

Phase 1 Cultural Heritage Impact Assessment:

**PROPOSED NKOSI MKUPHUKILE HIGH SCHOOL, ALFRED DUMA LOCAL MUNICIPALITY WITHIN
UTHUKELA DISTRICT, KWAZULU-NATAL**

Prepared for:

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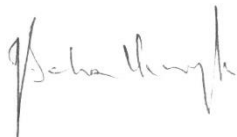


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Specialist competency:

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 2020

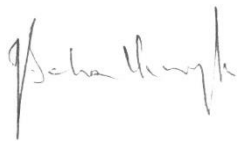


SPECIALIST DECLARATION

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 2020

EXECUTIVE SUMMARY

**Phase 1 Cultural Heritage Impact Assessment:
PROPOSED NKOSI MKUPHUKILE HIGH SCHOOL, ALFRED DUMA LOCAL MUNICIPALITY WITHIN
UTHUKELA DISTRICT, KWAZULU-NATAL**

The proposed Nkosi Mkuphukile High School, EMIS No. / Ref. uTh17/001, is a new public state-owned secondary school located on the farm The Ravine 9201 (Mbango) in the Alfred Duma Local Municipality, KwaZulu-Natal Province.

Envirovolution Consulting (Pty) Ltd was contracted as independent environmental consultant to undertake the basic assessment process for the proposed school development.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by *Envirovolution Consulting (Pty) Ltd* to conduct a cultural heritage assessment to determine if the development of the school would have an impact on any sites, features or objects of cultural heritage significance.

This report describes the methodology used, the limitations encountered, the heritage features that were identified and the recommendations and mitigation measures proposed relevant to this. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval.

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a very limited pre-colonial (Stone Age) occupation. The second and much later component is a colonial (farmer) one, with a very limited urban component consisting of a number of smaller towns, most of which developed during the last 120 years or less.

Identified sites

- 7.1.1 Single MSA point was recorded while walking across the proposed development site. The material used is hardened shale. Overall, single chance finds occur very sporadically throughout the area, although it seems as if it is more located in small streambeds where it has been washed down as a result of flash floods.
- 7.2.1 An area where some undecorated potsherds are eroding out. No other feature, i.e. structure, midden, etc. could be identified in the immediate vicinity. None of the pottery is decorated, apart from one piece that has a polished red sheen to it. This makes the identification and dating of this material difficult. However, it is possible that this site might predate the more recent agricultural activities in the area. It is also possible that it might be linked to the site with vitrified dung, i.e. possible cattle byre, in the record below.
- 7.2.2 An area where pieces of vitrified dung is exposed. On Iron Age sites this usually happens when a cattle/goat byre is exposed to intense heat until the dung is liquidized, after which it is cooled down rapidly to a near glass-like substance. No other feature, i.e. structure, midden, etc. could be identified in the vicinity. Also, important to remember, in case in the past people were buried in cattle byres. It is possible that this site might predate the more recent agricultural activities in the area. It is also possible that it might be linked to the site with pottery, see above.
- 7.3.1 Informal burial site with only two graves, both marked only with stone cairns. These graves probably originated from people that worked/lived here.

Impact assessment and proposed mitigation measures

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

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	Proposed mitigation (Refer to definitions in Section 12.3)
Stone Age tools chance finds					
7.1.1	Archaeological site	Section 35	High significance Grade 4-AC	10 4	(5) No further action required
Pottery site					
7.2.1	Archaeological site	Section 35	High significance Grade 4-A	48 16	(2) Archaeological investigation
Cattle byre					
7.2.2	Archaeological site	Section 35	High significance Grade 4-A	48 16	(2) Archaeological investigation
Informal burial site					
7.3.1	Burial site	Section 36	High significance Grade 4-A	48 16	(1) Avoidance/Preserve; (2) Relocation of graves

- Areas of sensitivity has been determined for the sites without definite boundaries and are presented in Fig. 14.
 - 7.2.1 Pottery occurrence = 340 m²
 - 7.2.2 Vitrified dung = 400 m²

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 no sites, features or objects of heritage significance occur in the study area. 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 development be allowed to continue on acceptance of the proposed mitigation measures above and the conditions proposed below.

Conditions for inclusion in the environmental authorisation:

- The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area has a moderate sensitivity of fossil remains to be found and therefore a desktop palaeontological required.
- Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.



J A van Schalkwyk
Heritage Consultant
March 2020

TECHNICAL SUMMARY

Project description	
Description	Development of a new school
Project name	Nkosi Mkuphukile High School

Applicant
KZN Department of Education

Environmental assessors
Envirovolution Consulting (Pty) Ltd
Mr G Govender

Property details																			
Province	KwaZulu-Natal																		
Magisterial district	Weenen																		
Local municipality	Alfred Duma																		
Topo-cadastral map	2830CA																		
Farm name	The Ravinve 9201																		
Closest town																			
Coordinates	Centre point (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>1</td> <td>S 28,74062</td> <td>E 30,21816</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No	Latitude	Longitude	No	Latitude	Longitude	1	S 28,74062	E 30,21816									
No	Latitude	Longitude	No	Latitude	Longitude														
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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	Sports field

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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: “Cumulative Impact”, 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 they herded cattle as well as 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
EAP	Environmental Assessment Practitioner
EIA	Early Iron Age
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
NHRA	National Heritage Resources Act
NCW	Not Conservation Worthy
PHRA	Provincial Heritage Resources Agency
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

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 6
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 7.3
d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 4.2.2
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 13 & 14
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 13 & 14 Section 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:
PROPOSED NKOSI MKUPHUKILE HIGH SCHOOL, ALFRED DUMA LOCAL MUNICIPALITY WITHIN
UTHUKELA DISTRICT, KWAZULU-NATAL**

1. INTRODUCTION

1.1 Background

The proposed Nkosi Mkuphukile High School, EMIS No. / Ref. uTh17/001, is a new public state-owned secondary school located on the farm The Ravine 9201 (Mbango) in the Alfred Duma Local Municipality, KwaZulu-Natal Province.

Envirovolution Consulting (Pty) Ltd was contracted as independent environmental consultant to undertake the basic assessment process for the proposed school development.

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 (NHRA), No. 25 of 1999, 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 (Pty) Ltd* to conduct a cultural heritage assessment to determine if the development of the school 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 South African Heritage Resources Agency (SAHRA).

1.2 Terms and references

The aim of a full 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 heritage impact assessment 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 will 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 if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where the proposed school is to be built. This included:

- Conducting a desk-top investigation of the area;
- A visit to the proposed development site.

The objectives were to:

- Identify possible archaeological, cultural and historic sites within the proposed development areas;
- Identify any potential 'fatal flaws' related to the proposed development;
- 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;
- Provide guideline measures to manage any impacts that might occur during the construction phase as well as the implementation phase.

1.2.2 Assumptions and Limitations

The investigation has been influenced by the following factors:

- It is assumed that the description of the proposed project, provided by the client, is accurate.
- The unpredictability of buried archaeological remains.
- No subsurface investigation (i.e. excavations or sampling) were undertaken, since a permit from SAHRA/AMAFA is required for such activities.
- 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 heritage impact assessment.

2. LEGISLATIVE FRAMEWORK

2.1 Background

Heritage Impact Assessments are governed by national legislation and standards and International Best Practise. These include:

- South African Legislation
 - National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA);
 - Mineral and Petroleum Resources Development Act, 2002 (Act No. 22 of 2002) (MPRDA);
 - National Environmental Management Act 1998 (Act No. 107 of 1998) (NEMA); and
 - National Water Act, 1998 (Act No. 36 of 1998) (NWA).
- Standards and Regulations
 - South African Heritage Resources Agency (SAHRA) Minimum Standards;
 - Association of Southern African Professional Archaeologists (ASAPA) Constitution and Code of Ethics;
 - Anthropological Association of Southern Africa Constitution and Code of Ethics.
- International Best Practise and Guidelines
 - ICOMOS Standards (Guidance on Heritage Impact Assessments for Cultural World Heritage Properties); and
 - The UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (1972).

2.2 Heritage Impact Assessment Studies

South Africa's unique and non-renewable archaeological and palaeontological heritage sites are 'generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, Section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority.

The National Heritage Resources Act (Act No. 25 of 1999, Section 38) provides guidelines 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, No. 4 of 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 study area is located approximately 10km northeast of the town of Weenen, in the Uthukela District Municipality of KwaZulu-Natal (Fig. 1). As such, the site is located on the northern or left-hand bank of the Thukela River, west of Mbango Village. For more information, see the Technical Summary on p. V above.

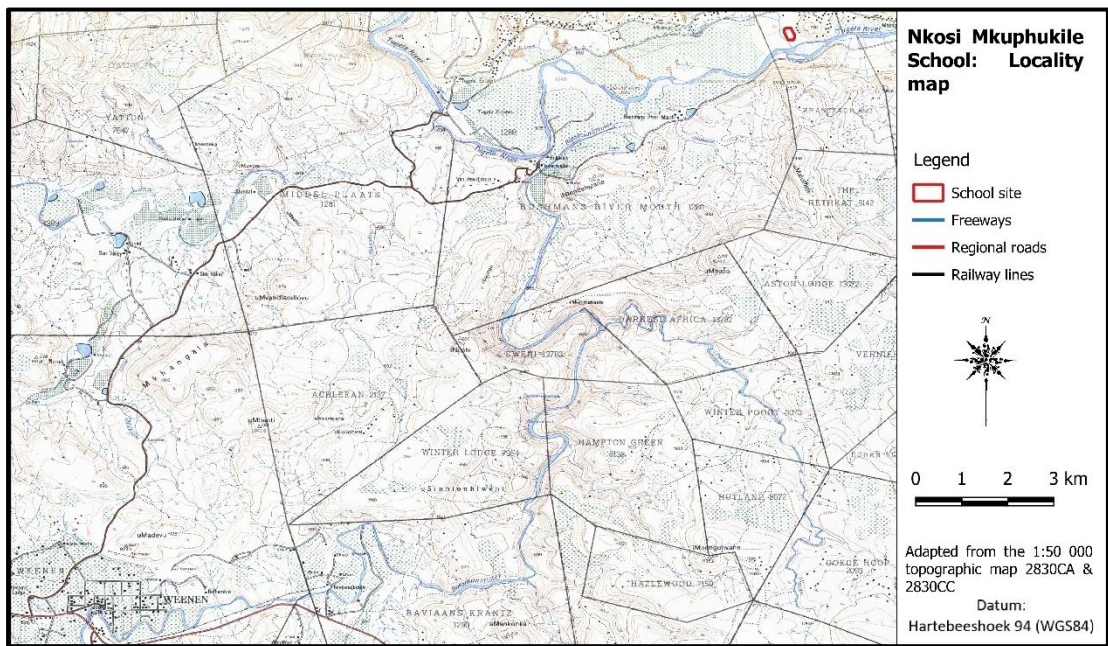


Figure 1. Location of the study area in regional context

4.2 Development proposal

Apart from the location and size of the proposed development, no further information was available during the site visit. As per the accommodation schedule issued by the KZN Department of Education the planned enrolment at the school is 1280 learners. The site is approximately 3,8ha in size.

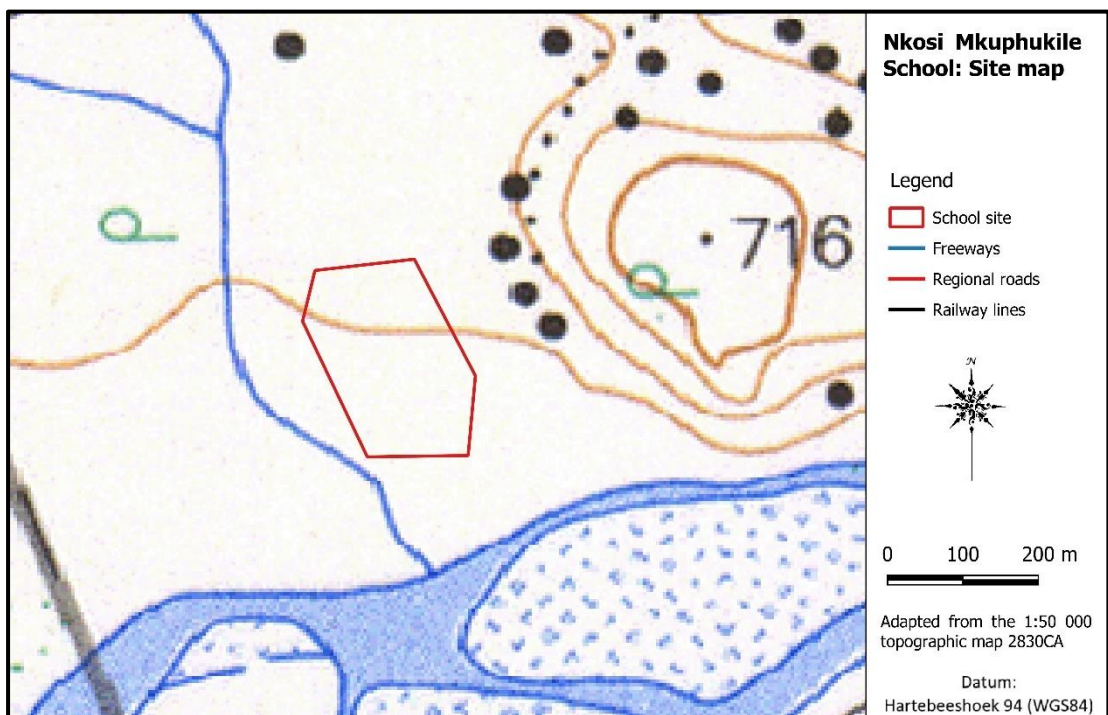


Figure 2. Layout of the project

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 study area as presented in Section 4 above and illustrated in Figure 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, 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

The results of the above investigation are presented in Table 1 and Figure 3 below – see list of references in Section 11 – and can be summarised as follows:

- Chance find stone tools dating to the Middle and Later Stone Age can be expected to occur in the vicinity of streambeds and rocky outcrops;
- Historic structures, inclusive of buildings and bridges, occur in a sporadic manner across the larger landscape;
- Informal burial sites occur in a number of places across the countryside.

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

Table 1: Pre-Feasibility Assessment

Category	Period	Probability	Reference
Natural			

- During the site visit, archaeological visibility was limited in some areas due to the dense vegetation cover encountered. In other areas, e.g. the soccer pitch, it was good, apart from the fact that the levelling of this section might have obliterated any sites and features that might have occurred here (see Fig. 5 below).

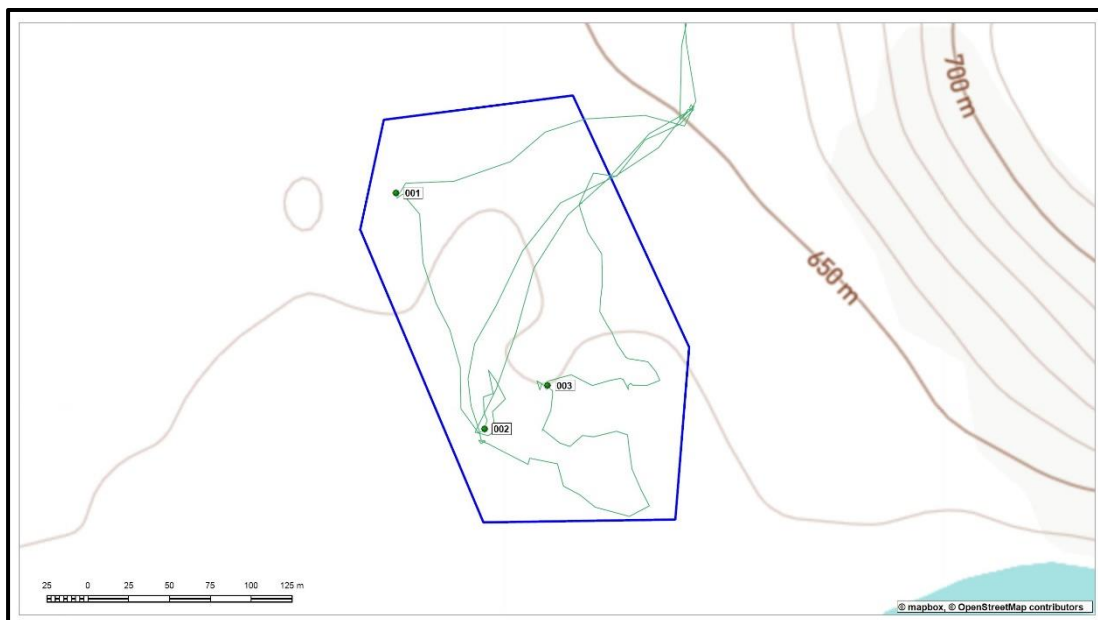


Figure 4. Map indicating the track log of the field survey.

5.2.3 Interviews

During the site visit, two local people assisted with the survey:

- Mr Mvelase, a teacher at the Shalumbe High School, was delegated by the principal of that school to accompany the specialist to the study area.
- Mr T Mvelase, local inhabitant staying adjacent to the study area.

5.2.4 Documentation

All sites, objects and structures that are 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 in order 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.

6. DESCRIPTION OF THE AFFECTED ENVIRONMENT

6.1 Natural Environment

The original vegetation in the study area is classified as Thukela Valley Bushveld, a savanna biome forming part of the Sub-Escarpment Savanna Bioregion (Muncina & Rutherford 2006) (Fig. 5). However, in the study area this has been impacted on by human settlement, agricultural fields and other activities.

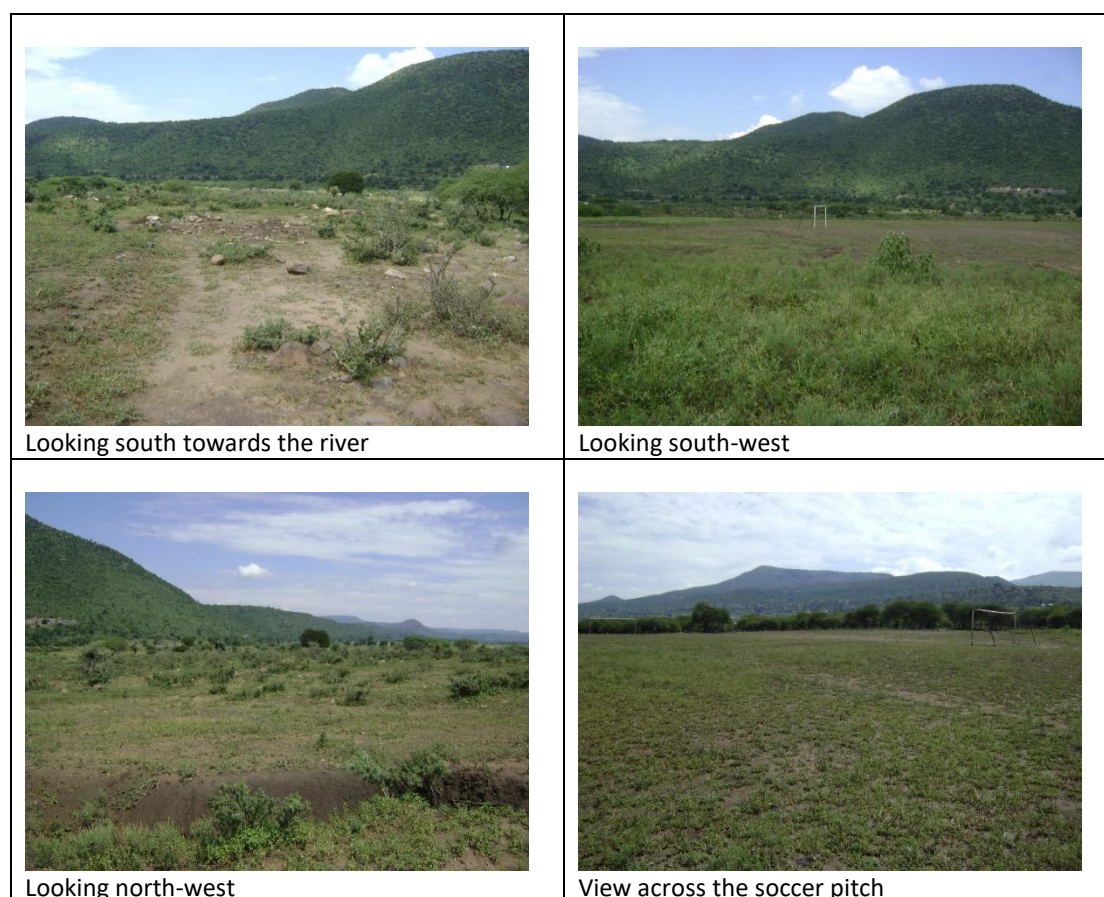


Figure 5. Views over the study area

The geology of the study area is made up of mudrock of the Volksrust Formation of the Ecca Group of the Karoo Supergroup. According to the SAHRIS fossil heritage browser (<https://sahris.sahra.org.za/fossil-heritage-layer-browser>) the Volksrust Formation has a high sensitivity for fossil remains to be found.

This changes directly to the north of the study area to fine- to coarse-grained sandstone, shale, coal seams of the Vryheid Formation of the Ecca Group of the Karoo Supergroup. According to the SAHRIS fossil heritage browser (<https://sahris.sahra.org.za/fossil-heritage-layer-browser>) the Vryheid Formation has a very high sensitivity for fossil remains to be found.

The contrasts with the Palaeontological Sensitivity Map (SAHRIS) which indicates that the study area (Fig. 6) has a moderate sensitivity of fossil remains to be found and therefore only a desktop palaeontological assessment is required.

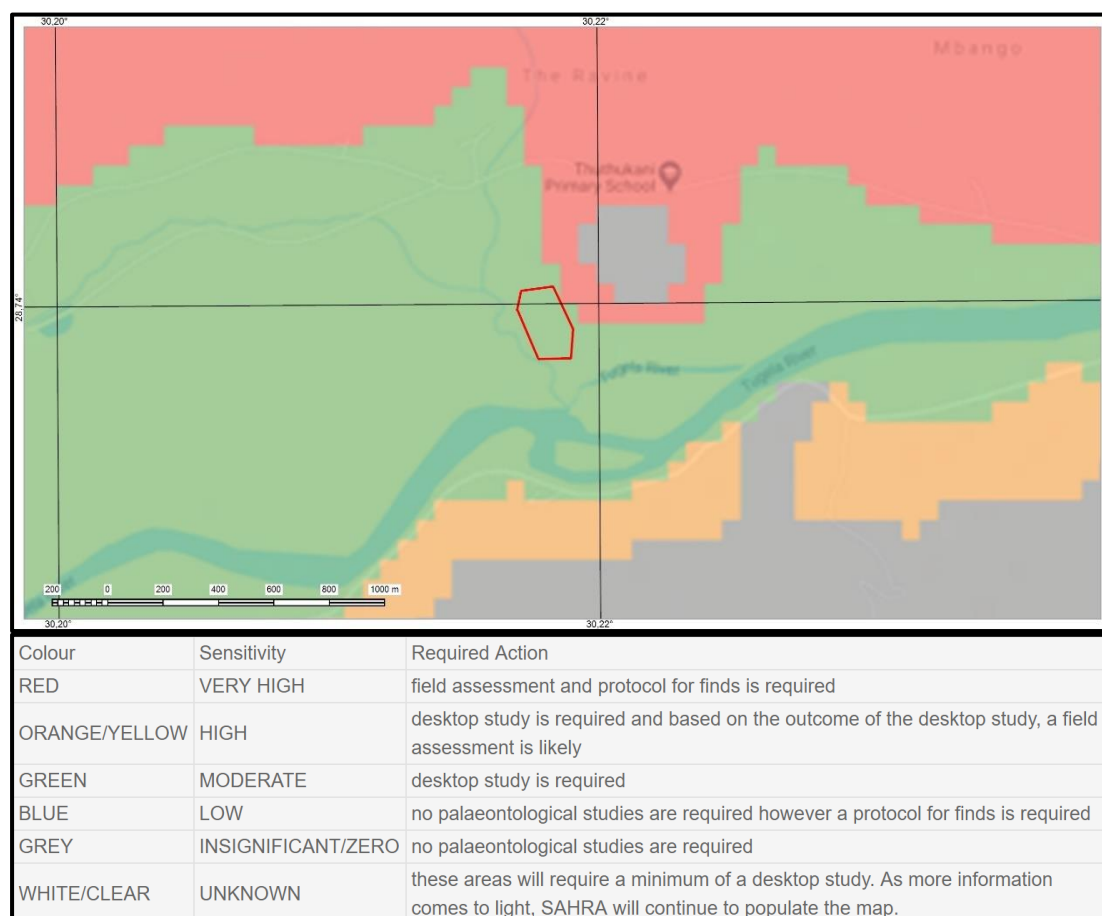


Figure 6. The Palaeontological sensitivity of the study areas

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 study area, within the context of their historic, aesthetic, scientific and social value, rarity and representivity.

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a very limited pre-colonial (Stone Age) occupation. The second and much later component is a colonial (farmer) one, with a very limited urban component consisting of a number of smaller towns, most of which developed during the last 120 years or less.

6.2.1 Stone Age

Most HIA's done in the region are of the opinion that the Stone Age footprint in the region is limited, consisting of surface scatters of Early Stone Age and Middle Stone Age material. These, according to them, are exposed due to erosion in the vicinity of streambeds and, as a result have little significance.

On the other hand, Mazel (1986) excavated two rock shelters in the region, showing the Late Stone Age people actively occupied the region during early Holocene times. He also went on to show how the

whole Thukela River Basin was a prime location for people during most of the Stone Age sequence to occupy (Mazel 1989).

6.2.2 Iron Age

Extensive research by various researchers allowed Huffman (2007) to develop a chronology for Iron Age agro-pastoralists occupation of the country and, for our purposes, the Thukela River Basin in particular. In the region of the study area, research has shown that both the Kalundu Tradition (western stream of migration) and the Urewe Tradition (eastern stream of migration) facies may be present:

Early Iron Age (Kalundu tradition)

- Msuluzi facies AD 650 to 750
- Ndondodwane facies AD 750 to 950
- Ntshekane facies AD 950 to 1050

Late Iron Age (Urewe Tradition)

- Moorpark facies AD 1350 to 1750
- Ngabeni facies 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).

6.2.3 Historic period

The town of Weenen is the second oldest white settlement in KwaZulu-Natal. White settlers, under leaders such as Piet Retief and Andries Pretorius entered the region during the early 1830s, taking up land to farm. This led to competition with the local Nguni-speaking people and eventually gave rise to conflict. On 6 February 1838 a large number of white settlers camped out along the Bloukrans and Bushmans Rivers were massacred by what is commonly referred to as Zulu impis. The survivors laid out a town not far from the massacre and called it Weenen (“weeping”).

After the annexation of Natalia by the British in 1843, many of these early white settlers left the area and moved onto the central plateau area to settle in what was to become the Orange Free State Republic and the South African Republic (ZAR).

In the larger region, a number of mission stations were developed, mostly by the *Berliner Missions Gesellschaft*, one of which, Steinthal, was located a few kilometres northeast of the town of Weenen.

Although the Anglo-Zulu War of 1879 took place over a very large part of the central KwaZulu-Natal, it did not have much of an impact on the region of the study area. The closest site is located at Keate’s Drift, some 35km to the east, where the British crossed the Thukela River in their attempt to escape from the Zulu.

During the Second South African War (1899-1902) a large number of significant battles between the British and the Republicans took place in the larger, especially to the west and north west at Colenso and Ladysmith.

6.3 Site specific review

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

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

From a copy of the original Deed of Transfer (Fig. 7) the farm The Ravine 9201 was first surveyed in January 1894 (CSG: N_A15CT4). Unfortunately, it does not state for whom it was surveyed. However, further documents indicate that it was granted to a person or persons unknown on 28 April 1913. In 1935 a deduction was made by Grant 297/17 (CSG: 101SUQ04).

From the above it can be seen that the history of ownership of the farm is unclear, but it seems also to have been somewhat problematic. The following is based on information obtained from the National Archives (Pietermaritzburg) – see list of reference in Section 11.3 below.

In 1898, a certain L.S. Kershaw applied for an extension of the time of one year in which to pay the instalment due on the farm. This carries the implication that he was the owner of the farm and for reasons unknown, was unable to pay the required premium. A year later, 1899, he asked for another year’s credit of instalments on the farm, but things still did not go his way and in 1900 the Surveyor-General demanded Kershaw to pay the instalments.

However, in 1905 W.J. Barrow of Weenen took occupation of the farm. What happened to Kershaw is unknown, but this occupation by Barrow seemed to have created a problem and in 1906 the Surveyor-General was asked to submit papers with regard to the rightful ownership of the farm. In 1907 W.J. Barrow of Weenen then, apparently in an effort to establish his ownership, submitted a cheque for the amount of £ 23-9-7 as an instalment on the farm The Ravine, as well as certificates of fencing and occupation of the farm.

Strangely, a year later J.C. Cartwright and R.N. Livingstone request permission from the magistrate in Weenen to “shoot royal game” on the farm Ravine.

Finally, in 1964 the Remainder of the farm The Ravine 9201 was bought by the South African Bantu Trust from the two then owners, D.A.J. Botha and W.D. Hyslop, for an undisclosed amount. Subsequently, the farm then became part of the KwaZulu homeland, developed by the former nationalist government in line with their policy of separate development.

Early maps of the region, such as the *Map of the Colony of Natal and Zululand, 1904* (Fig. 8), indicate the larger region, including the farm The Ravine. Although the various farms are indicated, no details such as farmsteads or settlements, apart from Weenen, are shown. Similarly, no tracks, bridges or drifts are indicated, but this does not mean that it did not exist.

Both the official aerial photograph dating to 1944 (Fig. 9) and the 1966 shows no development on or adjacent to the study area, apart from it being used as agricultural fields. It is only on the 1981 version of the 1:50 000 topographic map that one is able to detect intensive occupation in the region.

This occupation seemed to increase rapidly within the last few decades and image obtained from Google Earth (Fig. 11) shows not only an increase in settlement, but also the development of small agricultural plots where people use the fertile alluvial soils deposited by the Thukela River to produce vegetables, maize and sorghum for own consumption. The remains of these activities, boundary fences and field clearing cairns (Fig. 12), are to be found on the southern edge of the development site.

- Both Mr Mvelase and Mr T Mvelase who accompanied the researcher on the site are adamant that these features are of recent origin and can even remember seeing it being used some years ago. This is confirmed by the fact that these features are not present on the various old aerial photographs of the site that were studied.
 - These features are therefore regarded as having no significance, due to the fact that they are not old, not rare, and do not contain any unique or important element in their construction. It is also, according to Mr Mvelase, possible that they might be located outside the area of development.

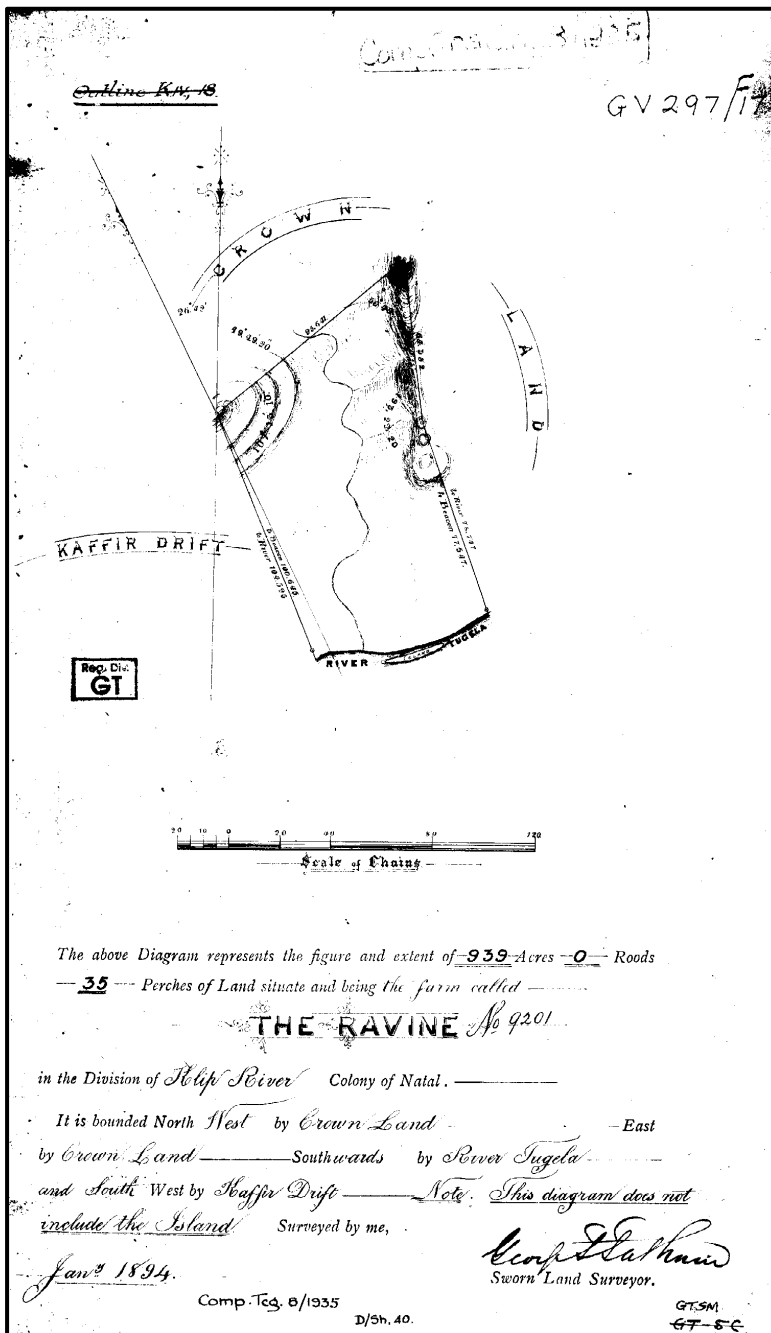


Figure 7. Copy of the original Deed of Transfer for the farm The Ravine

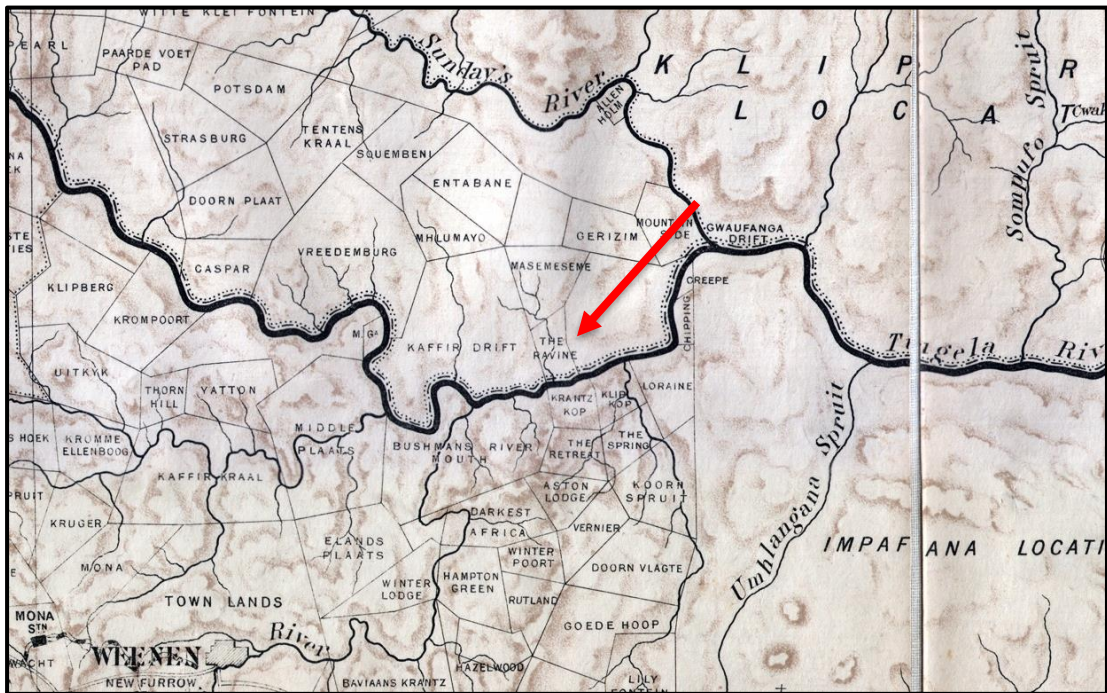


Figure 8. The region of the study area in 1904
(Map of the Colony of Natal and Zululand: Surveyor General's Office, Natal)



Figure 9. The study area on the 1944 version of the official aerial photograph
(Photograph: 75_035_04677)

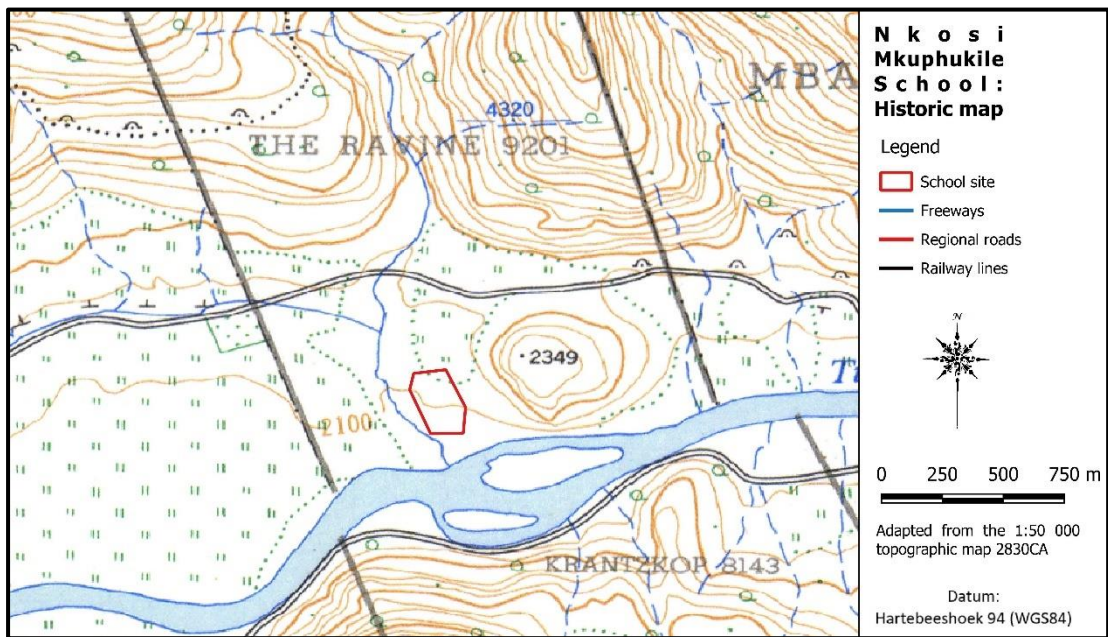


Figure 10. The study area on the 1966 version of the 1:50 000 topographic map

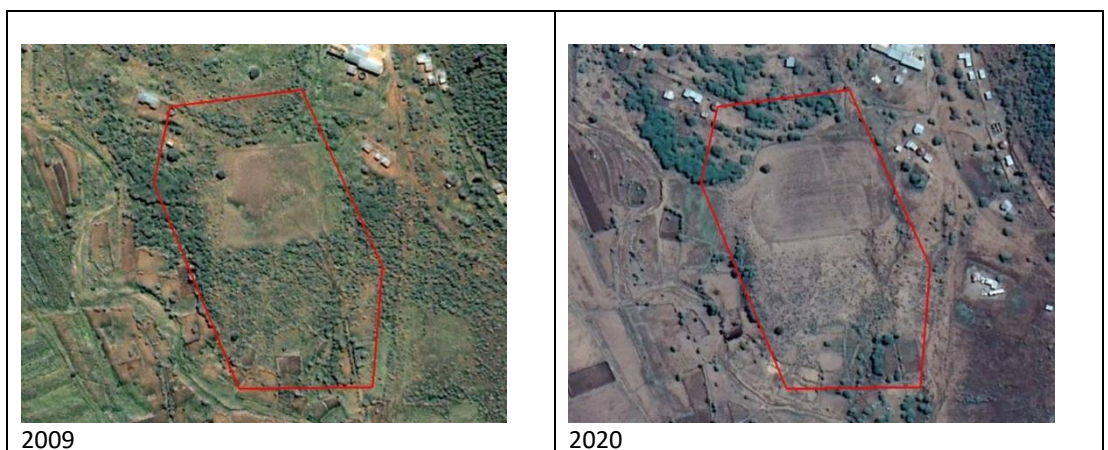


Figure 11. The study area seen from the air at a 10 year interval (Image: Google Earth)

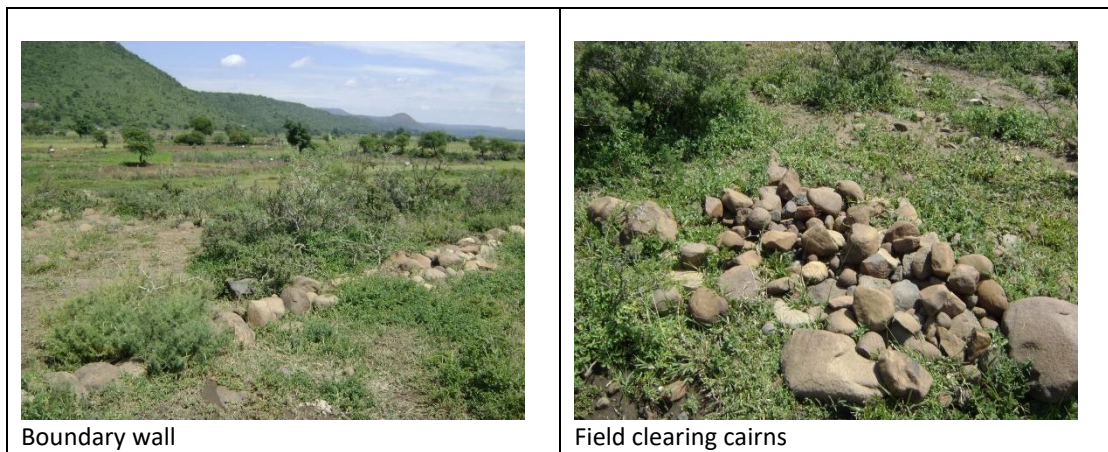


Figure 12. The remains of recent agricultural activities on the site

7. SURVEY RESULTS

During the physical survey, the following sites, features and objects of cultural significance were identified in the study area (Fig. 13).

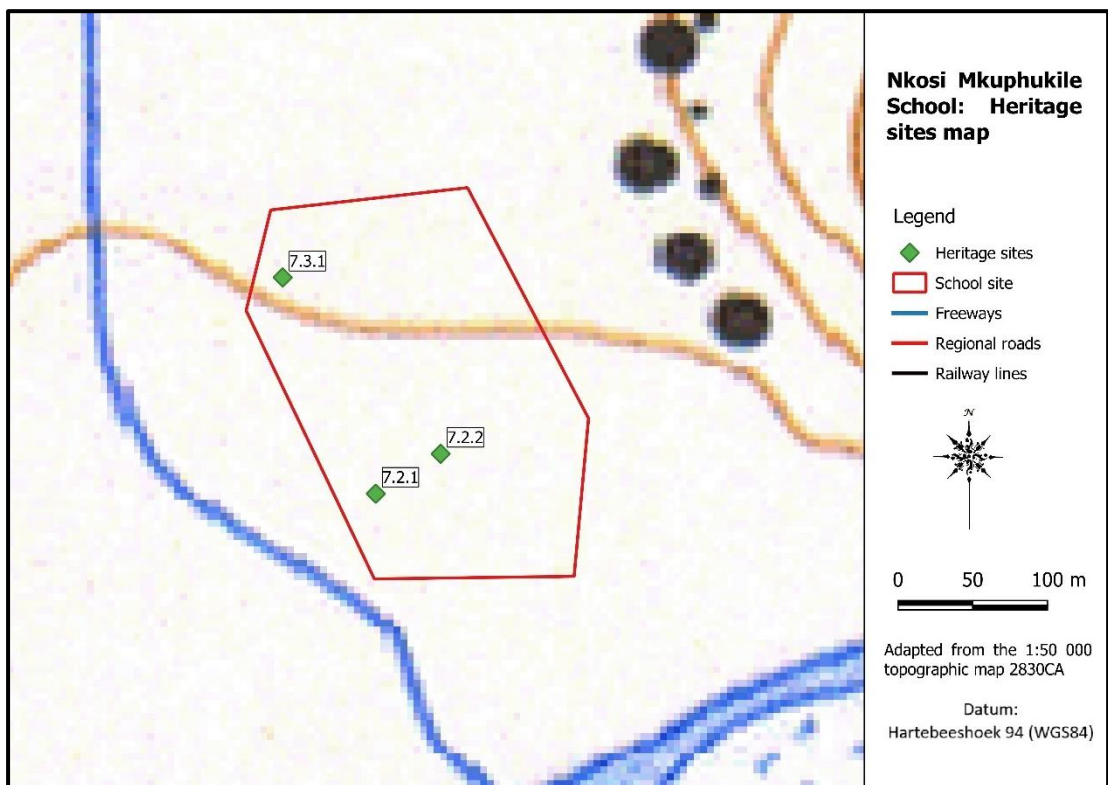


Figure 13. Location of heritage sites in the study area

7.1 Stone Age

NHRA Category	Archaeological Site or Material - Section 35
7.1.1 Type: Surface scatter. Farm: The Ravine 9201 Coordinates: -	

Description
<p>Single MSA point. This lithic was recorded while walking across the proposed development site. The material used is hardened shale.</p> <p>Overall, single chance finds occur very sporadically throughout the area, although it seems as if it is more located in small streambeds where it has been washed down as a result of flash floods.</p> <p>Stone artefacts (tools, cores and flakes) occur in limited numbers in rocky areas close to the Thukela River and its various tributaries.</p>

	
7.1.1: MSA surface find	

Significance of site/feature	Grade 4C: Low significance - Requires no further recording before destruction.
-------------------------------------	--

Reasoned opinion: As these are single surface finds, they are not in their original context any-more and are therefore viewed to have little significance.

Impact assessment
Although this feature is located inside the development area, its low significance allow it to be ignored.

Mitigation
(5) No further action required: They are seen to be fully recorded after having been included in this report.

Requirements
None

References
-

7.2 Iron Age

NHRA Category	Archaeological Site or Material - Section 35
7.2.1. Archaeological site. Farm: The Ravine 9201 Coordinates: S 28,74128; E 30,21777	

Description

An area where some undecorated potsherds are eroding out. No other feature, i.e. structure, midden, etc. could be identified in the immediate vicinity.

None of the pottery is decorated, apart from one piece that has a polished red sheen to it. This makes the identification and dating of this material difficult.

However, it is possible that this site might predate the more recent agricultural activities in the area. It is also possible that it might be linked to the site with vitrified dung, i.e. possible cattle byre, in the record below.



Focus area of pottery finds next to the tree



Fragments of pottery that was identified

Significance of site/feature	Generally protected: High significance - Grade 4-B
Reasoned opinion:	Little is known about Late Iron Age/early historic settlement in this region.

Impact assessment
This feature is located inside the proposed school site and would therefore be impacted on by the proposed development.

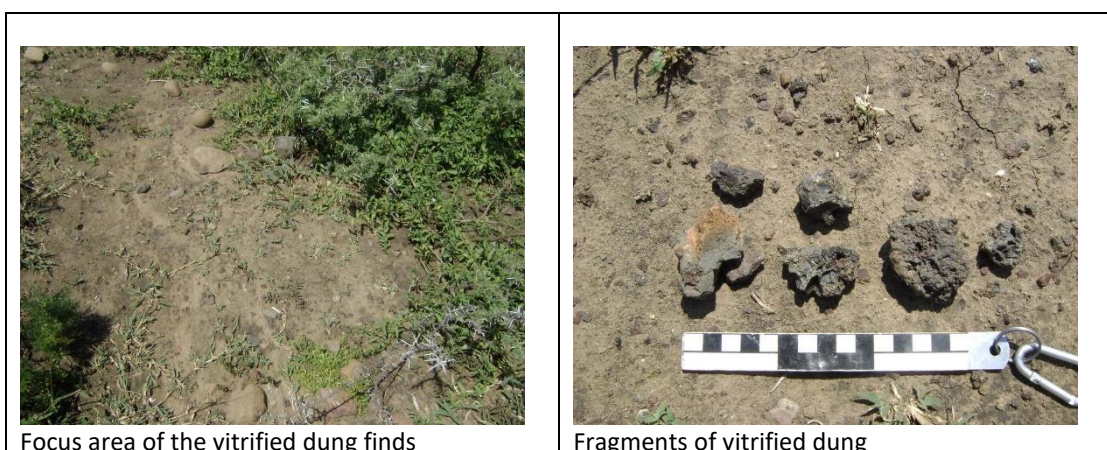
Mitigation
(2) Archaeological investigation: Due to the lack of sufficient material visible on the surface of this site, it is advised that an archaeologist should be present if and when excavation activities for the school takes place in this area.

Requirements
SAHRA permit

References
-

NHRA Category	Archaeological Site or Material - Section 35
7.2.1. Archaeological site. Farm: The Ravine 9201 Coordinates: S 28,74104; E 30,21816	

Description
An area where pieces of vitrified dung is exposed. On Iron Age sites this usually happens when a cattle/goat byre is exposed to intense heat until the dung is liquidized, after which it is cooled down rapidly to a near glass-like substance.
No other feature, i.e. structure, midden, etc. could be identified in the vicinity. Also, important to remember, in case in the past people were buried in cattle byres.
It is possible that this site might predate the more recent agricultural activities in the area. It is also possible that it might be linked to the site with pottery, see above.



Significance of site/feature	Generally protected: High significance - Grade 4-B
Reasoned opinion: Little is known about Late Iron Age/early historic settlement in this region.	

Impact assessment
This feature is located inside the proposed school site and would therefore be impacted on by the proposed development.

Mitigation
(2) Archaeological investigation: Due to the lack of sufficient material visible on the surface of this site, it is advised that an archaeologist should be present if and when excavation activities for the school takes place in this area.

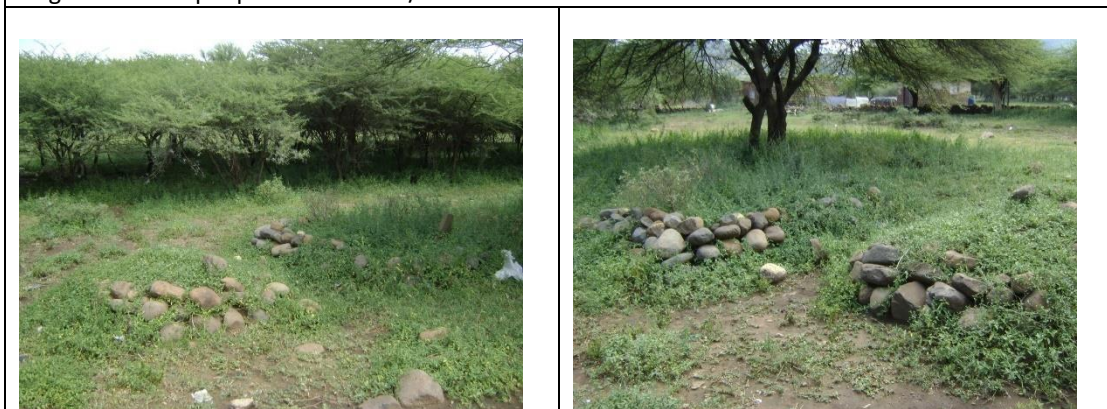
Requirements
SAHRA permit

References
-

7.3 Historic period

NHRA Category	Graves, Cemeteries and Burial Grounds - Section 36
7.3.1 Type: Burial site. Farm: The Ravine 9201 Coordinates: S 28,73998; E 30,21721	

Description
Informal burial site with only two graves, both marked only with stone cairns. These graves probably originated from people that worked/lived here.



Overview of the burial site	The two graves
Significance of site/feature	Generally protected: High significance – Grade IV-A
Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.	
Impact assessment	
This feature is located inside the proposed school site and would therefore be impacted on by the proposed development.	
Mitigation	
(1) Avoidance/Preserve: Because of its location inside the project development area, it would be impacted on. If it can be retained in its current location, it should be fenced off at least for the duration of construction activities. It is recommended that a buffer zone of 10m is created around the graves by means of a wire fence or, alternatively, with danger tape as a more temporary measure. (2) Relocation of graves: If the former is not possible, the graves should be relocated after proper procedures have been followed – see Addendum Section 4 below.	
Requirements	
Conservation by local authority. Sites should be mitigated before impact. Permit required from provincial heritage authority, as well as other institutions – see Section 4 of the Addendum.	
References	
-	

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 1 below:

- Areas of sensitivity has been determined for the sites without definite boundaries and are presented in Fig. 14 below.
 - 7.2.1 Pottery occurrence = 340 m²
 - 7.2.2 Vitrified dung = 400 m²

Table 2: Calculation of the impact on the identified heritage features

IDENTIFIED HERITAGE RESOURCE: Stone Ages tools – 7.1.1		
Nature: Chance find Stone Age material: These features are rated to have low significance due to their low numbers as well as the fact that the area has already extensively been disturbed by surface interference.		
	Without mitigation	With mitigation
Extent	Local area	Site
Duration	Permanent	Permanent

Intensity	Low	Minor		
Probability	Probable	Low		
Significance	Low (10)	Low (4)		
Status (positive or negative)	Negative	Neutral		
Reversibility	Non-reversible	Non-reversible		
Irreplaceable loss of resources?	Yes	No		
Can impacts be mitigated	Yes			
Mitigation: Avoidance of site				
Cumulative impact: Limited loss of similar features in the larger landscape.				
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
Chance finds	Stone Age tools	Section 35	Low significance – Grade IV-C	Low (10)
				Low (4)

IDENTIFIED HERITAGE RESOURCE: Archaeological site – 7.2.1				
Nature: Site with surface scatter of pottery. This site is located inside the study area and therefore there is a high likelihood that it would be impacted on by the proposed development.				
	Without mitigation		With mitigation	
Extent	Site (1)		Site (1)	
Duration	Permanent (5)		Permanent (5)	
Magnitude	Moderate (6)		Minor (2)	
Probability	Highly probable (4)		Improbable (2)	
Significance	High (48)		Medium (16)	
Status (positive or negative)	Negative		Neutral	
Reversibility	Non-reversible		Non-reversible	
Irreplaceable loss of resources?	Yes		No	
Can impacts be mitigated	Yes			
Mitigation: Full documentation				
Cumulative impact: Loss of information regarding settlement in the region.				
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.2.1	Iron Age pottery	Section 35	Medium significance – Grade IV-B	Medium (48)
				Low (16)

IDENTIFIED HERITAGE RESOURCE: Archaeological site – 7.2.1				
Nature: Site with surface scatter of vitrified dung. This site is located inside the study area and therefore there is a high likelihood that it would be impacted on by the proposed development.				
	Without mitigation		With mitigation	
Extent	Site (1)		Site (1)	
Duration	Permanent (5)		Permanent (5)	
Magnitude	Moderate (6)		Minor (2)	
Probability	Highly probable (4)		Improbable (2)	
Significance	High (48)		Medium (16)	
Status (positive or negative)	Negative		Neutral	
Reversibility	Non-reversible		Non-reversible	
Irreplaceable loss of resources?	Yes		No	
Can impacts be mitigated	Yes			
Mitigation: Full documentation				
Cumulative impact: Loss of information regarding settlement in the region.				
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.2.1	Vitrified dung – cattle byre	Section 35	Medium significance – Grade IV-B	Medium (48)
				Low (16)

IDENTIFIED HERITAGE RESOURCE: Burial site – 7.3.1				
Nature: Informal burial site with two graves. This site is located inside the study area and therefore there is a high likelihood that it would be impacted on by the proposed development.				

	Without mitigation	With mitigation		
Extent	Local area (1)	Local area (1)		
Duration	Permanent (5)	Permanent (5)		
Intensity	Moderate (6)	Minor (2)		
Probability	Highly probable (4)	Improbable (2)		
Significance	Medium (48)	Low (16)		
Status (positive or negative)	Negative	Neutral		
Reversibility	Non-reversible	Non-reversible		
Irreplaceable loss of resources?	Yes	No		
Can impacts be mitigated	Yes			
Mitigation: Avoidance of site/ Relocate of graves				
Cumulative impact: Limited loss of similar features in the larger landscape.				
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.1	Graves, cemeteries and burial grounds	Section 36	High significance – Grade IV-A	Medium (48) Low (16)

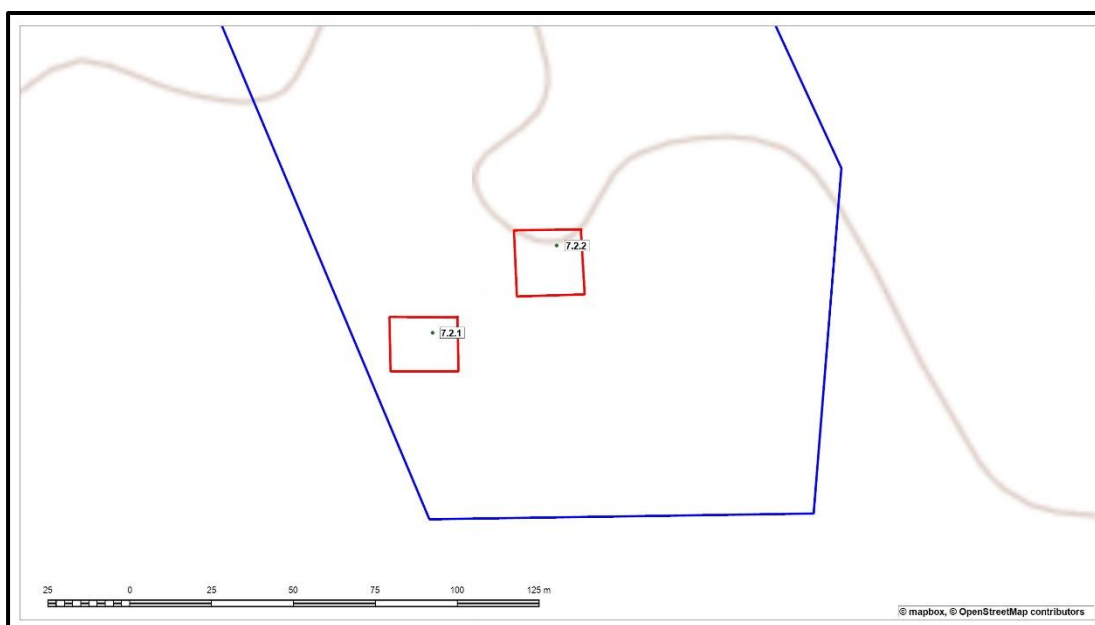


Figure 14. Map indicating the areas of sensitivity

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 (see **Section 3** of the **Addendum** for a discussion of all mitigation measures):

- 7.1.1 Chance find stone tools: (5) No further action required: They are seen to be fully recorded after having been included in this report.
- 7.2.1 Pottery site: (2) Archaeological investigation: Due to the lack of sufficient material visible on the surface of this site, it is advised that an archaeologist should be present if and when excavation activities for the school takes place in this area.

- 7.2.2 Cattle byre: (2) Archaeological investigation: Due to the lack of sufficient material visible on the surface of this site, it is advised that an archaeologist should be present if and when excavation activities for the school takes place in this area.
- 7.3.1 Burial site: (1) Avoidance/Preserve: Because of its location inside the project development area, it would be impacted on. If it can be retained in its current location, it should be fenced off at least for the duration of construction activities. It is recommended that a buffer zone of 10m is created around the graves by means of a wire fence or, alternatively, with danger tape as a more temporary measure. (2) Relocation of graves: If the former is not possible, the graves should be relocated after proper procedures have been followed.

9. MANAGEMENT MEASURES

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that 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 3A and 3B 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 boundary 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 in order 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 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 Environmental Control Officer 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 National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).

9.2 Control

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

- A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be 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 Environmental Control Officer 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 3A: 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 proposed 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 3B: 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		

10. CONCLUSIONS AND RECOMMENDATIONS

This report describes the methodology used, the limitations encountered, the heritage features that were identified and the recommendations and mitigation measures proposed relevant to this. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval.

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a very limited pre-colonial (Stone Age) occupation.

The second and much later component is a colonial (farmer) one, with a very limited urban component consisting of a number of smaller towns, most of which developed during the last 120 years or less.

Identified sites

- 7.1.1 Single MSA point was recorded while walking across the proposed development site. The material used is hardened shale. Overall, single chance finds occur very sporadically throughout the area, although it seems as if it is more located in small streambeds where it has been washed down as a result of flash floods.
- 7.2.1 An area where some undecorated potsherds are eroding out. No other feature, i.e. structure, midden, etc. could be identified in the immediate vicinity. None of the pottery is decorated, apart from one piece that has a polished red sheen to it. This makes the identification and dating of this material difficult. However, it is possible that this site might predate the more recent agricultural activities in the area. It is also possible that it might be linked to the site with vitrified dung, i.e. possible cattle byre, in the record below.
- 7.2.2 An area where pieces of vitrified dung is exposed. On Iron Age sites this usually happens when a cattle/goat byre is exposed to intense heat until the dung is liquidized, after which it is cooled down rapidly to a near glass-like substance. No other feature, i.e. structure, midden, etc. could be identified in the vicinity. Also, important to remember, in case in the past people were buried in cattle byres. It is possible that this site might predate the more recent agricultural activities in the area. It is also possible that it might be linked to the site with pottery, see above.
- 7.3.1 Informal burial site with only two graves, both marked only with stone cairns. These graves probably originated from people that worked/lived here.

Impact assessment and proposed mitigation measures

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

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	Proposed mitigation (Refer to definitions in Section 12.3)
Stone Age tools chance finds					
7.1.1	Archaeological site	Section 35	High significance Grade 4-AC	10 4	(5) No further action required
Pottery site					
7.2.1	Archaeological site	Section 35	High significance Grade 4-A	48 16	(2) Archaeological investigation
Cattle byre					
7.2.2	Archaeological site	Section 35	High significance Grade 4-A	48 16	(2) Archaeological investigation
Informal burial site					
7.3.1	Burial site	Section 36	High significance Grade 4-A	48 16	(1) Avoidance/Preserve; (2) Relocation of graves

- Areas of sensitivity has been determined for the sites without definite boundaries and are presented in Fig. 14.
 - 7.2.1 Pottery occurrence = 340 m²
 - 7.2.2 Vitrified dung = 400 m²

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 no sites, features or objects of heritage significance occur in the study area. 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 development be allowed to continue on acceptance of the proposed mitigation measures above and the conditions proposed below.

Conditions for inclusion in the environmental authorisation:

- The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area has a moderate sensitivity of fossil remains to be found and therefore a desktop palaeontological required.
- Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

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

Anderson, G. 2014. *Mashunka and Ngubo community access road and bridge, Tugela Ferry, KwaZulu-Natal*. Umlando: Archaeological Surveys and Heritage

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Mazel, A.D. 1986. Mbabane Shelter and eSinhlonhlweni Shelter: the last two thousand years of hunter-gatherer settlement in the central Thukela Basin, Natal, South Africa. *Annals of the Natal Museum* 27(2):389-453.

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

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Standard Encyclopaedia of Southern Africa (SESA) 1975. No. 11. Cape Town: Nasou Limited.

11.3 Archival sources, maps and aerial photographs

1: 50 000 Topographic maps
Google Earth

Aerial Photographs: Chief Surveyor-General

National Archives of South Africa:

- Depot: NAB, Source: SGO, Volume No. III/1/1898, Reference: SG2263/1898. Dated: 1898
- Depot: NAB, Source: SGO, Volume No. III/1/136, Reference: SG2495/1899, Dated: 1899
- Depot: NAB, Source: SGO, Volume No. III/1/141, Reference: SG1371/1900, Dated: 1900
- Depot: NAB, Source: SGO, Volume No. III/1/197, Reference No. SG4605/1905, Dated: 1905
- Depot: NAB, Source: SGO, Volume No. III/1/204, Reference: SC991/1906, Dated: 1906
- Depot: NAB, Source: SGO, Volume No. III/1/224, Reference: SG2605/1907, Dated: 1907
- Depot: NAB, Source: CSO, Volume No. 1874, Reference: 1909/3590, Dated: 1909
- Depot: SAB, Source: BAO, Volume No. 1/1062, Reference: D45/1750/4, Dated: 1965

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.
 - Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation in order to ensure that no undetected heritage/remains are destroyed.

4. Relocation of graves

If the graves are younger than 60 years, an undertaker can be contracted to deal with the exhumation and reburial. This will include public participation, organising cemeteries, coffins, etc. They need permits and have their own requirements that must be adhered to.

If the graves are older than 60 years old or of undetermined age, an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. This is a requirement by law.

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. Curriculum vitae

Johan Abraham van Schalkwyk

Personal particulars

Date of birth: 14 April 1952
Identity number: 520414 5099 08 4
Marital status: Married; one daughter
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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.