Phase 1 Cultural Heritage Impact Assessment:

THE BENGWENYAMA PGM EXPLORATION PROJECT ON THE FARMS EERSTEGELUK 327KT AND NOOITVERWACHT 324KT, STEELPOORT REGION, GREATER SEKHUKHUNE DISTRICT MUNICIPALITY, LIMPOPO PROVINCE

Prepared for:
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- Heritage Consultant: ASAPA Registration No.: 164 - Principal Investigator: Iron Age, Colonial Period, Industrial Heritage.
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Report No: 2022/JvS/011

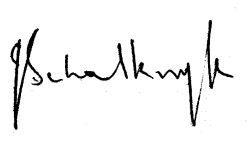
- Status: Final
- Date: April 2022
- Revision No: 1
- Date: 10 June 2022

Submission of the report:
It remains the responsibility of the client to submit the report to the South African Heritage Resources Agency (SAHRA) or relevant Provincial Heritage Resources Agency (PHRA) by means of the online SAHRIS System.

Copyright:

Specialist competency:

Johan A van Schalkwyk, D Litt et Phil, heritage consultant, has been working in the field of heritage management for more than 40 years. Originally based at the National Museum of Cultural History, Pretoria, he has actively done research in the fields of anthropology, archaeology, museology, tourism and impact assessment. This work was done in Limpopo Province, Gauteng, Mpumalanga, North West Province, Eastern Cape Province, Northern Cape Province, Botswana, Zimbabwe, Malawi, Lesotho and Swaziland. Based on this work, he has curated various exhibitions at different museums and has published more than 70 papers, most in scientifically accredited journals. During this period, he has done more than 2000 impact assessments (archaeological, anthropological, historical and social) for various government departments and developers. Projects include environmental management frameworks, roads, pipeline-, and power line developments, dams, mining, water purification works, historical landscapes, refuse dumps and urban developments.



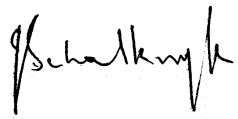
J A van Schalkwyk
Heritage Consultant
April 2022

SPECIALIST DECLARATION

I, J A van Schalkwyk, as the appointed independent specialist, in terms of the 2014 EIA Regulations (as amended), hereby declare that I:

- I act as the independent specialist in this application;
- I 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;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 (as amended) and any specific environmental management Act;
- 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 have no vested interest in the proposed activity proceeding;
- 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;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study 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 of the specialist



J A van Schalkwyk
April 2022

EXECUTIVE SUMMARY

Phase 1 Cultural Heritage Impact Assessment:
THE BENGWENYAMA PGM EXPLORATION PROJECT ON THE FARMS EERSTEGELUK 327KT AND NOOITVERWACHT 324KT, STEELPOORT REGION, GREATER SEKHUKHUNE DISTRICT MUNICIPALITY, LIMPOPO PROVINCE

Minxcon (Pty) Ltd was appointed as environmental specialists to oversee the environmental and permitting processes for the exploration activities. The project entails the drilling of 75 boreholes to determine the quantity and quality of the platinum-group metals (PGM) in the project area.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by *Minxcon* to conduct a cultural heritage assessment to determine if the exploration activities would have an impact on any sites, features or objects of cultural heritage significance.

This report describes the methodology used, the limitations encountered, the heritage features that were identified and the recommendations and mitigation measures proposed relevant to this. The investigation consisted of a desktop study (archival sources, database survey, maps and aerial imagery) and a physical survey that also included the interviewing of relevant people. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval.

- During the survey it was determined that the proposed drilling of the boreholes would have a very limited impact and any sites, features and objects of cultural significance. However, there is a possibility of secondary impacts that might result from the making of access roads to some of the drilling sites.

Identified sites

For detail on all the drill hole sites as well as photographs of the identified sites and features, see Section 7 of the report.

Drillhole No.	Description	NHRA category	Cultural significance	Field rating	Mitigation
E002	Old agricultural fields: Surface scatter of potsherds	Section 35	Low	Generally protected 4C: Low significance	None required
E045	Scrubland: Low scatter of pottery Marateng facies (Pedi) pottery	Section 35	Low	Generally protected 4C: Low significance	None required
E046	New urban stand: Low scatter of pottery Marateng facies (Pedi) pottery	Section 35	Low	Generally protected 4C: Low significance	None required
BHINF D/04	Early historic homestead (terracing, stone walling, pottery)	Section 35	Medium	Generally protected 4B: Medium significance	Avoid site. Probably only indirect impact by making of access road. Knowledgeable person such as January Nkosi should assist in determining access road in order to avoid features. Alternative would be full archaeological excavation.

	Three burial sites occur in close proximity	Section 36	High	Generally protected 4A: High/ medium significance	Establish buffer zone of 50m from the outer edges of the burial site. Demarcate for period of drilling with danger tape.
BHINF D/07	Surface scatter of MSA tools	Section 35	Low	Generally protected 4C: Low significance	None required
	Surface scatter of Marateng facies (Pedi) pottery	Section 35	Low	Generally protected 4C: Low significance	None required
BHINF D/08	Surface scatter of MSA material	Section 35	Low	Generally protected 4C: Low significance	None required
	Burial site	Section 36	High	Generally protected 4A: High/ medium significance	Establish buffer zone of 50m from the outer edges of the burial site. Demarcate for period of drilling with danger tape.
BHINF D/10	Early historic homestead with ruins of house, perimeter walling, grindstones, etc.	Section 35	Medium	Generally protected 4B: Medium significance	Avoid site. Probably only indirect impact by of making access road. Knowledgeable person such as January Nkosi should assist in determining access road in order to avoid features. Alternative would be full archaeological excavation.
BHINF D/11	Early historic homestead with ruins of house, perimeter walling, grindstones, midden, etc.	Section 35	Medium	Generally protected 4B: Medium significance	Avoid site. Probably only indirect impact by making of access road. Knowledgeable person such as January Nkosi should assist in determining access road in order to avoid features. Alternative would be full archaeological excavation.

Impact assessment and proposed mitigation measures

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development:

- For the current study, the following mitigation measures are proposed – see Section 8.2 for more details.

Drill hole sites: E2; E45; E46; D/07; D/08			
Site type	**NHRA category**	**Field rating**	**Impact rating: Before/After mitigation**
Archaeology, palaeontology and meteorites	Section 35	Generally protected 4C: Low significance	Low (21) Low (8)
Mitigation: (5) No further action required			

Drill hole sites: D/04; D10; D/11			
Significance			
Site type	**NHRA category**	**Field rating**	**Impact rating: Before/After mitigation**

Archaeology, palaeontology and meteorites	Section 35	Generally protected 4B: Medium significance	Medium (33) Low (8)
Mitigation: (1) Avoidance/Preserve: • Probably only indirect impact by making of access road. Knowledgeable person such as community member January Nkosi should assist in determining access road in order to avoid features. The alternative would be full archaeological excavation.			

Drill hole sites: D/04; D/08			
Significance			
Site type	**NHRA category**	**Field rating**	**Impact rating: Before/After mitigation**
Burial sites and Graves	Section 36	Generally protected 4A: High significance	Low (16) Low (8)
Mitigation: (1) Avoidance/Preserve: • If it is decided to retain the burial site, it should be fenced off with danger tape with a buffer zone of at least 50m for the duration of the drilling activities.			

Legal requirements

The legal requirements related to heritage specifically are specified in Section 3 of this report.

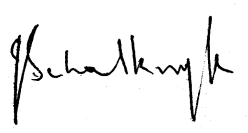
- For this proposed project, the assessment has determined that although sites, features or objects of cultural heritage significance occur in the project area, they are either of low significance and therefore require no further mitigation, or they can be avoided, and therefore no permits are required from SAHRA or the PHRA.
- If heritage features are identified during construction, as stated in the management recommendations, these finds would have to be assessed by a specialist, after which a decision will be made regarding the application for relevant permits.

Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view, it is recommended that the Proposed Project be allowed to continue on acceptance of the conditions proposed below.

Conditions for inclusion in the environmental authorisation:

- The Palaeontological Sensitivity Map (http://www.sahra.org.za/sahris/map/palaeo) indicate that sections of the project area, mostly on the farm Eerstegeluk has a low sensitivity of fossil remains to be found and, although a palaeontological study is not required, a protocol for finds is required. The rest of the project area has an insignificant to zero possibility of fossil remains to be found and therefore no palaeontological studies are required.
- Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made. The appropriate steps to take are indicated in Section 9 of the report, as well as in the **Management Plan: Burial Grounds and Graves, with reference to general heritage sites**, in the Addendum, Section 12.5.



J A van Schalkwyk
Heritage Consultant
April 2022

TECHNICAL SUMMARY

Project description	
Description	Drilling of 75 boreholes to determine the quantity and quality of the platinum-group metals (PGM) in the project area
Project name	Bengwenyama Exploration Project

Applicant
Miracle Upon Miracle Investments (Pty) Ltd

Environmental assessment practitioner
Minxcon (Pty) Ltd – Martha Monoke

Property details						
Province	Limpopo					
Magisterial district	Lydenburg					
District Municipality	Greater Sekhukhune					
Topographic map	2430Ca & 2430CC					
Farm name	Nooitverwacht 324-KT & Eerstegeluk 327-KT					
Closest town	Steelpoort					
Coordinates	Centre point (approximate)					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	S 24,73096	E 30,10419			
	.kml files[1]		Bengwenyana_Farm_ Boundary.kml		P1Drillholes.kmz	P1Drillholes.kml

Development criteria in terms of Section 38(1) of the NHR Act	Yes/No
Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	Yes
Construction of bridge or similar structure exceeding 50m in length	No
Development exceeding 5000 sq m	No
Development involving three or more existing erven or subdivisions	No
Development involving three or more erven or divisions that have been consolidated within past five years	No
Rezoning of site exceeding 10 000 sq m	No
Any other development category, public open space, squares, parks, recreation grounds	No

Land use	
Previous land use	Farming
Current land use	Farming / Urban

[1] Left click on the coloured icon to open the file in Google Earth, if installed on the computer. Alternatively, right click on the icon. In dialog box, select "Save Embedded File to Disk" and save to folder of choice.

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GLOSSARY OF TERMS AND ABBREVIATIONS

TERMS

Bioturbation: The burrowing by small mammals, insects and termites that disturb archaeological deposits.

Cumulative impacts: In relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

Debitage: Stone chips discarded during the manufacture of stone tools.

Factory site: A specialised archaeological site where a specific set of technological activities has taken place – usually used to describe a place where stone tools were made.

Historic Period: Since the arrival of the white settlers - c. AD 1830 - in this part of the country.

Holocene: The most recent time period, which commenced c. 10 000 years ago.

Iron Age (also referred to as **Early Farming Communities**)**:** Period covering the last 1800 years, when new people brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and herded cattle, sheep and goats. As they produced their own iron tools, archaeologists call this the Iron Age.

Early Iron Age	AD 200 - AD 900
Middle Iron Age	AD 900 - AD 1300
Later Iron Age	AD 1300 - AD 1830

Midden: The accumulated debris resulting from human occupation of a site.

Mitigation, means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

National Estate: The collective heritage assets of the Nation.

Pleistocene: Geological time period of 3 000 000 to 20 000 years ago.

Stone Age: The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

Early Stone Age	2 500 000 - 250 000 Before Present
Middle Stone Age	250 000 - 40-25 000 BP
Later Stone Age	40-25 000 - until c. AD 200

Tradition: As used in archaeology, it is a seriated sequence of artefact assemblages, particularly ceramics.

ACRONYMS and ABBREVIATIONS

AD	Anno Domini (the year 0)
ASAPA	Association of Southern African Professional Archaeologists

BC	Before the Birth of Christ (the year 0)
BCE	Before the Common Era (the year 0)
BP	Before Present (calculated from 1950 when radio-carbon dating was established)
CE	Common Era (the year 0)
CRM	Cultural Resources Management
CS-G	Chief Surveyor-General
DMRE	Department of Mineral Resources and Energy
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Early Iron Age
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Early Stone Age
HIA	Heritage Impact Assessment
I & AP's	Interested and Affected Parties
ICOMOS	International Council on Monuments and Sites
LIA	Late Iron Age
LSA	Later Stone Age
MIA	Middle Iron Age
MSA	Middle Stone Age
NASA	National Archives of South Africa
NEMA	National Environmental Management Act 107 of 1998
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
WUL	Water Use Licence

COMPLIANCE WITH APPENDIX 6 OF THE 2014 EIA REGULATIONS (AS AMENDED)

Requirements of Appendix 6 – GN R982	**Addressed in the Specialist Report**
1. (1) A specialist report prepared in terms of these Regulations must contain- 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;	 Front page Page i Addendum Section 7
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page ii
c) an 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 4
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 8
d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 4
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 4
f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 7; Figure 23
g) an identification of any areas to be avoided, including buffers;	Section 8
h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figure 23 Section 7 & 8
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 2
j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 7
k) any mitigation measures for inclusion in the EMPr;	Section 8 & 11
l) any conditions for inclusion in the environmental authorisation;	Section 11
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 9
n) a reasoned opinion- i. 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 11 Section 8, 9 & 10
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	-
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	-
q) any other information requested by the competent authority.	-
(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	-

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1. INTRODUCTION

1.1 Background

The Bengwenyama PGM project is held under preferent prospecting right number LP30/5/1/1/002PPR by *Miracle Upon Miracle Investments (Pty) Ltd*. The 002PPR encompasses the farms Eerstegeluk 327KT (previously 322KT) and Nooitverwacht 324KT. The preferent right is held in part by the Bengwenyama community that occupy the land.

Minxcon (Pty) Ltd was appointed as environmental specialists to oversee the environmental and permitting processes for the exploration activities. The project entails the drilling of 75 boreholes to determine the quantity and quality of the platinum-group metals (PGM) in the project area.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. However, according to Section 27(18) of the National Heritage Resources Act, No. 25 of 1999 (NHRA), no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by *Minxcon* to conduct a cultural heritage assessment to determine if the exploration activities would have an impact on any sites, features or objects of cultural heritage significance.

This report forms part of the 2015 DMRE approved Environmental Management Plan ("EMP"), as a condition was made within the EMP that an Archaeological study had to be conducted prior the commencement of prospecting activities. This report fulfils that condition and is intended for submission to the South African Heritage Resources Agency (SAHRA).

1.2 Terms and references

The aim of a full heritage impact assessment (HIA) investigation is to provide an informed heritage-related opinion about the proposed development by an appropriate heritage specialist. The objectives are to identify heritage resources (involving site inspections, existing heritage data and additional heritage specialists if necessary); assess their significances; assess alternatives in order to promote heritage conservation issues; and to assess the acceptability of the proposed development from a heritage perspective.

The result of this investigation is a HIA report indicating the presence / absence of heritage resources and how to manage them in the context of the proposed development.

Depending on SAHRA's acceptance of this report, the developer may receive permission to proceed with the proposed development, on condition of successful implementation of proposed mitigation measures.

1.2.1 *Scope of work*

The aim of this study is to determine the cultural heritage significance of the area where the exploration project is to take place. This included:

- Conducting a desk-top investigation of the project area; and
- A visit to the proposed project area.

The project area includes the following properties:

- The farms Nooitverwacht 324-KT & Eerstegeluk 327-KT.

The objectives were to:

- Evaluate the potential impacts of the exploratory drilling activities of the proposed development on archaeological, cultural and historical resources;
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural or historical importance; and
- Provide guideline measures to manage any impacts that might occur during the proposed project's implementation phases.

1.2.2 *Assumptions and Limitations*

The investigation has been influenced by the following:

- It is assumed that the description of the proposed project, provided by the client, is accurate;
- It is assumed that the public consultation process undertaken as part of the Basic Assessment is sufficient and that it does not have to be repeated as part of the HIA;
- It is assumed that the information contained in existing databases, reports and publications is correct;
- The unpredictability of buried archaeological remains;
- No subsurface investigation (i.e. excavations or sampling) were undertaken, since a permit from SAHRA is required for such activities;
- The vegetation cover encountered during a site visit can have serious limitations on ground visibility, obscuring features (artefacts, structures) that might be an indication of human settlement.

2. LEGISLATIVE FRAMEWORK

2.1 Background

HIAs are governed by national legislation and standards and International Best Practise. These include:

- South African Legislation
    - National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA);
    - Mineral and Petroleum Resources Development Act, 2002 (Act No. 22 of 2002) (MPRDA);
    - National Environmental Management Act 1998 (Act No. 107 of 1998) (NEMA); and
    - National Water Act, 1998 (Act No. 36 of 1998) (NWA).
- Standards and Regulations
    - South African Heritage Resources Agency (SAHRA) Minimum Standards;
    - Association of Southern African Professional Archaeologists (ASAPA) Constitution and Code of Ethics;
    - Anthropological Association of Southern Africa Constitution and Code of Ethics.
- International Best Practise and Guidelines
    - ICOMOS Standards (Guidance on Heritage Impact Assessments for Cultural World Heritage Properties); and

- The UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (1972).

2.2 Heritage Impact Assessment Studies

South Africa's unique and non-renewable archaeological and palaeontological heritage sites are 'generally' protected in terms of the NHRA (Section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority, subject to the provisions of Section 38(8) of the NHRA.

The NHRA, Section 38, contains requirements for Cultural Resources Management and prospective developments:

"38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as:

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of a site:
(i) exceeding 5 000 m^2 in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within he past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
(d) the re-zoning of a site exceeding 10 000 m^2 in extent; or
(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development."

And:

"38 (3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

(a) The identification and mapping of all heritage resources in the area affected;
(b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;
(c) an assessment of the impact of the development on such heritage resources;
(d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
(e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
(f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
(g) plans for mitigation of any adverse effects during and after the completion of the proposed development."

3. HERITAGE RESOURCES

3.1 The National Estate

The NHRA defines the heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations that must be considered part of the national estate to include:

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, including-
    - ancestral graves;
    - royal graves and graves of traditional leaders;
    - graves of victims of conflict;
    - graves of individuals designated by the Minister by notice in the Gazette;
    - historical graves and cemeteries; and
    - other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- sites of significance relating to the history of slavery in South Africa;
- movable objects, including-
    - objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
    - objects to which oral traditions are attached or which are associated with living heritage;
    - ethnographic art and objects;
    - military objects;
    - objects of decorative or fine art;
    - objects of scientific or technological interest; and
    - books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

3.2 Cultural significance

In the NHRA, Section 2 (vi), it is stated that ‘‘cultural significance’’ means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This is determined in relation to a site or feature’s uniqueness, condition of preservation and research potential.

According to Section 3(3) of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of

- its importance in 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; and
- sites of significance relating to the history of slavery in South Africa.

A matrix (see Section 2 of Addendum) was developed whereby the above criteria were applied for the determination of the significance of each identified site. This allowed some form of control over the application of similar values for similar identified sites.

4. PROJECT DESCRIPTION

4.1 Site location

The exploration activities will take place on the farms Nooitverwacht 324-KT & Eerstegeluk 327-KT, which are located, at their centre point, approximately 9 km west of Steelpoort and 39 km west of Burgersfort (Fig. 1). For more information, see the Technical Summary on p. V above.

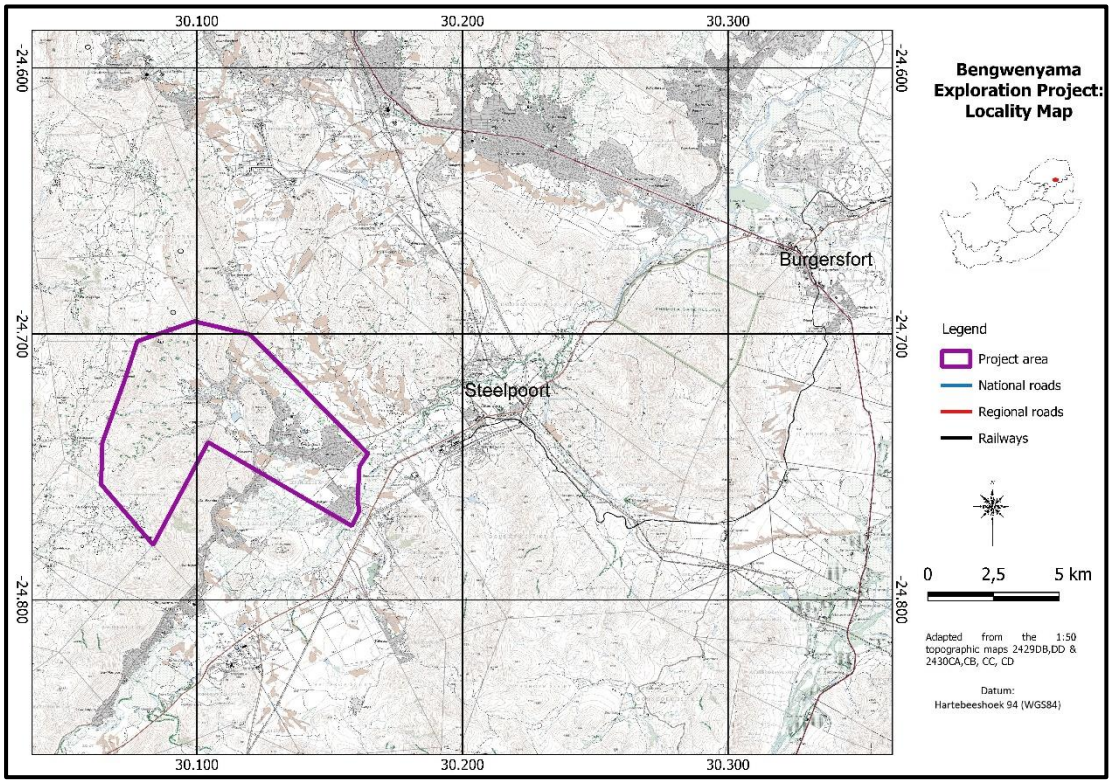


Figure 1. Location of the project area in regional context

4.2 Development proposal

The project involves the drilling of a number of boreholes according to a predetermined pattern and will be carried out in two phases (Fig. 2):

- Phase 1 (indicated in red on the map below)

This will consist of drilling 63 boreholes. A number of the proposed boreholes are situated in a residential area, sometimes located on a house or in a street. In these cases, an offset from the buildings will be applied. For the boreholes located outside the residential areas, where there are no roads, access tracks will have to be created in order to get the drill rigs to a particular point.

- Phase 2 (indicated in green on the map below)

This will consist of drilling 12 boreholes. In this case these boreholes are all located in open areas with no residential development. Therefore, as there are no roads, access tracks will have to be created in order to get the drill rigs to a particular point.

To accommodate the movement of the drilling rigs to the different borehole positions, it was proposed that a survey of the total property is done in order to identify no-go area which can then be avoided when tracks are made for the drilling rigs.

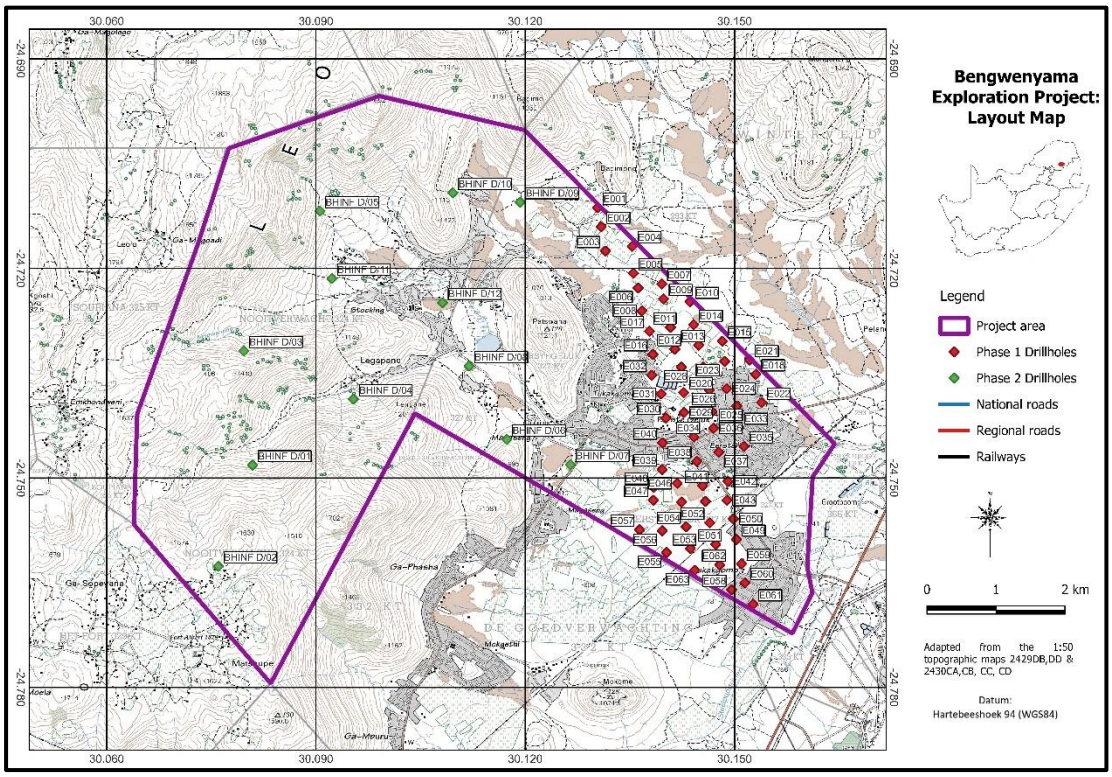


Figure 2. Layout of the proposed project

- It is important to note that some of the drilling points are located within residential areas. However, the residents, through their community participation forum were consulted and they consented to the drilling, for which they will be compensated.

5. STUDY APPROACH AND METHODOLOGY

5.1 Extent of the Study

This survey and impact assessment cover all facets of cultural heritage located in the project area, as presented in Section 4 above and illustrated in Figures 1 & 2.

5.2 Methodology

5.2.1 Pre-feasibility assessment

The objectives of this review were to:

- Gain an understanding of the cultural landscape within which the project is located;
- Inform the field survey.

5.2.1.1 Survey of the literature
A survey of the relevant literature was conducted with the aim of reviewing the previous research done and determining the potential of the area. In this regard, various anthropological, archaeological and historical sources were consulted – see list of references in Section 12.

- Information on events, sites and features in the larger region were obtained from these sources.

5.2.1.2 Survey of heritage impact assessments (HIAs)
A survey of HIAs done for projects in the region by various heritage consultants was conducted with the aim of determining the heritage potential of the area – see list of references in Section 12.

- Information on sites and features in the larger region were obtained from these sources.

5.2.1.3 Data bases
The *Heritage Atlas Database,* various SAHRA databases, the *Environmental Potential Atlas*, the *Chief Surveyor General* and the *National Archives of South Africa* were consulted.

- Database surveys produced a number of sites located in the larger region of the proposed development.

5.2.1.4 Other sources
Aerial photographs and topocadastral and other maps were also studied - see the list of references below.

- Information of a very general nature were obtained from these sources.

5.2.1.5 Results

The results of the above investigation are presented in Table 1 and Figure 3 below – see list of references in Section 12 – and can be summarised as follows:

- Reports indicate that Stone Age tools occur in limited numbers sporadically across the larger region and is most visible in erosion gullies or areas where sheet erosion occurs;
- Sites with Later Stone Age rock paintings occur to the southeast and far to the northwest;
- Sites dating to the Early Iron Age occur in significant numbers on the Steelpoort River Valley, mostly occurring on the rich alluvial and colluvial soils in close proximity to the river;
- Stone walled sites dating to the Late Iron Age occur some distance to the south, but also in the higher, more mountainous areas on both sides of the Steelpoort River;
- Historic structures, inclusive of buildings, monuments and bridges, occur sporadically across the larger region;
- Formal and informal burial sites occur sporadically throughout the region.

Based on the above assessment, the probability of cultural heritage sites, features and objects occurring in the project area is predicted to be ***high***.

Table 1: Pre-Feasibility Assessment

Category	Period	Probability	Reference
Landscapes			
Natural/Cultural		Low	General Staff War Office (1907); Historic maps & aerial photographs

Early hominin	Pliocene – Lower Pleistocene		
	Early hominin	None	-
Stone Age	Lower Pleistocene – Holocene		
	Early Stone Age	Low	Plug (1978); Van Schalkwyk (2016)
	Middle Stone Age	Low	Plug (1978); Van Schalkwyk (2007a, 2016); Verster & van Rooyen (1999)
	Later Stone Age	Low	Heritage Atlas Database; Plug (1978); Verster & van Rooyen (1999)
	Rock Art	Low	Heritage Atlas Database
Iron age	Holocene		
	Early Iron Age	None	Huffman (2004/2005; 2007); Van Schalkwyk (2007a; 2007b; 2009, 2016)
	Middle Iron Age	None	-
	Late Iron Age	Low	Huffman (2007); Van Schalkwyk (2007a, 2016); Van Schalkwyk & Teichert (2008)
Colonial period	Holocene		
	Contact period/Early historic	Possible	General Staff War Office (1907); Hunt (1931); Kinsey (1973a, 1973bSmith (1967); Van Coller (1949); Van Schalkwyk (2014/2015)
	Recent history	Possible	Pistorius (2006, 2007); Van Schalkwyk (2009; 2016)
	Industrial heritage	Low	Grabe (n.d.); Heritage Atlas Database; Machens (2009); Van Schalkwyk (2009; 2016)

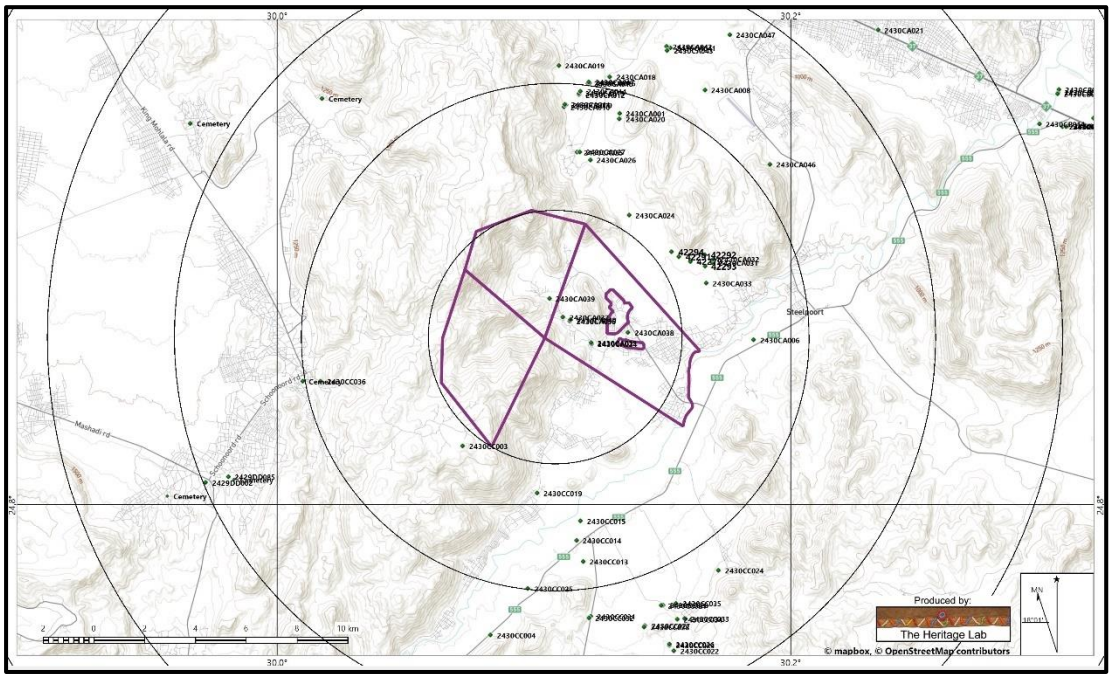


Figure 3. Location of known heritage sites and features in relation to the project area
(Circles spaced at 5km: heritage sites = coded green dots)

5.2.2 *Field survey*

The field survey was done according to generally accepted archaeological practices, and was aimed at locating all possible heritage sites, objects and structures.

The area that had to be investigated was identified by *Minxcon* by means of maps and .k*ml* files indicating the project area, including the various drill holes. This was loaded onto a Samsung digital device and used in Google Earth during the field survey to access the project area. The strategy that was followed was to visit each of the proposed drill hole points and investigate it for the presence of sites, object and features of cultural significance. Finds were then graded according to the system established by the NHRA and further developed by the South African Heritage Resources Agency (SAHRA 2007) (see Section 12, No. 2 below).

The project area was visited on two occasions: 22, 23 and 24 March and again on 29 and 30 March 2022. On both occasions the consultant was accompanied by Mr January Nkosi, a community member who is part of the community forum involved with the exploration project. Mr Nkosi also knows the area and its history very well as he grew up here.

A very dense vegetation cover was encountered in some sections of the project area (see Fig. 4). Not only did it negatively impacted on ground visibility, but in a few places the brush was too thick to gain access to the centre of some of the drill holes. In the eastern section, dense stands of sekelbos (*Dichrostachys cierea*) made accessing some of the drill holes virtually impossible (Fig. 4a). In the western section, the presence of haakdoring (Black monkey thorn – *Senegalia melifera*) served to prevent access (Fig. 4b). In both cases the growth of these plants has been encouraged by dry-land subsistence cultivation and grazing by cattle and goats. These activities, especially the former, would also have had a negative impact on any sites, features and objects that might have occurred in these areas in the past.

However, as the physical environment for these few drill holes are the same as for adjacent ones that could be access, i.e. dry, flat turf soils that were used for agricultural fields, it is assumed that the findings would be the same.

In many areas where were agricultural fields were made, people used set up small temporary shelters (*mokutwana*) to stay in while protecting the crops from gazing animals and birds. Over time this contributed to a 'faint' footprint of material culture (potshards, faunal material, etc.) in the fields.

Figure 4. The vegetation cover encountered in non-urban areas

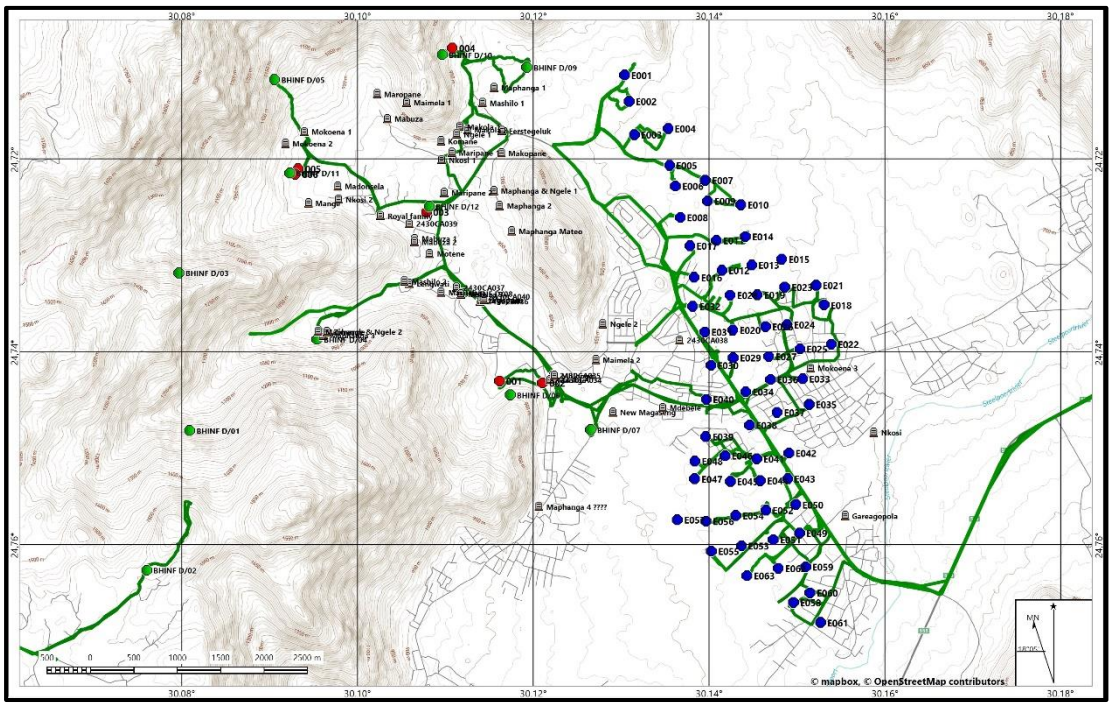


Figure 5. Track log of the survey

5.2.3 *Documentation*

All sites, objects and structures that were identified are documented according to the general minimum standards accepted by the archaeological profession. Coordinates of individual localities are determined by means of the *Global Positioning System* (GPS) and plotted on a map. This information is added to the description to facilitate the identification of each locality. Map datum used: Hartebeeshoek 94 (WGS84).

The track log and identified sites were recorded by means of a Garmin Oregon 550 handheld GPS device. Photographic recording was done by means of a Canon EOS 550D digital camera. Geo-rectifying of the aerial photographs and historic maps was done by means of a professional software package: ExpertGPS.

6. DESCRIPTION OF THE AFFECTED ENVIRONMENT

6.1 Natural Environment

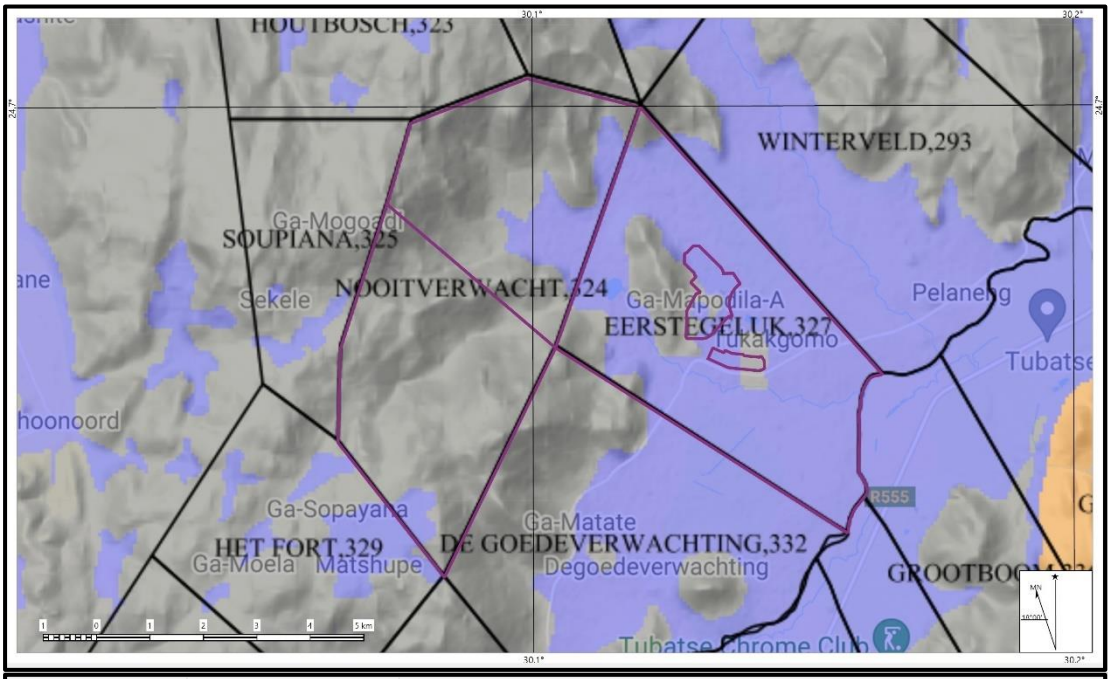
The geology of the region is made up of gabbro, norite and anorthosite of the Dsjate Subsuite of the Rustenburg Layered Suite of the Bushveld Complex.

The original vegetation is classified as Sekhukhune Mountain Bushveld, a savanna biome forming part of the Central Bushveld Bioregion. A section, mostly on the lower laying areas on the farm Eerste Geluk is classified as Sekhukhune Plains Bushveld, also forming part of the Central Bushveld Bioregion.

Large sections of the project area are also subjected to urbanization. In some areas open veld is now being cleared of vegetation and new shacks are built by people moving into the area.

Figure 6. Views over the project area

The Palaeontological Sensitivity Map (http://www.sahra.org.za/sahris/map/palaeo) (Fig. 7) indicate that sections of the project area, mostly on the farm Eerstegeluk has a low sensitivity of fossil remains to be found and, although a palaentological study is not required, a protocol for finds is required. The rest of the project area has an insignificant to zero possibility of fossil remains to be found and therefore no palaeontological studies are required.



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 7. The Palaeontological sensitivity of the project area

6.2 Cultural Landscape

The aim of this section is to present an overview of the history of the larger region in order to eventually determine the significance of heritage sites identified in the project area, within the context of their historic, aesthetic, scientific and social value, rarity and representivity.

6.2.1 *Stone Age*

Bushman Rock Shelter, one of the more important archaeological sites in the region is found approximately 30 kilometres to the east. Here, in this large, south facing rock shelter, archaeological excavations have revealed that early humans had lived here, discontinuously, for thousands of years, from the Early Stone Age, through the Middle Stone Age, and into the Late Stone Age. Occupation did not stop here but continued, for shorter periods, during the Iron Age as well as in historic times. The various top layers, going back more than 40 000 years, revealed a rich legacy of artefacts, including a

complex stone tool assemblage, bone tools, ostrich eggshell beads, some organic materials, pigments used for painting, as well as faunal remains (Plug 1978).

Unfortunately, no such sealed, stratified site occurs in the Steelpoort River valley. However, that Stone Age people occupied the Steelpoort River valley is evidenced by the presence of large numbers of stone tools dating to all phases of the Stone Age.

Although some tools occur on the current land surface, most artefacts are usually found in heavily eroded areas. These eroded areas or gullies are created by the Steelpoort River and its tributaries as they cut back upstream. The net result of this deflation of layers is that the density of stone tools increases, giving a compressed, and therefore false version of a long period of deposition. But even though the material is preserved in a deflated context, it still provides us with a set of archaeological signatures (Kuman *et al* 2005) that contribute to an overall picture of Stone Age occupation in the region.

As the dongas expose the natural stratigraphy formed by natural cycles of erosion and deposition, they have been used by researchers, e.g. Verster & Van Rooyen (1999), to try and reconstruct climatic changes during the Late Quaternary in the region. Although they caution that most of the conclusions drawn from such studies are tentative in nature, Verster & Van Rooyen supply us with some interesting points. They refer to the occurrence of calcic horizons, one of which is dated to greater than 22 500 BP, with one below that dating to between 28 600 to 30 000 BP. A similar, later layer, is dated 4 200 BP. According to them both layers represent periods that were drier than present conditions. No artefacts seem to occur below this substrate, with the implication that the stone tools are therefore younger than the calcic layer.

Ninety nine percent of the identified stone tools can be placed in the Middle Stone Age. Based on a visual inspection of the patination, it can be determined that some have been exposed much longer than others, even though they might occur in close proximity to each other. Only a few samples showed the results of washing, indicating that the majority occurred in close proximity of where they were found.

(2007)

Figure 8. Typical Middle Stone Age tools found in erosion gullies in the larger region
(A triangular point and a blade are shown)

Late Stone Age (LSA) people had even more advanced technology than the MSA people and therefore succeeded in occupying even more diverse habitats. Also, for the first time we now get evidence of people's activities derived from material other than stone tools. Ostrich eggshell beads, ground bone arrowheads, small, bored stones and wood fragments with incised markings are traditionally linked with the LSA.

Only a few Later Stone Age find spot have been identified. These usually occurred on outcrops, outside of the flood line, but still in the proximity of the river. This observation differs drastically from what was reported by Verster & Van Rooyen. Based on their work on the analysis of the palaeosols in erosion dongas in the area, Vester & Van Rooyen (1999:231) they found stone tools in the calcic layer that were identified as belonging to the LSA by H Deacon of the University of Stellenbosch. The interesting fact is that they obtained a radio-carbon date of 22,500 ± 290 for this layer.

6.2.2 *Iron Age*

A significant number of settlement sites dating to the Early Iron Age have been identified in the Steelpoort River valley and beyond. Based on the density of the distribution of sites identified in areas that have been surveyed, it is postulated that there would be many more which would only be revealed through a systematic survey of the region.

The question that springs to mind is: Why are there so many sites dating to this period in the river basin? The answer obviously lies in the nature of the basin itself. As described earlier, the region has a climate, vegetation and natural resources that ideally suited these early farming communities. When looking at the location of these early settlement sites, they are usually found in the close proximity of water and are not much higher than the 1000 metre contour line. They therefore had sufficient water and fertile colluvial and alluvial soils for planting crops. The mixed bushveld vegetation suited livestock such as cattle, sheep and goats and very importantly, there were no tsetse flies or malaria, with the exception of the lower laying areas in the northern parts of the valley. People could easily survive and prosper under such conditions and reach a higher population density than during the earlier Later Stone Age period. Thus, the new arrivals practising agriculture would eventually have outcompeted the previous inhabitants and slowly but surely pushed them out of the valley.

Sites belonging to this period in the Steelpoort River valley have been radiocarbon dated, with the results clustering in the range of AD 880 to 1040, which is well within that of AD 750 to 1000 given by Huffman (2007) for other known Doornkop sites outside the valley. Although the dates span a period of more than 200 years, it cannot be interpreted that an individual site was occupied for that length of time. The dates should rather be seen as a guideline indicating that the site could have been occupied for a considerable period of time.

Although only a few of the known sites have been studied so far, we have obtained enough information from them to adequately describe the societies that occupied them.

From an analysis of the pottery recovered, most of the sites that were investigated can be classified as belonging to the Doornkop facies of the Kalundu Tradition of the Early Iron Age. This, according to Huffman (2007), is a group of people that entered the region from the northwest - from the direction of what is now the DRC. The Doornkop people are famous for the set of remarkable clay masks found near Lydenburg in the 1960s. These people proliferated in the Steelpoort River valley and in the larger Sekhukhuneland region as well.

On some of these sites, linked to a second facies called Mzonjani, was also identified. According to Huffman (2007), the Mzonjani facies is linked to Doornkop. The former group originally formed part of the Kwale Branch of the Urewe Tradition, and usually predate the Doornkop people. However, new evidence seems to indicate that they were no longer separate groups by the time of the settlement of

the Steelpoort Valley sites, indicating fluidity in their ability on political and cultural level to renegotiate their identity on an on-going basis.

Overview of one of the excavations

Pot burial

Figure 9. Phase II mitigation measures at the De Hoop Dam – excavation of an Early Iron Age site (van Schalkwyk 2009)

Based on the material assemblages recovered and the location and layout of the villages, it can be deduced that these early communities experienced a life of peace and plenty. They were well adapted to their environment, producing food crops, herding domesticated stock and utilised various available resources to establish sustainable livelihoods. They also probably interacted with contiguous communities, for example the San.

On the other hand, on a larger scale, it seems as if they led somewhat isolated lives. Items usually perceived as prestige items, such as glass beads, metal and ivory objects are present in very limited quantities, indicating that the people were isolated from the trade routes that were developing in regions to the north of the country. For local communities, status was based on the possession of large numbers of cattle, a fact that is reflected in the huge primary and secondary cattle kraals that can be associated with some of the settlements.

As time passed, these early communities either left the region by their own accord or were displaced or assimilated by later people moving into the area. What type of contact this was is not clear, but as the new settlements are still located out in the open it seems as if they were living in peace with each other.

However, all of this was set to change. During the middle of the 18th century, developments that started to take place on a subcontinent scale, climatic change and economic and political factors, also touched the Steelpoort River valley and its people. New people, in many cases refugees from other parts of the country, entered the valley. Competition for land and its resources gave rise to situations of stress and conflict. This can be seen by the fact that people were now abandoning sites in the open areas, settling on the various hills and at the foot of the mountains, where they built sites that are clearly defensive in nature. A new element encountered on sites dating to this period is stonewalling.

This is also the period where we encounter oral histories, praise poems and such, sources that recount the lives of people and events, for the first time giving us a direct voice from the people involved. It is also the period where we get the first written documents on the people and the region. Settlers of European descent entered the valley looking for land and resources – farmers, missionaries, traders, teachers and prospectors - all came and influenced the people and used the land according to their

own needs and ambitions. Inevitably it put people on opposite sides, sides that were to become clearer over time, when the history of the next few decades were already starting be written.

Sotho-speakers

The area currently known as Sekhukhuneland, i.e. to the west of the Steelpoort River, was originally occupied by a group of people known as the Kwena of Mangatane. They entered the area from the north and, upon arriving at the Olifants River (Lepelle River), split into two groups. One group did not cross the Olifants River, but trekked upstream and eventually settled in what is today known as the Nebo magisterial district and became known as the Kopa of Ramupudu and the Kopa of Matsepe. The second group crossed the Olifants River under chief Mašabela and changed their totem from *phuti* (duiker) to that of *kwena* (crocodile). Their over-lordship as first arrivals had to be recognised by later arrivals such as the Pedi.

Groups known as the Phaša, settled somewhat later. They are related to the Mašabela but retained their original totem (*phuti*). They also call themselves Roka, which is probably an indication of their origin, north east of their current territory. Other groups are also known as Roka, although they do not share a history with the former groups and some of them are taken to be of Ndebele-speaking origin.

The Roka were soon followed by various Koni groups, which apparently took their name form the Bokoni area in the vicinity of Lydenburg from which they came. They were followed by the various Tau groups, who, according to some, are Sotho people who originally lived in the northern parts of what is today Swaziland.

The Pedi had moved into the area by 1650. Originally of Kgatla (Tswana) origin in the Brits region in North West Province, they entered the area from the southwest and subsequently changed their totem from *kgabo* (vervet monkey) to *noko* (porcupine). On arrival, they first paid tribute to the groups already settled in the area but over time as they grew stronger, they exerted their power over other groups and eventually came to dominate the political landscape and people started to paying tribute to the Pedi.

Ndebele-speakers

Although today mostly located in areas outside the Steelpoort River valley, the people known as Ndebele also played an important role in the region. It is said that they came into the region from either the south or the direction of KwaZulu-Natal.

They fall into two distinct sections - Northern and Southern. The former (Northern), living in the region of Mokopane (Potgietersrust) have largely lost their original language and way of life as a result of contact with various Sotho groups in the region.

The Southern Ndebele comprises two groups, the Manala and Ndzunda (popularly known as Mapoch, after their chief Mabhogo). The Ndzundza settled near Pretoria and over time extended the boundaries of their territory along the upper reaches of the Steelpoort River in the period between the 1600s to the early 1800s. Several of their early settlements - KwaSimkhulu, KwaMaza and Esikhunjini - are located inside the Valley.

Swazi-speakers

The Swazi-speaking communities living in the valley are much smaller in number. Their presence in the region is largely as a result of them escaping conflicts in other regions and as refugees who joined the

Pedi. Both chiefs Sekwati and Sekhukhune were careful to post such groups in outlaying strongholds between themselves and possible enemies. About 1874 Msuthu, the son of Somcuba Dhlamini of the ruling Swazi chief's house, fled from Swaziland to Sekhukhune with a considerable following, because Somcuba had been killed by Chief Umbandine. Sekhukhune located Msuthu and his Swazi followers on top of the Leolu range above Schoonoord.

A few months later another group of Swazi, smaller in number but more closely related to Mswati and Umbandine, fled, under Mphele, to Sekhukhune, and were also placed on the top of the Leolu range. These groups are still found here and have retained much of their original Swazi way of life.

From this description the conclusion that can be drawn is that the Steelpoort River valley and Sekhukhuneland to the west was a place of asylum for many displaced groups of people of diverse origins. Treating them as a single homogenous group - e.g. the Pedi or Nbebele - is obviously an oversimplification of their very complex and dynamic history.

6.2.3 *Historic period*

Andries Hendrik Potgieter and his fellow Trekkers is said to have trekked through the Steelpoort River valley in 1845. Their first meeting with the Pedi, then under the rule of chief Sekwati, was at Molahlegi, near Rooibokkop on the Olifants River. According to all accounts, this encounter was a friendly one. From here the Trekkers passed over Magnet Heights onwards and eventually settled at what was to become Andries-Ohrigstad. Due to the prevalence of malaria, they decided to move away and in 1850 established a new town, Lydenburg, some 50 km to the south. A few years later, in 1857 the Lydenburg Republic seceded from the Transvaal Republic. However, this did not last long and in April 1860 they re-joined the Transvaal Republic (Hunt 1931:290).

Figure 10. Traditional settlement layout at Magnet Heights southwest of the project area
(Photograph by H.F. Gros, 1880s – note the very Victorian Age approach to the composition of the photograph: people lined up in the foreground)

Earliest whites to settle permanently in the region were missionaries, mostly of the *Berliner Missionsgesellschaft* (BMS), for example Alexander Merensky (father of the famous geologist Hans Merensky), Gustav Eiselen, Otto Kahl, Gustav Mars, etc. Things did not always go well from them and their history in the region is one of starting new stations, abandoning them due to strife between local communities of tribal leaders who saw them as a threat to their authority, eventually returning and starting all over again. The Berliners were also fighting amongst themselves. Chief of this was Johannes Winter who rebelled against the strict, dogmatic approach of the *Gesellschaft*, and especially against Alexander Merensky. To make a long story short, he broke away from the mainstream Berliner society and established his own version, including much of traditional indigenous beliefs in his doctrine. This became known as the Bapedi Lutheran Christian Church, which is still active in the region.

Grave of Rev J.A. Winter (2007)

Bapedi Lutheran Church, Nooitverwacht (2007)

Figure 11. Evidence of missionary presence in the larger landscape

Two events that took place in the larger region probably also had an impact on the valley. The first is the so-called Sekhukhune Wars (1876, 1879), a number of sites dating to this event which can be found in the larger region and include the old battle site, a number of fortifications and graves.

The run-up to these events began somewhat earlier with the death of Chief Thulare who had two sons, the half-brothers Sekwati and Malekutu (Mőnnig 1967). On the death of Thulare the latter took over the chieftainship and ruled for a number of years. On his death he was succeeded by his half-brother Sekwati who was to act as regent up to the point where the real successor, Mampuru would be able to take over as chief.

Sekwati had a son called Sekhukhune, who, as the son of the regent had no claim to the chieftainship. However, Sekhukhune is said to have been very aggressive and on his father's death he forcefully seized the chieftainship, forcing Mampuru to flee. His success over Mampuru, as well as other events made Sekhukhune very ambitious, and he eventually started to challenge the ZAR government on various levels. This led to the first conflict in 1876. After a short period of siege by the ZAR forces, he was forced to surrender. For his trouble he was fined a large number of cattle, which he immediately vowed not to pay in full.

In April 1877 Sir Theophilus Shepstone annexed the ZAR on behalf of the British Empire. Soon Sekhukhune indicated that he was not going to obey the British either, and an expedition under Sir Garnet Wolseley was despatched to subjugate him. This objective was eventually achieved only after both sides suffered heavy losses.

The second event, largely following on the former, is the co-called Mapoch War of 1883. On 13 August 1882, Mampuru and some of his followers assassinated Sekhukhune while he was asleep. As the ZAR

government feared that this would cause problems in the region, which was still very unstable as a result of the preceding Sekhukhune War, they sent out a small commando to apprehend Mampuru. He, however, went into hiding with the Ndebele under Nyabela and when the latter was asked to give Mampuru up, it was refused. It was therefore decided to capture him by force, something that seemed easier said than done. It took a large contingent of men and the building of an extensive series of fortifications to lay siege to the Ndebele over a period of many months before the Nyabele agreed to surrender and hand Mampuru over to the ZAR forces. Both leaders, with a number of their councillors were arrested and taken to Pretoria where, after a short trail, both leaders were found guilty and condemned to death. Fortunately for him, Nyabela's sentence was commuted to life imprisonment, but Mampuru was executed a short while later by hanging on 22 November 1883.

One cannot think about the Steelpoort River valley and not think of mining. Probably the biggest impact the river had was to cut through the earth's natural layers and expose the rich mineral wealth hidden below. Platinum, chromite, vanadium, iron, manganese and magnetite are but a few of the minerals that were exposed in this way. This has played such an important role that one such cutting in the Dwars River - one of the larger tributaries - was declared a national monument. There the river cuts through the various chromite bands and anorthosite, allowing the relationship between these layers to be studied in detail. Although identified as early as 1909 by the well-known geologist Dr A.L. Hall, it was only after it drew the attention of the American geologist Edward Sampson in 1929 that its significance became clear.

In his description of the discovery of platinum deposits and chromium in the eastern lobe of the Bushveld Complex, Grabe (n.d.) mentions that as early as 1906 a Mr William Betel had assayed several samples of chrome-iron ore that contained up to 1,2 dwts (Penny Weights per Short Ton) of platinum. Two years later a similar discovery was made in Sekhukhuneland and the Rustenburg area by Drs A.L. Hall and W.A. Humphrey. In 1923, A. Erasmus discovered the Waterberg Load, which led to the establishment of the first platinum mine in South Africa.

In the next year, September 1924, platinum was also discovered in a section of a small stream close to the southern boundary of the farm Maandagshoek, at the foot of the Leolu Mountains by A.F. Lombard, a local farmer. He sent the samples to Hans Merensky, who was so convinced of its importance that he set up the L.P. Syndicate with four partners with the aim of exploiting this discovery. These letters actually stood for Lydenburg Platinum Syndicate but, as Merensky was worried about possible competitors, they kept their activities secret. In October of that year Merensky stated that the same ore body was found to exist south of the Steelpoort River. The source of the platinum panned by Lombard was traced to small kopjes on the farm Mooihoek. Soon afterwards, the dunite pipe Willemskop on the farm Driekop was also discovered. Further work led to the discovery of the Merensky Reef. In 1927 the Mooihoek Dunite Pipe was opened and started producing metallic concentrates. F.W. Blaine discovered the Onverwacht Platinum Pipe and the mine opened in 1926. Although over sixty separate occurrences of hortonolite-dunite had been discovered, only three were found to be lucrative, viz. Driekop, Mooihoek and Onverwacht (Machens 2009).


(2004)

Figure 12. The Overwacht Platinum Pipe discovered by F.W. Blaine

6.2.4 *Living heritage*

- *The aim of this section is to illustrate to the reader the type of archaeological material, their nature and use, by means of still existing cultural practices and artefacts in order to create an understanding of the archaeological material that was identified. From this, the significance of the identified material can then be reasoned.*

Oral traditions regarding their origins are still much part of the memory. This goes back to their origin as Swazi-speakers and many senior community members still visit eSwatini regularly to participate in communal festivals and events.
Settlement layout does not occur in the traditional manner any more and this is probably largely due to the former Nationalist' government policy of forced formal settlement, colloquially refereed to *malaene*, i.e., settlement in straight lines to accommodate supply of services such as roads, water and electricity.

Cultural activities, such as initiation (*koma*) still takes place, although it is now only boys that attend. This practice is not held locally, and the boys have to go "over the mountain" to attend such schools.

In addition to this, elements of traditions and activities as practiced in the past are noticeable to any-one in the know. Apart from the use of various wild plants for medicinal or food resources, e.g. Quin (1959), the planting of a variety of cereal crops, Cucurbitaceae and legumes also takes place. Traditional architectural forms still occur, although mostly in the more isolated areas. Traditional style pottery, baskets and some wooden utensils are still made and used.

Although the hand grinding of grain has now basically ceased to be practiced, remains of this can still be seen in the form of individual household grinding stones or the larger communal grinding places.

Typical traditional Sotho house structure

Nguni-type house structure

Using a grinding stone (*lwala*) and (*tšhilo*)

Communal grinding stone (*dinala*)

Typical Marateng facies (Pedi) pottery

Traditional Pedi cattle (*Bos taurus*)

Traditionally prepared *motsŏko* (snuff)

Traditional plant use

Figure 13. Examples of living heritage

6.3 Site specific review

Although landscapes with cultural significance are not explicitly described in the NHRA, they are protected under the broad definition of the National Estate (Section 3): Section 3(2)(c) and (d) list "historical settlements and townscapes" and "landscapes and natural features of cultural significance" as part of the National Estate.

The examination of historical maps and aerial photographs help us to reconstruct how the cultural landscape has changed over time as is show how humans have used the land.

From a review of the available old maps and aerial photographs it can be seen that large sections of the project area has until recently always been open space, with the main activity being grazing or the making of agricultural fields.

The farm Eerste Geluk (original no. 687) was granted to a certain L.A. Viljoen & Son by Deed of Grant No. 207 of 1886 (Fig. 13). Although the Deed of Grant for the farm Nooitverwacht 324-KT is not available online at the Chief Surveyor-General's website (http://csg.dla.gov.za), it can be assumed that it was transferred to white ownership during the same period, which would be in line with most of the adjacent farms.

Some of the earliest maps of the region was produced by Fred Jeppe, a German national working in the Office of the Surveyor-General of the South African Republic (Zuid-Afrikaansche Republiek – ZAR) as a draughtsman (Fig. 14). From available evidence it is clear that he passed his work on to the British Intelligence Division of the War Office, who used it to good effect during the Second South African War (1899-1902) (Braun 2018).

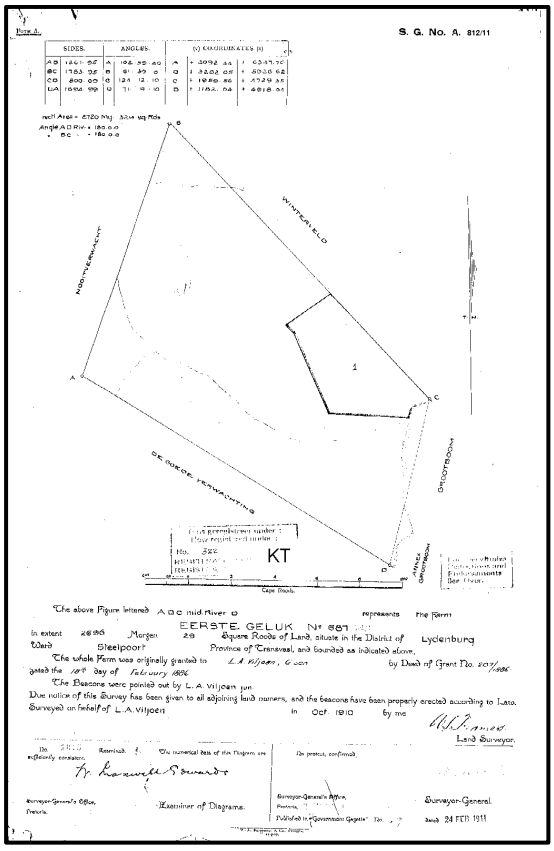


Figure 14. Copy of the Deed of Grant for the farm Eerste Geluk (CS-G record B14870)

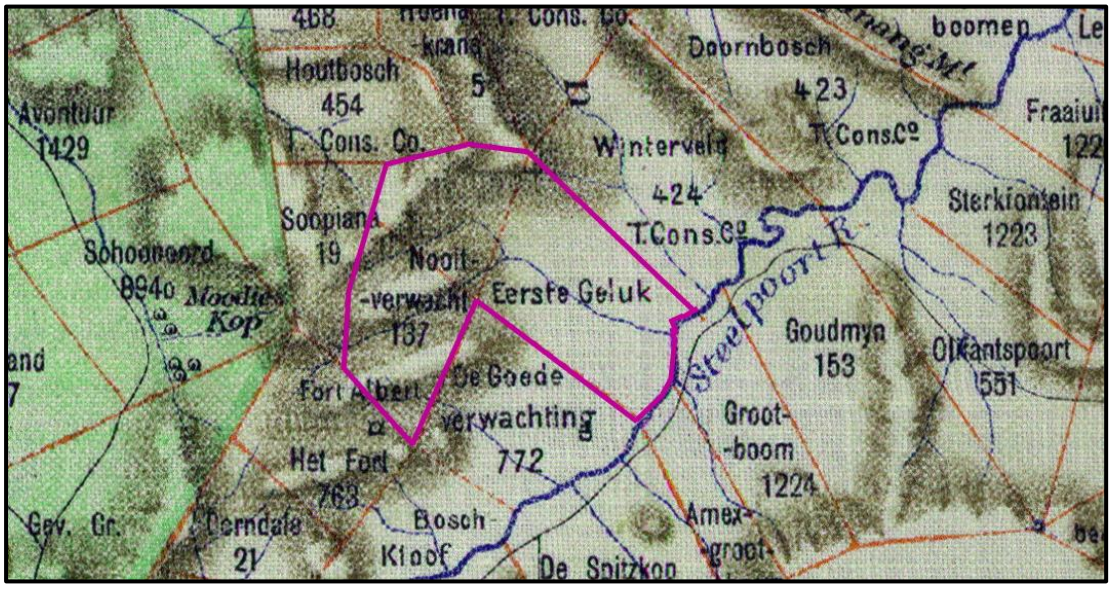


Figure 15. Section of Jeppe's map dating to 1889, showing the project area
(From Jeppe F. & Jeppe C. *Jeppe's Map of the Transvaal or S.A. Republic and Surrounding Territories*

Typical of their imperialistic notions, the British Imperial Army wished not only to be in control of conquered territories but made detailed preparations in anticipation of any possible insurrection that might arise from the locally conquered peoples.

The General Staff War Office prepared contingency plans for any uprising that might occur. The Major Jackson Series of Military Maps produced for the whole of South Africa is but one example of this. Of significance for the project area is the 1907 *Native Strongholds and Locations of the Transvaal*. The maps it contains are clearly based on the work of Fred Jeppe, as all the farm boundaries and names are correct. In addition, it contains detailed information on the topography, defensive positions, enemy numbers, water sources, approach roads and local tribes of various regions in the ZAR and its successor the Transvaal Province. In this particular case, it is supported by information obtained during the so-called Sekhukhune War of 1876 – 1877. It refers to Soopiane's "kraal" (@ Soupiane), a chief of the Swazi section of the inhabitants of the Luluberg (Leolo Mountain) on the farm Eerste Geluk, as well as the occurrence of cultivated fields, and thick bush in other areas.

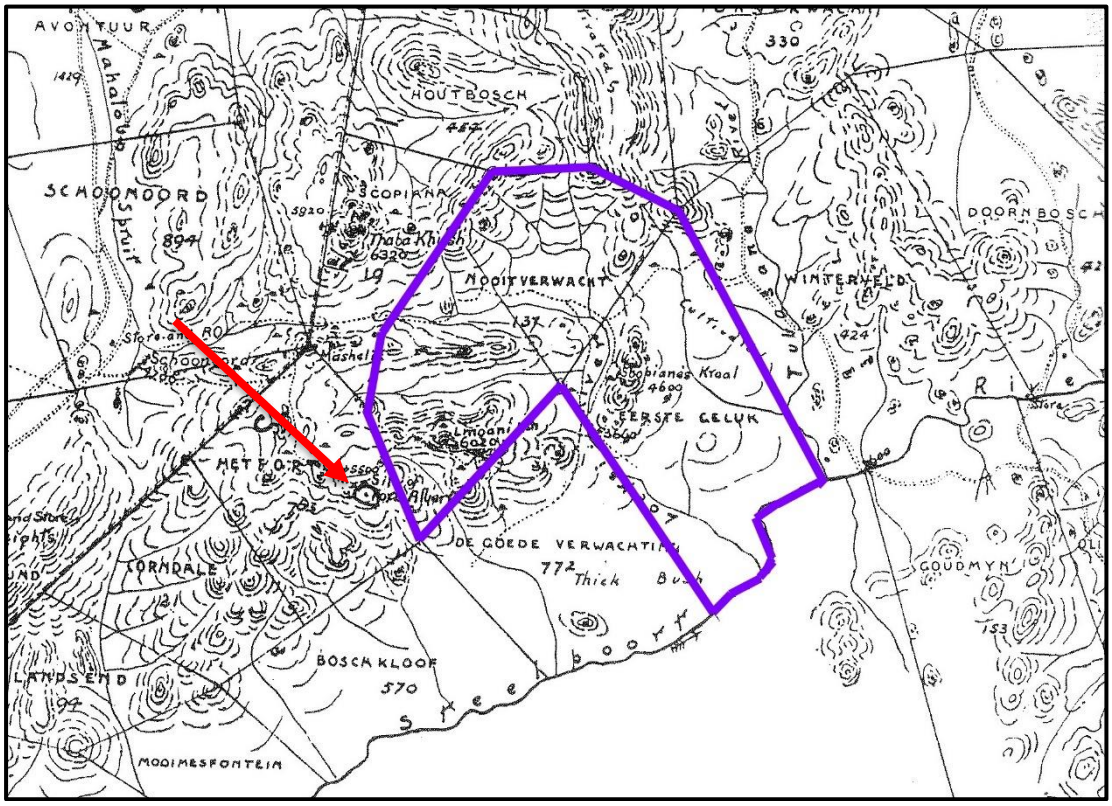


Figure 16. Section of the "Map of the Lulu Mountains" showing the project area and Fort Albert (Map produced by the General Staff War Office, 1907)

Evidence of the conflict with Sekhukhune in the vicinity of the project area is Fort Albert, located to the west and the grave of Colour Sergeant John Pegg, said to be the first British soldier to die for Queen and Country in the old South African Republic (ZAR), located a short distance to the east (Fig. 17).

(2002)

Figure 17. The grave of Colour Sergeant John Pegg who died during the Sekhukhune War

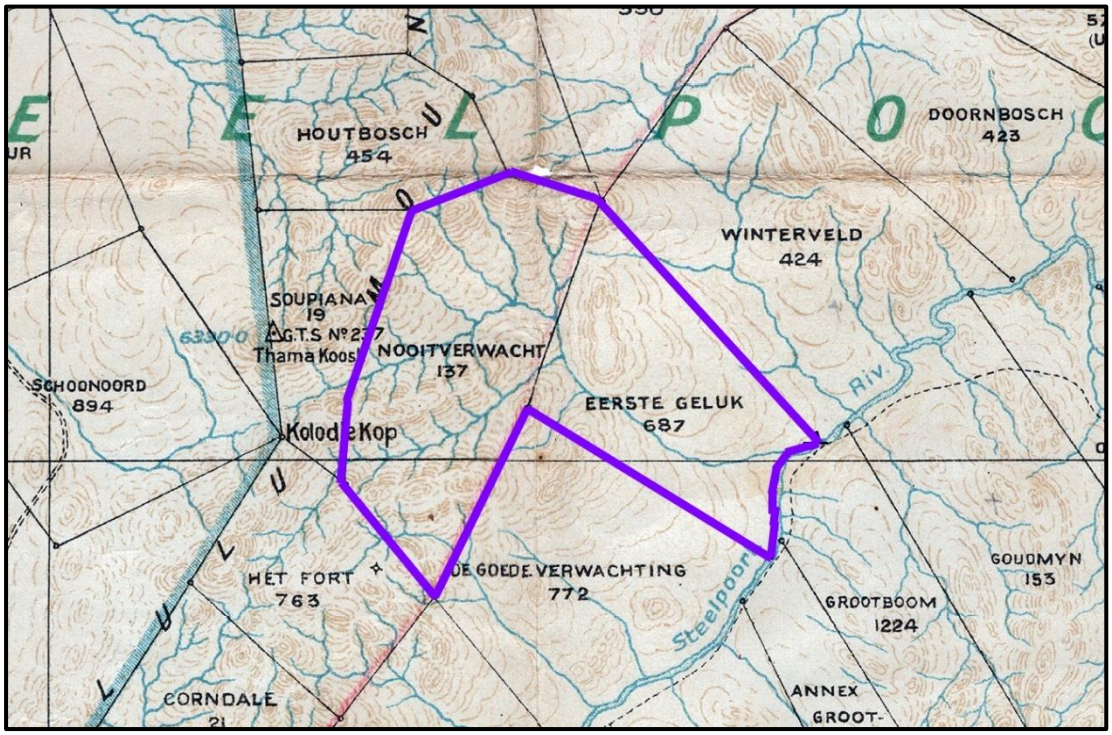


Figure 18. The project area on the 1911 version of the topographic map

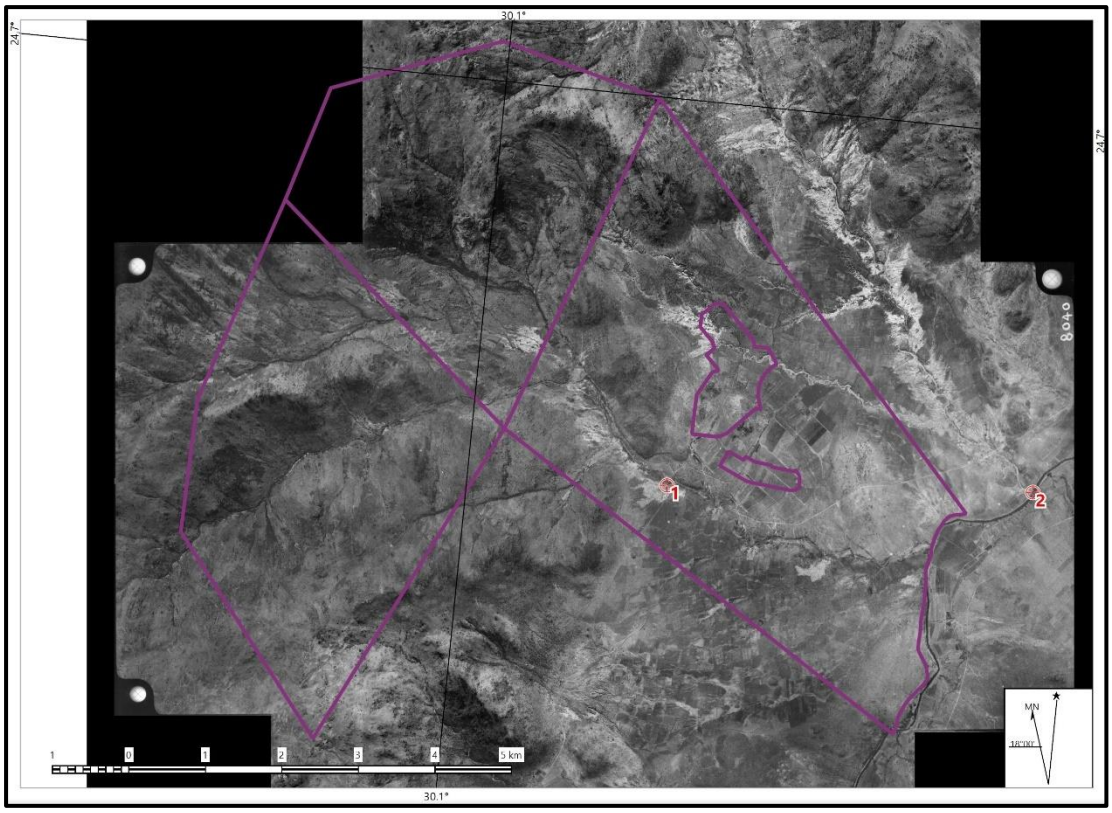


Figure 19. Aerial view of the project area dating to 1954
(CS-G photographs: 325_031_06076; 325_031_06077; 325_032_08040; 325_032_08041; 325_032_08042; 325_033_07986; 325_033_07987) (red wheel-crosses + calibration points

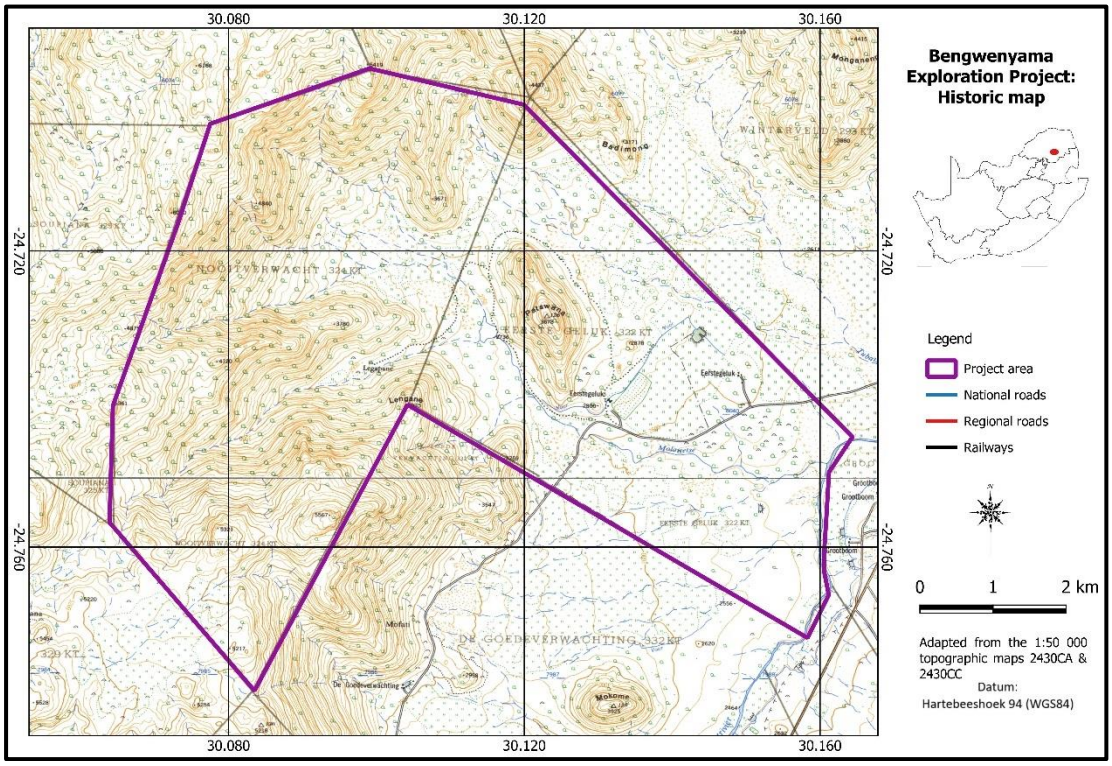


Figure 20. The project area of the 1987 version of the 1:50 000 topographic map

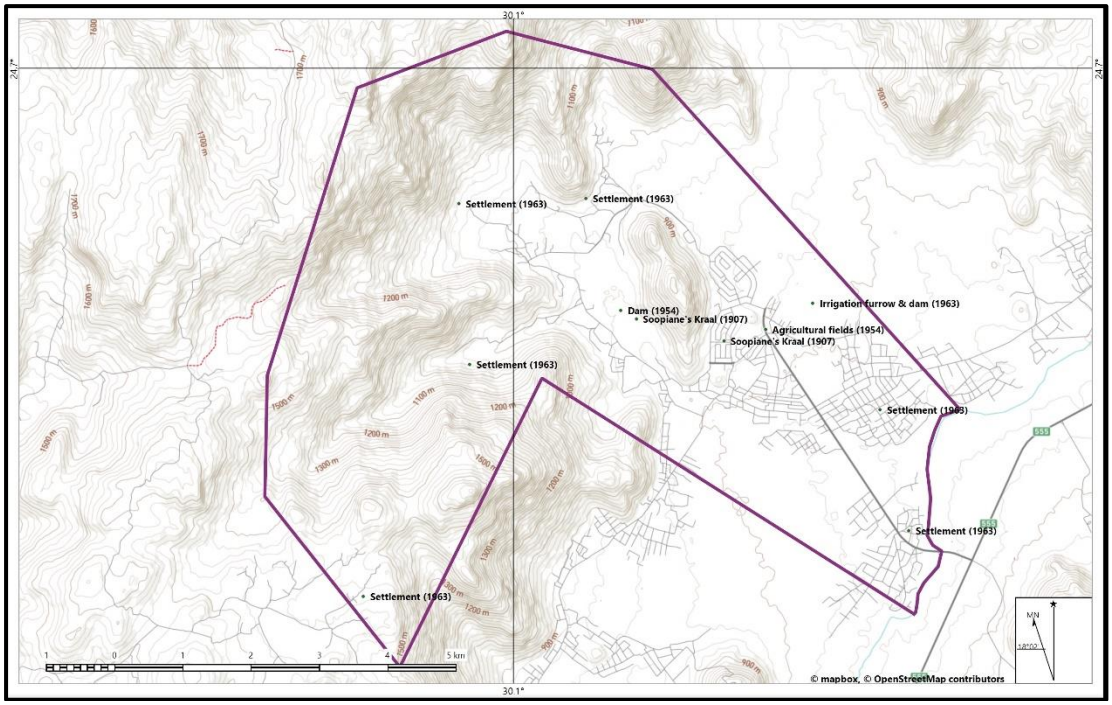


Figure 21. Results of historic images review indicating various sites and features
(Date in brackets = date of map/aerial photograph)

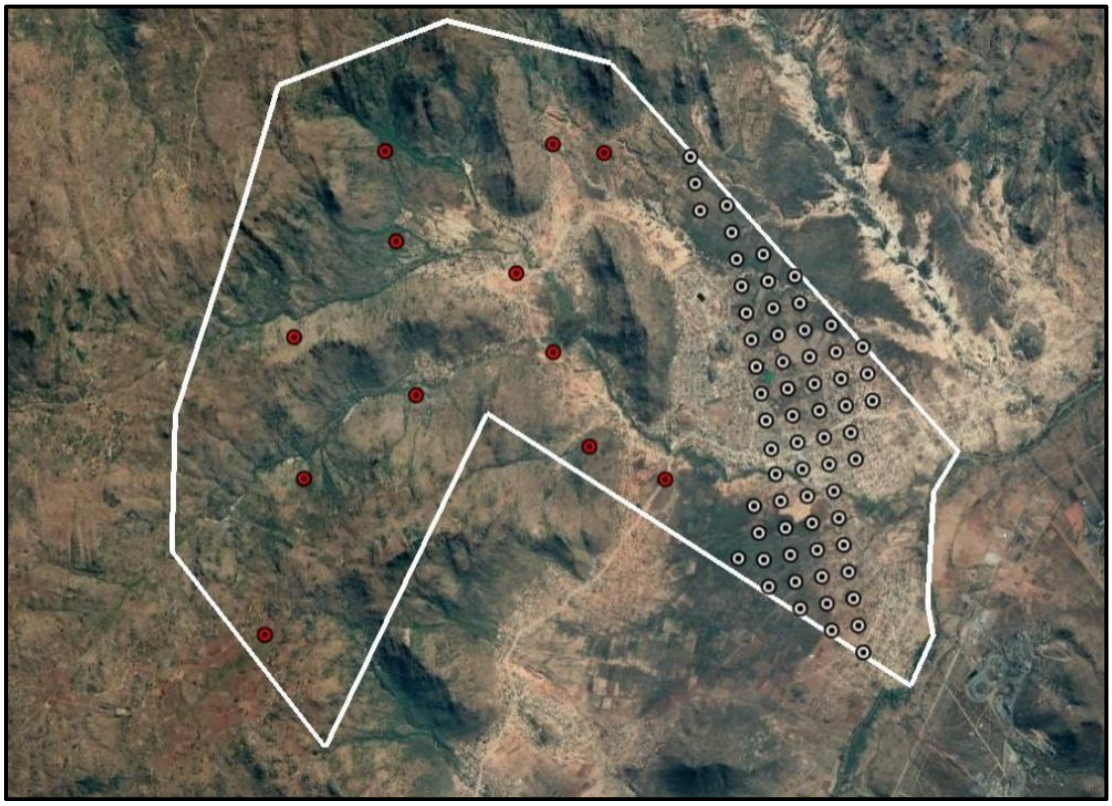


Figure 22. Aerial view of the project area dating to 2021
(Image: Google Earth)

Below is a list of burial sites that were supplied by the local community (Table 2). These sites were plotted in relation to the proposed drill holes (Fig. 23). Only those that are located in close proximity to any give drill hole were inspected for possible impact by the drilling activities.

Table 2: List of burial sites identified by the local community

Family	Section / Village	No of graves	S degrees	S Dec Min	E degrees	E dec min
Maimela	Lekgotong	26	24	42,849	30	6,338
Mashilo	Lekgotong	30	24	42,851	30	6,856
Maphanga	Lekgotong	49	24	42,757	30	6,935
Makola	Lekgotong	16	24	42,998	30	6,701
Makola	Lekgotong	76	24	43,019	30	6,753
Eerstegeluk Graveyard	Eerstegeluk	129	24	43,024	30	6,988
Makopane	Phakama	3	24	43,163	30	6,985
Maphanga & Ngele	Phakama	59	24	43,398	30	6,932
Maphanga	Phakama	28	24	43,490	30	6,973
Maphanga Mateo	Phakama	1	24	43,649	30	7,055
Mabuza	Mabuniwini	25	24	42,949	30	6,206
Maropane	Mabunwini	13	24	42,796	30	6,137
Maripane	Mabunwini	1	24	43,161	30	6,646
Nkosi	Mabunwini	4	24	43,206	30	6,577
Ngele	Mabunwini	3	24	43,046	30	6,679

Family	Section / Village	No of graves	S degrees	S Dec Min	E degrees	E dec min
Komane	Mabunwini	1	24	43,089	30	6,573
Maripane	Mabunwini	52	24	43,409	30	6,595
Mokoena	Mogwaneng	12	24	43.030	30	5.640
Mokoena	Mogwaneng	1	24	43,104	30	5,511
Madonsela	Mogwaneng	11	24	43,369	30	5,868
Nkosi	Mogwaneng	1	24	43,451	30	5,873
Mange	Mogwaneng	6	24	43,475	30	5,667
Royal Family	Legapane	250	24	43,554	30	6,159
Mabuza	Legapane	1	24	43,695	30	6,393
Mabuza	Legapane	23	24	43,716	30	6,391
Motene	Legapane	15	24	43,788	30	6,496
Zimande, Mdebele & Leru	Legapane	9	24	44,275	30	5,792
Maphanga	Legapane	18	24	44,298	30	5,768
Maphanga&Ngele	Legapane	12	24	44,273	30	5,734
Mashilo	Legapane	1	24	43,961	30	6,323
Lengwati	Legapane	2	24	43,976	30	6,357
Masilela	Legapane	6	24	44,030	30	6,574
Mabuza	Legapane	50	24	44,041	30	6,708
Legapane Graveyard	Legapane	62	24	44,078	30	6,848
Maroga	Legapane	27	24	44,074	30	6,866
Mhlongo	Legapane	21	24	44,547	30	7,345
Mankge	Legapane	66	24	44,574	30	7,318
Maphanga	Magaseng	1	24	45,362	30	7,242
Ngele	Magaseng	13	24	44,970	30	7,353
New Magaseng Graveyard	Magaseng	7	24	44,775	30	7,747
Maimela	Doding	1	24	44,450	30	7,629
Mdebele	Doding	36	24	44,747	30	8,086
Mokoena	Maileba	43	24	44,501	30	9,096
Nkosi	Maileba	49	24	44,901	30	9,528
Gareagopola Graveyard	Eerstegeluk	187	24	45,419	30	9.330

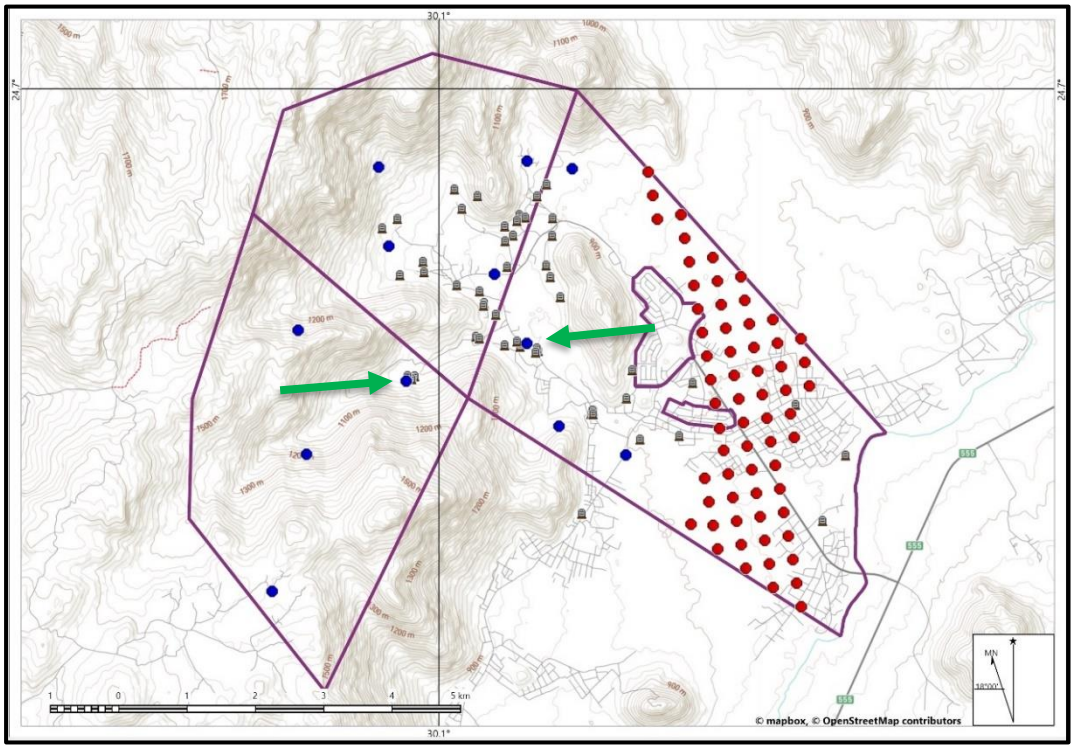


Figure 23. Burial sites identified by the local community in relation to the bore holes
(Grave stones = burial sites; red = phase 1 development; blue = phase 2 development)

7. SURVEY RESULTS

During the survey, the following sites, features and objects of cultural significance were identified in the project area. Each was categorised according to the various NHRA Categories as:

- Section 34. Structures (built environment)
- Section 35. Archaeology, palaeontology and meteorites
- Section 36. Burial grounds and graves
- Section 37. Public monuments and memorials

Following this they were subjected to a process of grading to determine their significance (Field Rating)

1.	National/Grade 1: High significance - No alteration whatsoever without permit from SAHRA
2.	Provincial/Grade 2: High significance - No alteration whatsoever without permit from provincial heritage authority.
3.	Local/Grade 3A: High significance - Mitigation as part of development process not advised.
4.	Local/Grade 3B: High significance - Could be mitigated and (part) retained as heritage register site
5.	Generally protected 4A: High/medium significance - Should be mitigated before destruction
6.	Generally protected 4B: Medium significance - Should be recorded before destruction
7.	Generally protected 4C: Low significance - Requires no further recording before destruction

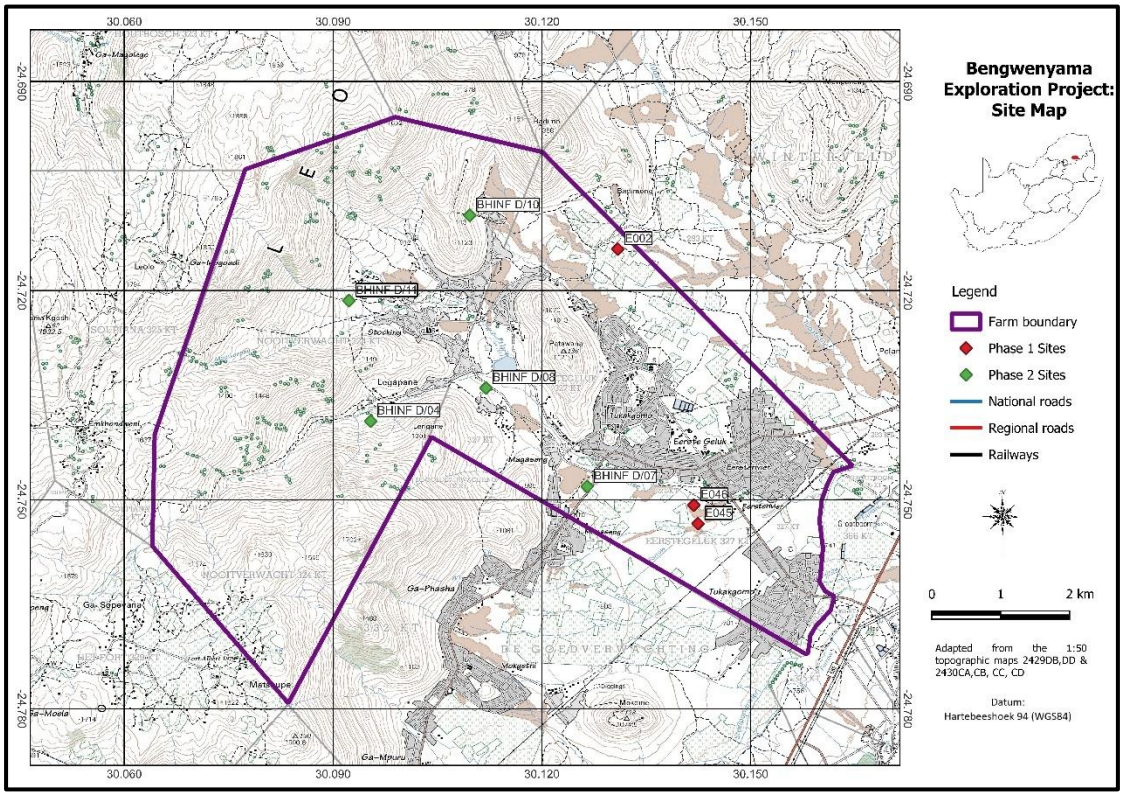


Figure 24. Drill holes where heritage sites, features and objects were identified

Table 3: Inventory of the different drill hole sites and identified heritage features

Drillhole No.	Coordinates	Description	NHRA category	Cultural significance	Field rating	Mitigation
E001	S 24,71132; E 30,13037	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E002	S 24,71405; E 30,13089	Old agricultural fields: Surface scatter of potsherds	Section 35	Low	Generally protected 4C: Low significance	None required
						
E003	S 24,71751; E 30,13151	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E004	S 24,71685; E 30,13533	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E005	S 24,72069; E 30,13551	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E006	S 24,72281; E 30,13617	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E007	S 24,72224; E 30,13957	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E008	S 24,72608; E 30,13673	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E009	S 24,72437; E 30,13982	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required

E010	S 24,72477; E 30,14360	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E011	S 24,72845; E 30,14082	Agricultural fields: No sites, features or objects	n/a	n/a	n/a	None required
E012	S 24,73156; E 30,14145	Old agricultural fields: No sites, features or objects	n/a	n/a	n/a	None required
E013	S 24,73099; E 30,14485	Agricultural fields: No sites, features or objects	n/a	n/a	n/a	None required
E014	S 24,72806; E 30,14414	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E015	S 24,73042; E 30,14825	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E016	S 24,73231; E 30,13831	Agricultural fields: No sites, features or objects	n/a	n/a	n/a	None required
E017	S 24,72901; E 30,13781	Agricultural fields: No sites, features or objects	n/a	n/a	n/a	None required
E018	S 24,73515; E 30,15306	Old agricultural fields: No sites, features or objects	n/a	n/a	n/a	None required
E019	S 24,73410; E 30,14548	Agricultural fields: No sites, features or objects	n/a	n/a	n/a	None required
E020	S 24,73777; E 30,14270	Old agricultural fields: No sites, features or objects	n/a	n/a	n/a	None required
E021	S 24,73311; E 30,15216	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E022	S 24,73921; E 30,15389	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E023	S 24,73331; E 30,14861	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E024	S 24,73721; E 30,14888	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E025	S 24, 73969; E 30,15032	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E026	S 24,73739; E 30,14641	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required

E027	S 24,74048; E 30,14678	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E028	S 24,73414; E 30,14238	Agricultural fields: No sites, features or objects	n/a	n/a	n/a	None required
E029	S 24,74063; E 30,14274	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E030	S 24,74141; E 30,14019	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E031	S 24,73797; E 30,13949	Agricultural fields: No sites, features or objects	n/a	n/a	n/a	None required
E032	S 24,73530; E 30,13813	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E033	S 24,74279; E 30,15064	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E034	S 24,74413; E 30,14418	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E035	S 24,74547; E 30,15137	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E036	S 24,74288; E 30,14699	Old agricultural fields: No sites, features or objects	n/a	n/a	n/a	None required
E037	S 24,74631; E 30,14773	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E038	S 24,74762; E 30,14458	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E039	S 24,74879; E 30,13961	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E040	S 24,74496; E 30,13967	Urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E041	S 24,75111; E 30,14542	Vacant urban: No sites, features or objects	n/a	n/a	n/a	None required
E042	S 24,75049; E 30,14906	New urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E043	S 24,75318; E 30,14893	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required

E044	S 24,75336; E 30,14584	Agricultural fields: No sites, features or objects	n/a	n/a	n/a	None required
E045	S 24,75343; E 30,14241	Scrubland: Low scatter of pottery Marateng facies (Pedi) pottery	Section 35	Low	Generally protected 4C: Low significance	None required
						
E046	S 24,75077; E 30,14180	New urban stand: Low scatter of pottery Marateng facies (Pedi) pottery	Section 35	Low	Generally protected 4C: Low significance	None required
						
E047	S 24,75319; E 30,13835	New urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E048	S 24,75135; E 30,13840	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E049	S 24,75881; E 30,15028	New urban stand: No sites, features or objects	n/a	n/a	n/a	None required

E050	S 24,75585; E 30,14985	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E051	S 24,75950; E 30,14731	New urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E052	S 24,75642; E 30,14645	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E053	S 24,76010; E 30,14367	New urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E054	S 24,75699; E 30,14305	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E055	S 24,76067; E 30,14027	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E056	S 24,75756; E 30,13965	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E057	S 24,75741; E 30,13640	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E058	S 24,76601; E 30,14959	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E059	S 24,76230; E 30,15099	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
E060	S 24,76502; E 30,15149	Vacant urban: No sites, features or objects	n/a	n/a	n/a	None required
E061	S 24,76808; E 30,15267	Vacant urban: No sites, features or objects	n/a	n/a	n/a	None required
E062	S 24,76245; E 30,14787	New urban stand: No sites, features or objects	n/a	n/a	n/a	None required
E063	S 24,76231 E 30,14430	Scrubland: No sites, features or objects	n/a	n/a	n/a	None required
BHINF D/01	S 24,74818; E 30.08091	Mountain slope: No sites, features or objects	n/a	n/a	n/a	None required
BHINF D/02	S 24,76264; E 30,07600	Pass over mountain: No sites, features or objects	n/a	n/a	n/a	None required
BHINF D/03	S 24,31825; E 30,07965	Mountain slope: No sites, features or objects	n/a	n/a	n/a	None required

BHINF D/04	S 24,73873; S 30,09537	Early historic homestead (terracing, stone walling, pottery)	Section 35	Medium	Generally protected 4B: Medium significance	Avoid site. Probably only indirect impact by making of access road. Knowledgeable person such as January Nkosi should assist in determining access road in order to avoid features. Alternative would be full archaeological excavation.
		Three burial sites occur in close proximity	Section 36	High	Generally protected 4A: High/ medium significance	Establish buffer zone of 50m from the outer edges of the burial site. Demarcate for period of drilling with danger tape.
 						
BHINF D/05	S 24,71179; E 30,09056	Mountain slope: No sites, features or objects	n/a	n/a	n/a	None required
BHINF D/06	S 24,74448; E 30,11736	Foot hills to mountain: No sites, features or objects	n/a	n/a	n/a	None required
BHINF D/07	S 24,74809; E 30,12649	Surface scatter of MSA tools	Section 35	Low	Generally protected 4C: Low significance	None required
		Surface scatter of Marateng facies (Pedi) pottery	Section 35	Low	Generally protected 4C: Low significance	None required

						
BHINF D/08	S 24,73398; E 30,11194	Surface scatter of MSA material	Section 35	Low	Generally protected 4C: Low significance	None required
		Burial site	Section 36	High	Generally protected 4A: High/ medium significance	Establish buffer zone of 50m from the outer edges of the burial site. Demarcate for period of drilling with danger tape.
						
BHINF D/09	S 24,71053; E 30,11926	Scrubland: No sites, features or objects		n/a	n/a	None required
BHINF D/10	S 24,70920; E 30,10962	Early historic homestead with ruins of house, perimeter walling, grindstones, etc.	Section 35	Medium	Generally protected 4B: Medium significance	Avoid site. Probably only indirect impact by of making access road. Knowledgeable person such as January Nkosi should assist in

						determining access road in order to avoid features. Alternative would be full archaeological excavation.
   						
BHINF D/11	S 24,72146; E 30,09227	Early historic homestead with ruins of house, perimeter walling, grindstones, midden, etc.	Section 35	Medium	Generally protected 4B: Medium significance	Avoid site. Probably only indirect impact by making of access road. Knowledgeable person such as January Nkosi should assist in determining access road in order to avoid features. Alternative would be full archaeological excavation.
   						
BHINF D/12	S 24,72492; E 30,10814	Sheet erosion: No sites, features or objects	n/a	n/a	n/a	None required

8. IMPACT ASSESSMENT RATINGS AND MITIGATION MEASURES

8.1 Impact assessment

Heritage impacts are categorised as:

- Direct or physical impacts, implying alteration or destruction of heritage features within the project boundaries;
- Indirect impacts, e.g. restriction of access or visual intrusion concerning the broader environment;
- Cumulative impacts that are combinations of the above.

For the project area, the impacts to heritage sites are expected to be of low significance. However, any possible impact can be ameliorated by implementing mitigation measures, include isolating sites, relocating sites (e.g. burials) and excavating or sampling any significant archaeological material found to occur within the project area. The chances of further such material being found, however, are considered to be negligible. After mitigation, the overall impact significance would therefore be low.

- The potential impact that the proposed development might have, has been calculated and is presented for each category of sites in Table 4 below.

Table 4: Impact assessment

Section 35. Archaeology, palaeontology and meteorites: E2; E45; E46; D/07; D/08			
Impact assessment: The various surface finds are viewed to be of low significance and is viewed to be fully documented after inclusion in this report.			
		Without mitigation	With mitigation
Extent		Site (1)	Site (1)
Duration		Long term (4)	Short term (1)
Magnitude/Intensity		Minor (2)	Minor (2)
Probability		Probable (3)	Improbable (2)
Reversibility		Partly reversible	Completely reversible
Irreplaceable loss of resources?		Marginal loss of resources	No loss of resources
Significance			
Site type	**NHRA category**	**Field rating**	**Impact rating: Before/After mitigation**
Archaeology, palaeontology and meteorites	Section 35	Generally protected 4C: Low significance	Low (21) Low (8)

Section 35. Archaeology, palaeontology and meteorites: D/04; D10; D/11			
Impact assessment: The various structures would not be impacted on by the drilling activities, but they might suffer secondary impact due to the making of access roads to the drilling points.			
		Without mitigation	With mitigation
Extent		Local area (2)	Local area (2)
Duration		Permanent (5)	Short term (1)
Magnitude/Intensity		Low (4)	Minor (2)
Probability		Probable (3)	Improbable (2)
Reversibility		Not reversible	Reversible
Irreplaceable loss of resources?		Loss of resources	No loss of resources
Significance			
Site type	**NHRA category**	**Field rating**	**Impact rating: Before/After mitigation**
Archaeology, palaeontology and meteorites	Section 35	Generally protected 4B: Medium significance	Medium (33) Low (8)

Section 36. Burial grounds and graves: D/04; D/08

Impact assessment: The various burial sites would not directly be impacted on by the proposed drilling activities.

	Without mitigation	With mitigation
Extent	Site (1)	Site (1)
Duration	Permanent (5)	Short term (1)
Magnitude/Intensity	Minor (2)	Minor (2)
Probability	Improbable (2)	Improbable (2)
Reversibility	Partly reversible	Completely reversible
Irreplaceable loss of resources?	Loss of resources	No loss of resources

Significance

Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
Burial sites and Graves	Section 36	Generally protected 4A: High significance	Low (16) Low (8)

8.2 Mitigation measures

Mitigation: means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

- For the current study, the following mitigation measures are proposed.

Section 35. Archaeology, palaeontology and meteorites: E2; E45; E46; D/07; D/08

Mitigation: (5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.

Requirements: None

Section 35. Archaeology, palaeontology and meteorites: E2; E45; E46; D/07; D/08

Mitigation: (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources.

- Probably only indirect impact by making of access road. Knowledgeable person such as January Nkosi should assist in determining access road in order to avoid features. The alternative would be full archaeological excavation.

Requirements: In the event of an impact occurring on the identified site or feature, a permit for mitigation and/or destruction must be obtained from SAHRA/PHRA prior to any work being carried out.

Section 36. Burial grounds and graves: D/04; D/08

Mitigation: (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources.

- If it is decided to retain the burial site, it should be fenced off with danger tape with a buffer zone of at least 50m for the duration of the drilling activities.

Requirements: In the event of an impact occurring on the identified site or feature, a permit for mitigation and/or destruction must be obtained from SAHRA/PHRA prior to any work being carried out.

- The appropriate steps to take are indicated in Section 9 of the report, as well as in the **Management Plan: Burial Grounds and Graves, with reference to general heritage sites**, in the Addendum, Section 12.5.

9. MANAGEMENT MEASURES

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and are directly impacted by the proposed development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted on can be written into the management plan, whence they can be avoided or cared for in the future.

Sources of risk were considered with regards to development activities defined in Section 2(viii) of the NHRA that may be triggered and are summarised in Table 5A and 5B below. These issues formed the basis of the impact assessment described. The potential risks are discussed according to the various phases of the project below.

9.1 Objectives

- Protection of archaeological, historical and any other site or land considered being of cultural value within the Project Area against vandalism, destruction and theft.
- The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities.

The following shall apply:

- Known sites should be clearly marked, so that they can be avoided during construction activities;
- The contractors and workers should be notified that archaeological sites might be exposed during the construction activities;
- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer (ECO) shall be notified as soon as possible;
- All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the ECO will advise the necessary actions to be taken;
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the NHRA, Section 51(1).

9.2 Control

In order to achieve this, the following should be in place:

- A person or entity, e.g. the ECO, should be tasked to take responsibility for the maintenance heritage sites.
- In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.

Table 5A: Construction Phase: Environmental Management Programme for the project

Action required	Protection of heritage sites, features and objects		
Potential Impact	The identified risk is damage or changes to resources that are generally protected in terms of Sections 27, 28, 31, 32, 34, 35, 36 and 37 of the NHRA that may occur in the Project Area.		
Risk if impact is not mitigated	Loss or damage to sites, features or objects of cultural heritage significance		
Activity / issue	**Mitigation: Action/control**	**Responsibility**	**Timeframe**
1. Removal of Vegetation 2. Construction of required infrastructure, e.g. access roads, water pipelines	See discussion in Section 9.1 above	Environmental Control Officer & the Contractor	During construction only
Monitoring	See discussion in Section 9.2 above		

Table 5B: Operation Phase: Environmental Management Programme for the project

Action required	Protection of heritage sites, features and objects		
Potential Impact	It is unlikely that the negative impacts identified for pre-mitigation will occur if the recommendations are followed.		
Risk if impact is not mitigated	Loss or damage to sites, features or objects of cultural heritage significance		
Activity / issue	**Mitigation: Action/control**	**Responsibility**	**Timeframe**
1. Additional construction / development of required infrastructure, e.g. access roads, water pipelines	See discussion in Section 9.1 above	Environmental Control Officer	During construction only
Monitoring	See discussion in Section 9.2 above		

9.3 Legal requirements

The legal requirements related to heritage specifically are specified in Section 3 of this report.

- For this proposed project, the assessment has determined that although sites, features or objects of cultural heritage significance occur in the project area, they are either of low significance and therefore require no further mitigation, or they can be avoided, and therefore no permits are required from SAHRA or the PHRA.

- If heritage features are identified during construction, as stated in the management recommendations, these finds would have to be assessed by a specialist, after which a decision will be made regarding the application for relevant permits.

10. CONCLUSIONS AND RECOMMENDATIONS

Minxcon Consulting was appointed to conduct the basic assessment process for the exploration activities. The project entails the drilling of 75 boreholes to determine the quantity and quality of the platinum-group metals (PGM) in the project area.

This report describes the methodology used, the limitations encountered, the heritage features that were identified and the recommendations and mitigation measures proposed relevant to this. The investigation consisted of a desktop study (archival sources, database survey, maps and aerial imagery)

and a physical survey that also included the interviewing of relevant people. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval.

- During the survey it was determined that the proposed drilling of the boreholes would have a very limited impact and any sites, features and objects of cultural significance. However, there is a possibility of secondary impacts that might result from the making of access roads to some of the drilling sites.

Identified sites

For detail on all the drill hole sites as well as photographs of the identified sites and features, see Section 7 of the report.

Drillhole No.	**Description**	**NHRA category**	**Cultural significance**	**Field rating**	**Mitigation**
E002	Old agricultural fields: Surface scatter of potsherds	Section 35	Low	Generally protected 4C: Low significance	None required
E045	Scrubland: Low scatter of pottery Marateng facies (Pedi) pottery	Section 35	Low	Generally protected 4C: Low significance	None required
E046	New urban stand: Low scatter of pottery Marateng facies (Pedi) pottery	Section 35	Low	Generally protected 4C: Low significance	None required
BHINF D/04	Early historic homestead (terracing, stone walling, pottery)	Section 35	Medium	Generally protected 4B: Medium significance	Avoid site. Probably only indirect impact by making of access road. Knowledgeable person such as January Nkosi should assist in determining access road in order to avoid features. Alternative would be full archaeological excavation.
	Three burial sites occur in close proximity	Section 36	High	Generally protected 4A: High/ medium significance	Establish buffer zone of 50m from the outer edges of the burial site. Demarcate for period of drilling with danger tape.
BHINF D/07	Surface scatter of MSA tools	Section 35	Low	Generally protected 4C: Low significance	None required
	Surface scatter of Marateng facies (Pedi) pottery	Section 35	Low	Generally protected 4C: Low significance	None required
BHINF D/08	Surface scatter of MSA material	Section 35	Low	Generally protected 4C: Low significance	None required
	Burial site	Section 36	High	Generally protected 4A: High/ medium significance	Establish buffer zone of 50m from the outer edges of the burial site. Demarcate for period of drilling with danger tape.

BHINF D/10	Early historic homestead with ruins of house, perimeter walling, grindstones, etc.	Section 35	Medium	Generally protected 4B: Medium significance	Avoid site. Probably only indirect impact by of making access road. Knowledgeable person such as January Nkosi should assist in determining access road in order to avoid features. Alternative would be full archaeological excavation.
BHINF D/11	Early historic homestead with ruins of house, perimeter walling, grindstones, midden, etc.	Section 35	Medium	Generally protected 4B: Medium significance	Avoid site. Probably only indirect impact by making of access road. Knowledgeable person such as January Nkosi should assist in determining access road in order to avoid features. Alternative would be full archaeological excavation.

Impact assessment and proposed mitigation measures

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development:

- For the current study, the following mitigation measures are proposed – see Section 8.2 for more details.

Drill hole sites: E2; E45; E46; D/07; D/08			
Site type	**NHRA category**	**Field rating**	**Impact rating: Before/After mitigation**
Archaeology, palaeontology and meteorites	Section 35	Generally protected 4C: Low significance	Low (21) Low (8)
Mitigation: (5) No further action required			

Drill hole sites: D/04; D10; D/11			
Significance			
Site type	**NHRA category**	**Field rating**	**Impact rating: Before/After mitigation**
Archaeology, palaeontology and meteorites	Section 35	Generally protected 4B: Medium significance	Medium (33) Low (8)
Mitigation: (1) Avoidance/Preserve: • Probably only indirect impact by making of access road. Knowledgeable person such as community member January Nkosi should assist in determining access road in order to avoid features. The alternative would be full archaeological excavation.			

Drill hole sites: D/04; D/08			
Significance			
Site type	**NHRA category**	**Field rating**	**Impact rating: Before/After mitigation**
Burial sites and Graves	Section 36	Generally protected 4A: High significance	Low (16) Low (8)
Mitigation: (1) Avoidance/Preserve: • If it is decided to retain the burial site, it should be fenced off with danger tape with a buffer zone of at least 50m for the duration of the drilling activities.			

Legal requirements

The legal requirements related to heritage specifically are specified in Section 3 of this report.

- For this proposed project, the assessment has determined that although sites, features or objects of cultural heritage significance occur in the project area, they are either of low significance and therefore require no further mitigation, or they can be avoided, and therefore no permits are required from SAHRA or the PHRA.
- If heritage features are identified during construction, as stated in the management recommendations, these finds would have to be assessed by a specialist, after which a decision will be made regarding the application for relevant permits.

Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view, it is recommended that the Proposed Project be allowed to continue on acceptance of the conditions proposed below.

Conditions for inclusion in the environmental authorisation:

- The Palaeontological Sensitivity Map (http://www.sahra.org.za/sahris/map/palaeo) indicate that sections of the project area, mostly on the farm Eerstegeluk has a low sensitivity of fossil remains to be found and, although a palaentological study is not required, a protocol for finds is required. The rest of the project area has an insignificant to zero possibility of fossil remains to be found and therefore no palaeontological studies are required.
- Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made. The appropriate steps to take are indicated in Section 9 of the report, as well as in the **Management Plan: Burial Grounds and Graves, with reference to general heritage sites**, in the Addendum, Section 12.5.

11. REFERENCES

11.1 Data bases

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SAHRA Archaeology and Palaeontology Report Mapping Project (2009)
SAHRIS Database

11.2 Literature

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11.3 Archival sources, maps and aerial photographs

1: 50 000 Topographic maps
Google Earth
Aerial Photographs: Chief Surveyor-General
http://artefacts.co.za
http://*vmus*.adu.org.za
http://www.sahra.org.za/sahris/map/palaeo

12. ADDENDUM

1. Indemnity and terms of use of this report

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

Although all possible care is taken to identify all sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. The author of this report will not be held liable for such oversights or for costs incurred as a result of such oversights.

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

2. Assessing the significance of heritage resources

A system for site grading was established by the NHRA and further developed by the South African Heritage Resources Agency (SAHRA 2007) and has been approved by ASAPA for use in southern Africa and was utilised during this assessment.

2.1 *Significance of the identified heritage resources*

According to the NHRA, Section 2(vi) the **significance** of a heritage sites and artefacts is determined by it aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

Matrix used for assessing the significance of each identified site/feature

1. SITE EVALUATION			
1.1 Historic value			
Is it important in the community, or pattern of history			
Does it have strong or special association with the life or work of a person, group or organisation of importance in history			
Does it have significance relating to the history of slavery			
1.2 Aesthetic value			
It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group			
1.3 Scientific value			
Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage			
Is it important in demonstrating a high degree of creative or technical achievement at a particular period			
1.4 Social value			
Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons			
1.5 Rarity			
Does it possess uncommon, rare or endangered aspects of natural or cultural heritage			
1.6 Representivity			
Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects			
Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class			
Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality.			
2. Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Regional			
Local			
Specific community			
3. Field Register Rating			
1.	National/Grade 1: High significance - No alteration whatsoever without permit from SAHRA		
2.	Provincial/Grade 2: High significance - No alteration whatsoever without permit from provincial heritage authority.		
3.	Local/Grade 3A: High significance - Mitigation as part of development process not advised.		

4.	Local/Grade 3B: High significance - Could be mitigated and (part) retained as heritage register site	
5.	Generally protected 4A: High/medium significance - Should be mitigated before destruction	
6.	Generally protected 4B: Medium significance - Should be recorded before destruction	
7.	Generally protected 4C: Low significance - Requires no further recording before destruction	

3. Method of Environmental Assessment

The environmental assessment aims to identify the various possible environmental impacts that could results from the proposed activity. Different impacts need to be evaluated in terms of its significance and in doing so highlight the most critical issues to be addressed.

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale i.e. site, local, national or global whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in the Table below.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

All impacts identified during the HIA stage of the study will be classified in terms of their significance. Issues would be assessed in terms of the following criteria:

Nature of the impact
A description of what causes the effect, what will be affected and how it will be affected.

Extent
The physical **extent**, wherein it is indicated whether:
- 1 - The impact will be limited to the site;
- 2 - The impact will be limited to the local area;
- 3 - The impact will be limited to the region;
- 4 - The impact will be national; or
- 5 - The impact will be international.

Duration
Here it should be indicated whether the lifespan of the impact will be:
- 1 - Of a very short duration (0–1 years);
- 2 - Of a short duration (2-5 years);
- 3 - Medium-term (5–15 years);
- 4 - Long term (where the impact will persist possibly beyond the operational life of the activity); or
- 5 - Permanent (where the impact will persist indefinitely).

Magnitude (Intensity)
The magnitude of impact, quantified on a scale from 0-10, where a score is assigned:
- 0 - Small and will have no effect;
- 2 - Minor and will not result in an impact;
- 4 - Low and will cause a slight impact;
- 6 - Moderate and will result in processes continuing but in a modified way;
- 8 - High, (processes are altered to the extent that they temporarily cease); or
- 10 - Very high and results in complete destruction of patterns and permanent cessation of processes.

Probability
This describes the likelihood of the impact actually occurring and is estimated on a scale where:
- 1 - Very improbable (probably will not happen);
- 2 - Improbable (some possibility, but low likelihood);
- 3 - Probable (distinct possibility);
- 4 - Highly probable (most likely); or

- 5 - Definite (impact will occur regardless of any prevention measures).

Significance
The significance is determined through a synthesis of the characteristics described above (refer to the formula below) and can be assessed as low, medium or high:

S = (E+D+M) x P; where
S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

Significance of impact		
Points	Significant Weighting	Discussion
< 30 points	Low	Where this impact would not have a direct influence on the decision to develop in the area.
31-60 points	Medium	Where the impact could influence the decision to develop in the area unless it is effectively mitigated.
> 60 points	High	Where the impact must have an influence on the decision process to develop in the area.

Confidence
This should relate to the level of confidence that the specialist has in establishing the nature and degree of impacts. It relates to the level and reliability of information, the nature and degree of consultation with I&AP's and the dynamic of the broader socio-political context.

- High, where the information is comprehensive and accurate, where there has been a high degree of consultation and the socio-political context is relatively stable.
- Medium, where the information is sufficient but is based mainly on secondary sources, where there has been a limited targeted consultation and socio-political context is fluid.
- Low, where the information is poor, a high degree of contestation is evident and there is a state of socio-political flux.

Status
- The status, which is described as either positive, negative or neutral.

Reversibility
- The degree to which the impact can be reversed.

Mitigation
- The degree to which the impact can be mitigated.

Nature:		
	Without mitigation	With mitigation
Construction Phase		
Probability		
Duration		
Extent		
Magnitude		
Significance		
Status (positive or negative)		
Operation Phase		
Probability		
Duration		

Extent		
Magnitude		
Significance		
Status (positive or negative)		
Reversibility		
Irreplaceable loss of resources?		
Can impacts be mitigated		

4. Mitigation measures

- *Mitigation: means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.*

Impacts can be managed through one or a combination of the following mitigation measures:

- Avoidance
- Investigation (archaeological)
- Rehabilitation
- Interpretation
- Memorialisation
- Enhancement (positive impacts)

For the current study, the following mitigation measures are proposed, to be implemented only if any of the identified sites or features are to be impacted on by the proposed development activities:

- (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources. The site should be retained *in situ* and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall). Depending on the type of site, the buffer zone can vary from
    - 10 metres for a single grave, or a built structure, to
    - 50 metres where the boundaries are less obvious, e.g. a Late Iron Age site.

- (2) Archaeological investigation/Relocation of graves: This option can be implemented with additional design and construction inputs. This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated. Mitigation is to excavate the site by archaeological techniques, document the site (map and photograph) and analyse the recovered material to acceptable standards. This can only be done by a suitably qualified archaeologist.
    - This option should be implemented when it is impossible to avoid impacting on an identified site or feature.
    - This also applies for graves older than 60 years that are to be relocated. For graves younger than 60 years a permit from SAHRA is not required. However, all other legal requirements must be adhered to.
        - Impacts can be beneficial – e.g. mitigation contribute to knowledge

- (3) Rehabilitation: When features, e.g. buildings or other structures are to be re-used. Rehabilitation is considered in heritage management terms as an intervention typically involving the adding of a new heritage layer to enable a new sustainable use.
    - The heritage resource is degraded or in the process of degradation and would benefit from rehabilitation.
    - Where rehabilitation implies appropriate conservation interventions, i.e. adaptive reuse, repair and maintenance, consolidation and minimal loss of historical fabric.
        - Conservation measures would be to record the buildings/structures as they are (at a particular point in time). The records and recordings would then become the 'artefacts' to be preserved and managed as heritage features or (movable) objects.
        - This approach automatically also leads to the enhancement of the sites or features that are re-used.

- (4) Mitigation is also possible with additional design and construction inputs. Although linked to the previous measure (rehabilitation) a secondary though 'indirect' conservation measure would be to use the existing architectural 'vocabulary' of the structure as guideline for any new designs.
    - The following principle should be considered: **heritage informs design**.
        - This approach automatically also leads to the enhancement of the sites or features that are re-used.

- (5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.
    - Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation to ensure that no undetected heritage/remains are destroyed.

5. Management Plan: Burial Grounds and Graves, with reference to general heritage sites

1. Background

Burial grounds and graves are viewed as having high emotional and sentimental value and accordingly always carry a high cultural heritage significance rating. Best practice principles dictate that they should preferably be preserved *in situ*. It is only when it is unavoidable and the site cannot be retained, that the graves should be exhumed and relocated after all due processes had been successfully implemented.

For retaining the burial sites and graves, the SAHRA Burial Grounds and Graves (BGG) unit requires a detailed Heritage Management Plan (HMP) clearly outlining a grave management plan that provides details of grave management and access protocols. In addition, the HMP should also provide detailed change finds protocol or procedures in the case of the identification human remains.

The primary aim of the Burial Grounds and Graves Management Plan therefore is to assist in the implementation of mitigation measures to reduce potential negative impacts through the modification of the proposed project development design.

2. Legal Implications

South Africa's unique and non-renewable archaeological and palaeontological heritage sites, inclusive of burial grounds and graves, are 'generally' protected in terms various laws and by-laws:

- Nationally: National Heritage Resources Act, No. 25 of 1999;

In addition, the following also refer specifically to burial grounds and graves:
- Human Tissue Act, No. 65 of 1983;
- Section 46 of the National Health Act, No. 61 of 2003;
- Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925)
- By-laws:
    - R363 of 2013: Regulations Relating to the Management of Human Remains
    - Local Authorities Notice 34 of 2017, Cemeteries, Crematoria and Funeral Undertakers By-Laws as per Provincial Gazette of 7 April 2017 No. 2800.

In terms of the National Heritage Resources Act, No. 25 of 1999, graves and burial grounds are divided into the following categories:
- Ancestral graves;
- Royal graves and graves of traditional leaders;
- Graves of victims of conflict;
- Graves of individuals designated by the Minister by notice in the Gazette;
- Historical graves and cemeteries; and
- Other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);

In terms of Section 36(3) of the National Heritage Resources Act, no person may, without a permit issued by the relevant heritage resources authority:
- Destroy, damage, alter, exhume or remove from its original position of otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- Destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

- Bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation, or any equipment which assists in the detection or recovery of metals.

Marked graves younger than 60 years do not fall under the protection of the NHRA (Act No. 25 of 1999) with the result that exhumation, relocation and reburial can be conducted by a register undertaker. This will include logistical aspects such as social consultation, purchasing of plots in cemeteries, procurement of coffins, etc.

Marked graves older than 60 years are protected by the NHRA (Act No. 25 of 1999) an as a result an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. Unmarked graves are by default regarded as older than 60 years and therefore also falls under the NHRA (Act No. 25 of 1999, Section 36).

3. Management Plan

3.1 *Definitions*

Heritage Site Management: Heritage site management is the control of the elements that make up physical and social environment of a site, its physical condition, land use, human visitors, interpretation, etc. Management may be aimed at preservation or, if necessary, at minimizing damage or destruction or at presentation of the site to the public. A site management plan is designed to retain the significance of the place. It ensures that the preservation, enhancement, presentation and maintenance of the place/site is deliberately and thoughtfully designed to protect the heritage values of the place (from: *SAHRA Site management plans: guidelines for the development of plans for the management of heritage sites or places*).

Mitigation: means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

3.2 *Heritage management plan (HMP)*

3.2.1 Phase 1: Site identification and verification

This part of the process usually take place during the Phase 1 heritage impact assessment and is discussed in Section 7 of the main body of the HIA.

Locality and identification:
- The location of the identified site (e.g. farm name, GPS coordinates) is given;
- Determination of the number of graves and the date range of the burials.

The physical condition of the site is also described in terms of:
- The condition of the burial grounds and graves, e.g. has the headstones been pushed over;
- The approximate number of graves and the date range of the graves;
- Is the site fenced off;
- Is there access to the site, in the case it is fenced off;
- Has the site recently been visited by next of kin or other individuals;
- The status of the vegetation cover on the site.

3.2.2 Phase 2: Determination of the potential impact on the identified sites

Identified impacts on the graves and burial sites are calculated and discussed in Section 8.1 of the main body of the HIA.

The second phase consists of information that should be collected in order to develop the conservation management plan. This includes:

- The needs of the client;
- External needs, i.e. the next of kin;
- Requirements for the maintenance of the cultural significance.

From the above an evaluation is made of the impact of the proposed development project on the status of each of the identified burial grounds and graves.

3.2.3 Phase 3: Mitigation measures

Proposed mitigation measures for each identified burial ground or graves are developed and is discussed in the main body of the HIA (Section 8.2).

The main aim of the mitigation measures, as far as is feasible, is to remove any physical, direct impacts on the burial grounds and graves.

- A minimum buffer of 20m must be established around known burial grounds and graves for the duration of the mining/construction phase. This is relevant where the burial site has been static for a considerable period of time and has already been fenced off;
- In cases the burial site is still in use and might expand in the future and is not fenced off, a minimum buffer of 100m should be implemented;
- In the case where blasting takes place during mining activities, the buffers should increase correspondingly to 200m;
- The buffers must be clearly demarcated, and signage placed during the construction/mining period;
- Access to the graves should be allowed to the descendants. However, they should adhere to the managing authorities' conditions regarding permissions, appointments, health, environment and safety.
- The areas with graves should be kept clean and the grass short so that visitors may enter it without any concerns.
    - However, this might create problems as in many cases not all graves are well-marked, carrying the possibility that they might inadvertently be damaged and therefore contractors/land-owners might not be will to accept this responsibility. The descendants should therefore be held responsible for the maintenance of the site.
- Sites that are located close to access/haul roads might need additional mitigation. All personnel and especially drivers of heavy haul vehicles should be informed where these sites are, and they should keep to the speed limits (usually 30km/h on mining sites);
- Any change in the development layout, future development plans, condition of the grave sites and individual graves should immediately be reported to the heritage inspector/SAHRA for guidance;
- Relevant strategies should be put in place for the managing of the burial grounds and graves after the closure of the mine or the completion of the project. It needs to be stated that the land-owner or developer always will be responsible for the preservation of the site. Therefore, measures should be put in place to ensure that the site is handled appropriately after closure, which, in essence would entail the continuation measures already put in place;

3.3 *Management strategy*

A general approach to this is set out in Section 9 of the main body of the HIA report and is equally applicable to general heritage sites and feature as well as to burial grounds and graves.

A strategy for the implementation of the conservation plan is developed:

- A heritage practitioner should be appointed to develop a heritage induction program and conduct training for the ECO, as well as team leaders, in the identification of heritage resources and artefacts;
- Known sites must be demarcated and fenced off and signage placed during the construction/mining period;
- This management strategy should be applicable to the construction, operation as well as the post operation phases of the development/mining activities.
- Relevant strategies should be put in place for the managing of the burial grounds and graves after the closure of the mine or the completion of the project. It needs to be stated that the land-owner or developer always will be responsible for the preservation of the site. Therefore, measures should be put in place to ensure that the site is handled appropriately after closure, which, in essence would entail the continuation measures already put in place;
- The managing authority should be able to regularly inspect the sites in order to ensure that construction and other such activities do not damage the graves;
    - SAHRA and the relevant PHRA are the competent authorities responsible for the regulation of the HMP in terms of the national legislative framework. The NHRA states:

        36(1) *Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make the necessary arrangement for their conservation as they see fit.*

4. Relocation of graves

Once it has been decided to relocate particular graves, the following steps should be taken:

- Notices of the intention to relocate the graves need to be put up at the burial site for a period of 60 days. This should contain information where communities and family members can contact the developer/archaeologist/public-relations officer/undertaker. All information pertaining to the identification of the graves needs to be documented for the application of a SAHRA permit. The notices need to be in at least 3 languages, English, and two other languages. This is a requirement by law.
- Notices of the intention needs to be placed in at least two local newspapers and have the same information as the above point. This is a requirement by law.
- Local radio stations can also be used to try contact family members. This is not required by law, but is helpful in trying to contact family members.
- During this time (60 days) a suitable cemetery need to be identified close to the development area or otherwise one specified by the family of the deceased.
- An open day for family members should be arranged after the period of 60 days so that they can gather to discuss the way forward, and to sort out any problems. The developer needs to take the families requirements into account. This is a requirement by law.
- Once the 60 days has passed and all the information from the family members have been received, a permit can be requested from SAHRA. This is a requirement by law.
- Once the permit has been received, the graves may be exhumed and relocated.
- All headstones must be relocated with the graves as well as any items found in the grave.

Information needed for the SAHRA permit application:

- The permit application needs to be done by an archaeologist.
- A map of the area where the graves have been located.
- A survey report of the area prepared by an archaeologist.
- All the information on the families that have identified graves.

- If graves have not been identified and there are no headstones to indicate the grave, these are then unknown graves and should be handled as if they are older than 60 years. This information also needs to be given to SAHRA.
- A letter from the landowner giving permission to the developer to exhume and relocate the graves.
- A letter from the new cemetery confirming that the graves will be reburied there.
- Details of the farm name and number, magisterial district and GPS coordinates of the gravesite.

5. Defining next of kin

An extensive Burial Grounds and Graves Consultation process must be implemented in accordance with NHRA Regulations to identify bona fide next of kin and reach agreement regarding relocation of graves.

Anthropologically speaking three type of kin are distinguished: patrilineal (called *agnates*), maternal (*uterine* kin) and kin by marriage (*affines*). All three categories have their important part to play in social life.

In terminologies used in the west the close-knit group of family members is clearly marked off from other kin - family terms, such as 'father', 'mother', 'brother' and 'sister' are never used for aunts, uncles and cousins.

In many non-western societies this is not the case and the family is merged with the wider group of kin and the family terms are applied much more widely. Next of kin for the Southern Bantu-language speakers is based on a classificatory system where a man uses a term to refer to three significant relatives – his father, his father's brother and his mother's brother.

For example, a man (A) may call his father's brother (i.e. uncle) also a father. All of that latter person's children will then also be called his (A) brothers and sisters, prohibiting him from marrying any of them (however, *vide* preferred marriages). In Anthropology this system is referred to as the Iroquois system (with reference to the North American Indian tribe where it was first described). When a man calls his father's brother 'father' a suffix is usually added to indicate whether he is an elder or junior brother (e.g. (*ra)mogolo* = elder brother; (*ra)ngwane* = junior brother; also (*ra)kgadi* = younger sister; (*ma)lome* = mother's brother)(SePedi terminology is used).

Consultants having to relocate graves might find it confusing if they do not have insight into this complex system of kinship, where, for example a single individual can have more than one father or mother.

6. Chance find procedures

A general approach to this is set out in Section 9 of the main body of the HIA report and is equally applicable to general heritage sites and features as to burial grounds and graves.

- A heritage practitioner should be appointed to develop a heritage induction program and conduct training for the ECO, as well as team leaders, in the identification of heritage resources and artefacts;
- An appropriately qualified heritage consultant should be identified to be called upon if any possible heritage resources or artefacts are identified;
- Should an archaeological site or cultural material be discovered during construction (or operation), the area should be demarcated, and construction activities be halted;

- The qualified archaeologist will then need to come out to the site and evaluate the extent and importance of the heritage resources and make the necessary recommendations for mitigating the find and impact on the heritage resource;
- The contractor therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the material and data are recovered;
- Should the heritage consultant conclude that the find is a heritage resource protected in terms of the NHRA (1999) Sections 34, 35, 37 and NHRA (1999) Regulations (Regulation 38, 39, 40), he or she should notify SAHRA and/or the relevant PHRA;
- Based on the comments received from SAHRA and/or the PHRA, the heritage consultant would present the relevant terms of reference to the client for implementation;
- Construction/Operational activities can commence as soon as the site has been cleared and signed off by the archaeologist.

7. Curriculum vitae

Johan Abraham van Schalkwyk

Personal particulars

Date of birth:	14 April 1952
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Qualifications

1995 DLitt et Phil (Anthropology), University of South Africa
1985 MA (Anthropology), University of Pretoria
1981 BA (Hons), Anthropology, University of Pretoria
1979 Post Graduate Diploma in Museology, University of Pretoria
1978 BA (Hons), Archaeology, University of Pretoria
1976 BA, University of Pretoria

Non-academic qualifications

12th HSRC-School in Research Methodology - July 1990
Dept. of Education and Training Management Course - June 1992
Social Assessment Professional Development Course - 1994
Integrated Environmental Management Course, UCT - 1994

Professional experience

Private Practice
2017 - current: Professional Heritage Consultant

National Museum of Cultural History
1992 - 2017: Senior researcher: Head of Department of Research. Manage an average of seven researchers in this department and supervise them in their research projects. Did various projects relating to Anthropology and Archaeology in Limpopo Province, Mpumalanga, North West Province and Gauteng. Headed the Museum's Section for Heritage Impact Assessments.
1978 - 1991: Curator of the Anthropological Department of the Museum. Carried out extensive fieldwork in both anthropology and archaeology

Department of Archaeology, University of Pretoria
1976 - 1977: Assistant researcher responsible for excavations at various sites in Limpopo Province and Mpumalanga.

Awards and grants

1. Hanisch Book Prize for the best final year Archaeology student, University of Pretoria - 1976.
2. Special merit award, National Cultural History Museum - 1986.
3. Special merit award, National Cultural History Museum - 1991.
4. Grant by the Department of Arts, Culture, Science and Technology, to visit the various African countries to study museums, sites and cultural programmes - 1993.
5. Grant by the USA National Parks Service, to visit the United States of America to study museums, sites, tourism development, cultural programmes and impact assessment programmes - 1998.
6. Grant by the USA embassy, Pretoria, under the Bi-national Commission Exchange Support Fund, to visit cultural institutions in the USA and to attend a conference in Charleston - 2000.
7. Grant by the National Research Foundation to develop a model for community-based tourism - 2001.

8. Grant by the National Research Foundation to develop a model for community-based tourism - 2013. In association with RARI, Wits University.

Publications
Published more than 70 papers, mostly in scientifically accredited journals, but also as chapters in books.

Conference Contributions
Regularly presented papers at conferences, locally as well as internationally, on various research topics, ranging in scope from archaeology, anthropological, historical, cultural historical and tourism development.

Heritage Impact Assessments
Since 1992, I have done more than 2000 Phase 1 and Phase 2 impact assessments (archaeological, anthropological, historical and social) for various government departments and developers. Projects include environmental management frameworks, roads, pipeline-, and power line developments, dams, mining, water purification works, historical landscapes, refuse dumps and urban developments.

Latest publications
Van Schalkwyk, J.A. 2020. A cognitive approach to ordering of the world: some case studies from the Sotho- and Tswana-speaking people of South Africa. In Whitley, D.S., Loubser, J.H.N. & Whitelaw, G. (eds.) *Cognitive Archaeology. Mind, Ethnography, and the Past in South African and Beyond*. London: Routledge. Pp. 184-200.

Namono, C. & Van Schalkwyk, J.A. 2020. Appropriating colonial dress in the rock art of the Makgabeng plateau, South Africa. In Wingfield, C., Giblin, J. & King, R. (eds) *The pasts and presence of art in South Africa: Technologies, Ontologies and Agents*. University of Cambridge: McDonald Institute for Archaeological Research. Pp. 51-62.