



ECOSOLVE

**PHASE I ARCHAEOLOGICAL AND CULTURAL HERITAGE IMPACT
ASSESSMENT SPECIALIST REPORT FOR THE PROPOSED
AUTHORISATION FOR ERMELO-RICHARDS BAY COAL LINK UPGRADE
PROJECT: DEVELOPMENT OF NZALO 400kV/88kV, 160MVA SUBSTATION
WITH ASSOCIATED 88kV AND 400kV TURN-IN POWER LINES WITHIN
EDUMBE LOCAL MUNICIPALITY OF ZULULAND DISTRICT IN KWAZULU
NATAL PROVINCE**

July, 2019

Draft Report

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DECLARATION

ABILITY TO CONDUCT THE PROJECT

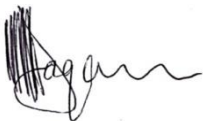
Munyadziwa Magoma is a professional archaeologist, having obtained his BA degree in Archaeology and Anthropology at University of South Africa (UNISA), an Honours degree at the University of Venda (UNIVEN), and a Master's degree at the University of Pretoria (UP). He is an accredited Cultural Resource Management (CRM) member of the Association for southern African Professional Archaeologists (ASAPA) and Amafa aKwaZulu-Natali. Munyadziwa is further affiliated to the South African Archaeological Society (SAAS), the Society of Africanist Archaeologists (SAfA), Historical Association of South Africa (HESA); Anthropology Southern Africa (ASnA); International Association for Impact Assessment (IAIASa); International Council on Monuments and Sites (ICOMOS) and the International Council of Archaeozoology (ICAZ). He has more than fifteen years' experience in heritage management, having worked for different CRM organisations and government heritage authorities. As a CRM specialist, Munyadziwa has completed well over 500 hundred Archaeological Impact Assessments (AIA) for developmental projects situated in several provinces of the Republic of South Africa. The AIAs projects he has been involved with are diverse, and include the establishment of major substation, upgrade and establishment of roads, establishment and extension of mines. In addition, he has also conducted Heritage Impact Assessments (HIAs) for the alteration to heritage buildings and the relocation of graves. His detailed CV is available on request.

INDEPENDENCE

I, Munyadziwa Magoma, declare that this report has been prepared independently of any influence as may be specified by all relevant department, institution and organization. I act as the independent specialist in this application, and will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favorable to the applicant. I declare that there are no circumstances that may compromise my objectivity in performing such work, I vow to comply with all relevant Act, Regulations and applicable Legislation. Furthermore, Vhubvo Consultancy Cc, which is a company I represent in this application, is an independent service provider and apart from fair remuneration for services rendered, it has no financial interest or vested interest in the proposed project.

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EXECUTIVE SUMMARY

Vhubvo Consultancy Cc has been commissioned by EcoSolve to conduct the Cultural Heritage Impact Assessment (HIA) Study for the proposed Nzalo (Mqwabe) 400kV/88kV, 160MVA Substation with associated 88kV and 400kV turn-in power lines in the eDumbe Local Municipality within KwaZulu-Natal Province. The aim of the survey was to investigate the availability of archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structures of historical significance that may be affected by the proposed Sports development facilities, these will in turn assist the developer in ensuring proper conservation measure in line with the National Heritage Resource Act, 1999 (Act 25 of 1999). The findings of this study have been informed by desktop study and field survey. The desktop study was undertaken through SAHRIS for previous Cultural Heritage Impact Assessments conducted in the region of the proposed development, and also for researches that have been carried out in the wider area over the past years.

Nature of Development

Transnet is South Africa's sole provider of rail transport infrastructure for coal transportation and it needs to increase the volume of coal that is being transported between the Mpumalanga coal fields and the Richard's Bay Coal Terminal for export market. 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 Holding SOC Limited (Eskom) received an authorisation on 27th October 2015 for the Construction of the Nzalo (Mqwabe) 400kV/88kV, 160MVA Substation with associated 88kV and 400kV turn in power lines East of Vryheid, KwaZulu-Natal Province. Eskom is proposing to amend the Environmental Authorisation to include a radio tower within Nzalo Substations well as 88kV power line deviation which falls outside approved corridor.

Receiving Environment

The proposed development will traverse on various communal and private owned farms. The area is currently used for various purposes including farming and other related activities. Although transformed, archaeological resources are not unexpected in these areas.

Impact statement

The construction of the proposed powerlines will result in various threats to archaeological and graves sites in the vicinity of the new infrastructure (s), with impacts ranging from moderate to low. Thus, the impact of the proposed powerline and substation on archaeological and cultural heritage remains is rated as being medium (see Table 1) on the proposed study areas. Noteworthy that the linear nature of the project area will cause minimal impact to the ground. Furthermore, tower positions can be moved to avoid direct impacts on



heritage resources. It is important to note that all categories of heritage resource, with the possible exception of movable objects, are generally known to occur in the area proposed for development. The primary areas of concern in this study are the impacts on archaeological sites and the landscape that is traversed by the proposed power lines. The presence of the power lines within a wide servitude will have a negative visual impact on heritage sites, and this impact will last for the lifespan of this proposed development. However, this is not addressed in this report as a separate report will be dealing with visual impacts.

Restrictions and Assumptions

Most of the area proposed for development is encroached by bush which makes it almost impossible to access. It is thus possible that some materials could have been overlooked due to that the area was investigated only in a broad, overview approach as access to the different properties was not possible. It is assumed that the Social Impact Assessment and Public Participation Process might also result in the identification of sites, features and objects, including sites of intangible heritage potential in the corridors and that these then will also have to be considered in the selection of the preferred corridor.

Survey sensation

The visibility of all area proposed for the powerline was fair, certain area could not be accessed with ease.

Site-Location Model

Archaeologists who do research in the region generally accept a site-location model proposed by Maggs (1980). The model suggests that inland sites will be found in locations which bear the following:

- Limited to below an altitude of 1000 m asl;
- Situated on riverside or streamside locations, on deep alkaline colluvial soils; and
- In areas appropriate for dry-farming (with sufficient summer rainfall).

Survey Findings and Recommendations

The main aim of the survey was to evaluate potential heritage resources that would occur within the boundaries of the proposed area (s) as well as to determine if there is any hamartia that would prevent the proposed development from taking place in any of the proposed study area (s). Archaeological sites dating to the Stone, Iron and Historical Age are known to occur in the region of study area. However, from the survey conducted, most of the known sites would only have an indirect impact. For example, power line crossing some distance from the site, thereby having only a visual impact. However, note should be taken that detailed information about the powerline is still in early stage, e.g., the exact position of the powerline/access roads are yet to be finalised, it might be possible that specific aspects related to development might have a direct disturbance, which would result in irreplaceable loss of heritage resources. Below are the sensitive areas that were noted during survey:



- Iron Age people preferred to settle on the alluvial soils close to rivers. As such, all river banks are viewed to be sensitive and should be avoided in the best way possible;
- The proposed development is also located in area with localised Airports, impacting on these should be avoided as far as possible.

The study area was investigated for sites of heritage significance that might be affected by the proposed construction. The only sign of sites of heritage potential were mostly graves, and this can be avoided. Nonetheless, there is also a high chance of finding archaeological sites and this will be difficult to avoid since most of these are trifling and often hidden underground and on area encroached by bush, only exposed once construction begins. It is on that note that the following recommendations are made:

A heritage practitioner should however complete a “walk down” of the final selected power line servitudes, the authorised corridor and all other activity areas (access roads, construction camps, etc.) prior to the start of any construction activities. This walk down will document all sites, features and objects, in order to propose adjustments to the corridor (s) and thereby to avoid as many impacts to heritage as possible.

Despite that no archaeological objects were observed during the survey, the client is reminded that unavailability of archaeological material does not mean absentee, archaeological material might be hidden underground. It is thus the responsibility of the developer to notify contractors and workers about archaeological material (e.g., pottery, stone tools, remnants of stone-walling, graves, etc) and fossils that may be located underground. Furthermore, the client is reminded to take precautions during construction.

Pre-construction education and awareness training

Prior to construction, contractors should be given training on how to identify and protect archaeological remains that may be discovered during the project. The pre-construction training should include some limited site recognition training for the types of archaeological sites that may occur in the construction areas. Below are some of the indicators of archaeological site that may be found during construction:

- ✚ Flaked stone tools, bone tools and loose pieces of flaked stone;
- ✚ Ash and charcoal;
- ✚ Bones and shell fragments;
- ✚ Artefacts (e.g., beads or hearths);
- ✚ Packed stones which might be uncounted underground, and might indicate a grave or collapse stone walling.

In the event that any of the above are unearthed, all construction within a radius of at least 10m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist or Provincial Heritage Resources Authority (PHRA) officer should be contacted immediately. In the meantime, it is the responsibility of the contractor to protect the site from publicity (i.e., media) until



a mutual agreement is reached. Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by PHRA.

Conclusions

A thorough background study and survey of the proposed development was conducted in line with SAHRA guidelines. Therefore, it is recommended that the proposed planning of the powerline proceed on condition that the recommended measures as laid in this report are adhered to.



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ACRONYMS AND ABBREVIATIONS

AIA	Archaeological Impact Assessment
EMP	Environmental Management Plan
HIA	Heritage Impact Assessment
LIA	Late Iron Age
MIA	Middle Iron Age
EIA	Early Iron Age
HMP	Heritage Management Plan
LSA	Late Stone Age
MSA	Middle Stone Age
ESA	Early Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Authority
PHRAG	Provincial Heritage Resources Authority Gauteng
SAHRA	South African Heritage Resources Agency



GLOSSARY OF TERMS

The following terms used in this Archaeology are defined in the National Heritage Resources Act [NHRA], Act Nr. 25 of 1999, South African Heritage Resources Agency [SAHRA] Policies as well as the Australia ICOMOS Charter (*Burra Charter*):

Archaeological Material: remains resulting from human activities, which are in a state of disuse and are in, or on, land and which are older than 100 years, including artifacts, human and hominid remains, and artificial features and structures.

Artefact: Any movable object that has been used, modified or manufactured by humans.

Conservation: All the processes of looking after a site/heritage place or landscape including maintenance, preservation, restoration, reconstruction and adaptation.

Cultural Heritage Resources: refers to physical cultural properties such as archaeological sites, palaeontological sites, historic and prehistorical places, buildings, structures and material remains, cultural sites such as places of rituals, burial sites or graves and their associated materials, geological or natural features of cultural importance or scientific significance. This include intangible resources such religion practices, ritual ceremonies, oral histories, memories indigenous knowledge.

Cultural landscape: “the combined works of nature and man” and demonstrate “the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both internal and external”.

Cultural Resources Management (CRM): the conservation of cultural heritage resources, management, and sustainable utilization and present for present and for the future generations

Cultural Significance: is the aesthetic, historical, scientific and social value for past, present and future generations.



Chance Finds: means Archaeological artefacts, features, structures or historical cultural remains such as human burials that are found accidentally in context previously not identified during cultural heritage scoping, screening and assessment studies. Such finds are usually found during earth moving activities such as water pipeline trench excavations.

Compatible use: means a use, which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance.

Conservation means all the processes of looking after a place so as to retain its cultural significance.

Expansion: means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

Grave: A place of interment (variably referred to as burial), including the contents, headstone or other marker of such a place, and any other structure on or associated with such place.

Heritage impact assessment (HIA): Refers to the process of identifying, predicting and assessing the potential positive and negative cultural, social, economic and biophysical impacts of any proposed project, plan, programme or policy which requires authorisation of permission by law and which may significantly affect the cultural and natural heritage resources. The HIA includes recommendations for appropriate mitigation measures for minimising or avoiding negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

Historic Material: remains resulting from human activities, which are younger than 100 years, but no longer in use, including artifacts, human remains and artificial features and structures.

Impact: the positive or negative effects on human well-being and / or on the environment.



In situ material: means material culture and surrounding deposits in their original location and context, for instance archaeological remains that have not been disturbed.

Interested and affected parties Individuals: communities or groups, other than the proponent or the authorities, whose interests may be positively or negatively affected by the proposal or activity and/ or who are concerned with a proposal or activity and its consequences.

Interpretation: means all the ways of presenting the cultural significance of a place.

Late Iron Age: this period is associated with the development of complex societies and state systems in southern Africa.

Material culture means buildings, structure, features, tools and other artefacts that constitute the remains from past societies.

Mitigate: The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.

Place: means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.

Protected area: means those protected areas contemplated in section 9 of the NEMPAA and the core area of a biosphere reserve and shall include their buffers.

Public participation process: A process of involving the public in order to identify issues and concerns, and obtain feedback on options and impacts associated with a proposed project, programme or development. Public Participation Process in terms of NEMA refers to: a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to specific matters.

Setting: means the area around a place, which may include the visual catchment.



Significance: can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgments and science-based criteria (i.e. biophysical, physical cultural, social and economic).

Site: a spatial cluster of artifact, structures, organic and environmental remains, as residues of past human activity.



1. Introduction

At the request of EcoSolve, Vhubvo Consultancy Cc conducted a Phase I Archaeological and Cultural Heritage Impact Assessment Study for the proposed Nzalo (Mqwabe) 400kV/88kV, 160MVA Substation with associated 88kV and 400kV turn-in power lines in KwaZulu-Natal Province as part of a suite of projects collectively known as the Ermelo-Richards Bay Coal Line Upgrade. The study aims to outline the archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed construction, and to advise mitigation should any be affected and these will in turn assist the developer to make a decision on the most appropriate option in line with the National Heritage Resource Act, 1999 (Act 25 of 1999). The findings of this cultural study have been informed by desktop study and field survey. The desktop study was undertaken through SAHRIS for previous Cultural Heritage Impact Assessments conducted in the region of the proposed development, and also for researches that have been carried out in the area over the past years.

2. Sites location and description

The proposed development is located east of Vryheid within the jurisdiction eDumbe Local Municipality of Zululand District. The land on which the development is proposed is transformed and no archaeological materials are expected. Furthermore, this proposal is on a section of land which is privately owned. The map provided on Figure 1 indicates the proposed study area.

Summary of Project Location Details

Province:	Gauteng
Local Municipality:	eDumbe
District:	Zululand
Proposed development:	Powerline



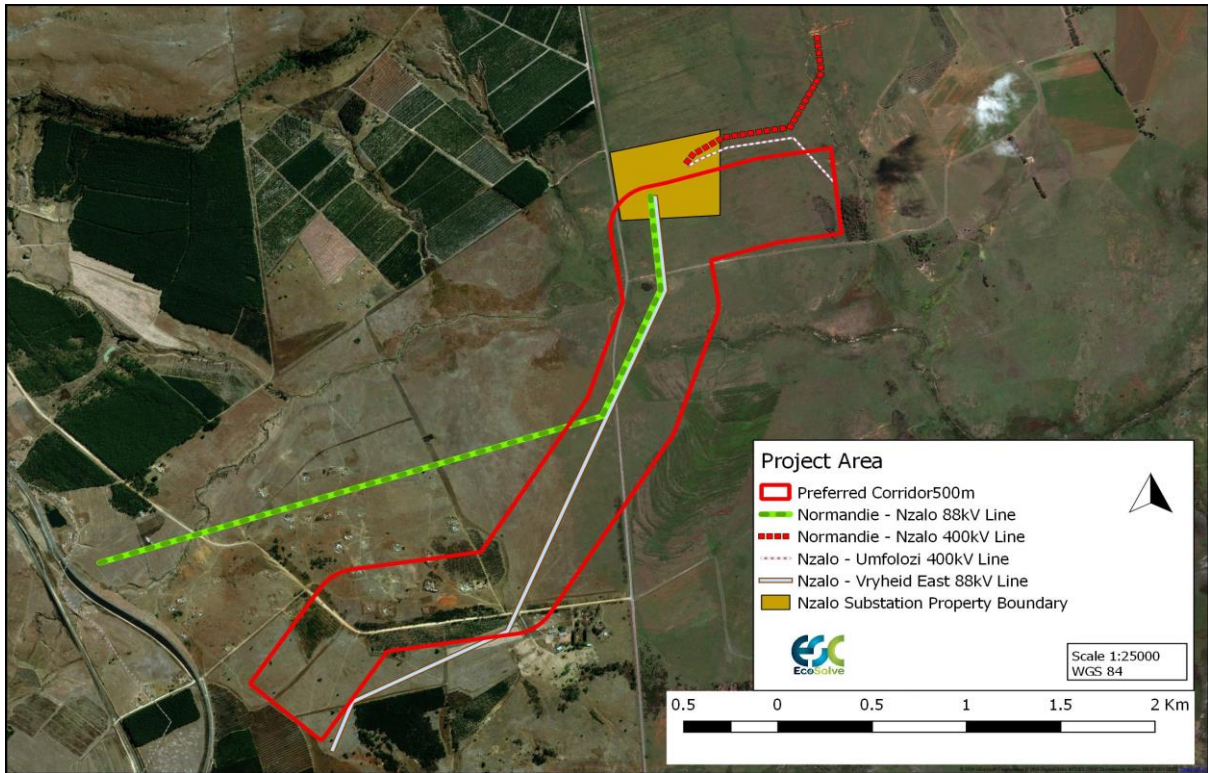


Figure 1: View of the map depicting the proposed development.



Figure 2: View of the eastern section of the area proposed for powerline.





Figure 3: An overview of the area proposed for Ermelo-Richards Bay Coal Line Upgrade.



Figure 4: An overview of the western section of the area proposed for powerline.





Figure 5: An overview of section of the proposed area.



Figure 6: An overview of some of the main road located in the area of the proposed area.



3. Nature of the proposed project

Transnet is South Africa's sole provider of rail transport infrastructure for coal transportation and it needs to increase the volume of coal that is being transported between the Mpumalanga coal fields and the Richard's Bay Coal Terminal for export market. 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 Holding SOC Limited (Eskom) received an authorisation on 27th October 2015 for the Construction of the Nzalo (Mqwabe) 400kV/88kV, 160MVA Substation with associated 88kV and 400kV turn in power lines East of Vryheid, KwaZulu-Natal Province. Eskom is proposing to amend the Environmental Authorisation to include a radio tower within Nzalo Substations well as 88kV power line deviation which falls outside approved corridor.

4. Purpose of the Cultural Heritage Study

The purpose of this Archaeological and Cultural Heritage study was to entirely identify and document archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed construction of powerline, these will in turn assist the developer in ensuring proper conservation measure in line with the National Heritage Resource Act, 1999 (Act 25 of 1999). Impact assessments highlight many issues facing sites in terms of their management, conservation, monitoring and maintenance, and the environment in and around the site. Therefore, this study involves the following:

- Identification and recording of heritage resources that maybe affected by the proposed construction of a powerline,
- Providing recommendations on how best to appropriately safeguard identified heritage sites. Mitigation is an important aspect of any development on areas where heritage sites have been identified.



5. Methodology and Approach

Background study introduction

The methodological approach is informed by the 2012 SAHRA Policy Guidelines for impact assessment. As part of this study, the following tasks were conducted: 1) literature review, 2), consultations with the developer and appointed consultants, 3), completion of a field survey and 4), analysis of the acquired data, leading to the production of this report.

Physical survey

The field survey was conducted on the **07th of July 2019**. Two archaeologists from Vhubvo conducted the survey.

Documentation

The general project area was documented. This documentation included taking photographs using cameras a 10.1 mega-pixel Sony Cybershort Digital Camera. Plotting of finds was done by a Garmin etrex Venture HC.

Oral interview

Oral interview was initiated with farm owners.

Restrictions and Assumptions

The sign of sites of heritage potential expected in the proposed area are mostly historical houses and graves. Although no remains of Stone/ Iron Age sites are expected in the proposed area, the proposed sites could still contain camps and some areas with suitable substrates that could have been used as quarries for material to produce tools.

It is assumed that the Social Impact Assessment and the Public Participation Process might also result in the identification of sites, features and objects, including sites of intangible heritage potential in the corridors and that these then will also have to be considered in the selection of the preferred alternatives.

6. Applicable Heritage Legislation

Several legislations provide the legal basis for the protection and preservation of both cultural and natural resources. These include the National Environment Management Act (No. 107 of 1998); Mineral Amendment Act (No 103 of 1993); Tourism Act (No. 72 of 1993); Cultural Institution Act (No. 119 of 1998), and the National Heritage Resources Act (Act 25 of 1999).



Section 38 (1) of the National Heritage Resources Act requires that where relevant, an Impact Assessment is undertaken in case where a listed activity is triggered. Such activities include:

- (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 50 m in length; and*
- (c) *any development or other activity which will change the character of an area of land, or water -*
 - (i) *exceeding 5 000 m² in extent;*
 - (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.*

Section 3 of the National Heritage Resources Act (25 of 1999) lists a wide range of national resources protected under the act as they are deemed to be national estate. When conducting a Heritage Impact Assessment (HIA) the following heritage resources have to be identified:

- (a) *Places, buildings structures and equipment of cultural significance*
- (b) *Places to which oral traditions are attached or which are associated with living heritage*
- (c) *Historical settlements and townscapes*
- (d) *Landscapes and natural features of cultural significance*
- (e) *Geological sites of scientific or cultural importance*
- (f) *Archaeological and paleontological sites*
- (g) *Graves and burial grounds including-*
 - (i) *ancestral graves*
 - (ii) *royal graves and graves of traditional leaders*
 - (iii) *graves of victims of conflict*
 - (iv) *graves of individuals designated by the Minister by notice in the Gazette*
 - (v) *historical graves and cemeteries; and*
 - (vi) *other human remains which are not covered by in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983)*
- (h) *Sites of significance relating to the history of slavery in South Africa*
 - (i) *moveable objects, including -*
 - (i) *objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens*
 - (ii) *objects to which oral traditions are attached or which are associated with living heritage*
 - (iii) *ethnographic art and objects*
 - (iv) *military objects*
 - (v) *objects of decorative or fine art*
 - (vi) *objects of scientific or technological interest; and*
 - (vii) *books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1 of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).*



Section 3 of the National Heritage Resources Act (No. 25 of 1999) also distinguishes nine criteria for places and objects to qualify as ‘part of the national estate if they have cultural significance or other special value ...’ These criteria are the following:

- (a) *Its importance in the community, or pattern of South Africa’s history*
- (b) *Its possession of uncommon, rare or endangered aspects of South Africa’s natural or cultural heritage*
- (c) *Its potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage*
- (d) *Its importance in demonstrating the principal characteristics of a particular class of South Africa’s natural or cultural places or objects*
- (e) *Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group*
- (f) *Its importance in demonstrating a high degree of creative or technical achievement at a particular period*
- (g) *Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons*
- (h) *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*
- (i) *Sites of significance relating to the history of slavery in South Africa.*

Other sections of the Act with a direct relevance to the AIA are the following:

Section 34(1) *No person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.*

Section 35(4) *No person may, without a permit issued by the responsible heritage resources authority:*

- *destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite*

Section 36 (3) *No person may, without a permit issued by SAHRA or a provincial heritage resources authority:*

- *destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside formal cemetery administered by a local authority;*
or
- *bring onto or use at a burial ground or grave any excavation equipment, or any equipment which assists in detection or recovery of metals.*

7. Degree of Significance

This category requires a broad, but detailed knowledge of the various disciplines that might be involved. It must be borne in mind that the significance of a site from an archaeological perspective does not necessarily depend on the size of the site but more on the uniqueness of the site within a region. The following table is used to grade heritage resources.



Table 1: Grading systems for identified heritage resources in terms of National Heritage Resources Act (Act 25 of 1999).

Level	Significance	Possible action
National (Grade I)	Site of National Value	Nominated to be declared by SAHRA
Provincial (Grade II)	Site of Provincial Value	Nominated to be declared by PHRA
Local Grade (IIIA)	Site of High Value Locally	Retained as heritage
Local Grade (IIIB)	Site of High Value Locally	Mitigated and part retained as heritage
General Protected Area A	Site of High to Medium Value	Mitigation necessary before destruction
General Protected Area B	Medium Value	Recording before destruction
General Protected Area C	Low Value	No action required before destruction

Significance rating of sites

(i) High

(ii) Medium

(iii) Low

These categories relate to the actual artefact or site in terms of its actual value as it is found today, and refers more specifically to the condition that the item is in. For example, an archaeological site may be the only one of its kind in the region, and will thus be considered to be of high regional significance, however; should there be heavy erosion of the greater part of the site, its significance rating would be medium to low. The following are guidelines for the nature of the mitigation that must take place as Phase 2 of the project.

High

- This is a ‘do not touch’ situation, alternative must be sought for the project, examples would be natural and cultural landscapes like the Mapungubwe Cultural Landscape World Heritage Site, or the house in which John Langalibalele resided.
- Certain sites, or features may be exceptionally important, but do not warrant leaving entirely alone. In such cases, detailed mapping of the site and all its features is imperative, as is the collection of diagnostic artefactual material on the surface of the site. Extensive excavations must be done to retrieve as much information as possible before destruction. Such excavations might cover more than half the site and would be mandatory; it would also be advisable to negotiate with the client to see what mutual agreement in writing could be reached, whereby part of the site is left for future research.



Medium

- Sites of medium significance require detailed mapping of all the features and the collection of diagnostic artefactual material from the surface of the site. A series of test trenches and test pits should be excavated to retrieve basic information before destruction.

Low

- These sites require minimum or no mitigation. Minimum mitigation recommended could be a collection of all surface materials and/ or detailed site mapping and documentation. No excavations would be considered to be necessary.

In all the above scenarios, permits will be required from the South African Heritage Resources Agency (SAHRA) or the appropriate PHRA as per the legislation (the National Heritage Resources Act, no. 25 of 1999). Destruction of any heritage site may only take place when the appropriate heritage authority has issued a permit. The following table is used to determine rating system on the receiving environment.

Table 2: Rating and evaluating criteria of impact assessment

NATURE		
Including a brief description of the impact of the heritage parameter being assessed in the context of the project. This criterion includes a brief written statement of the heritage aspect being impacted upon by a particular action or activity.		
TOPOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment of a project in terms of further defining the determined.		
1	Site	The impact will only affect site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact		



1	Unlikely	The chance of the impact occurring is extremely low (Less than 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than 75% chance of occurrence).

REVERSIBILITY

This describes the degree to which an impact on a heritage parameter can be successfully reversed upon completion of the proposed activity.

1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and mitigation measures exist.

IRREPLACEABLE LOSS OF RESOURCES

This describes the degree to which heritage resources will be irreplaceably lost as a result of proposed activity

1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resource	The impact will result insignificant loss of resources.
4	Complete loss of resource	The impact is result in a complete loss of



		all resources.
DURATION		
This describes the duration of the impact on the heritage parameter. Duration indicates the lifetime of a result of the proposed activity.		
1	Short term	The impact and its effects will either disappear with mitigation or will be mitigated through natural process in span shorter than the construction phase (0-1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0-2 years).
2	Medium term	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2-10 years).
3	Long term	The impact and its effects will continue or last for entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10-50 years).
4	Permanent	The only class of the impact that will non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).
CUMULATIVE EFFECT		



This describes the cumulative effect of the impacts on the heritage parameter. A cumulative effect/impact is an effect, which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from similar or diverse activities as a result of the project activity in question.		
1	Negligible Cumulative Impact	The impact would result in negligible to no cumulative effects.
2	Low Cumulative Impact	The impact would result in insignificant cumulative effects
3	Medium Cumulative Impact	The impact would result in minor cumulative effects
4	High Cumulative Impact	The impact would result in significant cumulative effects.
MAGNITUDE		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very High	Impact affects the continued viability of



		<p>the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapsed). Rehabilitation and remediation often impossible .If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.</p>
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8. History of the Area

Introduction

South Africa has one of the longest sequences of human development in the world. The prehistory and history of South Africa span the entire known life span of human on earth. It is thus difficult to determine exactly where to begin, a possible choice could be the development of genus *Homo* millions of years ago. South African scientists have been actively involved in the study of human origins since 1925 when Raymond Dart identified the Taung child as an infant halfway between apes and humans. Dart called the remains *Australopithecus africanus*, southern ape-man, and his work ultimately changed the focus of human evolution from Europe and Asia to Africa, and it is now widely accepted that humankind originated in Africa (Robbins *et al.* 1998). In many ways this discovery marked the birth of palaeoanthropology as a discipline. Nonetheless, the earliest form of culture known in South Africa is the Stone Age. These prehistoric period during which humans widely used stone for tool-making, stone tools were made from a variety of different sorts of stone. For example, flint and chert were shaped for use as cutting tools and weapons, while basalt and sandstone were used for ground stone. Stone Age can be divided into Early, Middle and Late, it is argued that there are two transitional period. Noteworthy that the time frame used for Stone Age period is an approximate and differ from researcher to researcher (see Korsman & Meyer 1999, Mitchell 2002, Robbins *et al.* 1998)

Environmental conditions played an important role in influencing past human settlements in the KwaZulu-Natal. As captured in the KwaZulu-Natal Museum, heritage site inventories indicate a wide spectrum of archaeological sites covering different time-periods and cultural traditions in



the KZN region.

Stone Age

ESA sites in this Province have produced very little with regards to other archaeological remains and much is not known about their period. Although Early Stone Age sites occur at various locations in the Province, none of them are in context and occur mostly in open-air situations, or in dongas close to water with little in-situ material. These sites were inhabited by *Homo erectus* and *Homo heidelbergensis* who were for the most part scavengers. Apart from stone artefacts, no preserved archaeological remains have been preserved dating back to this period. No information is known on the food eaten by ESA people in Natal, but it can be assumed that their diet consisted of animals and plant food (Mazel 1989). Oliver Davies a pioneer archaeologist being the only person to research ESA period in KwaZulu-Natal has recognized different traditions of Early Stone Age traditions in KwaZulu-Natal. All these traditions are characterised by heavy tools made from cores such as scrappers and picks, hand axes and cleavers (Davies 1976; Mazel 1989).

MSA period dates between 40 000 years and 200 000 years ago. Clear technological differences separate MSA from ESA tools which were generally core tools, while MSA tools were made of flakes and blades detached from the core (Mazel 1989). Various Middle Stone Age sites occur in the KZN region and the vast majority of these are open air sites or sites with little stratigraphic value. However, cave sites with Middle Stone Age deposits do occur in KwaZulu-Natal as well. A few sites with impressive MSA deposits have been excavated in KZN, which includes the Sibudu Cave, Holley Shelter, Umbeli Belli Shelter, Umhlatuzana Cave, and Border Cave (Mazel 1989). All these sites provided impressive evidence for fine resolution data and detailed stratigraphy as well as evidence for early farms relating to the period associated with the origins of anatomically modern people in the MSA of South Africa (Tomose 2014; Wadley 2001; Wadley 2005; Wadley & Jacobs 2006).

The Late Stone Age (LSA) sites occur throughout the province, the caves, plains and hills of this region contain sites with rock art from the San and Khoi San cultural groups. The Later Stone Age is generally associated with San hunter-gatherers or their immediate ancestors in KwaZulu-Natal. The region is renowned for the prolific LSA San rock painting sites concentrated in the

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areas such as Giants Castle, Ukhahlamba and Kamberg in the Drakensberg Mountains were rock shelters suitable for occupation are plentiful. It is important to note that rock art sites do occur outside the Drakensberg; such as rock art sites documented in the areas around Escourt, Mooi River and Dundee, however, these sites have not been afforded similar research attention as those sites occurring in the Drakensberg (Mazel 1989). According to the KwaZulu-Natal Museum archaeological database Later Stone Age sites have also been located in the Tugela River in the past but these are mostly restricted to surface scatters.

Iron Age

Pottery production is also an important feature of Iron Age communities. Iron smelting was practised quite significantly by Iron Age society as they had to produce iron implements for agricultural use. There is however no information of the area having iron smelting areas. Although Iron Age people occasionally hunted and gathered wild plants and shellfish, the bulk of their diet consisted of the crops they cultivated as well as the meat of the animals they kept. The LIA is not only distinguished from the EIA by greater regional diversity of pottery styles but is also marked by extensive stone wall settlements. However, stone walls were not common as Nguni people used thatch and wood to build their houses.

The archaeological evidence of the Iron Age people in the province is represented through distinct ceramic traditions, stone walls and other structural features such as grain bins and hut floor remains, kraal remains, vitrified cattle dung (sheep and goat), iron implements, slugs, bellows and furnaces (Huffman 2007; Maggs 1984a, 1989; Mitchell 2002). Iron Age occupation in KwaZulu-Natal was during the Early and Late Iron Age. There is no evidence of occupation during Middle Iron Age. Occupation of the KZN region was by the Bantu speakers who migrated from as far as the Great Lakes regions of Congo and Cameroon (Tomose 2014). Recently research has suggested that it may have been too dry further inland at this time for successful cultivation. However, from AD 650 climatic conditions improved and agriculturalists expanded into the valleys of KZN, where they settled close to rivers in savanna or bushveld environments (van Schalkwyk 2013). These conditions supported sorghum and millet production and cattle management in the grassland component of these environments (Maggs 1984a, 1989; Mitchell 2002).

KZN was occupied by the Nguni speaking group of the Eastern Bantu language stream is characterised by settlement patterns defined as the Central Cattle Pattern (CCP) (Huffman, 2010,



2007). The earliest known type of stonewalling that characterizes this settlement pattern (CCP) in the region (KZN) is known as Moor Park, which dates from the 14th to 16th Centuries AD (Huffman, Whitelaw, Davis 1974). This type of stonewalling can be found in defensive position on hilltops in the Midlands of KZN (Huffman, 2010 & 2007).

The EIA sites in KZN date to around AD 500 to AD 900. Extensive research in the province of this period led to it being divided in the following time lines according to ceramic styles (Maggs, 1989; Huffman 2007): Msuluzi (AD500); Ndondondwane (AD 700-800); and Ntshekane (AD 800-900). The archaeological database of the Natal Museum indicates that ten Early Iron Age sites occur in the immediate vicinity of the study area. Some well-known excavated sites such as Mamba, Whosi and Ndondondwane (Huffman 2007) occur in the banks of the Thukela River. EIA sites in KZN are found in level valley-bottom situations with tillable (colluvial and alluvial) arable soils and close to rivers or lake shorelines with opportunities for grazing and for obtaining timber (Maggs 1980, 1994–95; Tomose 2014; van Schalkwyk &Wahl 2013). The LIA is not only distinguished from the EIA by greater regional diversity of pottery styles but is also marked by extensive stonewall settlements. However, in this part of the world, stonewalls were not common as the Nguni people used thatch and wood to build their houses (Maggs, 1989; Huffman 2007). An astonishing 82 Later Iron Age sites (belonging to the period 1200 AD – 1880 AD) has been recorded in the Hluhluwe Nature Reserve.

Historical Period

The Portuguese explorer Vasco de Gama named Natal in 1497. The colonial history of the area starts around 1820 when early English ivory traders established themselves at Port Natal (Durban), at the time when Shaka, King of the Zulu was firmly in charge of the hinterland. They made almost no attempt to develop the interior, whose inhabitants had been decimated by the Zulu chief Shaka. During 1837 the Dutch descendants (i.e. Voortrekkers) entered the area through the Drakensberg passes, and defeated the Zulus at the Battle of Blood River in 1838 and thereafter established a short-lived Boer republic called Natalie. However, by 1845 Natal became a British colony. Between 1860 and 1911 shiploads of Indians brought in by British arrived to work in the coastal sugar plantations (www.sahistory.org.zaa; www.zulu.org).

Northern and central KwaZulu-Natal is strewn with sites of battles between the Zulu, Boer and British during the 1800's and 1900's. In 1879 the British finally conquered the Zulu in the Anglo-Zulu War and acquired the Zululand (the area north of the Tugela River). The lands north of the



Buffalo River were added in 1902. These conflicts are now collectively known as the South African War. A result of these conflicts was the construction of many forts in the area. Several colonial buildings, gravesites, monuments, stone Cairns and statues dating from the later 19th century as well as subsequent periods abound in the province. These are the legacy of this violent time in our history, like the archaeological resources of the province, are also protected by heritage legislation (Derwent 2006).

In 1910 Natal colony became a province of the Union of South Africa. In 1961 Natal was declared the province of Republic of South Africa. After the end of Apartheid in 1994 the homeland of KwaZulu was re-incorporated into the Natal province and was renamed to KwaZulu-Natal. KwaZulu, means "Place of the Zulu". The KZN province is home to the Zulu monarchy; the majority population and language of the province is Zulu. It is the only province in South Africa that has the name of its dominant ethnic group as part of its name (www.sahistory.org.za; www.zulu.org).



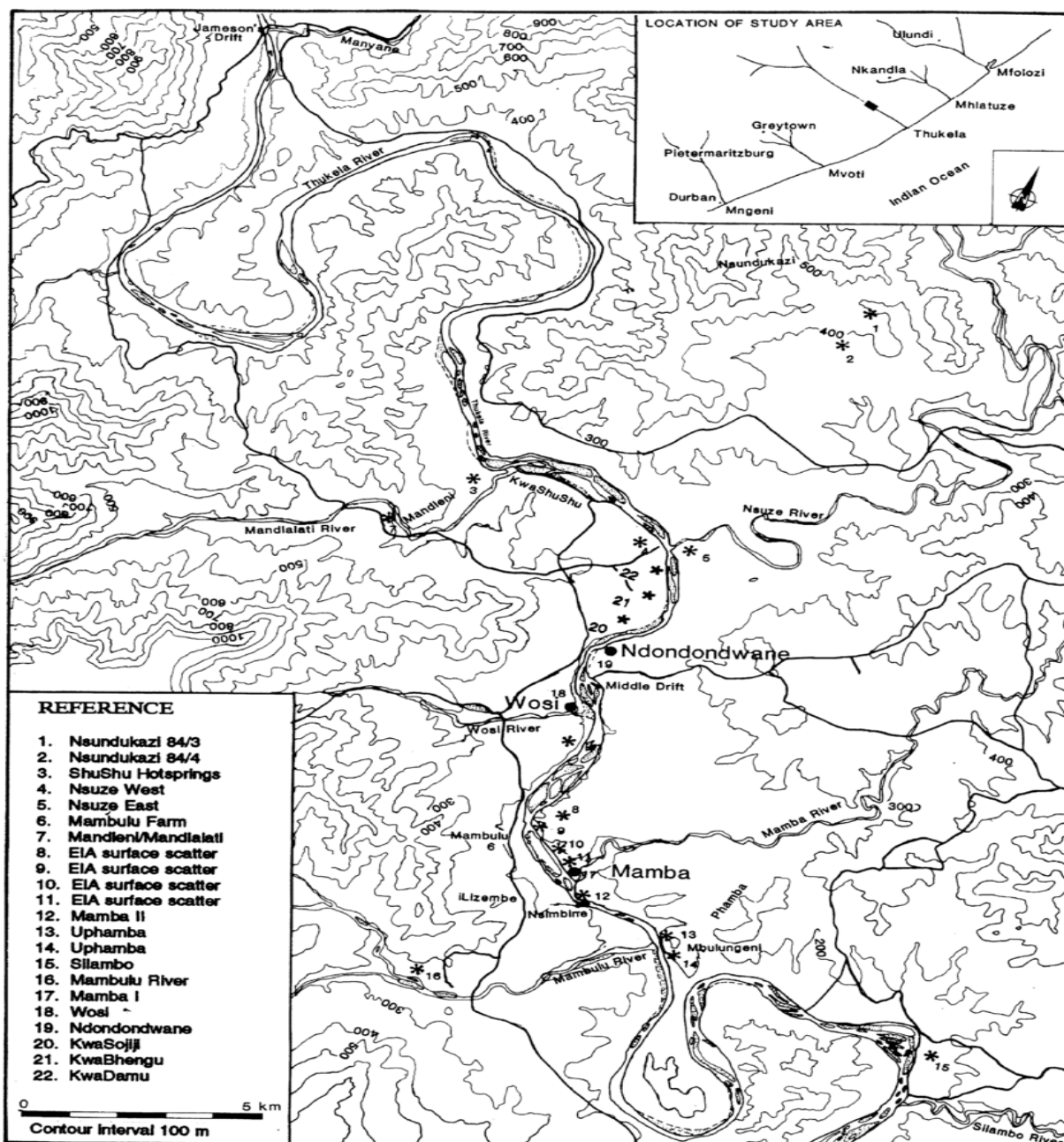


Figure 7: Map of Ndongondwane phase archaeological sites in the lower Thukela River valley (Greenfield and Van Schalkwyk 2008).

9. Survey Findings

The main aim of the survey was to evaluate potential heritage resources that would occur within the boundaries of the proposed area (s) as well as to determine if there is any hamartia that would prevent the proposed development from taking place in any of the proposed study area



(s). Archaeological sites dating to the Stone, Iron and Historical Age are known to occur in the region of study area. However, from the survey conducted, most of the known sites would only have an indirect impact. For example, power line crossing some distance from the site, thereby having only a visual impact. However, note should be taken that detailed information about the powerline is still in early stage, e.g., the exact position of the powerline/access roads are yet to be finalised, it might be possible that specific aspects related to development might have a direct disturbance, which would result in irreplaceable loss of heritage resources. Below are the sensitive areas that were noted during survey:

- Iron Age people preferred to settle on the alluvial soils close to rivers. As such, all river banks are viewed to be sensitive and should be avoided in the best way possible;
- The proposed development is also located in area with localised Airports, impacting on these should be avoided as far as possible.

The study area was investigated for sites of heritage significance that might be affected by the proposed construction. The only sign of sites of heritage potential were mostly graves, and this can be avoided. Nonetheless, there is also a high chance of finding archaeological sites and this will be difficult to avoid since most of these are trifling and often hidden underground and on area encroached by bush, only exposed once construction begins.

9.1 Impact Assessment

Below is a description of the related impact ratings. Note that these impacts are assessed as per Table 2 above. The proposed development will thus have related impacts to current condition. The anticipated rating is given in Table 3 below:

Table 3: Anticipated impact rating.

Alternatives Corridor 1	Ratings
Impact	Loss of any materials on site
Nature	Negative
Topographical Extent	The impact will only affect site
Duration	Long term



Magnitude	Medium
Probability	Possible
Significance	Medium
Reversibility	Irreversible
Irreplaceable Loss	The impact can result in significant loss

In consideration of the nature of the proposal, it is recommended that a heritage practitioner complete a “walk down” of the final selected power line servitudes, the authorised corridor and all other activity areas (access roads, construction camps, etc.) prior to the start of any construction activities. This walk down will document all sites, features and objects, in order to propose adjustments to the corridor (s) and thereby to avoid as many impacts to heritage as possible.

Despite that no archaeological objects were observed during the survey, the client is reminded that unavailability of archaeological material does not mean absentee, archaeological material might be hidden underground. It is thus the responsibility of the developer to notify contractors and workers about archaeological material (e.g., pottery, stone tools, remnants of stone-walling, graves, etc) and fossils that may be located underground. Furthermore, the client is reminded to take precautions during construction.

Pre-construction education and awareness training

Prior to construction, contractors should be given training on how to identify and protect archaeological remains that may be discovered during the project. The pre-construction training should include some limited site recognition training for the types of archaeological sites that may occur in the construction areas. Below are some of the indicators of archaeological site that may be found during construction:

- ✚ Flaked stone tools, bone tools and loose pieces of flaked stone;
- ✚ Ash and charcoal;
- ✚ Bones and shell fragments;
- ✚ Artefacts (e.g., beads or hearths);



- ✚ Packed stones which might be uncounted underground, and might indicate a grave or collapse stone walling.

In the event that any of the above are unearthed, all construction within a radius of at least 10m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist or Provincial Heritage Resources Authority (PHRA) officer should be contacted immediately. In the meantime, it is the responsibility of the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached. Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by PHRA.

10. Conclusions

A thorough background study and survey of the proposed development was conducted in line with SAHRA guidelines. Therefore, it is recommended that the proposed planning of the powerline proceed on condition that the recommended measures as laid in this report are adhered to.



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National Archives of South Africa
South African Heritage Resources Agency Database



APPENDIX 1: SITE SIGNIFICANCE

The following guidelines for determining site *significance* were developed by SAHRA in 2003. 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.

(a) 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 organization of importance in history?
- Does it have significance relating to the history of slavery?

(b) Aesthetic value

- Is it important in exhibiting particular aesthetic characteristics valued by a community or cultural group?

(c) 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?

(d) Social value

- Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?

(e) Rarity

- Does it possess uncommon, rare or endangered aspects of natural or cultural heritage?

(f) Representivity

- Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects?
- What is the 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?

- Is it important 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?

