

Phase 1 Heritage Impact Assessment Report:

Proposed Ariadne Msunduzi 132kV Power Lines 2 & 3 and
Ariadne Georgedale 132kV Power Lines 1 & 2,
Msunduzi Local Municipality,
uMgungundlovu District,
KwaZulu-Natal

Prepared for

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MANAGEMENT SUMMARY

eThembeni Cultural Heritage was appointed by Eyethu Engineers to undertake a Phase 1 Heritage Impact Assessment of proposed power lines, as required by the National Environmental Management Act 107 of 1998 as amended, in compliance with Section 38 of the National Heritage Resources Act 25 of 1999 as amended.

HERITAGE RESOURCE DESCRIPTIONS AND SIGNIFICANCE

Buildings and structures

Given the history and nature of the region it is likely that buildings and structures older than sixty years are present within proposed line corridors.

Landscapes and natural features

— **Boulder Hill Game Ranch**

Boulder Hill Game Ranch is a conservancy with high heritage significance at the local and regional levels for its scientific and aesthetic values.

Traditional burial places

Given the history and nature of the region it is likely that traditional burial places are present within proposed line corridors. All human remains have high heritage significance at all levels for their spiritual, social and cultural values.

Archaeological sites

On the farm Leliefontein 1175 in the southern portion of the proposed Western corridor two outspans were registered historically. Archaeological remains might be present in greenfield areas within the corridor.

ASSESSMENT OF DEVELOPMENT IMPACT

Buildings and structures

Power line infrastructure is unlikely to directly affect buildings or structures, but may have an indirect visual impact, affecting the sense of place of an historic farmstead, for example.

Nature	Extent	Duration	Intensity	Impact on irreplaceable resources	Consequence	Probability	Significance
Neutral-Negative	Low	High	High	Low	Low	Low-Medium	Low-Medium

Landscapes and natural features

— **Boulder Hill Game Ranch**

The sense of place of this heritage resource could be compromised by insensitive placement of the proposed Eastern corridor.

Nature	Extent	Duration	Intensity	Impact on irreplaceable resources	Consequence	Probability	Significance
Negative	Medium	High	High	Low	Low-Medium	Medium	Medium

Traditional burial places

Grave sites could be altered or destroyed by tower placements, materials' storage areas, construction camps, access roads, etc.

Nature	Extent	Duration	Intensity	Impact on irreplaceable resources	Consequence	Probability	Significance
Negative	Low	High	High	High	High	Medium	High

Archaeological sites

Archaeological sites could be altered or destroyed by tower placements, materials' storage areas, construction camps, access roads, etc.

Nature	Extent	Duration	Intensity	Impact on irreplaceable resources	Consequence	Probability	Significance
Negative	Low	High	High	High	High	Low-Medium	Medium

RECOMMENDED MITIGATION

General

A heritage practitioner should complete a 'walk-through' of the final selected power line routes and all activity areas (tower positions, access roads, construction camps, materials' storage areas, etc.) prior to the start of any construction activities and assess direct impacts on discrete heritage resources such as archaeological and palaeontological sites and graves.

Buildings and structures

No buildings or structures may be demolished, altered or added to without the prior written approval of the Amafa Council having been obtained on written application to the Council.

Tower placements should ensure minimal intrusion on the sense of place of historic homesteads.

Landscapes and natural features

— Boulder Hill Game Ranch

Routing of the proposed Eastern corridor parallel with the existing 400kV power line south and east of this heritage resource will minimise the visual impact on this largely north-facing conservation area.

Traditional burial places

Human remains may not be altered in any way without the permission of Amafa and the next-of-kin. Given the social and financial costs associated with exhumation and reinterment of graves, every effort should be made to relocate infrastructure during the planning phase to avoid any impacts on such heritage resources.

Archaeological sites

Archaeological sites may not be altered in any way without the permission of Amafa.

RECOMMENDED MONITORING

None at present.

CONCLUSION

We recommend that the development proceed with the proposed heritage mitigation and have submitted this report to Amafa in fulfilment of the requirements of the National Heritage Resources Act. The client may contact Ms Bernadet Pawandiwa at Amafa's Pietermaritzburg office in due course to enquire about the Council's decision.

If permission is granted for the development to proceed, the client is reminded that the Act requires that a developer cease all work immediately and adhere to the protocol described in Section 9 of this report should any heritage resources, as defined in the Act, be discovered during the course of development activities.

CONTENTS

MANAGEMENT SUMMARY	2
1 INTRODUCTION	5
2 TERMS OF REFERENCE	5
3 PROJECT DESCRIPTION.....	6
4 PROJECT LOCATION AND ENVIRONMENTAL DESCRIPTION.....	7
5 HERITAGE RESOURCES AND SIGNIFICANCE	13
ASSESSMENT METHODOLOGY.....	13
LOCAL HISTORY	16
ASSESSMENT OF HERITAGE RESOURCES	18
6 ASSESSMENT OF DEVELOPMENT IMPACT.....	20
7 RECOMMENDED MITIGATION MEASURES	22
8 RECOMMENDED MONITORING	22
9 PROTOCOL FOR THE IDENTIFICATION, PROTECTION AND RECOVERY OF HERITAGE RESOURCES DURING CONSTRUCTION AND OPERATION.....	23
10 CONCLUSION.....	24
11 BIBLIOGRAPHY	24
APPENDIX A STATUTORY REQUIREMENTS.....	25
APPENDIX B ARCHAEOLOGICAL AND HISTORICAL CONTEXT OF THE STUDY AREA.....	30
APPENDIX C METHODOLOGY	37
APPENDIX D SPECIALIST COMPETENCY AND DECLARATION OF INDEPENDENCE.....	42

LIST OF FIGURES

FIGURE 1 LOCATION OF PROPOSED PROJECT IN REGIONAL CONTEXT (SOURCE: GOOGLE EARTH).....	7
FIGURE 2 PROPOSED LINE CORRIDORS (SOURCE: EYETHU ENGINEERS).....	8
FIGURE 3 EXTRACT FROM RELEVANT 1:50 000 MAP SHEET, INDICATING REGIONAL LOCATION OF DEVELOPMENT..	9
FIGURE 4 APPROXIMATE ALIGNMENTS OF PROPOSED WESTERN AND EASTERN CORRIDORS.	10
FIGURE 5 SUGAR CANE PLANTATIONS AROUND ARIADNE SUBSTATION.....	11
FIGURE 6 CENTRAL PORTION OF PROPOSED EASTERN CORRIDOR.....	12
FIGURE 7 NAC ROUTE FROM DRUMMOND TO MARITZBURG (NAC 1929).....	16
FIGURES 8 AND 9 VIEWS OF BOULDER HILL GAME RANCH FACING SOUTH.....	19

1 INTRODUCTION

eThembeni Cultural Heritage was appointed by Eyethu Engineers to undertake a Phase 1 Heritage Impact Assessment of proposed power lines, as required by the National Environmental Management Act 107 of 1998 as amended (NEMA), in compliance with Section 38 of the National Heritage Resources Act 25 of 1999 (NHRA) (refer to Appendix A).

South Africa's heritage resources are both rich and widely diverse, encompassing sites from all periods of human history. Resources may be tangible, such as buildings and archaeological artefacts, or intangible, such as landscapes and living heritage. Their significance is based upon their aesthetic, architectural, historical, scientific, social, spiritual, linguistic, economic or technological values; their representivity of a particular time period; their rarity; and their sphere of influence.

The integrity and significance of heritage resources can be jeopardized by natural (e.g. erosion) and human (e.g. development) activities. In the case of human activities, a range of legislation exists to ensure the timeous identification and effective management of heritage resources for present and future generations.

This report represents compliance with a full Phase 1 HIA (excluding a specialist palaeontological study) for the proposed development, for review by Amafa aKwaZulu-Natali, the Provincial Heritage Resources Authority.

2 TERMS OF REFERENCE

A Phase 1 HIA must address the following key aspects:

- the identification and mapping of all heritage resources in the area affected;
- an assessment of the significance of such resources in terms of heritage assessment criteria set out in regulations;
- an assessment of the impact of the development on heritage resources;
- 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;
- the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development.

In addition, the HIA should comply with the requirements of NEMA, including providing the assumptions and limitations associated with the study; the details, qualifications and expertise of the person who prepared the report; and a statement of independence.

3 PROJECT DESCRIPTION¹

The proposed project entails the construction and operation of two separate double circuit 132kV power lines, each approximately 6km in length, for Ariadne-Msunduzi and Ariadne-Georgedale near Pietermaritzburg. Accordingly, two separate servitudes are required to accommodate two separate power line routes. These two separate routes may not run parallel, owing to risks associated with common cause failure. These proposed power lines will link Ariadne Substation to the existing Msunduzi/Georgedale 132kV lines. A total of fifteen line corridor options have been investigated to date, culminating in three distinct corridor options, namely eastern, western and central.

Line corridors comprise possible “routes” required by Eskom for the construction of two separate double circuit power lines. These “corridors” do not describe the exact position of the line, but define a strip of land within which the eventual power line and pylons would be positioned, as determined by physical features, practical constraints, technical line requirements, landowner requests and other relevant factors.

The western and eastern line route options are favoured for the required two separate power line routes. These two peripheral line route options, namely the western and eastern route corridors run on either edge of the central valley area.

Eastern Line Route Option

The eastern option cuts through existing crane foraging sites, however this impact is reduced as the line parallels the existing higher 400kV lines. There is only one small portion in the northeast sector, where the line breaks away from the 400kV lines, to just east of the existing railway bridge, and bird flappers have been stipulated in this section in order to help mitigate/reduce this impact. In the north, the proposed power line has been routed around the edges of the proposed Zulu Valley land development, in an attempt to accommodate the layout plan details received by Eskom. With ongoing consultation and discussion, a suitable easterly line route option might be obtained in this sector. In the south, there are additional constraints with proposed sugar cane farming, again consultation and discussion with landowners should assist in formulating acceptable line routes.

Western Line Route Option

In the west, there are several constraints that affect the northern portion of this option. The proposed line corridor has been pushed in a far westerly direction, owing to landowner requests, and a proposed development in this area, and this in turn results in traversing the highest point of Foxhill, Korandil, with high visual impact from all aspects. A revised layout plan effectively moves the proposed development further down the hill, in an easterly to south-easterly direction, owing to the existence of prime oribi habitat near the top of the hill, and as such, it may be possible to route the proposed western power line for the western sector through the corridor indicated with careful and continued consultation with all I&APs.

Central Line Route Options

Central line route options are not considered viable given the proposed “whole valley development” ethos, together with the issues of the central crane breeding site, existing structures, small land parcel sizes, development proposals in the area, drainage areas and existing establishments. Existing power lines already surround the study area, and cut through it. Virtually all of the present landowners already have more than one servitude, either electrical or underground water pipes on their properties, and are affected by these either physically or visually.

¹ Information obtained from the Environmental Scoping Report (Final) prepared by K Samouilhan for Eskom Distribution Eastern Region dated January 2007.

4 PROJECT LOCATION AND ENVIRONMENTAL DESCRIPTION²

The proposed project is situated in the Msunduzi Local Municipality (KZN225), uMgungundlovu District (DC22; Figures 1 and 2). The relevant Surveyor General 1:50 000 map sheet is 2930CB Pietermaritzburg (Figures 3 and 4). The coordinates of the approximate centre of the study area are 29°42'00"S 30°24'30"E.

The project is located to the south east of Pietermaritzburg, with Bisley Game Reserve to the north west, Shortts Retreat in Mkondeni to the north east, Thornville and the Ariadne Substation near Leliefontein in the south west and the old Manderston railway station to the south east.

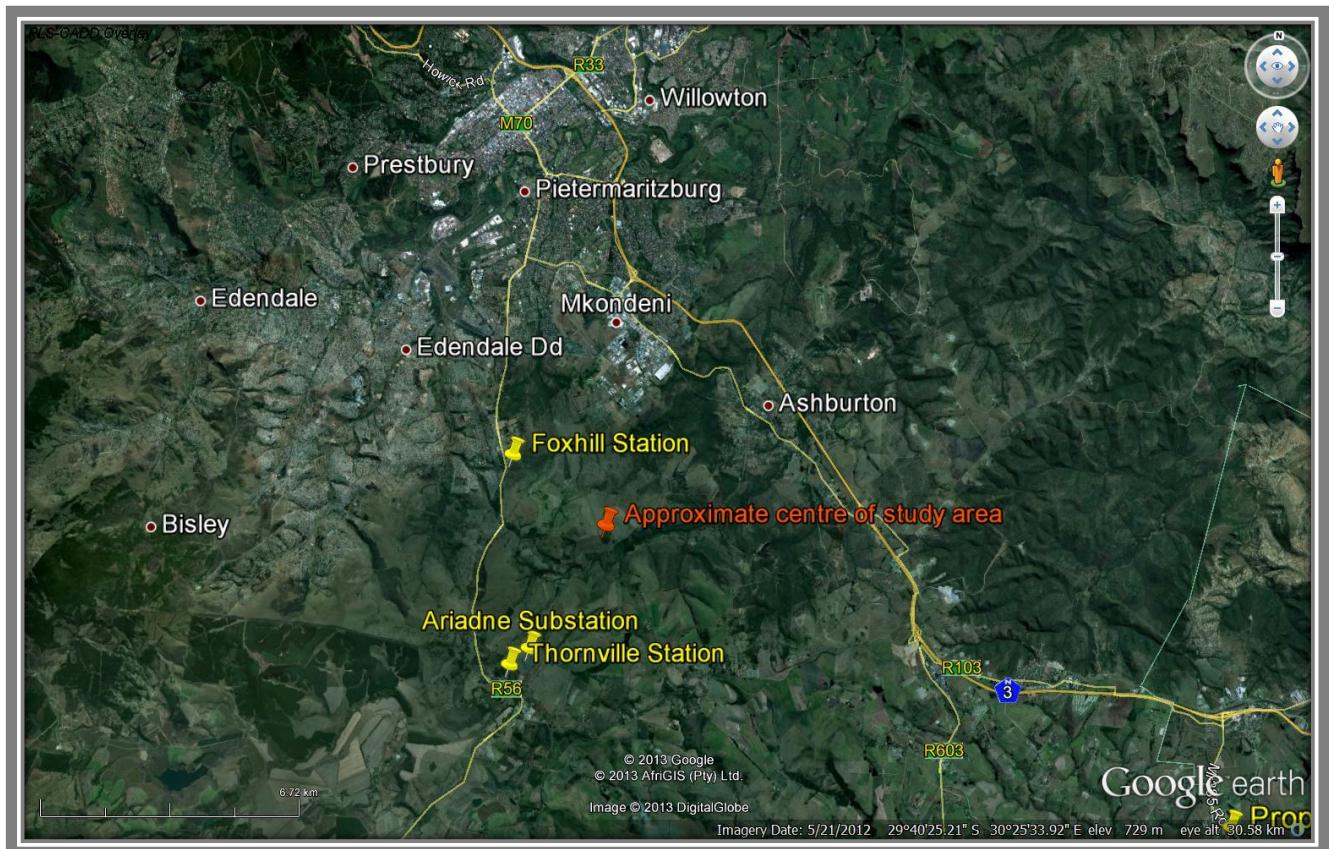


FIGURE 1 LOCATION OF PROPOSED PROJECT IN REGIONAL CONTEXT (SOURCE: GOOGLE EARTH).

² Information obtained from the Environmental Scoping Report (Final) prepared by K Samouilhan for Eskom Distribution Eastern Region dated January 2007.

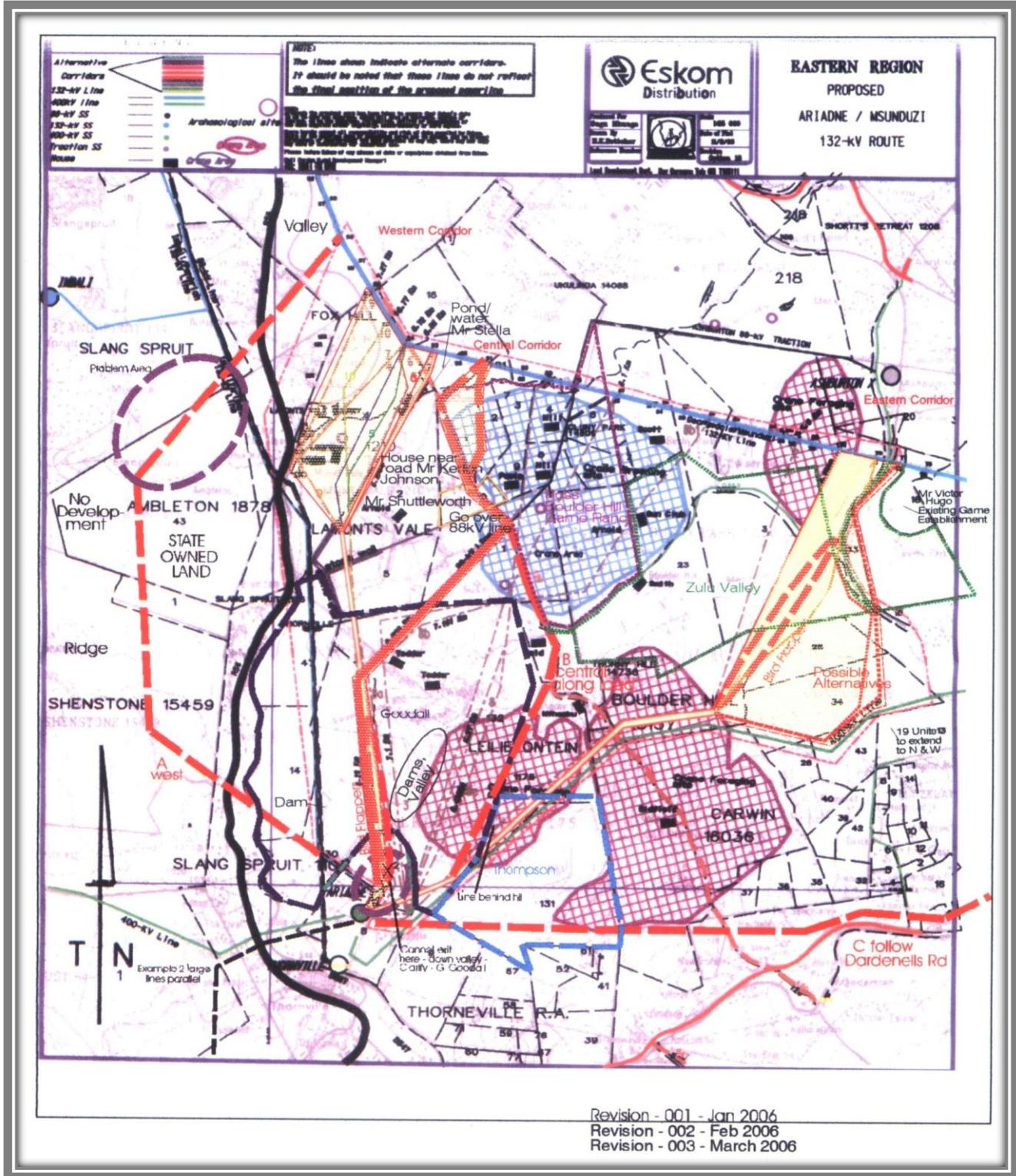


FIGURE 2 PROPOSED LINE CORRIDORS (SOURCE: EYETHU ENGINEERS).

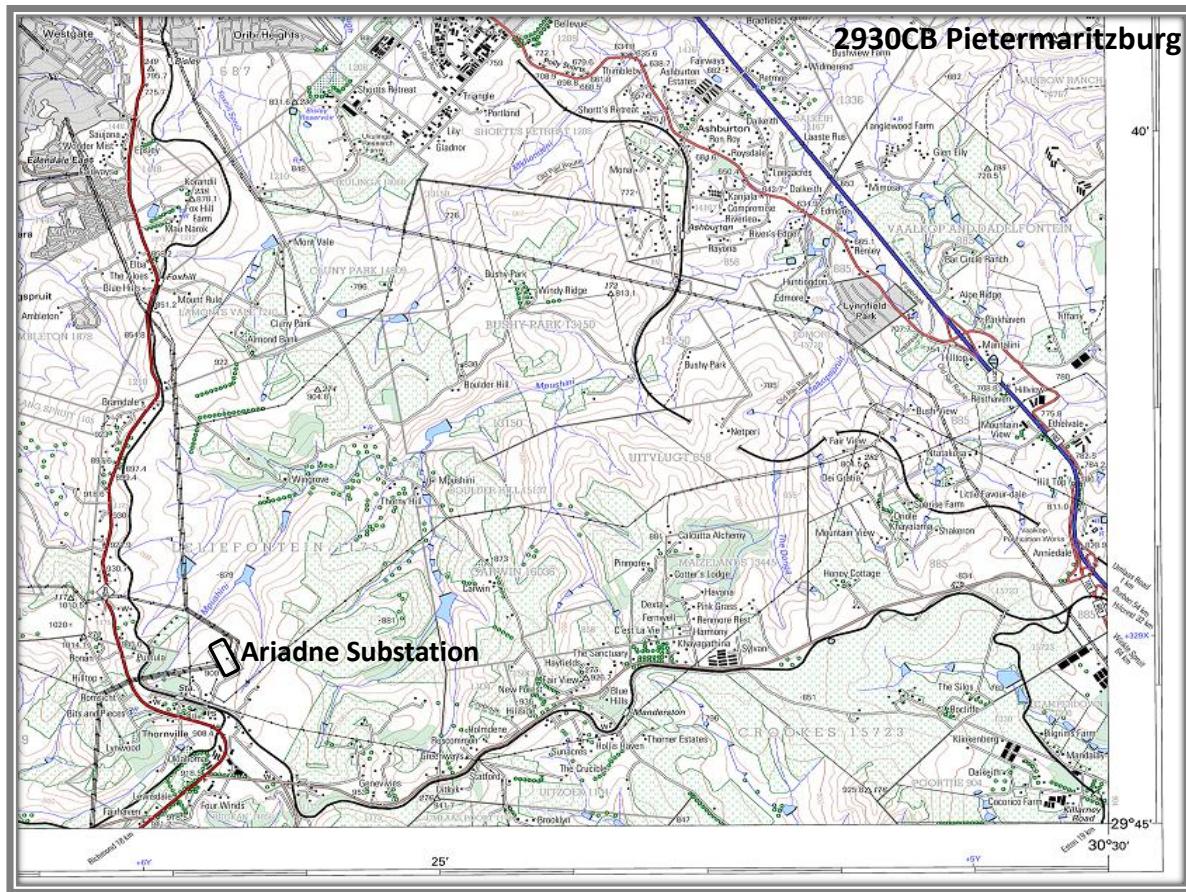


FIGURE 3 EXTRACT FROM RELEVANT 1:50 000 MAP SHEET, INDICATING REGIONAL LOCATION OF DEVELOPMENT.

The geology of the area indicates that the area contains iron or manganese coated fragments of light olive – grey oxidised and finely laminated shale of the Volksrust Formation. The principal rock types present in the western half of the study area consist mainly of shales and boulder clay belonging to the Dwyka Series of the Karoo System, and in the east, coarse grained sandstone, siltstone and mudstone of the Natal Group predominate. Post Karoo intrusive dolerite dykes and sills are more predominant on the western half of the study area close to Ariadne Substation.

The topography of the area is not representative of the dramatic variation possible in KZN, taking on a far more consistent look. Although the terrain is fairly undulating, it is not so steep as to prevent construction in any one portion. Ariadne Substation is situated at 909m metres above sea level. The Ngomankulu Mountain in the south west rises to a height of 960 metres above sea level. The proposed new portion of line passes over the undulating territory of Leliefontein, Bushy Park, crossing over the Mpshini River, and passing close to the Mkondeni River. The existing Msunduzi / Georgedale line passes over the Mkondeni River and the Foxhill Stream. A few small farm dams are also located in the study area. The landscape descends from 909 metres above sea level at Ariadne, to approximately 813 metres above sea level at the intersection with the existing Msunduzi / Georgedale lines. However, a 904m metres above sea level peak is situated in the centre of the study area, in an area in which Blue Crane are also found.

High altitudes are generally associated with steep slopes, remote access and topographical constraints, and impose technical limitations such as poor insulation capacities. High altitudes are also prone to more lightning strikes and severe weather conditions. A power line at high altitudes could be visually conspicuous and pylons are therefore, if possible, neither placed on skylines, nor at high altitude, but rather in valleys, at the foot of mountains or on lower land.

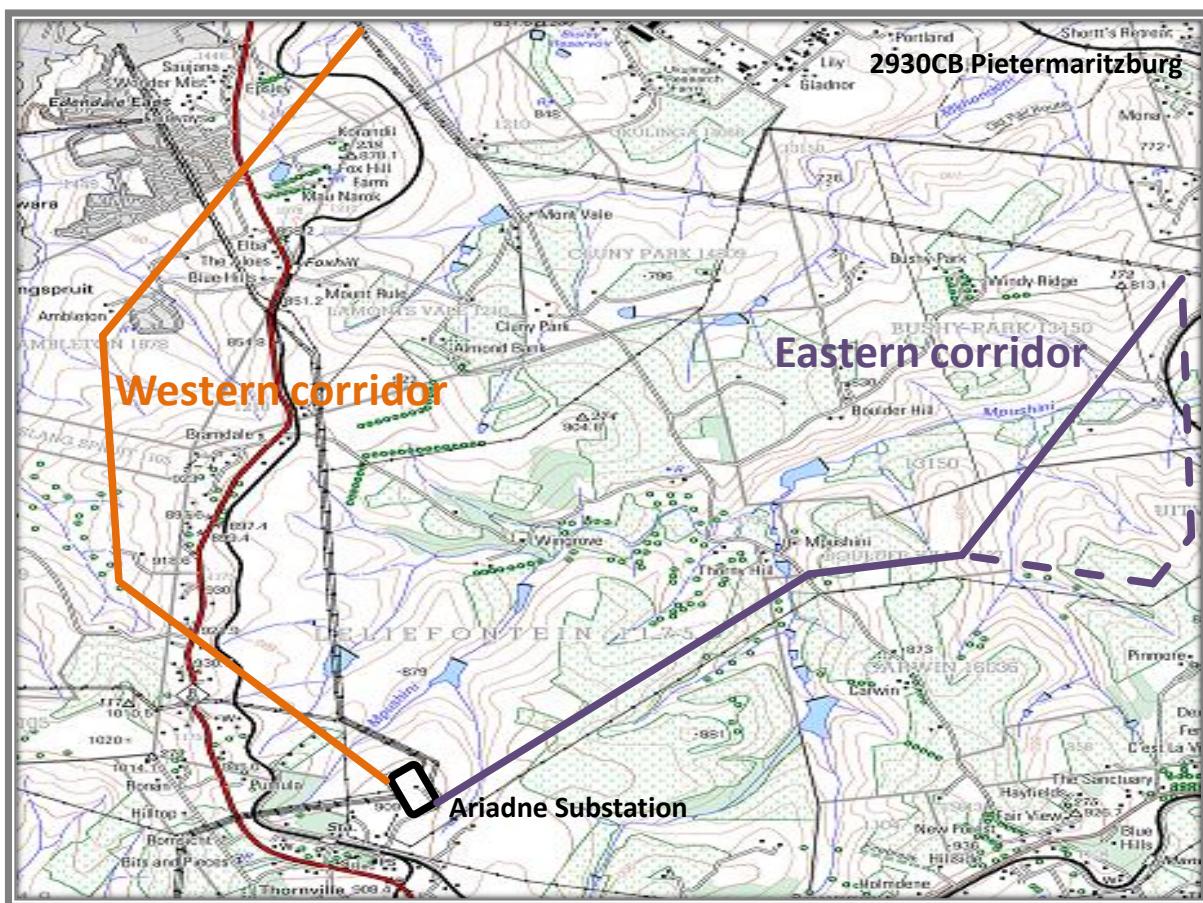


FIGURE 4 APPROXIMATE ALIGNMENTS OF PROPOSED WESTERN AND EASTERN CORRIDORS.

The vegetation type is best described under Low and Robelo's classification, by "Natal central bushveld" (25). This bushveld type occupies a large portion of the KwaZulu-Natal midlands, in the Newcastle, Vryheid, Dundee and Estcourt areas. The altitude is 600 to 1 350 m. This is an open savanna, with scattered trees of Paperbark Thorn *Acacia sieberiana*, Sweet Thorn *A. karroo*, Scented Thorn *A. nilotica* and *A. caffra*. The herbaceous layer is quite variable, with secondary grassland, dominated by patches of tall Common Thatchgrass *Hyparrhenia hirta*, and sour grassland, dominated by Hairy Tridentgrass *Tristachya leucothrix*. Other grass species include Narrowheart Lovegrass *Eragrostis racemosa*, Pincushion Grass *Microchloa caffra*, Broadleaf Bluestem *Diheteropogon amplectens*, *Trachypogon spicatus*, *Digitaria tricholaenoides*, *Elionurus muticus* and *Themeda triandra*. Where this vegetation type occurs on highly erodible, shallow duplex soils, grazing and fire require careful management. This highly transformed vegetation type is very poorly conserved.

The Environmental Potential Atlas for KwaZulu-Natal – Land Cover map (Department of Environmental Affairs and Tourism – 2000) shows that much of this area has been transformed into "cultivated grassland", "cultivated land" and some "built up land". Towards the north-east parts of the study, "thicket and bushland" still dominate. The cultivated land is mainly under sugar cane.

The fauna found in the area include domestic livestock as well as indigenous wildlife and some introduced game species. Domestic livestock species include cattle, horses and poultry species. Red Data mammal species likely to occur in the study area include the Antbear, Aardwolf, Blue Duiker and Oribi.

The study area has a wide range of land uses, including small holdings and small informal settlements of farm labourers dwellings; agriculture (Figure 5); wooded areas, including alien vegetation such as wattle; and natural vegetation.

Smallholdings are an important land use for the purpose of this study, as a number exist in the study area, particularly in the north. During the public participation process for this project, concern was raised regarding the economic viability of these small land units after a power line has been erected. The positioning of a power line across a small holding may render that small holding economically non viable due to the technical and legal constraints relating to the servitude. Furthermore, the aesthetic impact and impact on the “sense of place” of a small land unit is much greater. A number of the small holdings in the northern portion of the study area, those described as Cluny Park, have recently been sold and land ownership changes have resulted in some of these properties now linking together. Boulder Hill Game Ranch with periphery fencing has now been established north of the P120 (D120), incorporating several of these smallholdings.



FIGURE 5 SUGAR CANE PLANTATIONS AROUND ARIADNE SUBSTATION.

Agriculture in the area appears to be either highly productive sugar cane lands where soils allow it, or less productive grassland in the remaining areas. The erection of a power line can potentially pose a problem to sugar cane farming. However subtransmission lines such as the proposed 132kV line are not “cane free lines” meaning that they do not affect the landowners’ production of sugar cane. The landowners have however stated that power lines do complicate crop spraying by planes, and certain plant diseases are best treated in this way. The farmers also state that cane quota requirements necessitate cane ripening processes, also effected via small airplane becomes more complicated with additional power lines in the area.

Numerous power lines exist in the area already (Figure 6). Several IAP's expressed concern about the affect that another power line would have on the value of land in the area, as it is becoming disfigured with the criss-crossing power lines. By virtue of their size and magnitude, power lines are known to have a strong visual impact on aesthetics. Areas where the power line will have the most visual impact will be where the structures and conductors protrude against the skyline, across river crossings and along flat lands where mountains, trees and vegetation do not hide the line. Mitigation in this case will make little difference to the impact. In order to minimise this negative visual impact, it would be preferable to consider line route options very carefully to avoid skylining or high visual impact settings, wherever possible.

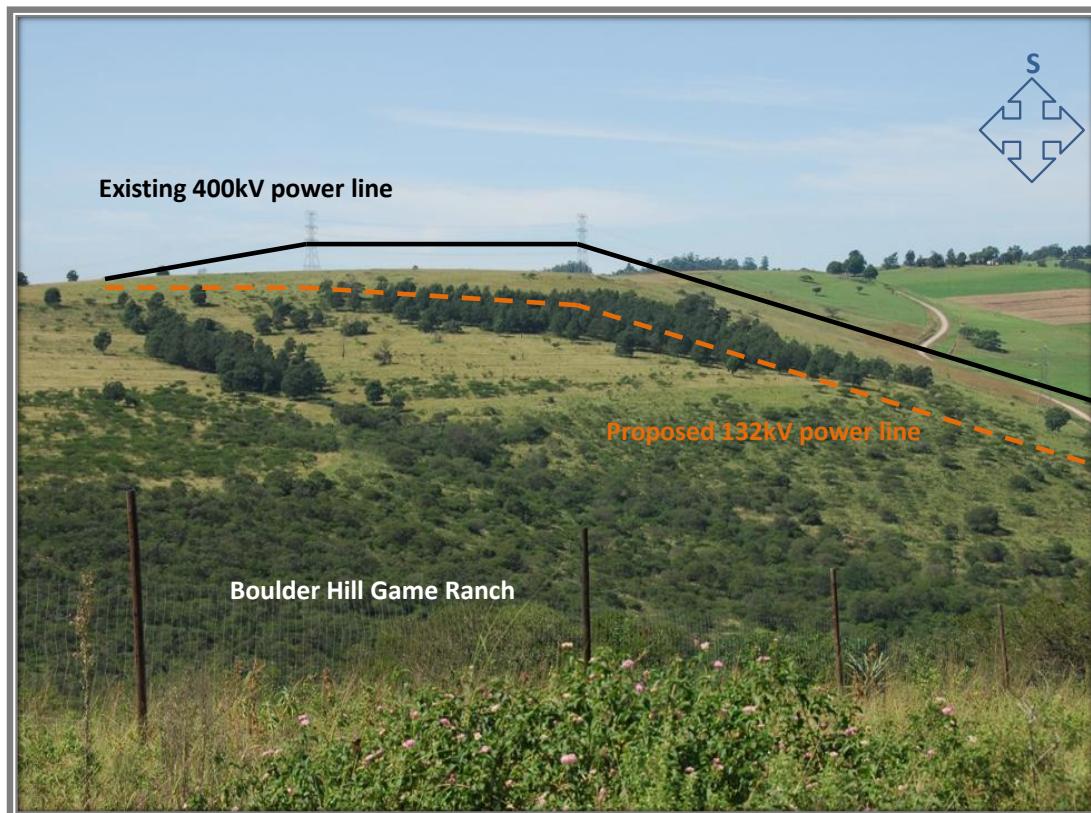


FIGURE 6 CENTRAL PORTION OF PROPOSED EASTERN CORRIDOR.

Two rivers occur within the study area, the Mkondeni in the northwest cutting across the north-western corner and the Mpshini in the south west. The Mpshini commences or sources to the south west of Ariadne Substation and flows through a series of valleys and dams, fed by various small valley drainage line tributaries, gently meandering in a north easterly direction, just south of Boulder Hill, and heading off in an easterly direction just south of the railway viaduct and Ashburton. Various drainage and wetland type areas occur along these river courses, and it is important that all drainage and run off from construction areas is correctly handled.

5 HERITAGE RESOURCES AND SIGNIFICANCE

ASSESSMENT METHODOLOGY

The methodology applied by eThembeni for Phase 1 HIAs of transmission lines is unlike that for projects where impacts primarily involve physical landscape disturbance. The greatest change invoked by transmission lines is typically above the ground surface; therefore the emphasis of the HIA is on resources that are sensitive to visual change. Such resources are usually places, structures and landscapes that are or could be publicly celebrated as heritage.

This approach, which eThembeni refers to as Linear Development Methodology (LDM) was pioneered by the Archaeology Contracts Office in Cape Town and has been adopted widely by other professionals. This practice is based on and proven to be successful by other specialists contributing to the Environmental Impact Assessment (EIA) process for linear developments, and endorsed by companies such as SANRAL and Eskom.

The purpose of an HIA in this stage of the EIA process is to identify a preferred transmission line corridor based on the occurrence of, and potential impact on visually sensitive categories of heritage resource, as well as discrete resources, such as archaeological sites, that have been recorded in provincial databases. In this way specialists are able to combine their findings to identify fatal flaws that will allow routes to be eliminated from the EIA process, thereby focussing studies on one or more preferred routes.

Section 38(3) of the NHRA states that a Phase 1 HIA should identify all heritage resources potentially affected by the proposed development. LDM explicitly complies with this requirement, but recognises the practical constraints around the processes and procedures concerned with the EIA of linear developments. Significantly, it recognises that no heritage practitioner can comprehensively identify and assess discrete heritage resources such as burial places and archaeological and palaeontological sites within a corridor potentially one kilometre wide and tens of kilometres in extent. To expect such an exercise to be funded by a developer (usually Eskom, Telkom or the National Roads Agency) is unrealistic and contrary to the requirements from other specialists involved in the EIA. Accordingly, the requirement of all specialists is to provide landscape-scale inputs into the determination of a final preferred route, which will be subject to the assessment recommendations of all specialists.

Furthermore, LDM recognises and accommodates the constraints facing all specialists with regard to land access. Until a final servitude has been negotiated with a land owner, no specialist may access private property (including formally protected areas) to undertake an impact assessment in good faith. Typically, specialists engaged to identify a suitable corridor for the determination of a preferred servitude are bound by a confidentiality agreement from engaging with land owners or any members of the public. This approach is recognised and endorsed by ASAPA in Section 1.5 of the Minimum Standards of Practice for ASAPA Members, to 'comply with all legal and safety requirements and obtain all necessary permits and permission from the relevant authorities, landowners, legal custodians or other stakeholders'.

Specialists also take the following factors into consideration:

- The constraints of fieldwork and a desktop study of a 100 metre wide servitude over the length of the corridor.
- The constraints of identifying an exact route using maps at a scale of 1:50 000, or even Google Earth files.
- Electronic databases of visually sensitive heritage resources do not exist for the study area, and paper versions are extremely limited.

- In open landscape during daylight hours, 400kV transmission lines on self-supporting towers are visible (but not necessarily intrusive) from a distance of 2 to 5km. Guidelines for the development of wind energy facilities in the Western Cape³ have suggested that a buffer zone of 1km be established around significant visually sensitive heritage resources to minimise the change to the ‘sense of place’. The point at which a transmission line may be perceived as intrusive or offensive is subjective.
- The presence of an existing transmission line in an area serves as a mitigatory factor rather than a cumulative negative impact, in terms of establishing new transmission lines in the same area (within a distance of 1km of the existing line). Electrical infrastructure is therefore best confined to an existing area or corridor of vertical visual disturbance, rather than introducing new infrastructure to an undisturbed landscape.
- The linear nature of the project where tower positions can be altered (within limits) to avoid direct impacts on heritage resources such as archaeological and palaeontological sites and graves that may have high heritage significance due to their scientific and spiritual values, but are generally not publicly celebrated as resources sensitive to visual change.
- A Phase 1 HIA report at this stage will always recommend that a heritage practitioner should complete a ‘walk-through’ of the final selected power line corridor and all other activity areas (access roads, construction camps, materials’ storage areas, etc.) prior to the start of any construction activities and assess direct impacts on discrete resources such as archaeological and palaeontological sites and graves. Mitigation can usually be achieved by micro-adjustment of tower positions, the exclusion of sensitive areas, basic recording and/or obtaining a permit for alteration, destruction or removal from SAHRA. The heritage practitioner will then submit a Phase 2 HIA report to the heritage authorities to allow them to assess whether mitigation is adequate and approve the project or not.

A guideline issued by the Western Cape Department of Environment and Cultural Affairs and Sport (2001) on the application of the EIA Regulations to structures associated with communication networks⁴ explicitly recognises that:

- The power supply services as well as access routes can have greater impacts on biophysical elements than the communication structure itself (noted above); and
- Masts and access routes can have significant visual impacts which can be out of character with the surrounding area.

This guideline document supports the following decision-making principles that are relevant to this HIA:

- Structures associated with communication networks that are proposed where they will be out of character or disruptive of the sense of place will be discouraged or completely avoided.
- Structures associated with communication networks, which are proposed where they will break the skyline on a scenic landscape, will be discouraged or completely avoided.
- Structures associated with communication networks, which are proposed along scenic tourist routes will be discouraged or completely avoided.
- Structures associated with communication networks, which are proposed in a sensitive environment as listed in Annexure A (see below) of the guideline document will be strongly discouraged or completely avoided.
- Structures associated with communication networks which are proposed in any area, property, adjacent to sites of cultural or social importance such as historical sites proclaimed in terms of the NHRA, graveyards, public open spaces and visual corridors or gateways will be strongly discouraged or completely avoided.

³ Developed by Department of Environmental Affairs and Development Planning, 2006.

⁴ Guideline on the application of the EIA Regulations to structures associated with communication networks. Developed by the Western Cape Department of Environment and Cultural Affairs and Sport, September 2001.

Annexure A of the guideline provides a list of potentially sensitive environmental features/areas that includes the following:

- Properties subject to any statutory conservation status or similar, including, but not restricted to, World Heritage Sites, National Parks, Provincial, Local Authority or Private nature reserves, Wilderness Areas, State Forests, Protected Natural Environments, or adjoining properties in so far as the activity or structure may affect the ecosystem function or aesthetic value of those conservation areas. This therefore includes locations for communication structures where such structures may be visible from sites of conservation significance (i.e. statutory conservation status).
- Natural Heritage Sites or adjoining properties in so far as the activity or structure may affect the ecosystem function or aesthetic value of those sites. This therefore includes locations for communication structures where such structures may be visible from Natural Heritage Sites.
- Any area, property or adjacent property that is of cultural or social importance e.g. historical sites, as proclaimed by the NHRA, graveyards, public open spaces and visual corridors or gateways.
- Any areas identified as areas of natural or conservation significance in statutory or non-statutory land use or development planning documents (structure plans, integrated development frameworks etc.) and/or maps, including the core areas of biosphere reserves or in close proximity thereto.
- Routes of tourism or scenic significance or locations visible from such routes.

The project in question has assessed numerous potential line routes over a period of more than eight years, involving extensive public participation. As stated in Section 1 two corridors of around 6km each in length have been identified, both of which will be utilised for the placement of two separate double circuit power lines. Visual impacts and effects on land use value and amenity have been primary concerns of landowners and have been addressed by Eskom, as is reflected in the consideration of more than 15 potential line routes.

LOCAL HISTORY

Appendix B includes a general contextualisation of the archaeological and historical context of the Pietermaritzburg area. Little history about the Thornville / Manderston area is available, but most properties were immigration lots that were alienated and settled in the late 19th century. This section provides brief summaries of the parent farms associated with the Thornville / Ashburton area⁵.

Vaalkop and Dadelfontein 885

This large property of 1086 acres in the vicinity of Umlaas Road (Figure 7) was a grant in 1849 to Francis Collison who transferred it to Joseph Byrne in the same year. Like most of Byrne's immigration schemes, it was doomed to failure, largely due to the quality of the soils which comprised the farmlands. Most people did not even bother to occupy their plots, instead choosing to move into town. Poignantly, the Land Register notes a 1981 transfer to the National Transport Commission from the Estate of 'JC Byrne now deceased'.



FIGURE 7 NAC ROUTE FROM DRUMMOND TO MARITZBURG (NAC 1929).

⁵ Source: Heritage Screening Report: Proposed Construction of Pietermaritzburg Ring Road, National Road 3 Section 3, Mkhambathini, Msunduzi, uMshwathi and uMngeni Local Municipalities, uMgungundlovu District, KwaZulu-Natal Prepared for CCA Environmental (Pty) Ltd by archaic consulting and eThembeni Cultural Heritage dated 15 February 2013.

Uitzoek 1104

This was a grant of 1923 acres in 1852 to William van Aardt. In the same year it was sold to Landsberg Hoffman and Co, and then in 1868 to the Natal Land and Colonial Company. In 1870 Subdivision A was registered to Ernest Landsberg. The Natal Land and Colonisation Company made another subdivision, selling the new Subdivision B to 'Scongswain' in 1883 before selling a flurry of small lots to both white and black buyers. The Natal Government Railways pushed through to Richmond across this farm in 1903.

Uitvlugt 858

This property was a 5971 acre grant to Jacobus Nicholaas Boshoff in 1848. In 1860 it passed into the hands of Carl Behrens, Adolf Coqui, Jonas Bergtheil, and Carl Watermeyer, effectively beginning its life as a speculative holding. In 1860 this is reinforced by Lot A being sold to John Moreland and the Remainder being registered in 1863 to the Cotton Plantation Company. This company went bankrupt in 1870 with an international slump in the price of cotton. However, prior to this mishap, the farm was taken over by the Natal Lands and Colonisation Company in 1867. In 1906 a portion was sold to John Keytel, in 1909 a portion to Henry Crabtree and in 1910 a subdivision to CS and CQ Phipson. Many other small subdivisions were registered, which is evident in the physical landscape today. Of interest is the subdivision 21, part of subdivision 17 which was purchased by the Seventh Day Adventist Community of South Africa International in 1921. Amongst numerous early farmsteads, this church land would be regarded as a heritage resource.

Leliefontein 1175

The original farm was an 1852 grant of 6228 acres to Gerhardus Rudolph, which was transferred to the Handel Maatschappij of Cape Town the following year. This patently distant owner would appear also to be speculative, until the property was registered in 1877 in the name of the Estate of Pietrus Keytel. In 1884, Sub A was transferred to Alfred Moss, Sub G to David Ritchie, Sub B1 to John Isbister and Sub F to Alexander Muir. In 1887 commencement of the construction of the railway was heralded by the acquisition of portions by the Colonial Government. As with the property above, many small lots, some registered in Indian names, were sold off. Power through Eskom arrived in 1942 and was bulked up in 1963, and, significantly, the trading store was registered as Thornville Stores Ltd 1948.

Over the railway line and before the line of the road were two registered outspans. The southerly one is to the south of the road opposite the store, and the position of the northerly one is appropriately named 'Pumula'.

ASSESSMENT OF HERITAGE RESOURCES

The following assessment of heritage resources represents a compilation of our assessment of visually sensitive and other heritage resources in the study area, and observations brought to the attention of the authorities during the public participation process of the EIA. No development activities associated with the proposed project had begun at the time of our visit.

Formally protected heritage resources

No heritage resources with Grade I or Grade II status are present within the study area (see Appendix C).

Buildings and structures

All buildings and structures older than sixty years are afforded general protection in terms of Section 33 of the KwaZulu-Natal Heritage Act 4 of 2008 (KZNHA; also see Appendix A). At least three buildings older than sixty years occur south of the study area and along the abandoned Central corridor, namely the dwelling on Portions 130, 131 and 132 of Farm Leliefontein; the dwelling on Farm Lamontsvale Portion 5 of 1210; and Thornville Trading Store.

Given the history and nature of the region it is likely that buildings and structures older than sixty years are present within proposed line corridors.

Landscapes and natural features

This heritage resource category includes sites, areas or reserves protected in terms of environmental legislation, including conservancies and nature reserves.

— **Boulder Hill Game Ranch (formerly Cluny Park)⁶**

Boulder Hill Game Ranch is a conservancy established in 2005 and owned by four entities, with the main goal of creating a game conservancy and safe haven for endangered species on the property, including oribi and blue crane (Figures 8 and 9). It is located in the north-central portion of the study area, around 29° 41' 38" S 30° 25' 49" E. A 2.7m high combi-bonnox fence has been erected around the 430ha farm and a management plan is in place.

⁶ Information obtained from the Environmental Scoping Report (Final) prepared by K Samouilhan for Eskom Distribution Eastern Region dated January 2007.



FIGURES 8 AND 9 VIEWS OF BOULDER HILL GAME RANCH FACING SOUTH.

The Oribi Working Group (part of Endangered Wildlife Trust) is considering the ranch as a potential recipient of the Oribi Custodian Board Accolade for work for the species. The ranch is also being considered for an award from the Crane Custodian Board for dedication to preserving their grassland habitat. The ranch is a study and field research site for University of KwaZulu-Natal and Damelin College students.

This heritage resource has high heritage significance at the local and regional levels for its scientific and aesthetic values.

Traditional burial places

Grave sites are known to be located to the south-west of the Ariadne Substation, and associated with the ruins of possible Settler structures on the farm Almond Bank, outside of the study area in the abandoned Central corridor (see below). However, given the history and nature of the region it is likely that traditional burial places are present within proposed line corridors. All human remains have high heritage significance at all levels for their spiritual, social and cultural values.

Archaeological sites

The ruins of structures that might comprise an original Settlers home, along with graves and low packed stone walls are present on the Farm Almond Bank, outside of the study area. However, on the farm Leliefontein 1175 in the southern portion of the proposed Western corridor two outspans were registered historically. The southerly one is to the south of the road opposite the Thornville Trading Store, and the position of the northerly one is appropriately named 'Pumula'. Archaeological remains might be present in greenfield areas within the corridor.

6 ASSESSMENT OF DEVELOPMENT IMPACT

A heritage resource impact may be defined broadly as the net change, either beneficial or adverse, between the integrity of a heritage site with and without the proposed development. Beneficial impacts occur wherever a proposed development actively protects, preserves or enhances a heritage resource, by minimising natural site erosion or facilitating non-destructive public use, for example. More commonly, development impacts are of an adverse nature and can include:

- destruction or alteration of all or part of a heritage site;
- isolation of a site from its natural setting; and / or
- introduction of physical, chemical or visual elements that are out of character with the heritage resource and its setting.

Beneficial and adverse impacts can be direct or indirect, as well as cumulative. Although indirect impacts may be more difficult to foresee, assess and quantify, they must form part of the assessment process. The following assessments are of impacts with no mitigation and the criteria used are described in Appendix C.

Formally protected heritage resources

Not applicable.

Buildings and structures

Power line infrastructure is unlikely to directly affect buildings or structures, but may have an indirect visual impact, affecting the sense of place of an historic farmstead, for example.

Nature	Extent	Duration	Intensity	Impact on irreplaceable resources	Consequence	Probability	Significance
Neutral-Negative	Low	High	High	Low	Low	Low-Medium	Low-Medium

Landscapes and natural features

— Boulder Hill Game Ranch

The sense of place of this heritage resource could be compromised by insensitive placement of the proposed Eastern corridor.

Nature	Extent	Duration	Intensity	Impact on irreplaceable resources	Consequence	Probability	Significance
Negative	Medium	High	High	Low	Low-Medium	Medium	Medium

Traditional burial places

Grave sites could be altered or destroyed by tower placements, materials' storage areas, construction camps, access roads, etc.

Nature	Extent	Duration	Intensity	Impact on irreplaceable resources	Consequence	Probability	Significance
Negative	Low	High	High	High	High	Medium	High

Archaeological sites

Archaeological sites could be altered or destroyed by tower placements, materials' storage areas, construction camps, access roads, etc.

Nature	Extent	Duration	Intensity	Impact on irreplaceable resources	Consequence	Probability	Significance
Negative	Low	High	High	High	High	Low-Medium	Medium

7 RECOMMENDED MITIGATION MEASURES

A key concept in the management of heritage resources is that of non-renewability: damage to or destruction of most resources, including that caused by bona fide research endeavours, cannot be reversed or undone. Accordingly, management recommendations for heritage resources in the context of development are as conservative as possible.

General

A heritage practitioner should complete a ‘walk-through’ of the final selected power line routes and all activity areas (tower positions, access roads, construction camps, materials’ storage areas, etc.) prior to the start of any construction activities and assess direct impacts on discrete heritage resources such as archaeological and palaeontological sites and graves.

Formally protected heritage resources

Not applicable.

Buildings and structures

No buildings or structures may be demolished, altered or added to without the prior written approval of the Amafa Council having been obtained on written application to the Council.

Tower placements should ensure minimal intrusion on the sense of place of historic homesteads.

Landscapes and natural features

— Boulder Hill Game Ranch

Routing of the proposed Eastern corridor parallel with the existing 400kV power line south and east of this heritage resource will minimise the visual impact on this largely north-facing conservation area.

Traditional burial places

Human remains may not be altered in any way without the permission of Amafa and the next-of-kin. Given the social and financial costs associated with exhumation and reinterment of graves, every effort should be made to relocate infrastructure during the planning phase to avoid any impacts on such heritage resources.

Archaeological sites

Archaeological sites may not be altered in any way without the permission of Amafa.

8 RECOMMENDED MONITORING

None at present.

9 PROTOCOL FOR THE IDENTIFICATION, PROTECTION AND RECOVERY OF HERITAGE RESOURCES DURING CONSTRUCTION AND OPERATION

It is possible that sub-surface heritage resources could be encountered during the construction phase of this project. The Environmental Control Officer and all other persons responsible for site management and excavation should be aware that indicators of sub-surface sites could include:

- Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate);
- Bone concentrations, either animal or human;
- Ceramic fragments, including potsherds;
- Stone concentrations that appear to be formally arranged (may indicate the presence of an underlying burial, or represent building/structural remains); and
- Fossilised remains of fauna and flora, including trees.

In the event that such indicator(s) of heritage resources are identified, the following actions should be taken immediately:

- All construction within a radius of at least 20m of the indicator should cease. This distance should be increased at the discretion of supervisory staff if heavy machinery or explosives could cause further disturbance to the suspected heritage resource.
- This area must be marked using clearly visible means, such as barrier tape, and all personnel should be informed that it is a no-go area.
- A guard should be appointed to enforce this no-go area if there is any possibility that it could be violated, whether intentionally or inadvertently, by construction staff or members of the public.
- No measures should be taken to cover up the suspected heritage resource with soil, or to collect any remains such as bone or stone.
- If a heritage practitioner has been appointed to monitor the project, s/he should be contacted and a site inspection arranged as soon as possible.
- If no heritage practitioner has been appointed to monitor the project, the head of archaeology at Amafa's Pietermaritzburg office should be contacted; telephone 033 3946 543).
- The South African Police Services should be notified by an Amafa staff member or an independent heritage practitioner if human remains are identified. No SAPS official may disturb or exhume such remains, whether of recent origin or not.
- All parties concerned should respect the potentially sensitive and confidential nature of the heritage resources, particularly human remains, and refrain from making public statements until a mutually agreed time.
- Any extension of the project beyond its current footprint involving vegetation and/or earth clearance should be subject to prior assessment by a qualified heritage practitioner, taking into account all information gathered during this initial HIA.

10 CONCLUSION

We recommend that the development proceed with the proposed heritage mitigation and have submitted this report to Amafa in fulfilment of the requirements of the NHRA. According to Section 38(4) of the Act the report shall be considered timeously by the Council which shall, after consultation with the person proposing the development, decide—

- whether or not the development may proceed;
- any limitations or conditions are to be applied to the development;
- what general protections in terms of the NHRA apply, and what formal protections may be applied to such heritage resources;
- whether compensatory action shall be required in respect of any heritage resources damaged or destroyed as a result of the development; and
- whether the appointment of specialists is required as a condition of approval of the proposal.

The client may contact Ms Bernadet Pawandiwa at Amafa's Pietermaritzburg office (telephone 033 3946 543) in due course to enquire about the Council's decision. If permission is granted for development to proceed, the client is reminded that the NHRA requires that a developer cease all work immediately and adhere to the protocol described in Section 9 of this report should any heritage resources, as defined in the Act, be discovered during the course of development activities.

11 BIBLIOGRAPHY

Appendix B

- Ellis, B. 1988. Pietermaritzburg and its environs: the early decades of white settlement. In J. Laband, & R. Haswell, *Pietermaritzburg 1838-1988: a new portrait of an African city* (pp. 29-32). Pietermaritzburg: University of Natal Press and Shuter & Shooter.
- Whitelaw, G. 1991. Precolonial iron production around Durban and in southern Natal. *Natal Museum Journal of Humanities* 3: 29-39.
- Whitelaw, G. 1997. What Da Gama missed on his way to Sofala. *Natalia* 27: 30-41.
- Whitelaw, G. 2009. An Iron Age fishing tale. *Southern African Humanities* 21: 195-212.

Methodology (Appendix C)

- Aldenderfer, M. S. and Hale-Pierce, C.A. 1984. *The Small-Scale Archaeological Survey Revisited*. American Archaeology 4(1):4-5.
- Deacon, J. 1996. *Archaeology for Planners, Developers and Local Authorities*. National Monuments Council. Publication no. PO21E.
- Deacon, J. 1997. *Report: Workshop on Standards for the Assessment of Significance and Research Priorities for Contract Archaeology*. In: Newsletter No. 49, Sept.1998. South African Association of Archaeology.
- HWC 2007. A short guide to grading Version 5. Unpublished document authorised by the Heritage Western Cape Chief Executive Officer and Accounting Authority.
- Schiffer, M. B., Sullivan A.P., and Klinger T.C. 1978. *The Design of Archaeological Surveys*. World Archaeology 10:1-28.
- Zubrow, E.B.A. 1984. *Small-Scale Surveys: A Problem for Quality Control*. American Archaeology 4(1):16-27.

APPENDIX A STATUTORY REQUIREMENTS

General

The Constitution of the Republic of South Africa Act 108 of 1996 is the source of all legislation. Within the Constitution the Bill of Rights is fundamental, with the principle that the environment should be protected for present and future generations by preventing pollution, promoting conservation and practising ecologically sustainable development. With regard to spatial planning and related legislation at national and provincial levels the following legislation may be relevant:

- Physical Planning Act 125 of 1991
- Municipal Structures Act 117 of 1998
- Municipal Systems Act 32 of 2000
- Development Facilitation Act 67 of 1995 (DFA)
- KwaZulu-Natal Planning and Development Act 6 of 2008.

The identification, evaluation and management of heritage resources in South Africa is required and governed by the following legislation:

- National Environmental Management Act 107 of 1998 (NEMA)
- KwaZulu-Natal Heritage Act 4 of 2008 (KZNHA)
- National Heritage Resources Act 25 of 1999 (NHRA)
- Minerals and Petroleum Resources Development Act 28 of 2002 (MPRDA)

KwaZulu-Natal Heritage Act 4 of 2008 (KZNHA)

This Act is implemented by Amafa aKwaZulu-Natali/Heritage KwaZulu-Natal, the provincial heritage resources authority charged to provide for the conservation, protection and administration of both the physical and the living or intangible heritage resources of the province; along with a statutory Council to administer heritage conservation in the Province.

National Heritage Resources Act 25 of 1999 (NHRA)

The NHRA established the South African Heritage Resources Agency (SAHRA) together with its Council to fulfill the following functions:

- co-ordinate and promote the management of heritage resources at national level;
- set norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance;
- control the export of nationally significant heritage objects and the import into the Republic of cultural property illegally exported from foreign countries;
- enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources; and
- provide for the protection and management of conservation-worthy places and areas by local authorities.

Heritage Impact Assessments

Section 38(1) of the NHRA may require a Heritage Impact Assessment in case of:

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- the construction of a bridge or similar structure exceeding 50m in length;
- any development or other activity which will change the character of a site—

- (i) exceeding 5 000m² 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;
- the re-zoning of a site exceeding 10 000m² in extent; or
- any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.

Reports in fulfilment of NHRA Section 38(3) must include the following information:

- the identification and mapping of all heritage resources in the area affected;
- an assessment of the significance of such resources in terms of the heritage assessment criteria set out in regulations;
- an assessment of the impact of the development on such heritage resources;
- 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;
- the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development.

It is incumbent upon the developer or Environmental Practitioner to approach the South African Heritage Resources Agency (SAHRA) or Amafa to ascertain whether an HIA is required for a project; what categories of heritage resource must be assessed; and request a detailed motivation for such a study in terms of both the nature of the development and the nature of the environment. In this regard we draw your attention to Section 38(2) of the NHRA which states specifically that 'The responsible heritage resources authority must ... if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report'. In other words, the heritage authority must be able to justify a request for an Archaeological, Palaeontological or Heritage Impact Assessment. The Environmental Practitioner may also submit information to the heritage authority in substantiation of exemption from a specific assessment due to existing environmental disturbance, for example.

Definitions of heritage resources

The Act 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.

Furthermore, 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; and
- its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.

Archaeological means –

- material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years including any area within 10m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act 15 of 1994, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

Palaeontological means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

A **place** is defined as:

- a site, area or region;
- a building or other structure which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure;
- a group of buildings or other structures which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures;
- an open space, including a public square, street or park; and
- in relation to the management of a place, includes the immediate surroundings of a place.

Public monuments and memorials means all monuments and memorials:

- erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government; or
- which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.

Structures means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.

Management of Graves and Burial Grounds

– Definitions

Grave

The NHRA defines a grave as a place of interment and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such a place.

The KwaZulu-Natal Cemeteries and Crematoria Act 12 of 1996 defines a grave as an excavation in which human remains have been intentionally placed for the purposes of burial, but excludes any such excavation where all human remains have been removed.

Burial ground

The term ‘burial ground’ does not appear to have a legal definition. In common usage the term is used for management purposes to describe two or more graves that are grouped closely enough to be managed as a single entity.

Cemetery

The KwaZulu-Natal Cemeteries and Crematoria Act 1996 defines a cemetery as any place

- (a) where human remains are buried in an orderly, systematic and pre-planned manner in identifiable burial plots;
- (b) which is intended to be permanently set aside for and used only for the purposes of the burial of human remains.

– Protection of graves and cemeteries

No person may damage, alter, exhume, or remove from its original position any grave, as defined above, without permission from the relevant authority, as detailed in the following table.

Grave type	Relevant legislation	Administrative authority – disinterment	Administrative authority – reburial
Graves located within a formal cemetery administered by a local authority	KwaZulu-Natal Cemeteries and Crematoria Act 12 of 1996	National and / or Provincial Departments of Health	If relocated to formal cemetery – relevant local authority.
Graves younger than 100 years located outside a formal cemetery administered by a local authority and the graves of victims of conflict	KwaZulu-Natal Heritage Act 4 of 2008 KwaZulu-Natal Cemeteries and Crematoria Amendment Act 2 of 2005	Amafa aKwaZulu-Natali, the provincial heritage resources authority	If relocated to private or communal property – Amafa. If relocated to formal cemetery – Amafa and relevant local authority.

– Procedures required for permission to disinter and rebury graves

The procedure for consultation regarding burial grounds and graves (Section 36 of the NHRA) is applicable to all graves located outside a formal cemetery administrated by a local authority. The following extract from this legislation is applicable to this policy document:

SAHRA or Amafa may not issue a permit for any alteration to or disinterment or reburial of a grave unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority—

- (a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and
- (b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

Any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Services and in accordance with regulations of the responsible heritage resources authority—

- (a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and
- (b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

The Vermillion Accord on Human Remains⁷

Adopted in 1989 at WAC Inter-Congress, South Dakota, USA

1. Respect for the mortal remains of the dead shall be accorded to all, irrespective of origin, race, religion, nationality, custom and tradition.
2. Respect for the wishes of the dead concerning disposition shall be accorded whenever possible, reasonable and lawful, when they are known or can be reasonably inferred.
3. Respect for the wishes of the local community and of relatives or guardians of the dead shall be accorded whenever possible, reasonable and lawful.
4. Respect for the scientific research value of skeletal, mummified and other human remains (including fossil hominids) shall be accorded when such value is demonstrated to exist.
5. Agreement on the disposition of fossil, skeletal, mummified and other remains shall be reached by negotiation on the basis of mutual respect for the legitimate concerns of communities for the proper disposition of their ancestors, as well as the legitimate concerns of science and education.
6. The express recognition that the concerns of various ethnic groups, as well as those of science are legitimate and to be respected, will permit acceptable agreements to be reached and honoured.

⁷ <http://www.worldarchaeologicalcongress.org/>

APPENDIX B ARCHAEOLOGICAL AND HISTORICAL CONTEXT OF THE STUDY AREA

The Stone Age⁸

The earliest period of Pietermaritzburg history can be reconstructed only from the archaeological remains that have been found in and around the City. The story will always be incomplete, for time has destroyed many traces of earlier settlement and others have yet to be found or have been built over.

Even within the Pietermaritzburg area the evidence available to us is very patchy. Many of the ancient items recovered and placed in museum collections are chance finds by members of the public. None is from systematic archaeological research. Instead, modern archaeological excavations and reconstructions carried out in other parts of Natal and beyond that provide some historical 'flesh and blood' to the dry 'bones' of the local artefacts.

The patchy nature of our available data is evident from maps where the great majority of finds are located in and around Scottsville. This pattern results from the work of one ardent collector, F.H.M. French, who was working in the Borough Engineer's Department when the township of Scottsville was being laid out. He took much trouble to recover and record the location of stone implements that came to light during the development works. His collection was donated to the Natal Museum on his death in 1940. Other areas have not been searched nearly so thoroughly, but it is likely that where similar topography and vegetation are present, for example around Ashburton, similar concentrations of Stone Age material may be present.

Pietermaritzburg, the urban centre, was founded in 1838 but archaeological remains show that people have been living in the city area for a quarter or even half a million years, a period some 2 000 times longer than that of the city itself. But we must give some thought to the possibility that there were people here in the even more distant past. No such sites are known from KwaZulu-Natal, nor is there much chance of their being found. This is because the landscape in general, and in Pietermaritzburg as much as anywhere, reflects rapid geological denudation: rivers are rapidly cutting down into their beds and the predominantly sloping landscape is subject to hillwash.

Thus the landscape we see today is a relatively young one – no more than 100 000 years old. Consequently the oldest Stone Age artefacts are buried under or incorporated into soils that have been formed since that time. If there were people here a million or more years ago, any remains that they left behind would long ago have eroded away and washed down the Msunduzi into the Indian Ocean. The very land surface on which they would have walked, according to the estimates of geologists, was some 15 metres above today's ground surface.

The earliest surviving traces of human presence in the area belong to the Acheulian Stone Age industry. The hallmark of the Acheulian is the distinctive but poorly understood 'handaxe' – probably a multi-purpose tool – that is characteristic of sites dating to the period 600 000 to 150 000 years ago. The Acheulian industry was developed by our immediately ancestral species *Homo erectus*, who spread throughout the habitable parts of Africa and was the first of our family to emigrate to other continents.

Like their Stone Age successors, the Acheulian population lived a hunting and gathering way of life relying entirely on wild plant and animal foods. They would have moved about from place to place, seldom staying for more than a few days at a time. They evidently preferred to live in the open, for their artefacts are seldom found in caves or rock shelters.

Although many of the modern large African mammals were already present, a number of others became extinct in this period. These include *Megantereon*, the last sabretoothed cat; *Hipparrison*, a three-toed

⁸ Source: 'Pietermaritzburg – the first 2 000 000 years', by Tim Maggs, sourced from <http://www.pmbhistory.co.za>. See also Whitelaw 1991; 1997; 2009.

horse; *Sivatherium*, a short-necked but antlered relative of the giraffe; and *Hippopotamus gorgops*, a hippo with periscope eyes.

Evidence from Central Africa and Europe shows that the Acheulians could hunt animals as large as elephants. From the abundance of their artefacts found along river valleys, we conclude that they spent much of their time in these areas. Locally such sites have been found on both sides of the Msunduzi in the Scottsville and central town areas. Note that the sites are not immediately beside the river but on the slightly higher ground on either side of the valley. This reflects the down cutting of the river and the sideways movements of its meanders during the last 150 000 years or so, which have erased the earlier evidence from the riverside itself.

Downstream, and particularly along the uMngeni River below Table Mountain, there exist 'terraces', now raised above the river, marking the position of ancient parts of the river-bed. These terraces are frequently covered by sheets of old river pebbles amongst which Acheulian artefacts can be found. Indeed these river pebbles were a major source of suitable stone for the artefact makers. Acheulian material has also been found further away from the Msunduzi valley. Here it is usually from relatively flat areas such as Scottsville-Pelham and the Ashburton ridge or beside smaller streams such as the Slangspruit, Foxhill Spruit and Mkhondeni. Some Acheulian occupation clearly took place on these flatter areas. However, with time, soil creep will have taken place down the steeper slopes carrying any artefacts with it into the small streams. Once into a stream, the artefacts are washed down relatively rapidly, becoming rounded in the process. Such artefacts, often barely recognizable, can be found in the river gravels downstream.

The hunter-gatherer way of life continued through the Middle Stone Age (MSA) which is characterized by a development in stone tool technology. Here the emphasis was on producing long, blade-like flakes of stone, some of which were then trimmed to produce spearheads and scrapers. MSA artefacts are very common over most of KwaZulu-Natal below an altitude of 1200 metres, and Pietermaritzburg is no exception. A strong concentration collected in the Scottsville area again reflects the intensive collecting of Mr French. But the absence of any sites on the higher ground north of the central city is representative of the situation in the province in general. For a considerable part of the MSA the climate would have been appreciably cooler than today – corresponding to the last glacial period of the northern hemisphere. This climate would probably have made the upland areas of KwaZulu-Natal from Hilton up to the Drakensberg relatively unattractive to hunter-gatherers and many of the game animals they hunted.

The MSA people were of our own species, *Homo sapiens*, though not of any racial type surviving today. Their contemporaries in Europe and parts of Asia – the Neanderthals – are currently considered as an anatomically robust adaptation to the glacial conditions of northern climes, not the brutish primitives of cartoon mythology.

The dating of the MSA started between 200 000 and 130 000 years ago, and it was replaced at least 35 000 years ago (but possibly as early as 60 000 years ago) by the Late Stone Age (LSA). In Pietermaritzburg the evidence for the early part of the LSA consists of several small collections of stone artefacts including a distinctive type known as a naturally-backed knife. These have been dated to the period roughly 15 000 to 7 000 years ago, during which climates worldwide were recovering from the last glacial epoch and becoming similar to today's conditions.

An interesting point about the local spread of these artefacts is that, although far fewer sites have been recorded than for the earlier periods, some sites do occur on the highlands north of the city, and there is even one near the top of Swartkop, the highest local peak. This pattern has been noted elsewhere in the Midlands, and it therefore seems that people at this time were attracted to these cool, sourveld areas despite their being even colder then than now.

The final phase of the Stone Age began about 7 000 years ago and is the most familiar one to us, for its cultural heritage was passed down to the historic Khoisan hunter-gatherers whom the white colonists

disparagingly referred to as 'Bushmen'. Their stone toolkit evolved gradually during this period, and consisted mainly of miniature implements scrapers, arrow points and woodworking tools that were attached to other materials by the use of adhesives. The bow and arrow was the main hunting weapon and towards the end of the period arrowheads of bone, then steel, used with poison, increasingly replaced stone. The bored stone, made to give more weight to digging sticks, was also a feature of this period.

An increasingly wide range of wild plant and animal foods was exploited during this period. Both marine and freshwater fish were caught, sometimes with delicate bone hooks, while shellfish were important along the coast. Among the bones of the occasional large animal we find numerous smaller ones: small buck, dassies, hares and even moles. Bored stones attest to a predilection for underground plant parts such as bulbs, corms and roots which are often highly nutritious. Fruit and berries were also much sought after.

This period has left relatively little trace in Pietermaritzburg itself, although rock shelters in the neighbourhood have produced evidence. Best known among the remains are rock paintings, most of which were done in this period. Drakensberg shelters in the cave sandstone contain the great majority of KwaZulu-Natal's rock art, though there are paintings closer afield, for example in the uMngeni valley above Table Mountain and near Shongweni. Indeed, wherever sandstone outcrops have formed suitable rock shelters, paintings may be found.

Khoisan hunter-gatherers continued to occupy the upland portions of the province, between Hilton and the Drakensberg, down to the coming of white settlers. The Voortrekkers named the escarpment which overlooks Pietermaritzburg 'Boesmansrand', and initially referred to the Msunduzi as the 'Boesmansrivier' and the Dorpspruit as the 'Klein Boesmansrivier'.

The Iron Age

The most important change in the pre-colonial past was the advent of a new way of life, labelled by archaeologists as the Iron Age. Of most significance was not so much knowledge of metals, but rather that of the farming of domestic plants and animals. Food was now produced rather than obtained from the wild. The nomadic hunter-gatherer way of life gave way to sedentary settlement with built homesteads comprising domestic accommodation, food storage structures and stock pens. Pottery, known in simple forms to the last of the Stone Age inhabitants, was now expertly fashioned and well decorated. Such distinctive pottery is a hallmark of this period. Current evidence indicates that this revolution in life style was introduced by new arrivals of Negro physical type indistinguishable from today's black population.

The Iron Age way of life developed in equatorial Africa, spreading rapidly southwards and reaching the KwaZulu-Natal coastal plain around AD250. By AD500 Iron Age villages were established throughout the coastal and savannah areas. Inland, the settlements clung to river valleys, for broad flat areas of good soil beside the rivers were preferred as village sites. These were often large in size and probably housed a few hundred people.

The Pietermaritzburg sites fit into this pattern with one slight exception, which is away from the rivers near the University. Although none has been excavated and dated, the styles of pottery indicate dates between AD500 and 800.

Since Pietermaritzburg is situated at the upper limit of savannah country in the Msunduzi valley, these Early Iron Age sites mark their furthest expansion up the valley during this period. In the same way contemporary sites in the Albert Falls area mark the furthest penetration up the uMngeni valley. However, the riverside village locations should not obscure the point that within a few hours' walk from such sites other desirable resources would be available to these communities. In particular the grasslands on the adjacent highlands, for example up towards the Hilton ridge and beyond, would have provided better spring and summer grazing than the sweeter but sparser lowland pastures which in turn have better autumn and winter

grazing. Thus, although the permanent settlements remained in the valleys, the surrounding areas would also have been used for a variety of purposes such as grazing, firewood, hunting and collecting wild foods to supplement the products of farming. Each village was relatively self-sufficient, even to the smelting and production of its own iron and steel tools. We can therefore see the beginning of local industry at this time.

The lowland, village pattern of settlement gave way to a more dispersed and upland pattern around 1000 years ago. Reasons for this change are not yet well understood, but it seems that the emphasis was now on smaller and shorter term settlements. These were probably no more than the homestead of a single family group, as was the case with the Nguni-speaking peoples as far back as the earliest written records go, which is to the mid-sixteenth century accounts of shipwrecked Portuguese mariners. One such settlement was built on the shoulder of the spur overlooking the Dorpspruit in the Botanical Gardens. All that remains is a thin scatter of pottery sherds suggesting a family homestead of perhaps only a few years' duration.

The pottery of the last 900 years has relatively little decoration. Many vessels are plain, and what decoration there is usually consists of no more than a few rows of impressions on the rim or neck. An interesting find from Mountain Rise is part of a bowl carved out of soapstone, but both in shape and decoration it is similar to pottery and even wooden vessels made by nineteenth century Zulu craftsmen. It probably dates to shortly before the arrival of white colonists.

Outside the city itself, but in the neighbourhood, are the remains of stone structures which were built during the past few centuries. Earliest of these may be the irregularly-walled areas in naturally defended sites such as one in the Umgeni Valley Nature Reserve. A similar structure at Moor Park near Estcourt, the only one yet excavated, dates to around AD1300. Later in the sequence are numerous circular stone cattle-pens which can be found in many of KwaZulu-Natal's grassland areas. Each was the centre of a homestead inhabited by ancestors of today's Nguni-speaking people. Also belonging to this late period are several collections of iron artefacts which have been dug up in recent years. These were no doubt buried by their owners for security but never reclaimed. One such batch of hoes was found at the SOMTA Factory, Plessislaer.

Thus down to the coming of the Voortrekkers, or at least to the *mfecane* of a few years earlier, the Pietermaritzburg area had been occupied for 1 300 years by settled black communities of agriculturalists. They evidently avoided the mistbelt sourveld areas from Hilton up country, but the savannah areas continued to be attractive throughout this time and from about AD1200 grassland areas with less acid soils also saw Iron Age settlement.

Pietermaritzburg and its environs: the early decades of white settlement⁹

At first glance the Trekkers' choice of site for the town may seem a curious one. Admittedly the place was a safe distance from the port, but why choose a treeless, sloping plain nestling in a hollow? Unfortunately we do not know the answer to this question, as the Trekker leaders, in attempting to attract more settlers, exaggerated its potential. But we can follow the course of the environmental history of the area and see what use the settlers made of its vaunted potential and how they, in turn, made their impact on the environment in the first few decades of white settlement. For the sake of convenience, this will be examined in relation to the changes made to the mineral resources and landform, the flora and the fauna.

From the records we have, it seems that the early white settlers made only a few minor changes to the mineral resources and landform of the town and its environs. We know that the Boers affected the natural flow of several rivers and streams, however slightly, by their irrigation schemes. The furrows they led from the Dorpspruit became a feature of the town, while a few local farmers and gardeners were skilled at building furrows and irrigating crops. Boers also quarried stone locally; stone suitable for housing and for the

⁹ Source Ellis (1988).

church (the Church of the Vow) probably came from C. Ortmann's shale quarry to the east of the town. The fact that by 1844 more than half of the 132 houses in town were of brick or shale gives us some indication of the demand for building stone and the scale of its exploitation. One enterprising farmer, P. Ferreira of the Karkloof, even mined a small coal outcrop on his farm and it is possible that the wagonload sold on the market in the 1842 came from there.

During the next few decades, as the town grew with the arrival of the British settlers, the demand for building stone increased. Men such as Gabriel Eaglestone and Jesse Smith were skilled stonemasons and Eaglestone's best known work, the Church of St. Peter's, still stands. Up until April 1860 anyone was free to quarry stone in the vicinity of the town, but then the town council resolved that, in future, permission had to be obtained and an annual rent paid for a quarry. Unfortunately all the official records of quarries are very vague, such as that of 1862 which states that quarries were worked 'in several localities chiefly near Pietermaritzburg and for the purpose of building in the City'. We are therefore left in doubt as to the exact dates and the extent of exploitation of old quarries, even ones that are still visible, like that in the Botanic Gardens. All in all, by about 1870 the most obvious signs of human activity on the landform were probably a few quarries close to town and the roads that led to the surrounding towns of Estcourt, Richmond, Greytown and Durban.

When the Trekkers first laagered at the Bushmansrand, the most noticeable features of the indigenous flora would have been the following: while the plain itself was bare, there was a forest to the north-west (the present-day Town Bush Valley area); forests to the west (the Swartkop forests) and, at some distance inland, the mist-belt forests stretched from the Blinkwater in the north to the uMzimkhulu in the south. The impression of Lieutenant C.J. Gibb in 1843 was that there was 'scarcely any wood about this place . . . the little wood where the firewood is procured will all be used up in the course of a few years'. Certainly the greatest demand on the flora around the town in the early 1840s would have been for fuel. It was needed for heating, cooking, and candle- and soap-making. The residents would have obtained fuel from the Town Bush Valley for themselves and for the only fuel-burning industry in town, the brick and tileworks run by the Pistorius family at the foot of Town Hill. From the records it is also clear that black people removed large numbers of saplings from this forest, to general concern. The fact that Pistorius had to advertise for firewood as early as 1843 suggests that fuel was already becoming more difficult to obtain.

The Swartkop forest and the Karkloof section of the mist-belt forests supplied the timber needed for buildings, wagons, furniture and implements. As a visit to the Voortrekker Museum shows, Boer technology made it possible for them to fell large trees and then work the wood, for they had a variety of handaxes, adzes and saws of different kinds, including the huge kraamaag that was taller than a man. A few families supplemented their income by felling particular species, such as yellowwood, sneezewood, stinkwood and ironwood, and selling the timber in town. Wherever this selective exploitation occurred it must have affected the composition of the forests, however slightly.

The arrival of the British settlers and the garrison meant that the demand for firewood increased; not only were there more people in the town but also the British, with their interest in producing for a market economy, established more fuel-burning industries, particularly brickworks. While the garrison's fuel supply seems to have come mainly from Swartkop, residents had several sources available. They could have cut fuel themselves in the Town Bush area or bought it at the market, where it was brought from farms such as Piet Otto's or from the thorn forest at Uys Doorns; they could also have bought it from African women who went from door to door selling bundles of wood cut from the Swartkop forests. By the early 1860s much of the local fuel supply seems to have been exhausted, proving Lieutenant Gibb's prediction correct. Fuel had to be obtained from further away so that by the mid-1870s, when the Capital was using about 555 tons per month, most of it came from the Table Mountain area, about thirty kilometres away. Some enterprising souls even started growing exotic species such as bluegums to sell as fuel to the brickyards.

Like the Boers, the British settlers wanted certain types of timber for buildings, wagons and furniture, so they too looked to the mist-belt forests to supply their needs. But whereas there had been only a few Boer

part time sawyers, working mostly in the Karkloof forests with hand-operated tools, the British sawyers spread themselves out through much of the mist-belt forests and set up sawmills which gradually acquired sophisticated machinery. Again, with an eye to producing commodities, the British settlers made full use of the timber resources available to them. In 1865, for example, 29 of the 70 manufactures and works listed for Pietermaritzburg were concerned with timber. These were one sawmill, one cooper, twelve wagonmakers, and fifteen carpenters', joiners', and cabinetmakers' shops, while in the whole Country of Pietermaritzburg there were eight sawmills and twenty pit saws in the Karkloof forests. Whereas the pit saws were still hand-operated, the mills were either water or steam powered, which increased their output enormously.

Timber from these forests, particularly yellowwood, was also exported during the 1850s and 1860s. Wagonloads of timber went over the Berg to the states of the interior, while considerable quantities were also shipped to the Cape. Few residents of Durban could afford to use timber from the Midlands as the high transport costs made it cheaper for them to import timber from America.

Over the years, the authorities took several steps to try to curb the destruction of the indigenous flora. The most important was the proclamation of 1853 that restricted people from removing timber from crown lands without a licence to do so. This proclamation was timed to coincide with the appointment of several resident magistrates and field cornets, for the implementation of the proclamation lay in their hands. To control destruction on the borough lands, the Town Council instituted a licensing system in 1857, but, as it lacked officers to enforce it, the system failed; a special committee of 1863 reported that there was very little timber left, only firewood. In the forests surrounding the town, settler exploitation, coupled with the destruction caused by Africans making clearings for mealie gardens, led to considerable thinning of the forests. This was pointed out in the leader column of the Natal Witness as early as 1866. Clearly all attempts at control had failed, and the Colony was paying the price for its shortsighted policy of destroying indigenous flora without replacing it at all. At last, in 1867, the first forest conservator in Natal, James Archbell, was appointed to the Swartkop forests, but Natal still had to wait more than twenty years for a department of forestry.

One of the reasons the Trekkers found Natal attractive was the wealth of game in the area. In the immediate environs of the Bushmansrand there were several species of animals suitable as food for the Boers. On the nearby marshes there were wild duck, snipe and species of widow bird; on the surrounding plains and hillsides there were pheasant and partridge, oribi, duiker and reedbuck. Further afield, one could hunt eland and buffalo in the Noodsberg and buffalo at the Dargle and the Karkloof.

Some Boers hunted particular animals for commercial gain. Using Pietermaritzburg as a market base, they brought in skins, such as buffalo and eland, as well as ivory. While there is no complete record of either the quantity sold or the origin of these commodities, it is possible that many of the animals destroyed came from the environment around the town, for these species could all be found there in the early 1840s. Indeed, it was still possible, in 1842, for a man to shoot seventeen elephant in one month in the Karkloof forests!

It is clear that certain species were of far more value to the hunter than others and one therefore presumes that these few species were more heavily exploited: as even an average-sized pair of elephant tusks weighs about 100 pounds, it was obviously far more lucrative to shoot an elephant than a buck.

The Boer leaders in the Raad valued game highly as a food resource and consequently took steps to conserve it. In 1841 the Raad resolved to fine those who killed game unnecessarily or who did not 'use' it properly. (It did not define what it meant by the term 'use'.) This appears to have been the first resolution concerning game preservation made by a Boer state in southern Africa.

When the British settlers arrived, they killed game for much the same reasons as the Boers had. However, because the white population increased dramatically in size in the early 1850s, there was a rapid

decline in the populations of certain species of game. The most important animal product for trade was still ivory, but as the last recorded sighting of elephant in the Natal Midlands took place in 1848, when a herd of about 32 was seen 50 kilometres north-west of the Capital, it is clear that ivory sold after that date probably came from the Overberg or from north of the Thukela. Some ivory could have been obtained from hippo, for these were hunted in the uMngeni in the 1850s, but by 1864 they were seen only occasionally in the stretch of river near the Albert Falls. Lion and leopard skins also fetched a good price: while both species were found near the town in the 1840s, by the late 1850s lion had moved away and leopard were seen only in the midst-belt forests.

As the years went by, it became increasingly difficult to find game around Pietermaritzburg for the pot. By the 1860s there are no records of this sort of activity. Accounts of hunting for sport give a similar picture. In the 1840s, the officers of Fort Napier found the area a veritable 'paradise' for sportsmen: an afternoon's shooting produced a fine bag. During the next decade, when hunting became fashionable amongst members of the wealthier classes, hunts took place to the south and west of the town and bags included reedbuck, oribi, duiker and paauw. By the late 1860s sportsmen had to travel far further away from the town for the pleasures of the chase. But while game in the environs of the town was thinned out, on the farms of the Dargle and the Karkloof it was still sufficiently plentiful for farmers to hunt regularly for food, and advertisements for farms in the Natal Witness commonly included descriptions of the game found on them.

One searches in vain for any records of residents of Pietermaritzburg catching fish from the nearby rivers for sale: it appears that the townspeople did not attempt to make use of this resource. If they wished to eat fish, they either ate dried or pickled fish that had been imported, or occasionally they could buy fresh fish that was brought up from Durban. This was done only in winter because the lack of refrigeration made the transport of fresh fish in the summer heat impossible.

Unlike the Boer administration, the British one made no move to protect game during its first twenty years of control. Eventually it was the sportsmen, led by Charles Barter, who agitated for Natal's first game law, in 1866. The chief concern of this elite group was not an aesthetic appreciation of the fauna of the Colony, but rather that numbers of certain species of game were decreasing and this heralded an end to their sporting pleasure. Hence the main clauses of the law were concerned with the types of animals they liked to shoot. In fact, the protection given was minimal, partly because it prohibited the destruction of a few species during their supposed breeding seasons only, but also because no officers were appointed to implement the law. There was little game left near to the town to be protected: some animals had moved away from the human settlement; others had been destroyed. There was also a marked decrease in the variety of game around the town by 1870 for several species were no longer found there. These included elephant, hippo, buffalo and lion.

The founders of Pietermaritzburg established the town in an area where human beings had utilized natural resources for hundreds of years already. With the arrival of the whites, the nature and scale of human exploitative activities changed, mainly because of superior technology and through production for the market. The most obvious changes in the first few decades concerned the indigenous flora and fauna. The settlers used up much of the woody vegetation near the town and, together with the local black population, were responsible for substantial thinning of the surrounding forests. They also preyed heavily on those species of game that provided food or trade articles, so that game around the town diminished rapidly in both number and variety. Much of the impact made by the whites must have been mirrored in the Swartkop location where some people intensified their exploitation of the forests in response to the presence of a market in the town. When Pietermaritzburg first began to feel the effects of the discovery of diamonds at Kimberley, the early phase of her environmental history ended.

APPENDIX C METHODOLOGY

Site survey

eThembeni staff members inspected the proposed activity area on 11 February and 22 March 2013. The site survey comprised a visual survey of the proposed activity area by driving along public access roads. Geographic coordinates were obtained using a handheld Garmin global positioning unit (WGS 84).

Database and literature review

No archaeological site data was available for the project area from the Natal Museum database. A concise account of the archaeology of the broader study area was compiled from sources including those listed in the bibliography.

Assessment of heritage resource value and significance

Heritage resources are significant only to the extent that they have public value, as demonstrated by the following guidelines for determining site significance developed by Heritage Western Cape (HWC 2007) and utilised during this assessment.

Grade I Sites (National Heritage Sites)

Regulation 43 Government Gazette no 6820. 8 No. 24893 30 May 2003, Notice No. 694 states that: Grade I heritage resources are heritage resources with qualities so exceptional that they are of special national significance should be applied to any heritage resource which is

- a) Of outstanding significance in terms of one or more of the criteria set out in section 3(3) of the NHRA;
 - b) Authentic in terms of design, materials, workmanship or setting; and is of such universal value and symbolic importance that it can promote human understanding and contribute to nation building, and its loss would significantly diminish the national heritage.
1. Is the site of outstanding national significance?
 2. Is the site the best possible representative of a national issue, event or group or person of national historical importance?
 3. Does it fall within the proposed themes that are to be represented by National Heritage Sites?
 4. Does the site contribute to nation building and reconciliation?
 5. Does the site illustrate an issue or theme, or the side of an issue already represented by an existing National Heritage Site – or would the issue be better represented by another site?
 6. Is the site authentic and intact?
 7. Should the declaration be part of a serial declaration?
 8. Is it appropriate that this site be managed at a national level?
 9. What are the implications of not managing the site at national level?

Grade II Sites (Provincial Heritage Sites)

Regulation 43 Government Gazette no 6820. 8 No. 24893 30 May 2003, Notice No. 694 states that: Grade II heritage resources are those with special qualities which make them significant in the context of a province or region and should be applied to any heritage resource which -

- a) is of great significance in terms of one or more of the criteria set out in section 3(3) of the NHRA; and
- (b) enriches the understanding of cultural, historical, social and scientific development in the province or region in which it is situated, but that does not fulfil the criteria for Grade 1 status.

Grade II sites may include, but are not limited to –

- (a) places, buildings, structures and immovable 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 palaeontological sites; and
- (g) graves and burial grounds.

The cultural significance or other special value that Grade II sites may have, could include, but are not limited to –

- (a) its importance in the community or pattern of the history of the province;
- (b) the uncommon, rare or endangered aspects that it possess reflecting the province's natural or cultural heritage
- (c) the potential that the site may yield information that will contribute to an understanding of the province's natural or cultural heritage;
- (d) its importance in demonstrating the principal characteristics of a particular class of the province's natural or cultural places or objects;
- (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group in the province;
- (f) its importance in demonstrating a high degree of creative or technical achievement at a particular period in the development or history of the province;
- (g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; and
- (h) its strong or special association with the life or work of a person, group or organization of importance in the history of the province.

Grade III (Local Heritage Resources)

Regulation 43 Government Gazette no 6820. 8 No. 24893 30 May 2003, Notice No. 694 states that: Grade III heritage status should be applied to any heritage resource which

- (a) fulfils one or more of the criteria set out in section 3(3) of the NHRA; or
- (b) in the case of a site contributes to the environmental quality or cultural significance of a larger area which fulfils one of the above criteria, but that does not fulfill the criteria for Grade 2 status.

Grade IIIA

This grading is applied to buildings and sites that have sufficient intrinsic significance to be regarded as local heritage resources; and are significant enough to warrant any alteration being regulated. The significances of these buildings and/or sites should include at least some of the following characteristics:

- Highly significant association with a
 - historic person
 - social grouping
 - historic events
 - historical activities or roles
 - public memory

- Historical and/or visual-spatial landmark within a place
- High architectural quality, well-constructed and of fine materials
- Historical fabric is mostly intact (this fabric may be layered historically and/or past damage should be easily reversible)
- Fabric dates to the early origins of a place
- Fabric clearly illustrates an historical period in the evolution of a place
- Fabric clearly illustrates the key uses and roles of a place over time
- Contributes significantly to the environmental quality of a Grade I or Grade II heritage resource or a conservation/heritage area

Such buildings and sites may be representative, being excellent examples of their kind, or may be rare: as such they should receive maximum protection at local level.

Grade IIIB

This grading is applied to buildings and/or sites of a marginally lesser significance than grade IIIA; and such marginally lesser significance argues against the regulation of internal alterations. Such buildings and sites may have similar significances to those of a grade IIIA building or site, but to a lesser degree. Like grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be rare, but less so than grade IIIA examples: as such they should receive less stringent protection than grade IIIA buildings and sites at local level and internal alterations should not be regulated (in this context).

Grade IIIC

This grading is applied to buildings and/or sites whose significance is, in large part, a significance that contributes to the character or significance of the environs. These buildings and sites should, as a consequence, only be protected and regulated *if the significance of the environs is sufficient to warrant protective measures*. In other words, these buildings and/or sites will only be protected if they are within declared conservation or heritage areas.

Criteria for the assessment of development impacts

Criteria	Rating Scales	Notes
Nature	Positive	An evaluation of the type of effect the construction, operation and management of the proposed development would have on the heritage resource.
	Negative	
	Neutral	
Extent	Low	Site-specific, affects only the development footprint.
	Medium	Local (limited to the site and its immediate surroundings, including the surrounding towns and settlements within a 10 km radius);
	High	Regional (beyond a 10 km radius) to national.
Duration	Low	0-4 years (i.e. duration of construction phase).
	Medium	5-10 years.
	High	More than 10 years to permanent.
Intensity	Low	Where the impact affects the heritage resource in such a way that its significance and value are minimally affected.
	Medium	Where the heritage resource is altered and its significance and value are measurably reduced.
	High	Where the heritage resource is altered or destroyed to the extent that its significance and value cease to exist.
Potential for impact on irreplaceable resources	Low	No irreplaceable resources will be impacted.
	Medium	Resources that will be impacted can be replaced, with effort.
	High	There is no potential for replacing a particular vulnerable resource that will be impacted.
Consequence a combination of extent, duration, intensity and the potential for impact on irreplaceable resources)	Low	A combination of any of the following: - Intensity, duration, extent and impact on irreplaceable resources are all rated low. - Intensity is low and up to two of the other criteria are rated medium. - Intensity is medium and all three other criteria are rated low.
	Medium	Intensity is medium and at least two of the other criteria are rated medium.
	High	Intensity and impact on irreplaceable resources are rated high, with any combination of extent and duration. Intensity is rated high, with all of the other criteria being rated medium or higher.
Probability (the likelihood of the impact occurring)	Low	It is highly unlikely or less than 50 % likely that an impact will occur.
	Medium	It is between 50 and 70 % certain that the impact will occur.
	High	It is more than 75 % certain that the impact will occur or it is definite that the impact will occur.
Significance (all impacts including potential cumulative impacts)	Low	Low consequence and low probability. Low consequence and medium probability. Low consequence and high probability.
	Medium	Medium consequence and low probability. Medium consequence and medium probability. Medium consequence and high probability. High consequence and low probability.
	High	High consequence and medium probability. High consequence and high probability.

Assumptions and limitations of this HIA

- The description of the proposed project, provided by the client, is assumed to be accurate.
- The public consultation process undertaken as part of the Environmental Impact Assessment is sufficient and adequate and does not require repetition as part of the heritage impact assessment.
- Soil surface visibility varied from good to non-existent. Heritage resources might be present below the surface or in areas of dense vegetation and we remind the client that the NHRA requires that a developer cease all work immediately and observe the protocol in Section 9 of this report should any heritage resources, as defined in the Act, be discovered during the course of development activities.
- No subsurface investigation (including excavations or sampling) were undertaken, since a permit from Amafa is required to disturb a heritage resource.
- eThembeni is not able to provide a specialist palaeontological assessment for this project and informed the client as much at the time of quotation.
- A key concept in the management of heritage resources is that of non-renewability: damage to or destruction of most resources, including that caused by bona fide research endeavours, cannot be reversed or undone. Accordingly, management recommendations for heritage resources in the context of development are as conservative as possible.
- Human sciences are necessarily both subjective and objective in nature. eThembeni staff members strive to manage heritage resources to the highest standards in accordance with national and international best practice, but recognise that their opinions might differ from those of other heritage practitioners.
- Staff members involved in this project have no vested interest in it; are qualified to undertake the tasks as described in the terms of reference (refer to Appendix D); and comply at all times with the Codes of Ethics and Conduct of the Association of Southern African Professional Archaeologists.
- eThembeni staff members take no personal or professional responsibility for the misuse of the information contained in this report, although they will take all reasonable precautions against such misuse.

APPENDIX D SPECIALIST COMPETENCY AND DECLARATION OF INDEPENDENCE

Specialist competency

Len van Schalkwyk is accredited by the Cultural Resources Management section of the Association of South African Professional Archaeologists (ASAPA) to undertake HIAs in South Africa. Mr van Schalkwyk has a master's degree in archaeology (specialising in the history of early farmers in southern Africa) from the University of Cape Town and 25 years' experience in heritage management. He has worked on projects as diverse as the establishment of the Ondini Cultural Museum in Ulundi, the cultural management of Chobe National Park in Botswana and various archaeological excavations and oral history recording projects. He was part of the writing team that produced the KwaZulu-Natal Heritage Act 1997. He has worked with many rural communities to establish integrated heritage and land use plans and speaks good Zulu.

Mr van Schalkwyk left his position as assistant director of Amafa aKwaZulu-Natali, the provincial heritage management authority, to start eThembeni in partnership with Elizabeth Wahl, who was head of archaeology at Amafa at the time. Over the past decade they have undertaken almost 1000 HIAs throughout South Africa, as well as in Mozambique.

Elizabeth Wahl has a BA Honours in African Studies from the University of Cape Town, majoring in archaeology, and has completed various Masters courses in Heritage and Tourism at the University of KwaZulu-Natal. She is currently studying for an MPhil in the Conservation of the Built Environment at the University of Cape Town. She is also a member of ASAPA.

Ms Wahl was an excavator and logistical coordinator for Glasgow University Archaeological Research Division's heritage programme at Isandlwana Battlefield; has undertaken numerous rock painting surveys in the uKhahlamba/Drakensberg Mountains, northern KwaZulu-Natal, the Cederberg and the Koue Bokkeveld in the Cape Province; and was the principal excavator of Scorpion Shelter in the Cape Province, and Lenjane and Crystal Shelters in KwaZulu-Natal. Ms Wahl compiled the first cultural landscape management plan for the Mnweni Valley, northern uKhahlamba/Drakensberg, and undertook an assessment of and made recommendations for cultural heritage databases and organisational capacity in parts of Lesotho and South Africa for the Global Environment Facility of the World Bank for the Maloti Drakensberg Transfrontier Conservation and Development Area. She developed the first cultural heritage management plan for the uKhahlamba Drakensberg Park World Heritage Site, following UNESCO recommendations for rock art management in southern Africa.

Declaration of independence

We declare that Len van Schalkwyk, Elizabeth Wahl and eThembeni Cultural Heritage have no financial or personal interest in the proposed development, nor its developers or any of its subsidiaries, apart from in the provision of HIA and management consulting services.

