

Phase 1 Cultural Heritage Impact Assessment:

**TRANSNET COAL LINK UPGRADE PROJECTS: THE PROPOSED CONSTRUCTION OF THE NZALO 2X 88KV
TURN-IN POWER LINES NEAR VRYHEID, KWAZULU-NATAL PROVINCE**

Prepared for:

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Report No: 2021/JvS/015

- Status: Final
- Date: March 2021
- Revision No: -
- Date: -

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.

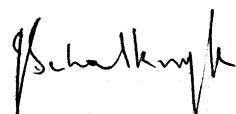


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Specialist competency:

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
March 2021

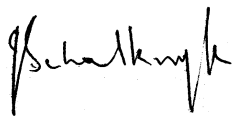


SPECIALIST DECLARATION

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
March 2021

EXECUTIVE SUMMARY

**Phase 1 Cultural Heritage Impact Assessment:
TRANSNET COAL LINK UPGRADE PROJECTS: THE PROPOSED CONSTRUCTION OF THE NZALO 2X
88KV TURN-IN POWER LINES NEAR VRYHEID, KWAZULU-NATAL PROVINCE**

Transnet is South Africa's sole provider of rail transport infrastructure for coal transportation. One of South Africa's largest foreign exchange earners is the export of high-quality coal products to China. The Transnet rail link between the coal fields in Mpumalanga Province and the export node, the Richards' Bay Coal Terminal, is one of the busiest railway links in South Africa.

The increase in demand for South Africa's high-quality coal necessitates the increase in production, which in turn has demands on the railway network infrastructure. In response to the increased demand for South Africa's coal in the global marketplace, Transnet needs to increase the volume of coal that is being transported between the Mpumalanga coal fields and the Richard's Bay Coal Terminal. This increase will be facilitated through capital expenditure on two fronts, the supporting infrastructure, i.e. the electrical network supplying the locomotives and the locomotives themselves.

In order to address this request, various projects were proposed including the construction of Nzalo and Duma 400kV Main Transmission Stations and the associated 88kV and 400kV Turn in Powerlines in KwaZulu-Natal Province.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by *Envirovolution Consulting* to conduct a cultural heritage assessment to determine if the construction of the power lines and substation would have an impact on any sites, features or objects of cultural heritage significance.

Identified sites

During the survey no sites, features or objects of cultural significance were identified.

7.3.1: Old single lane concrete low water bridge. It originally formed part of the old alignment of the road (number unknown), which was later changed to straighten it out.

7.3.2: A single grave marked by a stone cairn. It seems to be very old as it is total overgrown with trees. No other signs of habitation could be detected.

7.3.3: An informal burial site with approximately 12 graves. All are only marked with stone cairns and some have aloes planted on them. These graves belong to the existing and previous homesteads that occur in its immediate vicinity.

7.3.4: A large area that has been fenced off with wire to create a formal community cemetery. It currently has more than 30 graves, some with headstones. It is possible that some older graves are located outside on the southern side of the fence, but due to the dense grass cover it was difficult to confirm this fact.

Impact assessment and proposed mitigation measures

Impact analysis of cultural heritage resources under threat of the proposed upgrading activities is based on the present understanding of the project:

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.1	Concrete bridge	Section 34	Generally protected 4B: Medium significance	Low (16)

				Low (16)
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. This is also applicable where the identified feature is located in such a position that the proposed development is unlikely to impact on the site.				

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.2	Burial site	Section 36	Generally protected 4A: High significance	Medium (56)
				Low (16)
Mitigation: (1) Avoidance/Preserve: (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and the site should be retained <i>in situ</i> and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall) of 20m.				

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.3	Burial site	Section 36	Generally protected 4A: High significance	Medium (56)
				Low (16)
Mitigation: (1) Avoidance/Preserve: (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and the site should be retained <i>in situ</i> and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall) of 20m.				

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.4	Burial site	Section 36	Generally protected 4A: High significance	Medium (56)
				Low (16)
Mitigation: (1) Avoidance/Preserve: (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and the site should be retained <i>in situ</i> and a buffer zone should be created around it – fortunately, this site is already fenced off and no further buffer zone is required.				

Alternatives assessment

For the purpose of the development of the power line, two alternative routes were proposed. Based on the outcome of the heritage survey, the alternatives are rated as being either preferred, not-preferred, favourable or no preference.

Alternative	Preference	Reason
Bloedrivier-Nzalo	Preferred	Will not impact on any known sites of cultural heritage significance.
Normandie-Nzalo	Favourable	Although passing in close proximity of the burial sites, it will not impact directly on any of them.

Legal requirements

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

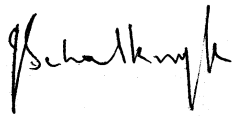
- The concrete bridge in the project area is older than 60 years, is rare and therefore formally protected by the NHRA of 1999. Impact on or destruction of this structure for the purposes of the power line development would require a permit which must be obtained from SAHRA/PHRA prior to any work being carried out.
- If the identified graves are to be relocated for the purposes of the power line development, proper procedures must be followed after obtaining all the necessary permits – see Section 12.4.
- If heritage features are identified during construction, as stated in the management recommendation, 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 mitigation measures presented above and 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 most of the project area has an insignificant to zero sensitivity of fossil remains to be found. However, two sections have a moderate sensitivity and therefore a desktop palaeontological study is 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 12.4.



J A van Schalkwyk
Heritage Consultant
March 2021

TECHNICAL SUMMARY

Project description	
Description	Development of 88kV turn-in power lines and substation
Project name	Transnet Coal Link Upgrade Projects: Normandie-Nzalo and Nzalo-Vryheid East 88kv Turn-in Power Lines and Tx Substation

Applicant
Transnet

Environmental assessment practitioner
Ms S Bolingo
Envirovolution

Property details													
Province	KwaZulu-Natal												
Magisterial district	Vryheid												
Local Municipality	eDumbe & AbaQulusi												
Topo-cadastral map	2730DB												
Farm name	Portion 4 & 5 Traktaat 200-HT; Portion 1 & 2 Voorkeurplaats 332-HT; Portion 0 Geluk No 723HT Portion 1 & 2												
Closest town	Vryheid												
Coordinates	End points (approximate)												
	<table border="1"> <thead> <tr> <th>No</th> <th>Latitude</th> <th>Longitude</th> <th>No</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>N-E</td> <td>S 26,63401</td> <td>E 30,87257</td> <td>S-W</td> <td>E 27,66031</td> <td>E 30,84798</td> </tr> </tbody> </table>	No	Latitude	Longitude	No	Latitude	Longitude	N-E	S 26,63401	E 30,87257	S-W	E 27,66031	E 30,84798
No	Latitude	Longitude	No	Latitude	Longitude								
N-E	S 26,63401	E 30,87257	S-W	E 27,66031	E 30,84798								
	.kml files ¹												

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	Yes
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

¹ Left click on the 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	Front page
ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;	Page i Addendum Section 5
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 7
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 15
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 15 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 & 10
l) any conditions for inclusion in the environmental authorisation;	Section 10
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;	Section 10
(iiA) 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 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.	-

**Phase 1 Cultural Heritage Impact Assessment:
TRANSNET COAL LINK UPGRADE PROJECTS: THE PROPOSED CONSTRUCTION OF THE NZALO 2X
88KV TURN-IN POWER LINES NEAR VRYHEID, KWAZULU-NATAL PROVINCE**

1. INTRODUCTION

1.1 Background

Transnet is South Africa's sole provider of rail transport infrastructure for coal transportation. One of South Africa's largest foreign exchange earners is the export of high-quality coal products to China. The Transnet rail link between the coal fields in Mpumalanga Province and the export node, the Richards' Bay Coal Terminal, is one of the busiest railway links in South Africa.

The increase in demand for South Africa's high-quality coal necessitates the increase in production, which in turn has demands on the railway network infrastructure. In response to the increased demand for South Africa's coal in the global marketplace, Transnet needs to increase the volume of coal that is being transported between the Mpumalanga coal fields and the Richard's Bay Coal Terminal. This increase will be facilitated through capital expenditure on two fronts, the supporting infrastructure, i.e. the electrical network supplying the locomotives and the locomotives themselves.

In order for Transnet to accomplish the above they need to upgrade their power supply to their various traction substations between Ermelo and Richards Bay to facilitate the introduction of the new, larger locomotives that will be added to increase the volume of coal being transported and exported. *Eskom Holdings SOC Ltd* being one of the main suppliers of electrical energy in South Africa has been tasked by Transnet to supply the additional energy requirements to these traction substations.

In order to address this request, various projects were proposed including the construction of Nzalo and Duma 400kV Main Transmission Stations and the associated 88kV and 400kV Turn in Powerlines in KwaZulu-Natal Province. TAP was responsible for managing Transnet's projects and this included appointment and management of Environmental Impact Assessment consultant (Sivest). The project was handed over to Land Development after EA has been secured. However, for instance the EIA listed activity dealing with radio tower within Duma Substation is not included in the EA. In addition, Land acquisition process has been completed and, in some instances, servitudes have been negotiated outside of approved corridors. Disputes regarding late estates that could not be resolved in time forced Eskom to look at alternative routes that were technically feasible. This process has been concluded and servitudes acquired.

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 *Envirovolution Consulting* to conduct a cultural heritage assessment to determine if the construction of the power lines and substation would have an impact on any sites, features or objects of cultural heritage significance.

This report forms part of the Environmental Impact Assessment (EIA) as required by the EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended and is intended for submission to the Amafa aKwaZulu-Natali Heritage Agency and 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 construction of the power lines and substation 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:

- Portion 4 & 5 of the farm Traktaat 200-HT;
- Portion 1 & 2 of the farm Voorkeurplaats 332-HT
- Portion 0 of the farm Geluk 723HT, Portion 1 & 2.

The objectives were to:

- Evaluate the potential impacts of construction, operation and maintenance 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 construction and 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 Environmental Impact Assessment (EIA) 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;
- The vegetation cover encountered during the site visit can have serious limitations on ground visibility;
- No subsurface investigation (i.e. excavations or sampling) were undertaken, since a permit from AMAFA is required for such activities.

2. LEGISLATIVE FRAMEWORK

2.1 Background

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

- South African Legislation
 - KwaZulu-Natal Heritage Act, Act No. 4 of 2008;
 - 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 m² 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 the 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 m² 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 KwaZulu-Natal Heritage Act 2008 defines a heritage resource as any place or object of cultural significance i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This includes, but is not limited to, the following wide range of places and objects:

- living heritage as defined in the National Heritage Council Act 11 of 1999 (cultural tradition; oral history; performance; ritual; popular memory; skills and techniques; indigenous knowledge systems; and the holistic approach to nature, society and social relationships);
- ecofacts (non-artefactual organic or environmental remains that may reveal aspects of past human activity; definition used in KwaZulu-Natal Heritage Act 2008);
- places, buildings, structures and equipment;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds;
- public monuments and memorials;
- sites of significance relating to the history of slavery in South Africa;
- movable objects, but excluding any object made by a living person; and
- battlefields.

3.2 Cultural significance

In the KwaZulu-Natal Heritage Act, Act No. 4 of 2008, “cultural significance” means of aesthetic, architectural, historical, scientific, social, spiritual or technological value or significance.

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 project area is located approximately 15km northeast of the town of Vryheid in KwaZulu-Natal Province (Fig. 1). For more information, see the Technical Summary on p. V above.

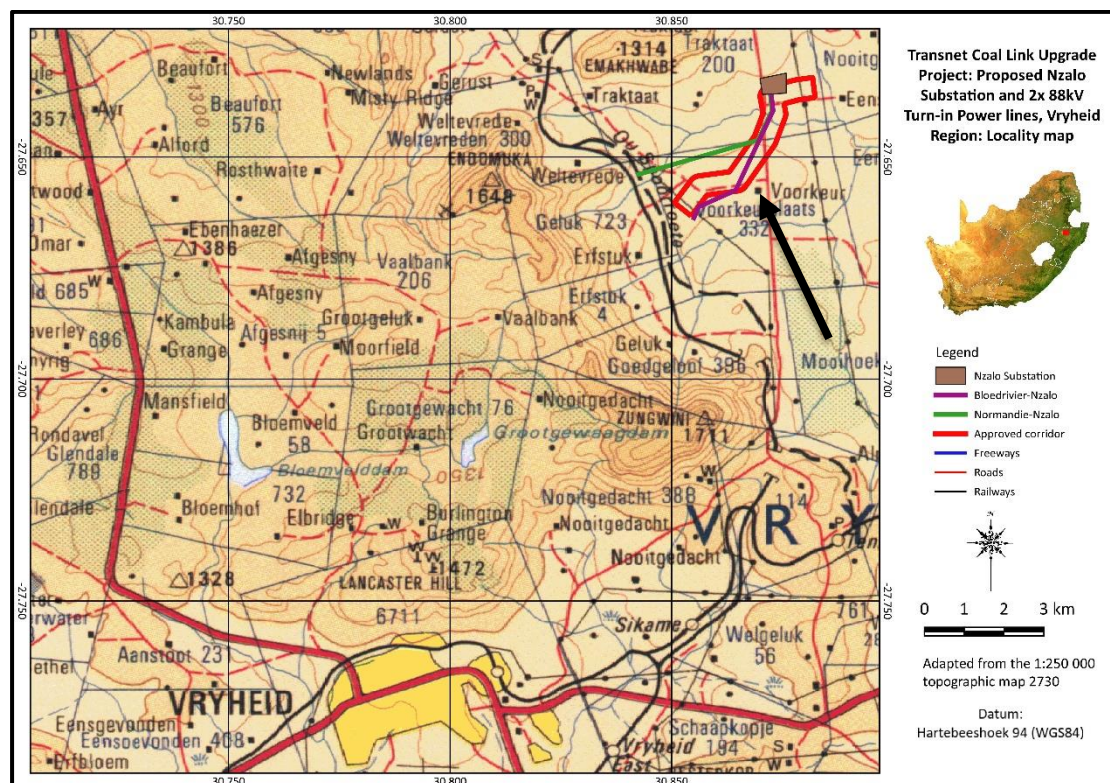


Figure 1. Location of the project area in regional context

4.2 Development proposal

The following designs are proposed:

- **Proposed 88kV power line:** This will consist of a series of towers located approximately 200m apart, depending on the terrain and soil conditions. It is proposed that the Lattice tower type with a minimum height of 20m and a maximum height of 85m will be used, however the exact tower type will be determined (based on load and other calculations) during the final design stages of the power line.
 - Two alternative routes have been proposed for the power lines.
- **Proposed Nzalo Tx Substation** site is approximately 600m x 800m (48ha).

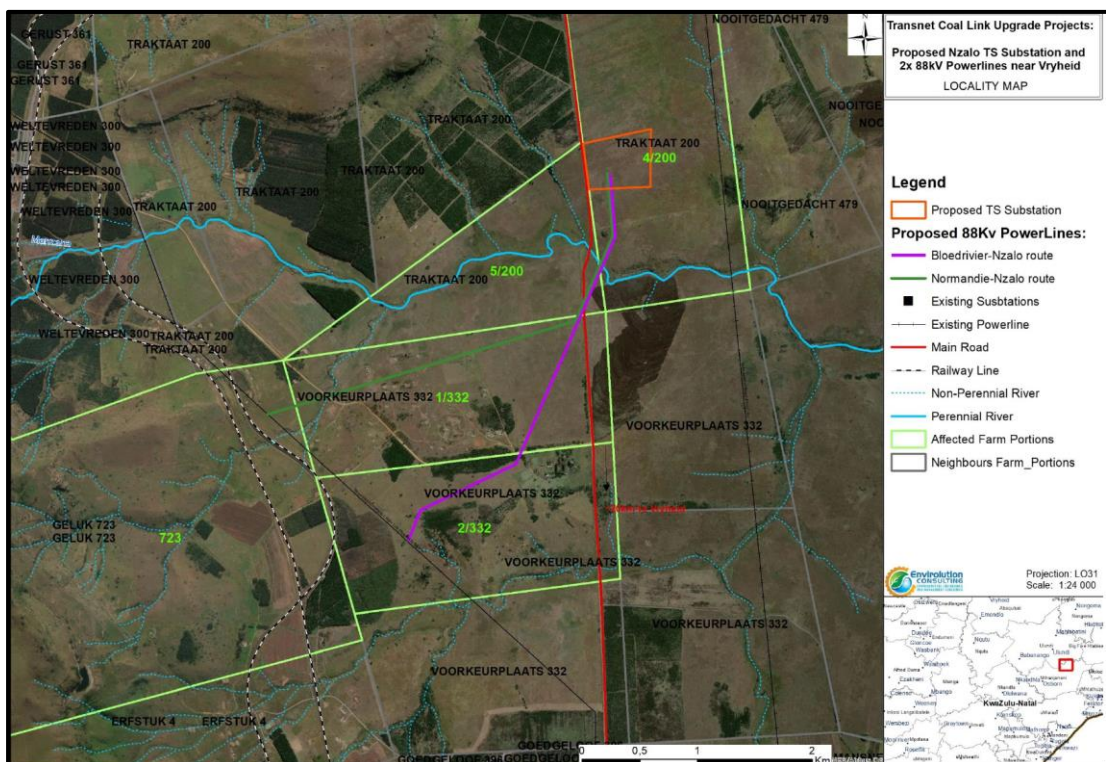


Figure 2. Layout of the proposed power line routes and substation (Map supplied by Envirolution Consulting)

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 and 2.

5.2 Methodology

5.2.1 Pre-feasibility assessment

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 11.

- 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 11.

- 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, Amafa database, 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 4 below – see list of references in Section 11 – and can be summarised as follows:

- Late Stone Age sites containing rock paintings occur to the west, in the vicinity of Utrecht and northwest of the study area, e.g. Lancaster Hill;
- Historic structures, inclusive of buildings, infrastructure related features such as bridges, railway lines and culverts occur in a sporadic manner across the landscape;
- A number of battle fields dating to different phases of the South African past are located in the larger region;
- Formal cemeteries are located in the towns and townships;
- Informal burial sites occur sporadically throughout the countryside.

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

Table 1: Pre-Feasibility Assessment

Category	Period	Probability	Reference
Landscapes			
Natural/Cultural		Low	Historic maps & aerial photographs
Early hominin	Pliocene – Lower Pleistocene		
	Early hominin	None	-
Stone Age	Lower Pleistocene – Holocene		
	Early Stone Age	None	-
	Middle Stone Age	None	-
	Later Stone Age	None	-

	Rock Art	Low	Prins (2019)
Iron age	Holocene		
	Early Iron Age	None	-
	Middle Iron Age	None	-
	Late Iron Age	Low	Huffman (2007)
Colonial period	Holocene		
	Contact period/Early historic	Possible	Von der Hyde (2013)
	Recent history	Low	Anderson (2015); Magoma (2019); Van Schalkwyk (2019)
	Industrial heritage	Low	Heritage Atlas Database

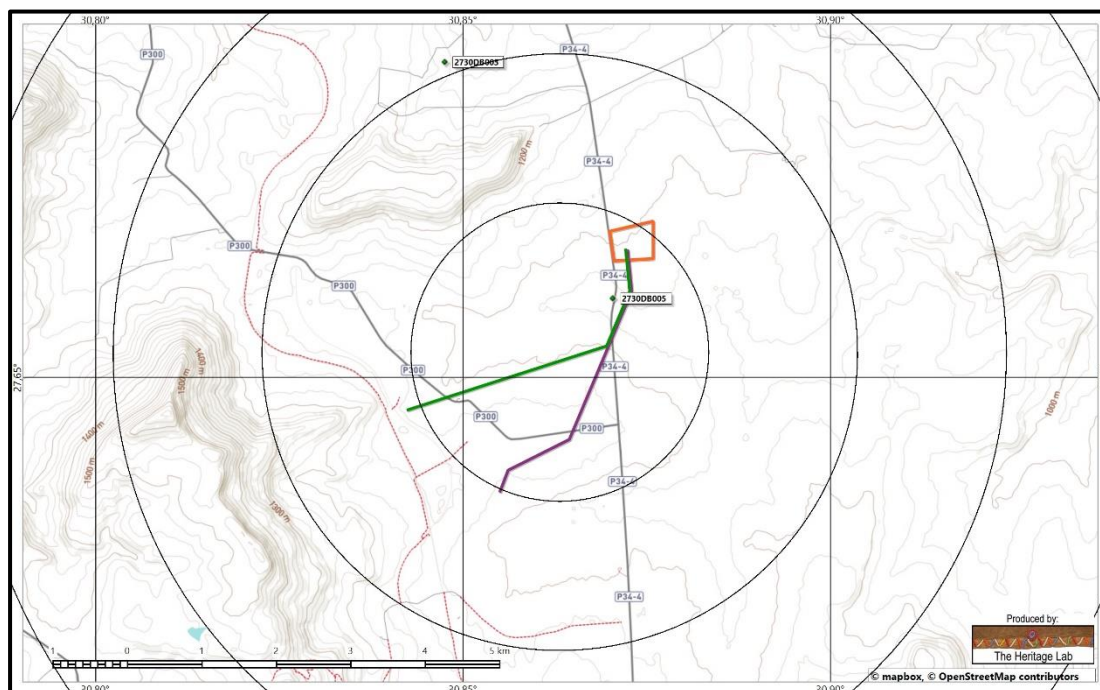


Figure 3. Location of known heritage sites and features in relation to the project area (Circles spaced at a distance of 2km: heritage sites = coded green dots)

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 *Envirolution Consulting* by means of maps and *.kml* files indicating the project area. This was loaded onto a Samsung digital device and used in Google Earth during the field survey to access the project area.

The site was visited on 11 March 2021 and was investigated by travelling, either by vehicle or on foot, along the different power line route alternatives (Fig. 4).

During the site visit, the archaeological visibility was much limited due to the dense grass cover occurring all over the project area (Fig. 5). Consequently, noticeable natural features were specifically investigated. These included (Fig. 6):

- Clumps of trees for signs of habitation and burials;
- Rock outcrops for signs of stone walling or LIA rock engravings.

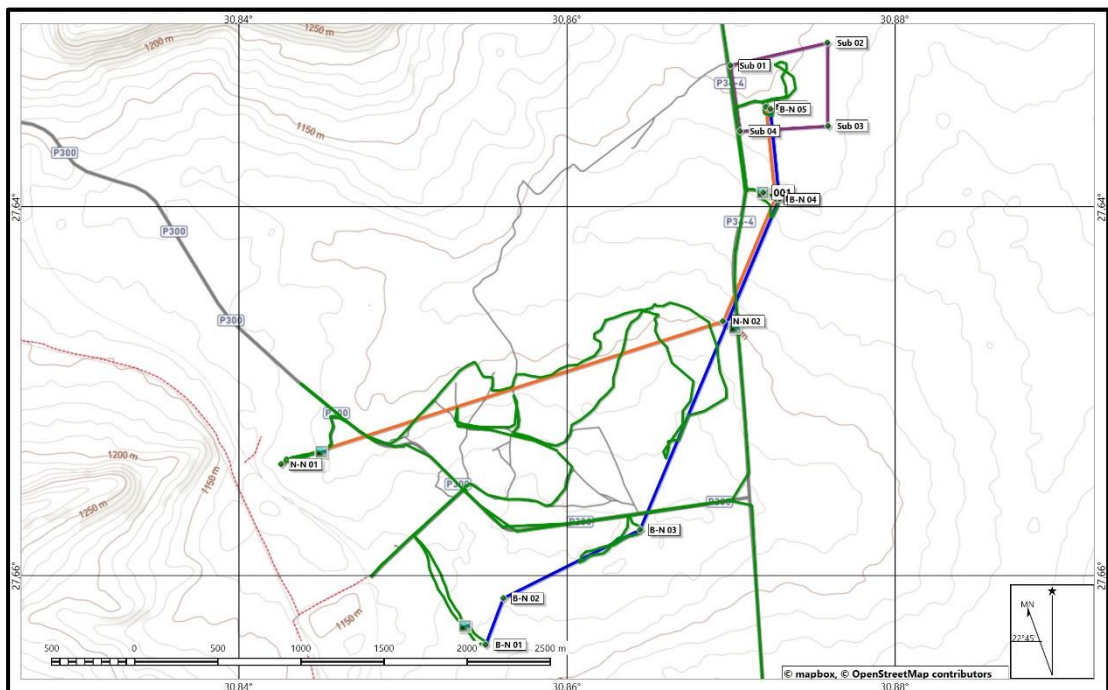
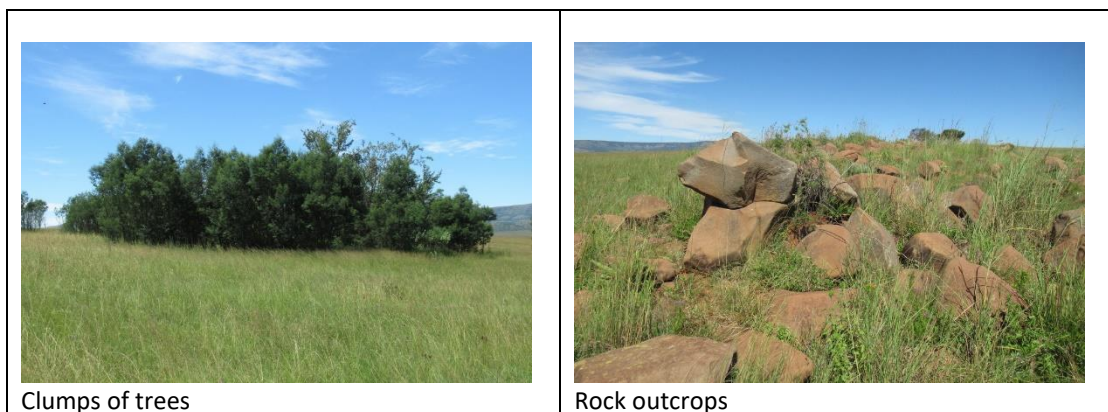


Figure 4. Map indicating the track log of the field survey



Figure 5. The vegetation cover encountered during the field survey



Clumps of trees

Rock outcrops

Figure 6. Natural features that were specifically investigated

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 a network of dolerite sills, sheets and dykes, mainly intrusive into the Karoo Supergroup. The original vegetation is classified as Paulpietersburg Moist Grassland, a grassland biome, forming part of the Mesic Highveld Grassland Bioregion. In some section of the project area, this has been transformed due to agricultural activities (Fig. 7).

The topography of the region is classified as irregular undulating lowlands with hills. The Manzana Spruit crosses through the area, flowing from east to west.



Figure 7. Views over the project area

The Palaeontological Sensitivity Map (<http://www.sahra.org.za/sahris/map/palaeo>) indicate that most of the project area (Fig. 8) has an insignificant to zero sensitivity of fossil remains to be found. However, two sections have a moderate sensitivity and therefore a desktop palaeontological study is required.

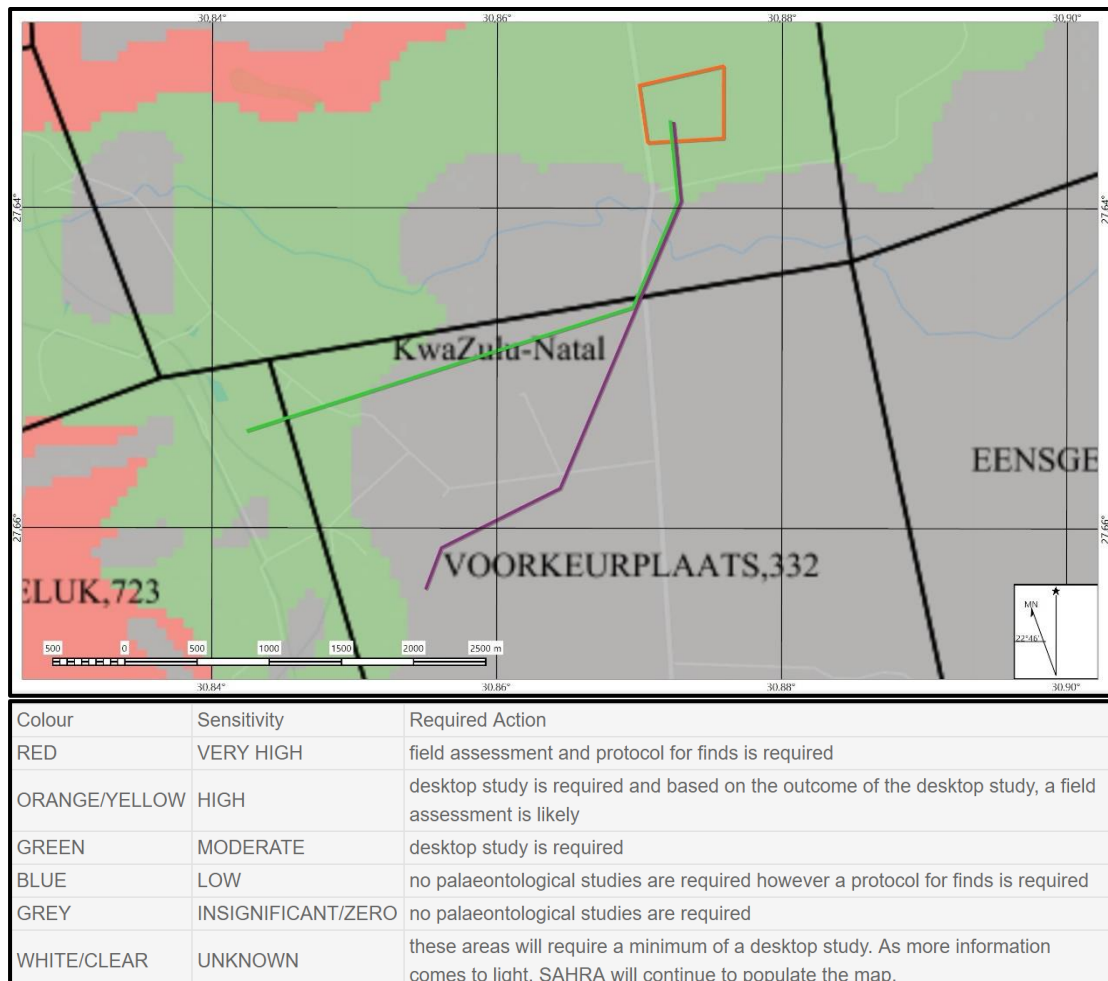


Figure 8. The Palaeontological sensitivity of the project area

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.

- The cultural landscape qualities of the larger region essentially consist of two components. The first is a rural area in which the human occupation is made up of a limited pre-colonial element (Stone Age and Iron Age) component. The second component is a farming landscape dating to the colonial period, which, over time also gave rise to an industrial landscape (coal mining).

Unfortunately, not much research has been done on the prehistory (Stone Age and Iron Age) in the region. References are made to the occurrence of sites dating to all the phases of these two periods in

the larger region (e.g. Anderson 2015). However, these seems to be reports contained in the various databases, e.g. AMAFA and SAHRA and do not contain much more information. This lack of information is also evident in the *AbaQulusi Local Municipality: Final 2015/2016 Integrated Development Plan Review*, where the main emphasis is placed on game reserves and areas of natural beauty, in contrast to a very few sites of cultural heritage significance that are indicated.

Intensive research conducted by Aron Mazel (1989) indicates that the Upper Thukela River Basin was sparsely populated during the terminal Pleistocene and even early Holocene. Even in the preceding period, the Middle Stone Age, there seems to have been little occupation of the region. For the latter period, he attributes this lack of occupation to the cold and harsh environment that enveloped the subcontinent between 26 000 – 15 000 BP, forcing people to rather stay in the lower laying areas closer to the coast.

Mazel proposes the occupation of hunter-gatherer societies to be one typified by a pioneering society, of low population density. Their social and biological reproduction probably depended on maintaining an extensive alliance network across a large region. This was achieved by a *hxaro*-type of exchange pattern similar to that which existed in the !Kung (San) society. This is a system of reciprocal exchange of gifts. By doing this, people strengthen their social network, which in turn would ensure stability.

Over time the amount of exchange items seems to decline, as is evidenced from the material recovered from the various shelters that Mazel excavated. This is seen as symptomatic of a society beginning to experience a greater level of stability, where they need not to invest so heavily in servicing extended social relations. However, a parallel increase and intensifying in ritual activity can also be seen during this time.

Shortly after the change of the millennium, new people moved into the region. The coastal plains of KwaZulu-Natal were first occupied by Early Iron Age communities belonging to the Msulenzi Facies of the Early Iron Age. These sites have been dated to the range AD 650 to 750. They were followed, at a slightly later date, AD 750 to 950 by the people of the Ndongondwane Facies. In turn, they were replaced by the Ntshekane facies, ranging in date between AD 950 to 1050 (Huffman 2007).

People gradually moved inland, occupying large sections of the interior below the escarpment. These Iron Age communities belonged to the Ngabeni Facies of the Urewe Tradition and the date range for this settlement spans the period AD 1700 to 1820, thereby equating them with modern communities found in the region today. At the same time, the highveld region on the top of the escarpment, was settled by communities identified as belonging to the Makgwareng Facies of the Urewe Tradition (Huffman 2007).

By the 16th century things changed, with the climate becoming warmer and wetter, creating condition that allowed Late Iron Age (LIA) farmers to occupy areas previously unsuitable, for example the Witwatersrand and the treeless, windswept plains of the Free State and the Mpumalanga escarpment. This period of consistently high rainfall started in about AD 1780. At the same time, maize was introduced from Maputo and grown extensively. Given good rains, maize crops yield far more than sorghum and millets. This increase in food production probably led to increased populations in coastal area as well as the central highveld interior by the beginning of the 19th century. This wet period came to a sudden end sometime between 1800 and 1820 by a major drought lasting 3 to 5 years. The drought must have caused an agricultural collapse on a large, subcontinent scale (Huffman 2004).

This was also a period of great military tension, sometimes referred to as the *difaqane*. Armed Qriqua and Korana raiders on horseback were active in the northern Cape and Orange Free State by about 1790. The Xhosa were raiding across the Orange River about 1805. Military pressure from Zululand spilled onto the highveld by at least 1821. Various marauding groups of displaced Sotho-Tswana moved across the plateau in the 1820s. Mzilikazi raided the plateau extensively between 1825 and 1837. The white settlers trekked into this area in the 1830s (Huffman 2004).

Adaptation to these two disparate ecological niches, the wetter region below the escarpment and the higher, drier inland areas, required specific adaptations in order to best survive (Sansom 1974). This, for example, is expressed in housing style and settlement layout and theoretically, it would be possible to find both settlement expressions in the project area.

Significantly, Huffman (2007) in his seminal work on the Iron Age of southern Africa do not indicate any Iron Age tradition to occur in the vicinity of the study area, the closest being the Nqabeni facies and, a bit to the west, the Makgwareng facies, both belonging to the Urewe Tradition of the Late Iron Age. These sites have a date range of AD 1700 to 1820.

During the Late Iron Age increasing power struggles broke out between these groups, culminating, eventually in extensive disruption across the wider area resulting from the expansion of the Zulu kingdom under Shaka in the early 19th century. White settlers arrived in the region, arriving as part of the great trek and from Port Natal where British settlers had landed in 1824. This incursion was met with fierce and bloody opposition while the Zulu nation was still in ascendancy, culminating in the battle of Bloodriver. Following this victory, the settlers quickly took up farms and established the Republic of Natalia. This period was short-lived as the republic was annexed by the British in 1845 (sic) and many trekkers left the region for the interior (Prins 2019).

During 1879 various battles relating to the Anglo-Zulu War, took place in the larger region. British expansionist ambition to form a confederation of South African states was the driving force behind the outbreak of this war. Various pretexts were used to put together an ultimatum which was presented to Cetshwayo, leader of the Zulu nation. When he refused to accept the terms of the ultimatum, a British army invaded Zululand in January 1879. They suffered a terrible defeat at Isandlwana and were forced to retreat. Some months later, June of the same year, with the arrival of reinforcements from Britain, they eventually succeed in subjecting the Zulu at the Battle of Ulundi (Von der Heyde 2013).

However, this was not an easy task. British troops stationed at Khambula, some distance to the west of the study area, went cattle raiding on the nearby Hlobane Mountain, a short distance north of the study area. This mountain served as stronghold for the Zulu and was also used for grazing cattle. Trying to scale the steep slopes of the mountain, the British troops came under heavy fire, suffering large numbers of casualties. The British retreated back to their camp at Khambula, where they were attacked the following day by a large army of Zulu warriors. However, the British succeed in driving off the Zulu, who suffered huge losses (Von der Heyde 2018; Laband & Tompson 2004). Graves dating back to these events are found at both sites.

The town of Vryheid was established in November 1884 as the capital of the Nuwe Republiek (New Republic). This republic was established as a direct result of the Anglo-Zulu War. As a consequence of this latter war the larger region experienced a troubled time with different Zulu leaders trying to assert their power over each other. White farmers in the region felt threatened and in an effort to stabilise the region they supported Dinizulu, the legitimate heir and successor of Cetshwayo. As a reward, Dinizulu granted them a large tract of land, which they settled and called the New Republic. The South African Government (ZAR – Transvaal republic), whose dream was to have a direct route to the sea and thereby develop their own harbour in an effort to be independent of the British who controlled Durban. After some border disputes, the British annexed Zululand as protectorate in 1887. This impacted hugely on the New Republic, making it in effect economically not viable. The only solution was to opt for incorporation with the ZAR, which was completed in 1888 (Berg 1999).

During the Second South African War (1899-1902) a number of battles took place in the region, e.g. at Lancaster Hill and at Holkrans some distance to the north of the study area. At the latter site 56 republicans were killed during a surprise attack by the Zulu.

The larger Vryheid region soon became known for its rich and extensive coal fields, which have been exploited for more than 100 years. For some time, the coke-ovens at Vryheid Coronation Mines held the record of being the largest such ovens in the southern hemisphere.

The railway line running from Vryheid eastwards via Hlobane was completed in 1909 and mainly served the various coal mines in the region. A shorter branch line used to split off at Boomlaer, west of Hlobane, running in a south-eastern direction to serve a number of mines. However, this section of the line has been dismantled for some time now, with only the old railway bed remaining.

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 townscape" 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 study of old maps and aerial photographs (Fig. 9 to 14) it can be seen that little development took place in the larger region. Some of the earliest development shows roads and tracks and, later, some "farm labourer" homesteads, as well as agricultural fields. Over time an increase in the number of the homesteads can be seen.

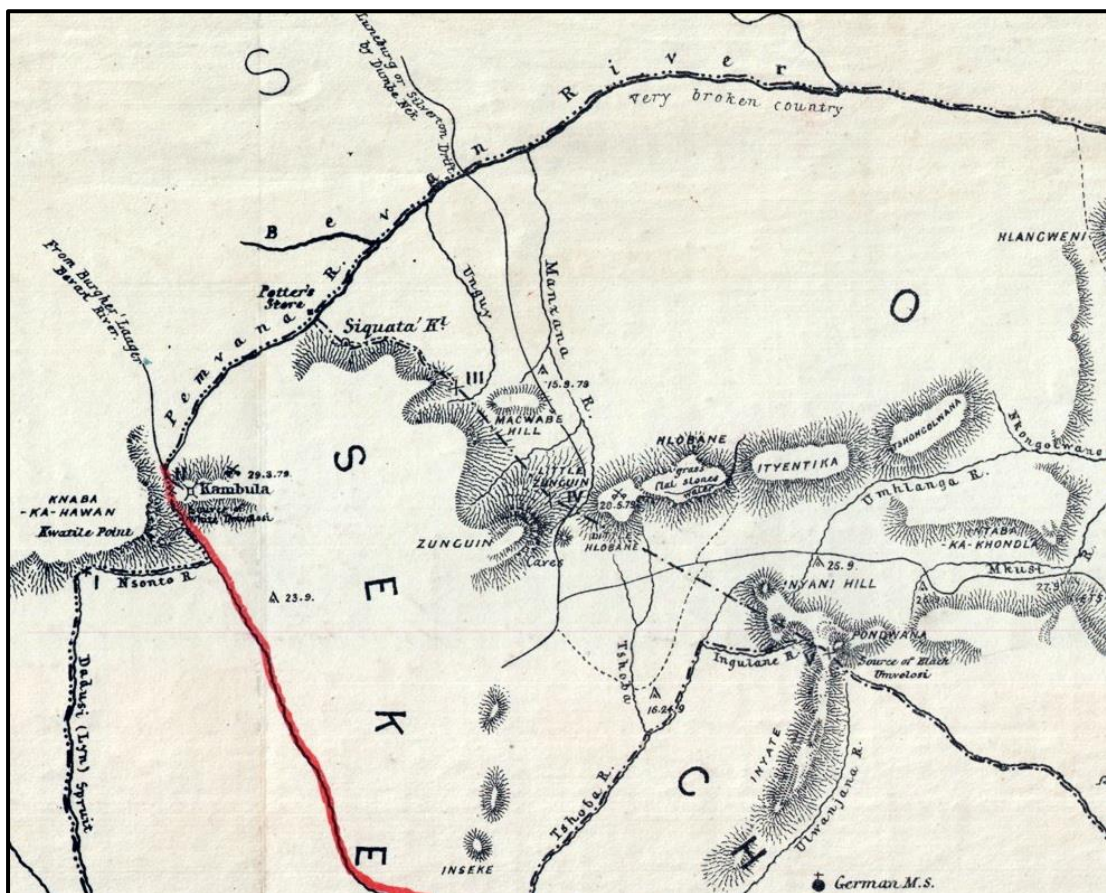


Figure 9. Section of the map "Zululand" (1879) showing the larger project area



Figure 10. Aerial view of the project area dating to 1935 (CS-G photograph: 107_080_37148; 107_078_36306)

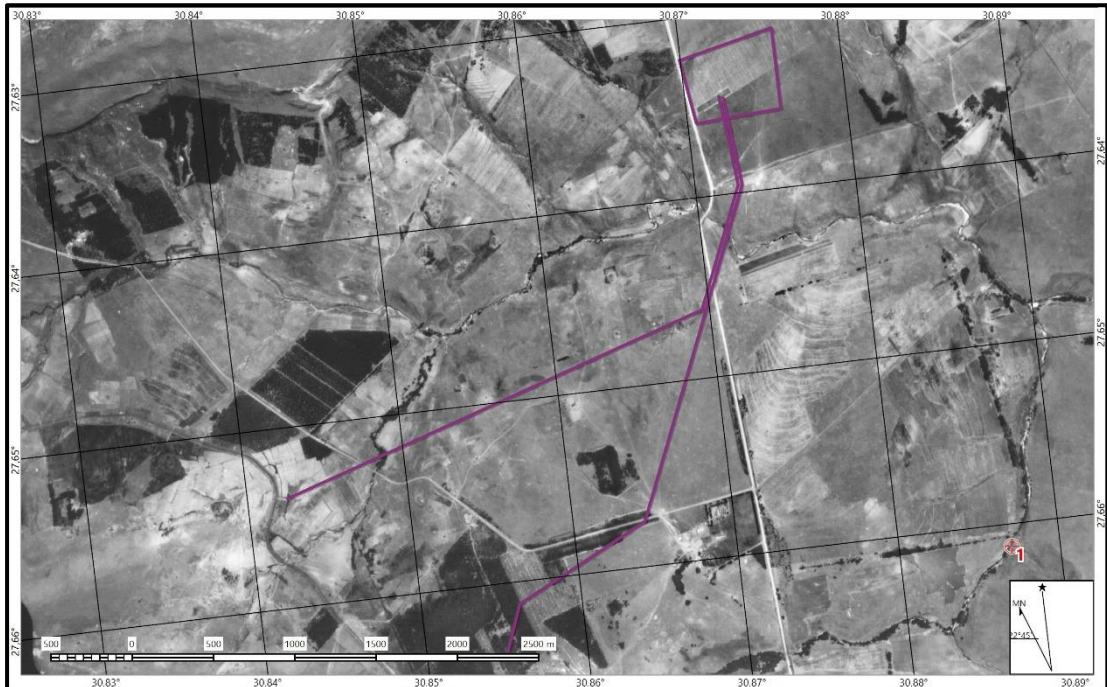


Figure 11. Aerial view of the project area dating to 1961 (CS-G photograph: 455_013_06491)

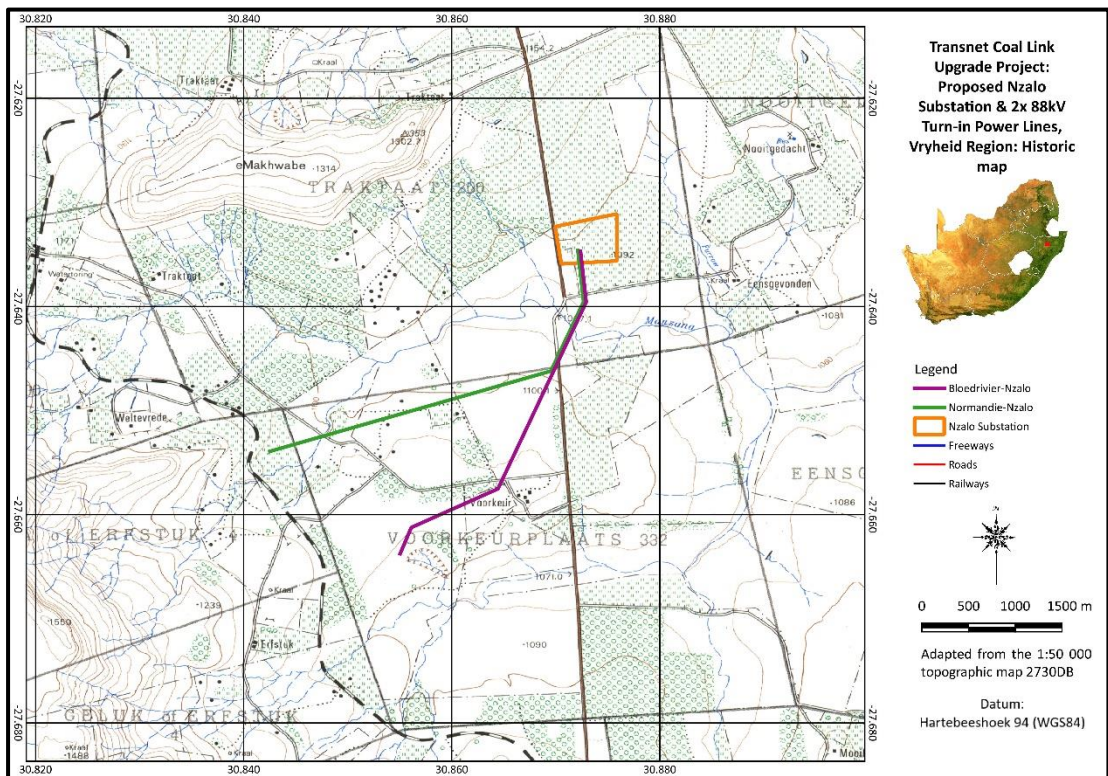


Figure 12. The project area on the 1973 version of the 1:50 000 topographic map



Figure 13. Aerial view of the project area dating to 2012 (Image: Google Earth)

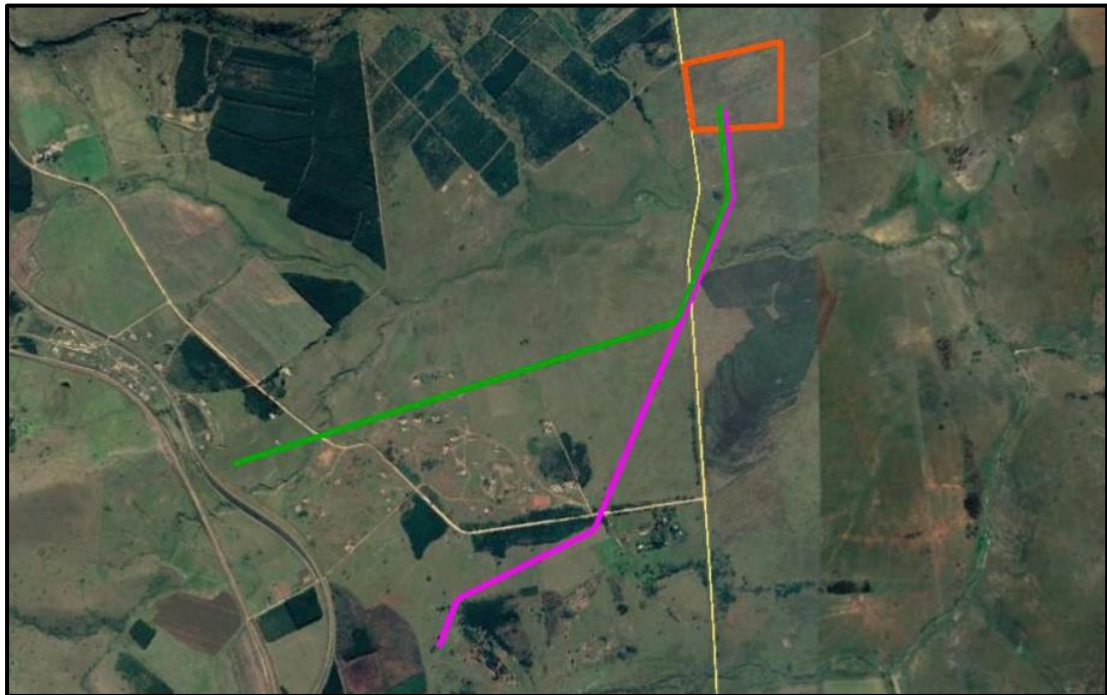


Figure 14. Aerial view of the project area dating to 2020
(Image: Google Earth)

7. SURVEY RESULTS

During the physical survey, the following sites, features and objects of cultural significance were identified in the project area (Fig. 15).

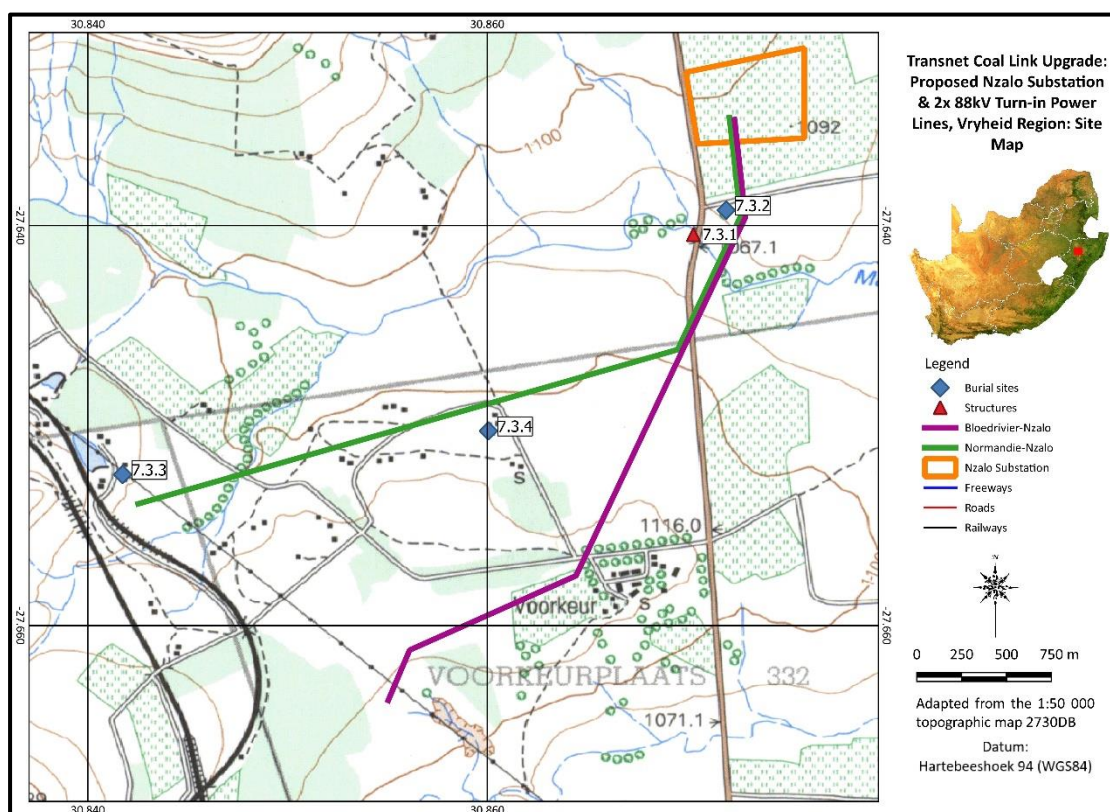


Figure 15. Identified features identified in the project area

7.1 Stone Age

- No sites, features or objects of cultural significance dating to the Stone Age were identified in the project area.

7.2 Iron Age

- No sites, features or objects of cultural significance dating to the Iron Age were identified in the project area.

7.3 Historic period

NHRA Category	Structures older than 60 years - Section 34
7.3.1. Type: Road bridge Farm: Traktaat 200. Coordinates: S 27,64045; E 30,87032	
Description: Old single lane concrete low water bridge. It originally formed part of the old alignment of the road (number unknown), which was later changed to straighten it out.	
Significance of site/feature	Generally protected 4B: Medium significance - Should be recorded before destruction
Reasoned opinion: It represents the remains of a technology that became redundant due to technological development. Such sites representing industrial heritage are usually few and far between and therefore the destruction of a single such site would have a proportionate high impact on the occurrences of similar features in the larger landscape.	

References: -

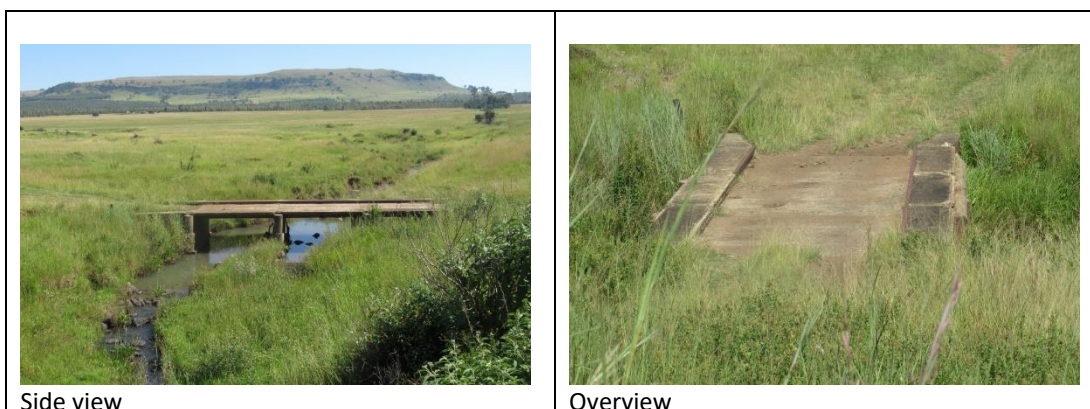


Figure 16. Different views of the concrete bridge

NHRA Category	Graves, Cemeteries and Burial Grounds - Section 36
7.3.2. Type: Burial site. Farm: Traktaat 200. Coordinates: S 27,63923; E 30,87196	
Description: A single grave marked by a stone cairn. It seems to be very old as it is total overgrown with trees. No other signs of habitation could be detected.	
Significance of site/feature	Generally protected 4A: High/medium significance - Should be mitigated before destruction.
Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.	
References: -	

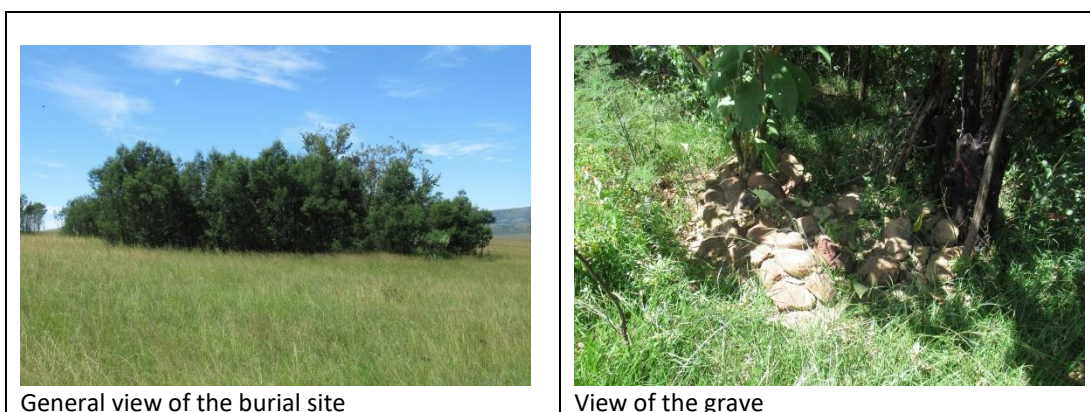


Figure 17. Views of the burial site

7.3.3. Type: Burial site. Farm: Voorkeurplaats 332. Coordinates: S 27,65235; E 30,84174	
Description: An informal burial site with approximately 12 graves. All are only marked with stone cairns and some have aloes planted on them. These graves belong to the existing and previous homesteads that occur in its immediate vicinity.	
Significance of site/feature	Generally protected 4A: High/medium significance - Should be mitigated before destruction.

Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.

References: -



Figure 18. Views of the burial site

7.3.4. Type: Burial site. **Farm:** Voorkeurplaat 332. **Coordinates:** S 27,65027; E 30,86006

Description: A large area that has been fenced off with wire to create a formal community cemetery. It currently have more than 30 graves, some with headstones. It is possible that some older graves are located outside on the southern side of the fence, but due to the dense grass cover it was difficult to confirm this fact.

Significance of site/feature

Generally protected 4A: High/medium significance - Should be mitigated before destruction.

Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.

References: -

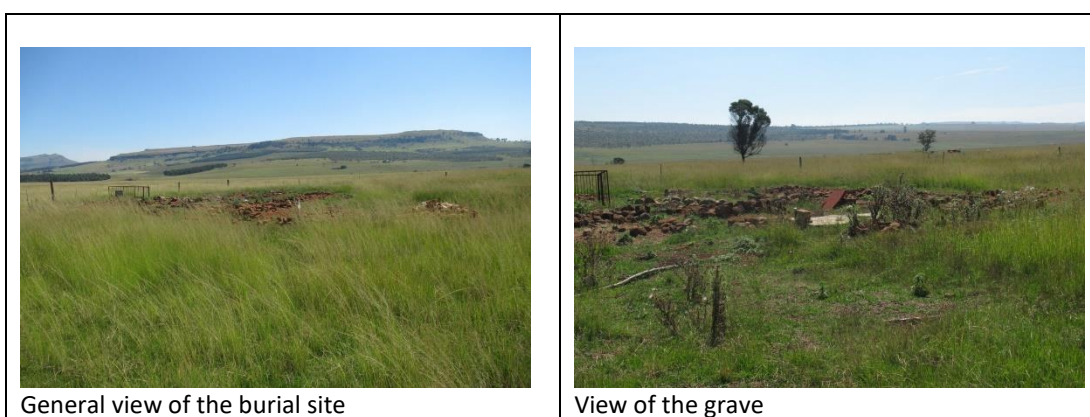


Figure 19. Views of the burial site

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.

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development and is summarised in Table 2 below:

Table 2: Impact assessments

7.3.1. Type: Concrete road bridge		
Impact assessment		
This feature is located inside the larger project area, but due to its position on the western side of the main road, whereas the power line will be constructed on the eastern side of the same road, it is highly unlikely that it would be impacted on negatively.		
	Without mitigation	With mitigation
Extent	Site (1)	Site (1)
Duration	Permanent (5)	Permanent (5)
Intensity	Minor (2)	Minor (2)
Probability	Improbable (2)	Improbable (2)
Significance	Low (16)	Low (16)
Status (positive or negative)	Neutral	Neutral
Reversibility	Non-reversible	Non-reversible
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated	Yes	
Cumulative impact: Loss of a singular feature in the larger landscape.		

7.3.2. Type: Burial site		
Impact assessment		
This site is located approximately 75m west of both the proposed power line routes.		
	Without mitigation	With mitigation
Extent	Site (1)	Site (1)
Duration	Permanent (5)	Permanent (5)
Intensity	High (8)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	Medium (56)	Low (16)
Status (positive or negative)	Negative	Neutral
Reversibility	Non-reversible	Non-reversible
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated	Yes	
Cumulative impact: Loss of a limited number of similar features in the larger landscape.		

7.3.3. Type: Burial site		
Impact assessment		
This site is located approximately 180m north of the proposed Normandie-Nzalo power line route.		
	Without mitigation	With mitigation
Extent	Site (1)	Site (1)
Duration	Permanent (5)	Permanent (5)
Intensity	High (8)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	Medium (56)	Low (16)
Status (positive or negative)	Negative	Neutral
Reversibility	Non-reversible	Non-reversible

Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated	Yes	
Cumulative impact: Loss of a limited number of similar features in the larger landscape.		

7.3.4. Type: Burial sites		
Impact assessment		
This site is located approximately 140m south of the proposed Normandie-Nzalo power line route.		
	Without mitigation	With mitigation
Extent	Site (1)	Site (1)
Duration	Permanent (5)	Permanent (5)
Intensity	High (8)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	Medium (56)	Low (16)
Status (positive or negative)	Negative	Neutral
Reversibility	Non-reversible	Non-reversible
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated	Yes	
Cumulative impact: Loss of a limited number of similar features in the larger landscape.		

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:

7.3.1. Type: Concrete road bridge
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. This is also applicable where the identified feature is located in such a position that the proposed development is unlikely to impact on the site. <ul style="list-style-type: none"> Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation to ensure that no accidental damaged is caused to the features or that undetected heritage/remains are destroyed.
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.

7.3.2. Type: Burial site
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. The site should be retained <i>in situ</i> and should be fenced off, with a buffer zone of at least 20m. <ul style="list-style-type: none"> Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation to ensure that no accidental damaged is caused to the features or that undetected heritage/remains are destroyed.
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.

7.3.3. Type: Burial site
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. The site should be retained <i>in situ</i> and should be fenced off, with a buffer zone of at least 20m. <ul style="list-style-type: none"> Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation to ensure that no accidental damaged is caused to the features or that undetected heritage/remains are destroyed.
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.

7.3.4. Type: Burial site
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. The site should be retained <i>in situ</i> . Fortunately, this site is already fenced off and no further buffer zone is required. <ul style="list-style-type: none"> Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation to ensure that no accidental damaged is caused to the features or that undetected heritage/remains are destroyed.
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.

8.3 Alternatives assessment

For the purpose of the development of the power line, two alternative routes were proposed. Based on the outcome of the heritage survey, the alternatives are rated as being either preferred, not-preferred, favourable or no preference. The comparative assessment is provided in Table 3 below.

Table 3: Comparative Assessment of Alternatives

Key

Not Preferred	The alternative will result in a high impact / increase the impact
Preferred	The alternative will result in a low impact / reduce the impact
Favourable	The impact will be relatively insignificant
No preference	All alternatives will result in similar impacts

Alternative	Preference	Reason
Bloedrivier-Nzalo	Preferred	Will not impact on any known sites of cultural heritage significance.
Normandie-Nzalo	Favourable	Although passing in close proximity of the burial sites, it will not impact directly on any of them.

9. MANAGEMENT MEASURES AND LEGAL REQUIREMENTS

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 4A and 4B 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 heritage sites and held accountable for any damage.
- Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the ECO as identified above.
- 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 4A: 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	During construction only
Monitoring	See discussion in Section 9.2 above		

Table 4B: 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. Removal of Vegetation 2. Construction 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 sites, features or objects of heritage significance occur in the project area.

- The concrete bridge in the project area is older than 60 years, is rare and therefore formally protected by the NHRA of 1999. Impact on or destruction of this structure for the purposes of the power line development would require a permit which must be obtained from SAHRA/PHRA prior to any work being carried out.
- If the identified graves are to be relocated for the purposes of the power line development, proper procedures must be followed after obtaining all the necessary permits – see Section 12.4.
- If heritage features are identified during construction, as stated in the management recommendation, 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

Transnet is South Africa's sole provider of rail transport infrastructure for coal transportation. One of South Africa's largest foreign exchange earners is the export of high-quality coal products to China. The

Transnet rail link between the coal fields in Mpumalanga Province and the export node, the Richards' Bay Coal Terminal, is one of the busiest railway links in South Africa.

The increase in demand for South Africa's high-quality coal necessitates the increase in production, which in turn has demands on the railway network infrastructure. In response to the increased demand for South Africa's coal in the global marketplace, Transnet needs to increase the volume of coal that is being transported between the Mpumalanga coal fields and the Richard's Bay Coal Terminal. This increase will be facilitated through capital expenditure on two fronts, the supporting infrastructure, i.e. the electrical network supplying the locomotives and the locomotives themselves.

In order to address this request, various projects were proposed including the construction of Nzalo and Duma 400kV Main Transmission Stations and the associated 88kV and 400kV Turn in Powerlines in KwaZulu-Natal Province.

Identified sites

During the survey no sites, features or objects of cultural significance were identified.

7.3.1: Old single lane concrete low water bridge. It originally formed part of the old alignment of the road (number unknown), which was later changed to straighten it out.

7.3.2: A single grave marked by a stone cairn. It seems to be very old as it is total overgrown with trees. No other signs of habitation could be detected.

7.3.3: An informal burial site with approximately 12 graves. All are only marked with stone cairns and some have aloes planted on them. These graves belong to the existing and previous homesteads that occur in its immediate vicinity.

7.3.4: A large area that has been fenced off with wire to create a formal community cemetery. It currently have more than 30 graves, some with headstones. It is possible that some older graves are located outside on the southern side of the fence, but due to the dense grass cover it was difficult to confirm this fact.

Impact assessment and proposed mitigation measures

Impact analysis of cultural heritage resources under threat of the proposed upgrading activities is based on the present understanding of the project:

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.1	Concrete bridge	Section 34	Generally protected 4B: Medium significance	Low (16)
				Low (16)
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. This is also applicable where the identified feature is located in such a position that the proposed development is unlikely to impact on the site.				

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.2	Burial site	Section 36	Generally protected 4A: High significance	Medium (56)
				Low (16)
Mitigation: (1) Avoidance/Preserve: (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and the site should be retained <i>in situ</i> and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall) of 20m.				

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.3	Burial site	Section 36	Generally protected 4A: High significance	Medium (56)

				Low (16)
Mitigation: (1) Avoidance/Preserve: (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and the site should be retained <i>in situ</i> and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall) of 20m.				

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.4	Burial site	Section 36	Generally protected 4A: High significance	Medium (56)
Mitigation: (1) Avoidance/Preserve: (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and the site should be retained <i>in situ</i> and a buffer zone should be created around it – fortunately, this site is already fenced off and no further buffer zone is required.				

Alternatives assessment

For the purpose of the development of the power line, two alternative routes were proposed. Based on the outcome of the heritage survey, the alternatives are rated as being either preferred, not-preferred, favourable or no preference.

Alternative	Preference	Reason
Bloedrivier-Nzalo	Preferred	Will not impact on any known sites of cultural heritage significance.
Normandie-Nzalo	Favourable	Although passing in close proximity of the burial sites, it will not impact directly on any of them.

Legal requirements

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

- The concrete bridge in the project area is older than 60 years, is rare and therefore formally protected by the NHRA of 1999. Impact on or destruction of this structure for the purposes of the power line development would require a permit which must be obtained from SAHRA/PHRA prior to any work being carried out.
- If the identified graves are to be relocated for the purposes of the power line development, proper procedures must be followed after obtaining all the necessary permits – see Section 12.4.
- If heritage features are identified during construction, as stated in the management recommendation, 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 mitigation measures presented above and 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 most of the project area has an insignificant to zero sensitivity of fossil remains to be found. However, two sections have a moderate sensitivity and therefore a desktop palaeontological study is 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 12.4.

11. REFERENCES

11.1 Data bases

Chief Surveyor General
Environmental Potential Atlas, Department of Environmental Affairs and Tourism.
Heritage Atlas Database, Pretoria
National Archives of South Africa
SAHRA Archaeology and Palaeontology Report Mapping Project (2009)
SAHRIS Database

11.2 Literature

AbaQulusi Local Municipality: Final 2015/2016 Integrated Development Plan Review. Prepared by: The Office of the Municipal Manager, Vryheid.

Anderson, G. 2015. *Heritage impact assessment for AMI Colliery, Vryheid, kwaZulu-Natal*. Unpublished report: Meerensee.

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Muncina, L. & Rutherford, M.C. 2006. *The Vegetation Map of South Africa, Lesotho and Swaziland*. Pretoria: SANBI.

Prins, F. 2019. *A desktop heritage impact assessment of the proposed construction of the new gravel road in Oqungweni Ward 3, Alfred Duma Local Municipality, KwaZulu-Natal*. Howick: Unpublished report.

Sansom, B. 1974. Traditional economic systems. In Hammond-Tooke, W.D. (ed.) *The Bantu-Speaking Peoples of Southern Africa*. London: Routledge & Kegan Paul. Pp. 135-176.

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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 and potential impacts

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	

2.2 Significance of the anticipated impact on heritage resources

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:

$S = (E+D+M) \times P$; 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		

3. 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. This is also applicable where the identified feature is located in such a position that the proposed development is unlikely to impact on the site.
 - Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation to ensure that no accidental damaged is caused to the features or that undetected heritage/remains are destroyed.

4. 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;
- Provincially: KwaZulu-Natal Heritage Act, No. 4 of 2008.

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);

For KwaZulu-Natal, the KwaZulu-Natal Heritage Act No. 4 of 2008, graves and burial grounds are divided into the following categories:

- Clause 34: Clause 34 seeks to generally protect, against damage or alteration, graves of victims of conflict.
- Clause 35: Clause 35 seeks to generally protect, against damage or alteration, traditional burial places.

- Clause 40: Clause 40 seeks to give special protection to graves of members of the Royal Family listed in the schedule.

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 or 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) and 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).

For graves in KwaZulu-Natal permission is required as follows:

- Clause 34: Approval of the Council must first be sought;
- Clause 35: Approval of the Council must first be sought;
- Clause 40: Nothing is stated in the Act.

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.

5. 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.

6. 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.