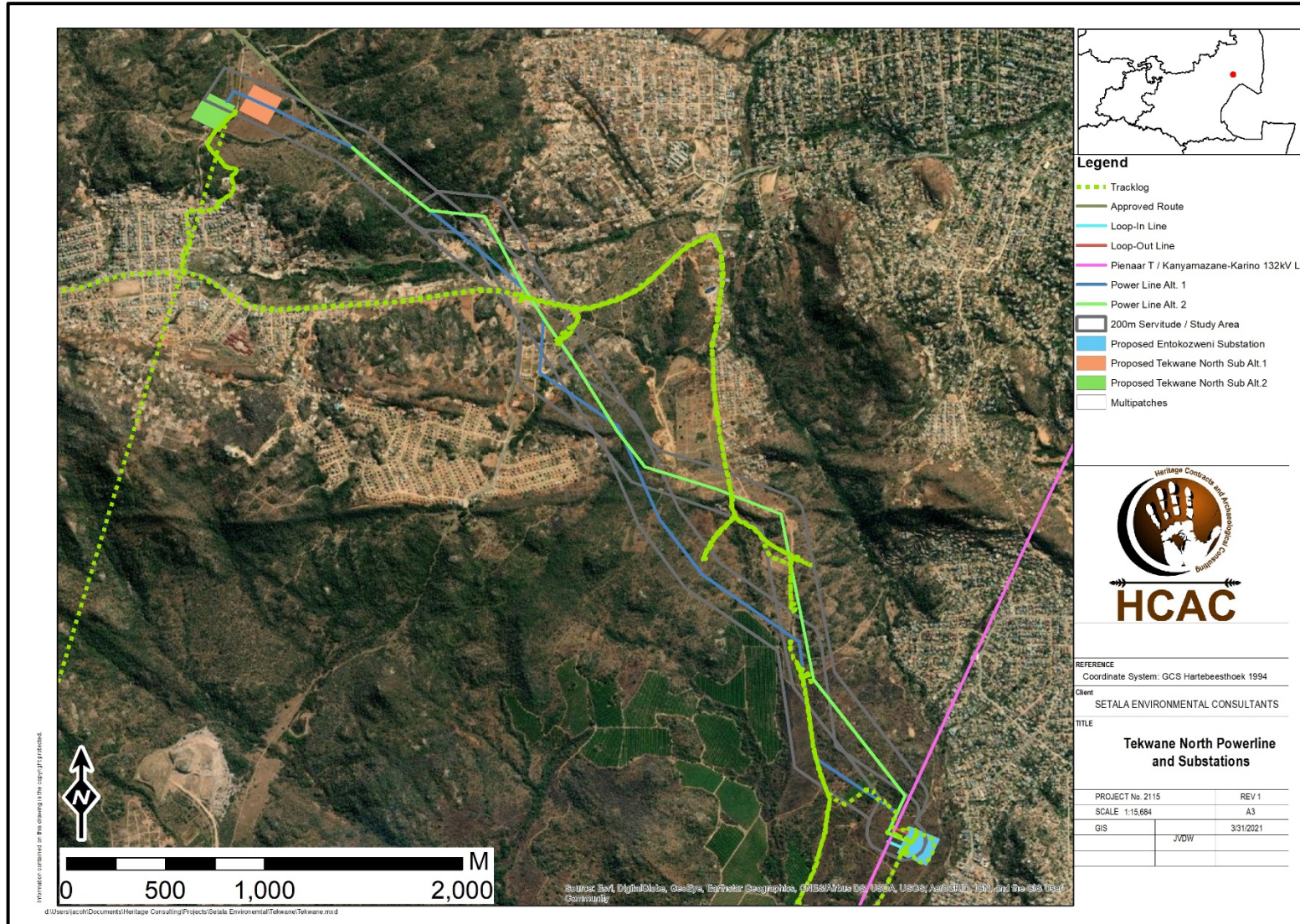


Figure 3-1: Tracklog of the survey in green.

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

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

3.6 Impact Assessment Methodology

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

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

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

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

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

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

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

3.7 Limitations and Constraints of the study

The authors acknowledge that the brief literature review is not exhaustive on the literature of the area. Due to the nature of heritage resources and pedestrian surveys, the possibility exists that some features or artefacts may not have been discovered/recorded and the possible occurrence of graves and other cultural material cannot be excluded. Similarly, the depth of cultural deposits and the extent of heritage sites cannot be accurately determined due its subsurface nature. This report consists of a high level assessment of the general area. 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. The track log reflect areas visited in order to site the line outside of known heritage resources.

4 Description of Socio-Economic Environment

According to the 2019 – 2020 IDP review of the City of Mbombela the following pertains to the Municipality. Community Survey 2016 results based on the 2016 municipal boundaries indicate that the Mbombela municipal area had a total population of 695 913. This population constitutes 39.6% of the entire population of Ehlanzeni District. Hence, the municipal area of Mbombela is the most populous within the Ehlanzeni District (Community Survey, 2016). With regards to the municipal area's population City of Mbombela - IDP Review 2019-2020 115 trends over the past 15 years, the Municipality has been one of the fastest growing municipalities in the district. Unemployment within the Mbombela municipal area has declined by 3.2% between 2011 and 2017. The unemployment rate (strict definition) thus stood at 24.8% during 2017 from 28.0% in 2011. It can also be observed that females were the most affected by unemployment within the municipal area with 27.1% of unemployed females whilst male unemployment rate stood at 22.7%.

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 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.

6 Literature / Background Study:

6.1 Literature Review (SAHRIS)

Several previous CRM surveys are on record for the larger study area e.g. van Schalkwyk (2012, 2014), Fourie & van der Walt (2006), van der Walt & Celliers (2012). Apart from the van Schalkwyk 2014 study which did not record any sites of significance the other studies recorded MSA, Iron Age sites, historical buildings as well as graves. Closer to the current study area on the farm Friedenheim studies by Celliers (2005) recorded no sites of significance. The study by Fourie & van der Walt (2005) recorded Stone Age, Iron Age and grave sites.

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological and historical sites might be located. The palaeontological sensitivity map on SAHRIS indicated that the area is of no palaeontological significance and no additional studies were conducted.

On the 1:50 000 map sheet 2530 BD at the Wits archaeology database 33 sites are on record. None of the recorded sites are near the study area. The sites recorded vary from early and middle Stone Age sites to early and late Iron Age sites.

Closer to the study area the following studies were consulted for this project:

Author	Year	Project	Findings
Celliers, J.P.	2006	Heritage impact Assessment and archaeological survey for the Karino Urban Development on Portions 7,15,16, 18, 19, 20, 26,44, and 73 of the farm Goedehoop 128 JU, Portion 23 of the farm Broedershoek, Mbombela.	Iron Age Features, Structures as well as numerous grave sites and cemeteries.
Van Wyk Rowe, C.	2018	Phase 1 Archaeological / Heritage Impact Assessment for a proposed 2ha development of the Msogwaba Youth Development Centre on Portion A of the farm Nyamasaan 647JU, Msogwaba, Mpumalanga Province	No sites
Birkholtz, P.	2017	The Proposed Development of The Karino Interchange, Located East Of Mbombela, Mbombela Local Municipality, Ehlanzeni District Municipality, Mpumalanga Province.	Buildings and structures
Celliers, J. P.	2012	Report on Phase 1 Archaeological Impact Assessment on Portions 1, 3, 5 and 16 of the farm Tipperary 135 JU, Portion 4 of Portion 5 of the farm Duma 201 JU and Portion 3 of the farm Langgewacht 202 JU near Karino, Mpumalanga Province.	Water Furrows

Rowe, C.	2017	Report on a Grave Site Found at Portion 7 of Tekwane 537JU, in way of the amended Bulk Sewer Pipeline, Kanyamazane Mpumalanga Province	Graves
Van Vollenhoven, A. C.	2013	A report on a basic assessment relating to cultural heritage resources for the proposed Eskom Tekwane North Line and substations, Mpumalanga Province.	Iron age site, homestead and cemeteries

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

6.2.1 Archaeology of the area

The archaeology of the area can be divided in three main periods namely the Stone Age, Iron Age and Historical period.

6.2.2 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 human - . 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.

Very few Early Stone Age (ESA) sites are on record for Mpumalanga. An example where ESA tools have been discovered located outside of the study area is at Maleoskop (Bergh 1999) on the farm Rietkloof, which is one of only a handful of such sites in Mpumalanga. Another example also outside of the study area is at Bushman Rock Shelter (Mason 1969, Wadley 1987), a well-known site in the Ohrigstad district. This cave was excavated twice in the 1960s by Louw and later by Eloff. The MSA layers show that the cave was repeatedly frequented over a long period. Lower layers have been dated to over 40 000 Before Present (BP), while the top layers date to approximately 27 000 BP (Esterhuysen and Smith in Delius, 2007). MSA material is found widely across South Africa and some MSA manifestations can be expected in the study area.

Sites dating to the LSA are found in numerous rock shelters throughout Eastern Mpumalanga, where some of their rock art is still visible. A number of these shelters have been documented throughout the Province (Schoonraad in Barnard, 1975; Bornman, 1995 and Delius, 2007). These include areas such as Witbank, Ermelo, Barberton, Nelspruit, White River, Lydenburg and Ohrigstad. At Honingklip near Badplaas in the Carolina District, two LSA rock shelters with four panels of rock art was excavated. The site was used between 4870 BP and as recently as 200 BP. Stone walls at both sites date to the last 250 years of hunter-gatherer occupation and they may have served as protection against intruders and predators. Pieces of

clay ceramic and iron beads found at the site indicates that there was early social interaction between the hunter-gatherer communities and the first farmers who moved into this area at around 500 AD.

6.2.3 Iron Age and historical period

Bantu-speaking people moved into Eastern and Southern Africa about 2,000 years ago (Mitchell, 2002). These people cultivated sorghum and millets, herded cattle and small stock and manufactured iron tools and copper ornaments. Because metalworking represents a new technology, archaeologists call this period the Iron Age. Characteristic ceramic styles help archaeologists to separate the sites into different groups and time periods. 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.

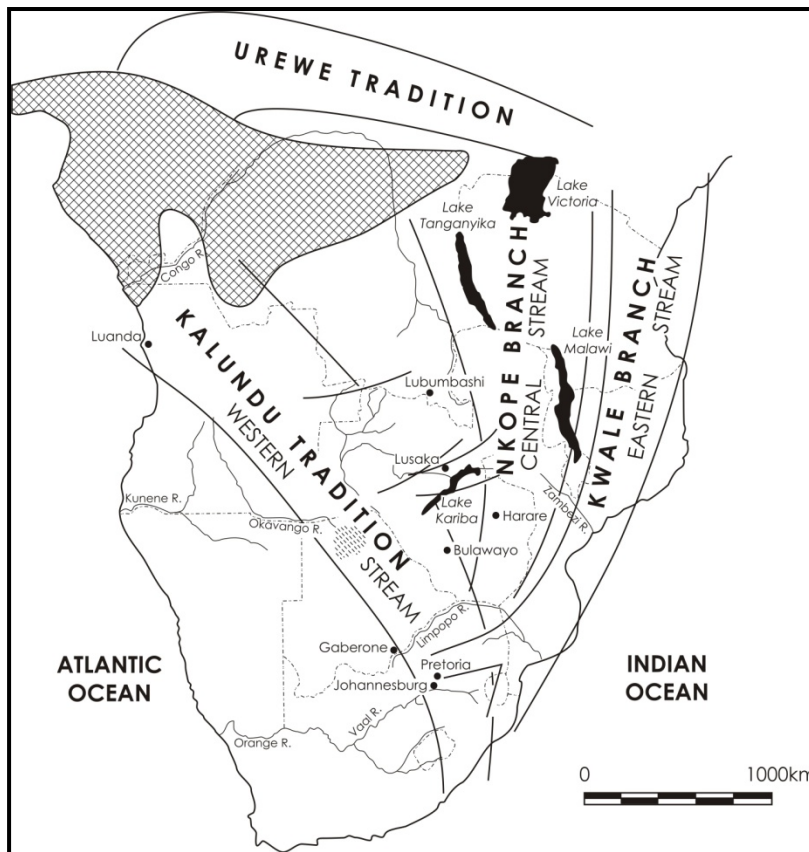


Figure 6-1: Movement of Bantu speaking farmers (Huffman 2007).

The later phases of the Iron Age (AD 1600-1800's) are represented by various tribes including Ndebele, Swazi, BaKoni, and Pedi, marked by extensive stonewalled settlements found throughout the escarpment and particularly around Machadodorp, Lydenburg, Badfontein, Sekhukuneland, Roosenekal and Steelpoort. The BaKoni were the architects of a unique archaeological stone building complex who by the 19th century spoke seKoni which was similar to Sepedi. The core elements of this tradition are stone-walled enclosures, roads, and terraces. These settlement complexes may be divided into three basic features: homesteads, terraces, and cattle tracks.

Researchers such as Mike Evers (1975) and David Collett (1982) identified three basic settlement layouts in this area. These sites can be divided into simple and complex ruins. Simple ruins are normally small in relation to more complex sites and have smaller central cattle byres and fewer huts. Complex ruins consist of a central cattle byre, which has two opposing entrances and several semi-circular enclosures surrounding it. The perimeter wall of these sites is sometimes poorly visible. Huts are built between the central enclosure and the perimeter wall. These are all connected by trackways referred to as cattle tracks. These tracks are made by building stone walls, which forms a walkway for cattle to the centrally located cattle byres. A combination of these features occurs on a few dispersed sites to the north west of the study area (Celliers 2019).

Individual sites range from simple enclosures, which consist of single or two concentric stonewalled circles found in small, isolated settlements, to complex sites with large central enclosures which have smaller enclosures attached to their outer walls. The walls are built with undressed, locally occurring, stone. Walls on average are 0.5 to approximately 1 meter high, although often only the foundation stones are left. The Early Iron Age site Plaston is located close to Witrivier.

6.2.4 Anglo-Boer War

Although the Lowveld region has a rich history regarding events and occurrences that transpired during the Anglo-Boer War little information could be obtained of any historical data that directly affected the study area. However, according to the map (Figure 6-2.) from J.S. Bergh, (red), *Geskiedenisatlas van Suid-Afrika, Die vier noordelike provinsies*, there was a Black Concentration Camp established in the vicinity of the Elandshoek Railway Station and another one at the railway station at Nelspruit. The map also indicates that no battles or noteworthy skirmishes occurred in the region under investigation. It would seem that the closest battle to the farm would have been the one at Paardeplaats (Long Tom Pass).



Figure 6-2. Concentration camps represented by red dots and railway stations with grey squares

6.2.1 Cultural Landscape

The project area is characterized by township, agricultural and infrastructure developments and the powerline is in line with the current land use.

6.3 Graves and Burial Sites

Graves and cemeteries are widely distributed across the landscape and can be expected anywhere.

7 Description of the Physical Environment

The study area is situated to the north-east of the town of Mbombela in the Mpumalanga Province (Figure 1-1). The specific farms influenced by the development are Tekwane 573 JU, Porton 9; Nyamasaan 647 JU, R/E; Tekwane North, Erf 816 JU; Tekwane 573 JU, R/E.

The general topography is undulating with several small mountains and ridges in the northern section of the study area. The environment is characterized by agricultural fields mainly orchards and township developments. Both locations for the substations at alternative 1 is marked by old agricultural fields. The power line follows a dirt track along certain sections but also through greenfield areas and traversing citrus orchards (Figure 7-1 to 7-4).



Figure 7-1. General site conditions with high vegetation cover at Alternative 1.



Figure 7-2. Thick vegetation cover in Greenfields areas in the southern portion of the study area.



Figure 7-3. Citrus orchards in the southern section of the study area.



Figure 7-4. Existing dirt tracks along the proposed alignments.

8 Findings of the Survey

The study area is characterised by high vegetation cover after the recent rains, limiting archaeological visibility. Four heritage features (Table 6 and Figure 8-1 to 8-6) were recorded consisting of cemeteries that are rapidly expanding. A single find spot was recorded indicating use of the wider landscape by Stone Age people and Iron Age communities.

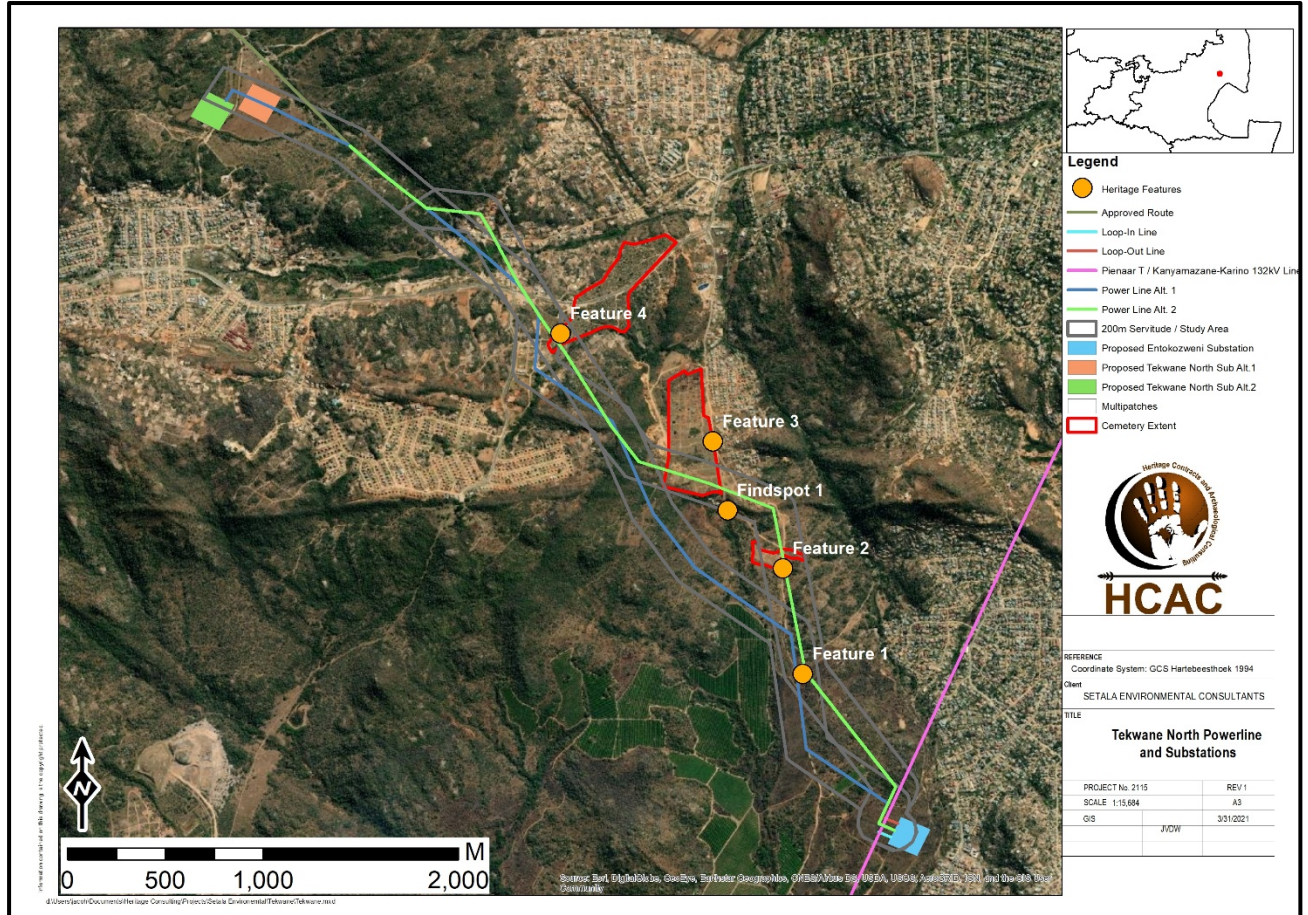


Figure 8-1. Site distribution map.

Table 6. Heritage features identified.

Label	Longitude	Latitude	Description	Field Rating and Significance	Alternative
Findspot 1	31° 09' 00.5616" E	25° 26' 31.7509" S	Multiple MSA flakes Undecorated ceramics	GP C Low	NA
Feature 1	31° 09' 12.9925" E	25° 26' 58.8480" S	House foundation/Farmhouse Water tank(cement) Close to large water reservoir also recorded in the Van Vollenhoven HIA (2013)	GP C Low	2
Feature 2	31° 09' 09.6732" E	25° 26' 39.3505" S	New informal cemetery, several new grave pits is visible indicating the rapid expansion of the cemetery.	GP A High Social Significance	2
	31° 09' 09.7055" E	25° 26' 41.3269" S		GP A High Social Significance	2
Feature 3	31° 08' 51.0433" E	25° 25' 49.1124" S	Large Municipal graveyard that is marked by a cement palisade fence. Recent addition to the cemetery is visible where the cemetery is expanding to the south.	GP A High Social Significance	2
Feature 4	31° 08' 32.8883" E	25° 26' 02.4469" S	Large informal graveyard extending on both sides of the tar road	GP A High Social Significance	2
	31° 08' 33.1439" E	25° 26' 02.2955" S		GP A High Social Significance	2



Figure 8-2. Scatter of Stone age artefacts at Findspot 1.



Figure 8-3. House foundations at Feature 1.

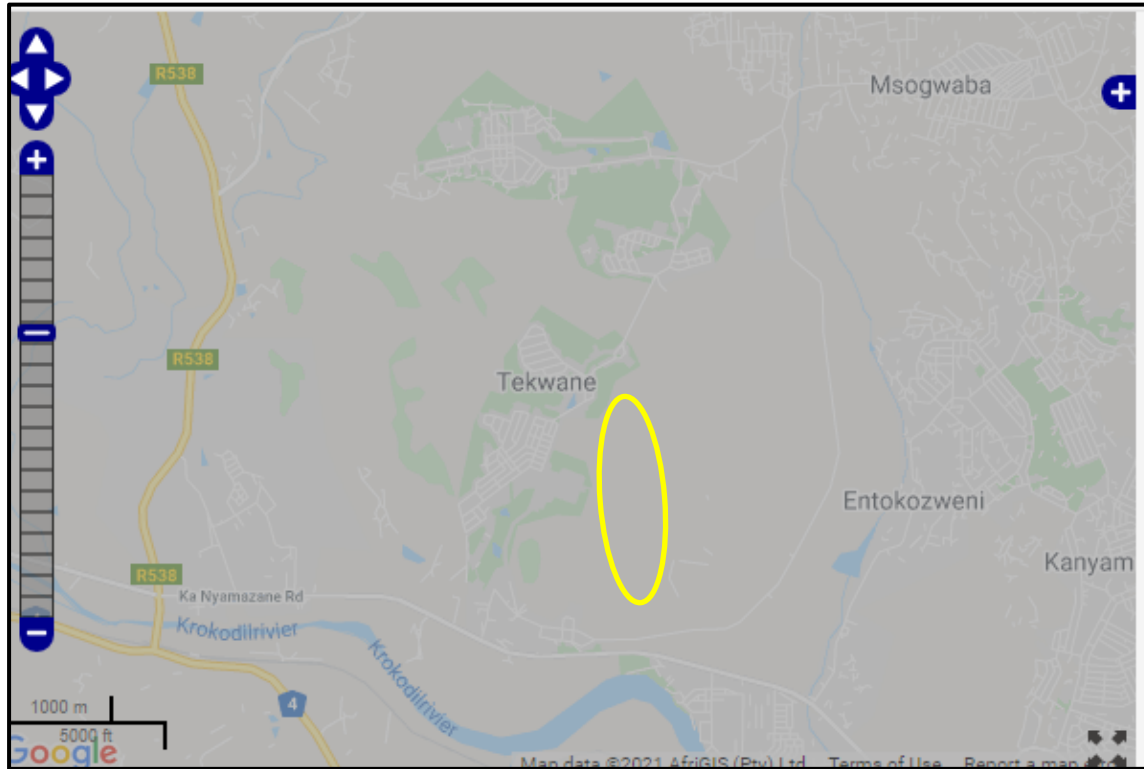


Figure 8-4. Graves recorded in the study area Feature 2.



Figure 8-5. Large municipal cemetery at Feature 3.

Based on the SAHRA Paleontological map the area (Fig 8-6) is of insignificant paleontological sensitivity and no further studies are required for this aspect.



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

Figure 8-6. Paleontological Sensitivity of the approximate study area (yellow polygon) is indicated as insignificant.

9 Potential Impact

Alternative 2 traverses several cemeteries that is rapidly expanding and could have an irreversible impact on these features especially on the intangible aspects associated with burial sites. Alternative 1 was then sited in the field in order to avoid the heritage sensitivities and therefore avoiding know heritage sites limiting the potential impact of this alternative. The potential impact of the project on recorded sites is indicated in Figure 9-1 and 9-2 as well as in Table 7 and 8 and discussed below.

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 features if any occur. 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. Potential impacts include destruction or partial destruction of non-renewable heritage resources.

9.1.3 Operation Phase

No impact is expected during this phase.

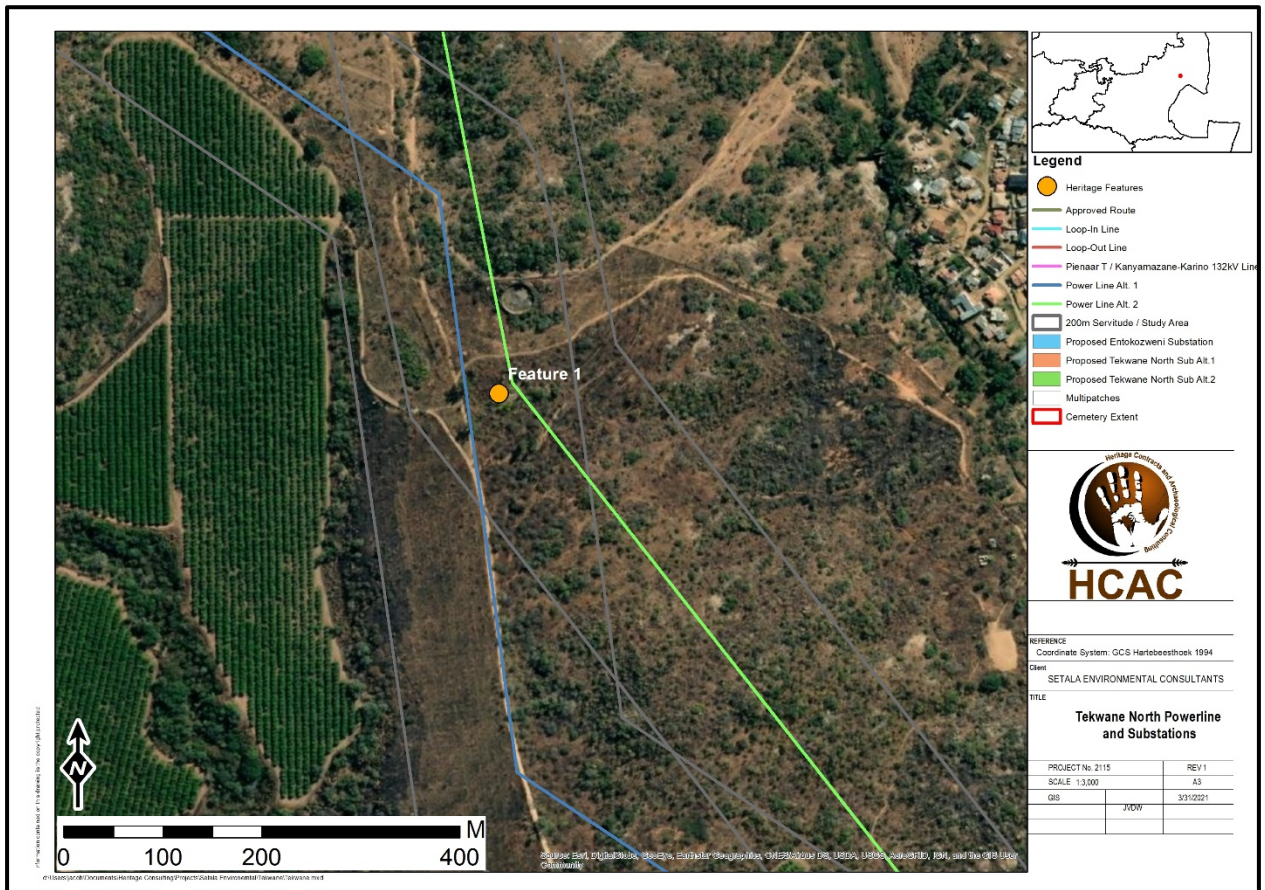


Figure 9-1. Impact of the project in relation the Feature 1.

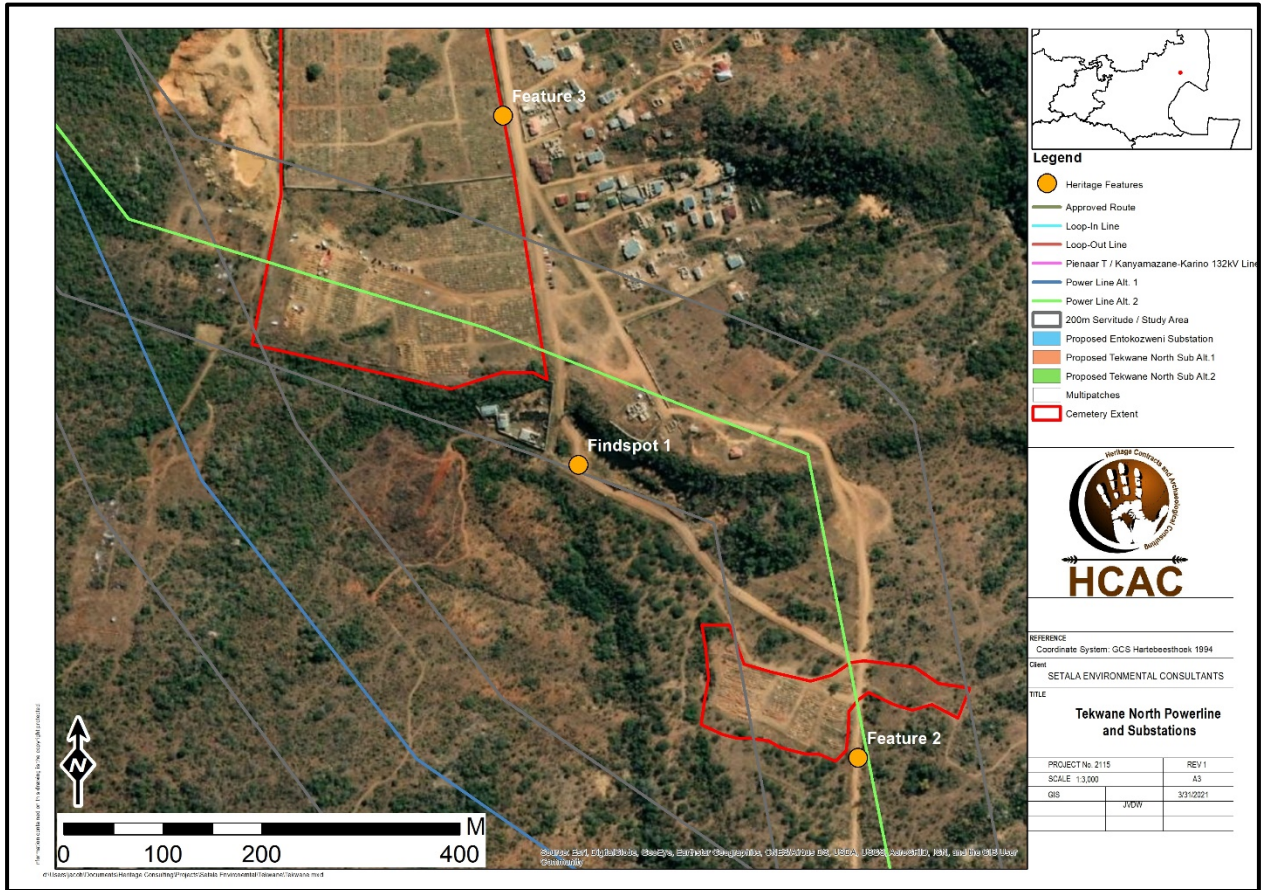


Figure 9-2. Impact on recorded heritage features (Findspot 1 and Feature 2).

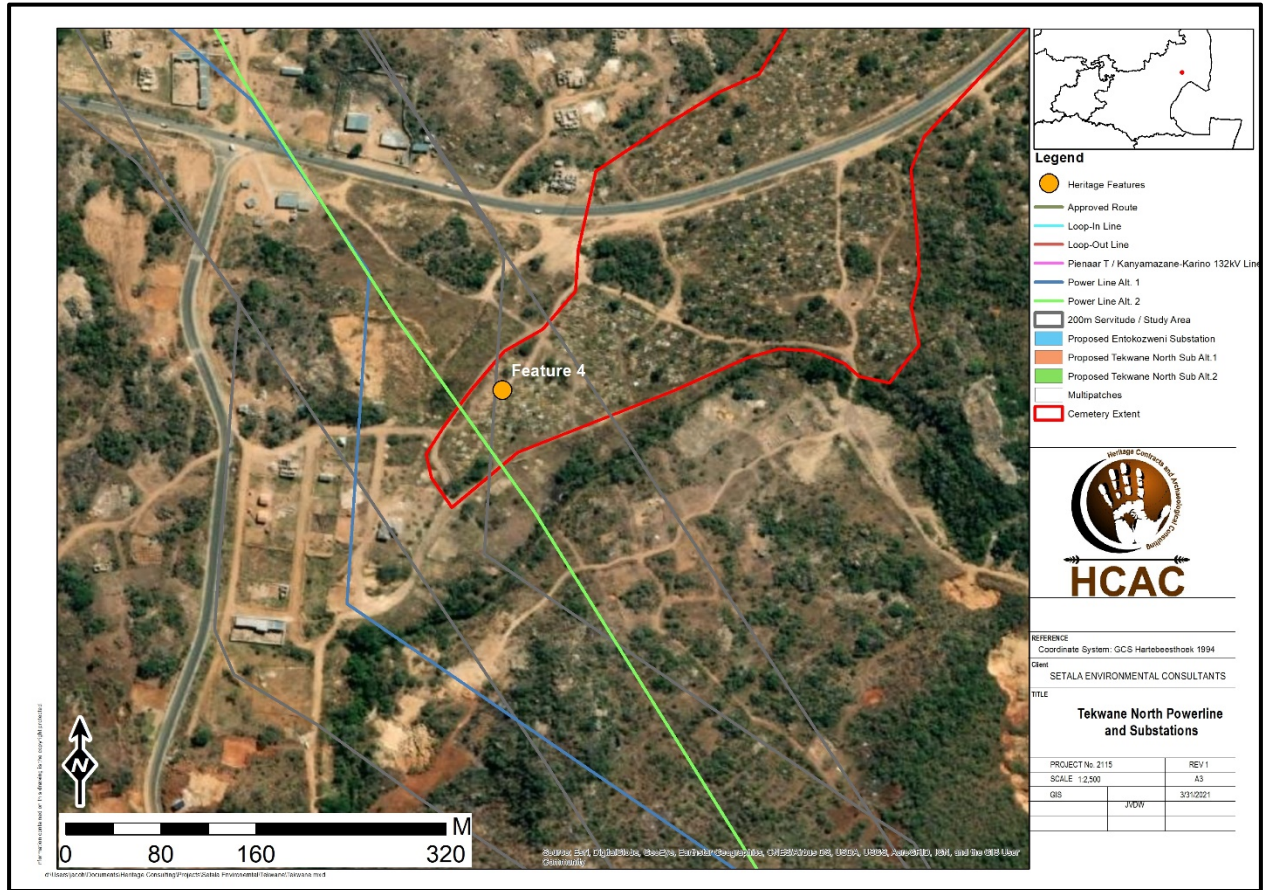


Figure 9-3. Impact on Feature 4.

Table 7. Impact assessment of the proposed project on archaeological background scatter Findspot 1.

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.		
	Without mitigation	With mitigation (Preservation/ excavation of site)
Extent	Local (2)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (2)	Low (2)
Probability	Probable (3)	Improbable (2)
Significance	27 (Low)	16 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation: The recorded features are out of context and of low significance and is sufficiently recorded in this report and will not be impacted on by the line therefore no additional mitigation is required.		
Cumulative impacts: With the implementation of the mitigation measures as proposed in this report the cumulative impact is low.		
Residual Impacts: Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted on, but this cannot be quantified.		

Table 8. Impact of the project on burial sites Feature 1 - 4.

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.		
	Without mitigation	With mitigation (Preservation/ excavation of site)
Extent	Regional (4)	Regional (3)
Duration	Permanent (5)	Permanent (5)
Magnitude	Moderate (6)	Moderate (4)
Probability	Definite (5)	Improbable (2)
Significance	75 (High)	24 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation:		
<ul style="list-style-type: none"> • Alternative 1 is the preferred alignment, that avoids heritage resources thereby minimising impacts; • Heritage Walk down of the final alignment and pylon positions; • Implementation of a Chance find procedure. 		
Cumulative impacts:		
By avoidance of known heritage resources and with the implementation of the mitigation measures as proposed in this report the cumulative impact is low.		
Residual Impacts:		
Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted on, but this cannot be quantified.		

10 Conclusion and recommendations

The study area is characterised by high vegetation cover after the recent rains, limiting archaeological visibility, however four heritage features were recorded. These features consist of cemeteries that is rapidly expanding. A single find spot was recorded indicating use of the wider landscape by Stone Age people and Iron Age communities. Alternative 1 does not impact on any known heritage resources and is therefore the preferred alternative as Alternative 2 traverses several cemeteries.

The impact of the Alternative 1 on heritage resources is low and the project can commence based on the adherence to the recommendations in this report and the approval of SAHRA.

10.1. Recommendations for condition of authorisation

The following recommendations for Environmental Authorisation apply and the project may only proceed based on approval from SAHRA:

- Heritage walkdown of the recommended alternative and pylon positions prior to construction;
- If heritage resources are identified during the walk down, it is recommended that the line should be micro sited to avoid these features and allow for a sufficient buffer around the identified features;
- Implementation of a chance find procedure for the project.

10.2. Chance Find Procedures

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

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

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

10.3. Reasoned Opinion

The overall impact of the project is considered acceptable based on the adherence to the recommendations in this report and approval from SAHRA prior to development. The socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the project.

10.4 Potential risk

Potential risks to the proposed project are the occurrence of intangible features and unrecorded cultural resources (of which graves are the highest risk). This can cause delays during construction, as well as additional costs involved in mitigation, and possible layout changes.

10.5 Monitoring Requirements

Day to day monitoring can be conducted by the Environmental Officers (EO). The EO or other responsible persons should be trained along the following lines:

- *Induction training:* Responsible staff identified by the developer should attend a short course on heritage management and identification of heritage resources.
- *Site monitoring and watching brief:* As most heritage resources occur below surface, all earth-moving activities need to be routinely monitored in case of accidental discoveries. The greatest potential impacts are the initial soil removal and subsequent earthworks during construction. The EO should monitor all such activities daily. If any heritage resources are found, the chance finds procedure must be followed as outlined above.

Table 9. Monitoring requirements for the project

Heritage Monitoring					
Aspect	Area	Responsible for monitoring and measuring	Frequency	Proactive or reactive measurement	Method
Clearing activities and Excavations	Entire project area	EO	Weekly – during construction phase	Proactively	<ul style="list-style-type: none"> • If risks are manifested (accidental discovery of heritage resources) the chance find procedure should be implemented: <ol style="list-style-type: none"> 1. Cease all works immediately; 2. Report incident to the Sustainability Manager; 3. Contact an archaeologist to inspect the site; 4. Report incident to the competent authority; and 5. Employ reasonable mitigation measures in accordance with the requirements of the relevant authorities. • Only recommence operations once impacts have been mitigated.

10.6 Management Measures for inclusion in the EMPr

Table 10. Heritage Management Plan for EMPr implementation

Area	Mitigation measures	Phase	Timeframe	Responsible party for implementation	Target	Performance indicators (monitoring tool)
Final Alignment and Pylon Positions	Walk Down prior to construction	Prior to construction	Prior to construction	EAP Applicant	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	Heritage walk down report.
General project area	Implement chance find procedures in case possible heritage finds are uncovered	Ground clearance, excavations as well as construction and operation	Throughout the project	Applicant EAP	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	EO Checklist/Report
Burial Sites	All graves should be indicated on development plans and avoided	All	Throughout the project	Applicant and ECO	Retain graves in situ	ECO Checklist/ Report

10.7 KNOWLEDGE GAPS

Due to the subsurface nature of heritage resources and limited archaeological visibility due to high vegetation cover, the possibility of discovery of heritage resources during the construction phase cannot be excluded. This limitation is successfully mitigated with the implementation of a chance find procedure.

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- Wits Archaeological Database (2009)

12. Appendices:**Appendix A****Jaco van der Walt****Archaeologist**Email: Jaco@heritageconsultants.co.za

Cell: 082 373 8491

Professional Profile

I have more than 20 years' experience conducting heritage assessments, grave relocation projects, heritage mitigation and management projects complying with both national heritage legislation and IFC Requirements. I published in internationally peer-reviewed journals and presented my findings at various national and international conferences. Work experience includes projects in South Africa, Afghanistan, Lesotho, Zambia, Zimbabwe, Mozambique, Botswana, the Democratic Republic of the Congo, Tanzania and Guinea.

Key Skills and Experience

- Project management and coordination;
- Management of non- renewable heritage resources within the framework of national and international legislation;
- Archaeological site identification and spatial analysis;
- Archaeological Excavations and research skills;
- Proficient in GIS;
- Heritage Impact Assessments;
- Data capturing in field using Fulcrum
- Practical instruction and training of both students and interns;
- Management of staff and general project management including management of finances, logistics and tasks;
- Team focused, both working as part of a team and managing teams;
- Planning and organisational skills, able to prioritise effectively and bring motivation to any task;
- Strong interpersonal skills, able to build productive relationships with others;
- Analytical problem solver, uses initiative to deliver outcomes;
- Meticulous level of attention to detail, ability to analyse data and compile reports;
- Good communication skills, written and verbal, able to engage with a range of people at all levels;
- Target driven, works with accuracy to challenging deadlines;
- Committed to professional development;
- Excellent IT skills in MS Excel, MS Word, BaseCamp and Power Point;
- Proficient in both English and Afrikaans.

Education

Name of University or Institution:	University of Johannesburg
Degree:	PhD
Year:	Currently Enrolled
Name of University or Institution:	University of the Witwatersrand
Degree Obtained:	MA (Archaeology)
Year of Graduation:	2012
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 Pretoria
Degree obtained:	BA Heritage Tourism & Archaeology
Year of graduation:	2001

Employment History

2011 – Present	HCAC Heritage Contracts and Archaeological Consulting CC <ul style="list-style-type: none"> • Archaeologist and Project Manager
2007 - 2010	Managed the Heritage Contracts Unit at the University of the Witwatersrand - <ul style="list-style-type: none"> • CRM Archaeologist and Project Manager as well as lecturing a course on CRM Archaeology
2005 – 2007	Director of Matakoma Heritage Consultants <ul style="list-style-type: none"> • CRM Archaeologist and project manager
2004	Department of Anatomy University of Pretoria – <ul style="list-style-type: none"> • Technical Assistant,
2003	Mapungubwe World Heritage Site <ul style="list-style-type: none"> • Archaeologist and site supervisor
2001 – 2002	R & R Cultural Resource Consultants, Polokwane <ul style="list-style-type: none"> • CRM Archaeologists
2000	Fort Klapperkop <ul style="list-style-type: none"> • Museum Assistant

Membership of Professional Associations:

- Association of Southern African Professional Archaeologists. Member number 159
- Association of Professional Heritage Practitioners. Member Number #114
- 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)

Countries of work experience

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

Selected Projects

Archaeological Impact Assessments (Phase 1)
Linear Developments
Selected Linear Phase 1 Cultural Resource Management (Heritage and Archaeological Impact Assessment) Projects:

Archaeological Impact Assessment, Sekuruwe Pipelines, Mokopane, Limpopo.
 Archaeological Impact Assessment, Seema Pipelines, Mokopane, Limpopo.
 Archaeological Impact Assessment, Tshamahansi Pipelines, Mokopane, Limpopo.
 A cultural heritage evaluation for the proposed Spencer Venulu Power line
 Archaeological Impact Assessment for the Mamelodi – Hatherley Power Line, Mamelodi, Gauteng Province.
 Archaeological Impact Assessment Medupi – Spitskop Power Line, Limpopo Province
 Archaeological Impact Assessment Amendment to The Existing Report for The Grootvlei-Balfour Powerline, Burnstone Gold Mine Project, Balfour, Mpumalanga
 Archaeological Impact Assessment for the Simmerpan Strengthening Project - Powerlines and New Substation, Johannesburg, Gauteng Province
 Archaeological And Cultural Land Assessment For The Lethabo Power Station, On The Farm Lethabo Power Station 1814, Vereeniging, Free State Province
 Archaeological Impact Assessment Proposed Marula 132/11kv Substation on A Remainder of Portion 2 Of the Farm Hartebeestfontein 258 IQ, Randfontein, Gauteng Province
 Archaeological Impact Assessment Proposed Cot Wildebees 400/132 Kv Substation and Loop in Lines, On Portions of The Farms Pienaarspoort 338 & 339 JR And Hatherley 331 JR, Gauteng Province
 Heritage Desktop Study for Eskom Tonki project.
 Archaeological Impact Assessment for Majuba, Tutuka and Lethabo PV Facilities
 Archaeological Walkdown of the Mareetsane Powerline, North West Province.
 Phase 1 Heritage Assessment of Doornpoort 312 JS Witbank, Mpumalanga.

Renewable Energy developments

HIA for the proposed Karoshoek Solar Project Kenhardt PV
 HIA for the proposed Kotulo Tsatsi Solar Development, Northern Cape.
 HIA for the proposed Karoshoek Solar Development, Northern Cape.
 HIA for the proposed Buffels Solar Farm 1 , Klerksdorp, North West Province
 HIA for the proposed Buffels Solar Farm 2 , Klerksdorp, North West Province
 HIA for the proposed Woodhouse Solar Development, North West Province
 HIA for the proposed Orkney Solar Farm, Orkney, North West Province
 HIA for the proposed Henneman Solar AIA, Free State Province.
 Archaeological Impact Assessment for the infrastructure component of the Batoka Gorge Hydro-Electric Scheme, Zambia.
 Cultural heritage assessment for the Kalungwishi Hydropower Project in the Luapula and Northern Provinces, Zambia

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.

The South African Radio Astronomy Observatory Square Kilometre Array – Heritage Impact Assessment and Conservation Management Plan (Specialist input for Digby Wells)

Publications and Presentations

- A Culture Historical Interpretation, Aimed at Site Visitors, of the Exposed Eastern Profile of K8 on the Southern terrace at Mapungubwe.
 - J van der Walt, A Meyer, WC Nienaber
 - Poster presented at Faculty day, Faculty of Medicine University of Pretoria 2003
- ‘n Reddingsondersoek na Anglo-Boereoorlog-ammunisie, gevind by Ifafi, Noordwes-Provinsie. South-African Journal for Cultural History 16(1) June 2002, with A. van Vollenhoven as co-writer.
- Fieldwork Report: Mapungubwe Stabilization Project.
 - WC Nienaber, M Hutten, S Gaigher, J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2004
- A War Uncovered: Human Remains from Thabantšho Hill (South Africa), 10 May 1864.
 - M. Steyn, WS Boshoff, WC Nienaber, J van der Walt
 - Paper read at the 12th Congress of the Pan-African Archaeological Association for Prehistory and Related Studies 2005
- Field Report on the mitigation measures conducted on the farm Bokfontein, Brits, North West Province.
 - J van der Walt, P Birkholtz, W. Fourie
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2007
- Field report on the mitigation measures employed at Early Farmer sites threatened by development in the Greater Sekhukhune area, Limpopo Province. J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2008
- Ceramic analysis of an Early Iron Age Site with vitrified dung, Limpopo Province South Africa.
 - J van der Walt. Poster presented at SAFA, Frankfurt Germany 2008
- Bantu Speaker Rock Engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga (*In Prep*)
 - J van der Walt and J.P Celliers
- Sterkspruit: Micro-layout of late Iron Age stone walling, Lydenburg, Mpumalanga. W. Fourie and J van der Walt. A Poster presented at the Southern African Association of Archaeologists Biennial Conference 2011
- Detailed mapping of LIA stone-walled settlements’ in Lydenburg, Mpumalanga. J van der Walt and J.P Celliers
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011

- Bantu-Speaker Rock engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga. J.P Celliers and J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Pleistocene hominin land use on the western trans-Vaal Highveld ecoregion, South Africa, Jaco van der Walt.
 - J van der Walt. Poster presented at SAFA, Toulouse, France. Biennial Conference 2016
- Kite-like structures in the Nama Karoo of South Africa. *Antiquity*, 92(363).
 - Van der Walt, J. and Lombard, M., 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. and Bradfield, J., 2018.
- The Keimoes 3 'desert kite' site, South Africa: An aerial LiDAR and micro-topographic exploration *Antiquity* (in Press)
 - Marlize Lombard , Matthew V. Caruana , Jaco van der Walt and Anders Högberg
- Evidence of Earlier Stone Age occurrences on in the North West Grassland Biome, Barberspan, South Africa. *South African Archaeological Bulletin* (In Press)
 - Matthew V. Caruana, Jaco van der Walt, Marlize Lombard

References:

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