

APPENDIX D3

Heritage (Archaeology and Palaeontology Impact Assessment

Terms of Reference: Heritage Assessment (Archaeology and Palaeontology)

The emphasis of the HIA is on resources that are sensitive to visual change, and the disruption of archaeological artefacts/finds at the proposed sites. Visual resources are usually places, structures and landscapes that are or could be publicly celebrated as heritage.

1. Conduct a desktop study within a 100 metre wide servitude over various potential corridors and deviations over a distance of 90 kilometres.
2. Conduct a site visit to verify potential sites or areas that may be of heritage importance.
3. Describe and report on any site or area that may contain potential heritage resources that must be considered.
4. Assessed and evaluated the potential impact on identified heritage resources according to the magnitude, spatial scale, timing, duration, reversibility, probability and significance.
5. Propose and explain mitigation measures
6. Summarise residual impacts after mitigation. An impact summary table will be provided, discussing expected impacts before and after mitigation.
7. Draft an impact statement of the proposed development on the potential heritage resources.

Other factors to be considered:

- Electronic databases of visually sensitive heritage resources do not exist for the study area, and paper versions are extremely limited.
- In palaeontological terms the Dieprivier – Kareedouw sector is unproblematic (mainly Table Mountain Group) but the other two sections transect rock units of high palaeontological sensitivity (e.g. Early Devonian Lower Bokkeveld Group, Early Cretaceous Kirkwood Formation) and the stratigraphy is quite complex in terms of the number of rock units concerned (Dr John Almond, email communication 14 November 2011).
- In open landscape during daylight hours, distribution 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 Cape 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 distribution line may be perceived as intrusive or offensive is subjective.
- The presence of an existing distribution line in an area serves as a mitigatory factor rather than a cumulative negative impact, in terms of establishing new distribution 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.
- Distribution power line routes should be chosen to minimise the requirements for new infrastructure such as access roads, which have the greatest permanent direct and indirect impact on the landscape. This factor supports the previous observation in that new distribution lines located close to existing lines can share access and maintenance roads.
- 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 that may have high heritage significance due to their scientific values, but are generally not publicly celebrated as resources sensitive to visual change.

Phase 1 Heritage Impact Assessment Report:
Melkhout-Dieprivier 132kV Power Line
and Substation Infrastructure,
Kouga Local Municipality,
Cacadu District Municipality,
Eastern Cape Province, South Africa

Prepared for

Arcus GIBB Engineering and Science

2nd Floor, Greyville House, Cnr Greyville & Cape Roads,
Greenacres, Port Elizabeth 6001
Box 63703, Greenacres 6057
Telephone Mathys Vosloo 084 748 3018; 041 392 7518
Fax 041 363 9300; 086 545 8835
mvosloo@gibb.co.za

Prepared by



**eTHEMBENI
CULTURAL
HERITAGE**

Len van Schalkwyk and Elizabeth Wahl
Box 20057 Ashburton 3213 Pietermaritzburg
Telephone 033 326 1136 / 082 655 9077 / 082 529 3656
Facsimile 086 672 8557 thembeni@iafrica.com

30 May 2012

Management Summary

eThembeni Cultural Heritage was appointed by Arcus GIBB Engineering and Science to undertake a Phase 1 Heritage Impact Assessment of a proposed transmission power line and substation site in the Eastern Cape Province, in terms of 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, significance and development impacts

– Landscapes

The proposed electrical infrastructure is located along the Gamtoos Scenic Route. This scenic route has high local and regional significance for its aesthetic and economic (tourism) values. The unmanaged potential impact on this landscape is medium.

– Palaeontology

Geological formations in the Dieprivier – Melkhout sector might contain well-preserved plant material. The unmanaged potential impact on palaeontological remains is low to medium.

Recommended mitigation

– Landscapes

Towers should be located such that they do not interrupt skylines, and are not visible from scenic routes.

– General, including palaeontology

A heritage practitioner should complete a 'walk-through' of the final selected power line route 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 traditional burial places, and archaeological and palaeontological sites.

Recommended monitoring

None at present.

Conclusion

We recommend that the development proceed with the proposed heritage mitigation and have submitted this report to SAHRA in fulfilment of the requirements of the NHRA. Relevant staff members may be contacted at the SAHRA Cape Town head office (Mariagrazia Galimberti telephone 021 462 4502; MGALIMBERTI@sahra.org.za). If permission is granted for development to proceed, the client is reminded that the NHRA requires that a developer cease all work immediately and follow the protocol contained in Section 10 of this report should any heritage resources, as defined in the Act, be discovered during the course of development activities.

Contents

	Page
1 Introduction	4
2 Terms of reference	4
3 Project description	5
4 Project location and environmental description	6
5 Method and approach	7
6 Heritage resources and significance	9
7 Assessment of impacts	10
8 Recommended mitigation	10
9 Recommended monitoring	11
10 Protocol for the identification, protection and recovery of heritage resources during construction and operation	12
11 Conclusion	13
12 Bibliography	13
Appendix A Statutory requirements	14
Appendix B Coordinates of site infrastructure	19
Appendix C Archaeological and historical context of the study area	21
Appendix D Criteria for determination of significance of and impacts on heritage resources	25
Appendix E Palaeontological Impact Assessment	29
Appendix F Specialist competency and Declaration of independence	31

List of figures

Figure 1	Patensie-Kareedouw power line, Eastern Cape.	6
Figure 2	Proposed tower positions along the Gamtoos Scenic Route.	11

1 Introduction

eThembeni Cultural Heritage was appointed by Arcus GIBB Engineering and Science to undertake a Phase 1 Heritage Impact Assessment of a proposed transmission power line and substation site in the Eastern Cape Province, in terms of 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, as amended (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 for the proposed development, including a specialist desktop palaeontological study.

2 Terms of reference

An 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

New 132 kV overhead transmission power lines are proposed to strengthen and upgrade the grid supply in the Patensie, Humansdorp and Kareedouw area of the Eastern Cape in order to support the recent and planned growth and development in the area. An upgrade of the existing electrical distribution network is therefore required to accommodate the new supply. This involves the construction of new 132 kV infrastructure, new substations as well as the decommissioning of certain facilities. The construction of new and upgrading of existing substations will further aid in strengthening of the local network. The total length of the proposed power lines amounts to approximately 90 km. Project 1 entails the following:

- Construction of approximately 26km of overhead 132kV power line from Melkhout to Dieprivier Substations.
- Construction of a new Dieprivier Substation.
- Decommissioning of redundant infrastructure once new infrastructure has been commissioned.
- Construction of new or maintenance of existing minor roads.

¹ Information obtained from Background Information Document prepared by the client.

4 Project location and environmental description

The proposed power line is located north of the town of Humansdorp in the Kouga Local Municipality of the Cacadu District in the Eastern Cape (Figure 1). The relevant Surveyor-General 1:50 000 maps for the entire route are 3324CC Witelsbos, 3324CD Kareedouw, 3324DC Andrieskraal and 3324DD Hankey. Given the length of the power line and the inadequacy of printed maps in this report to indicate the proposed infrastructure we direct the reader to Appendix B and the following file to access the proposed routes in Google Earth: [Melkhout - Dieprivier 132kV line.kmz](#)

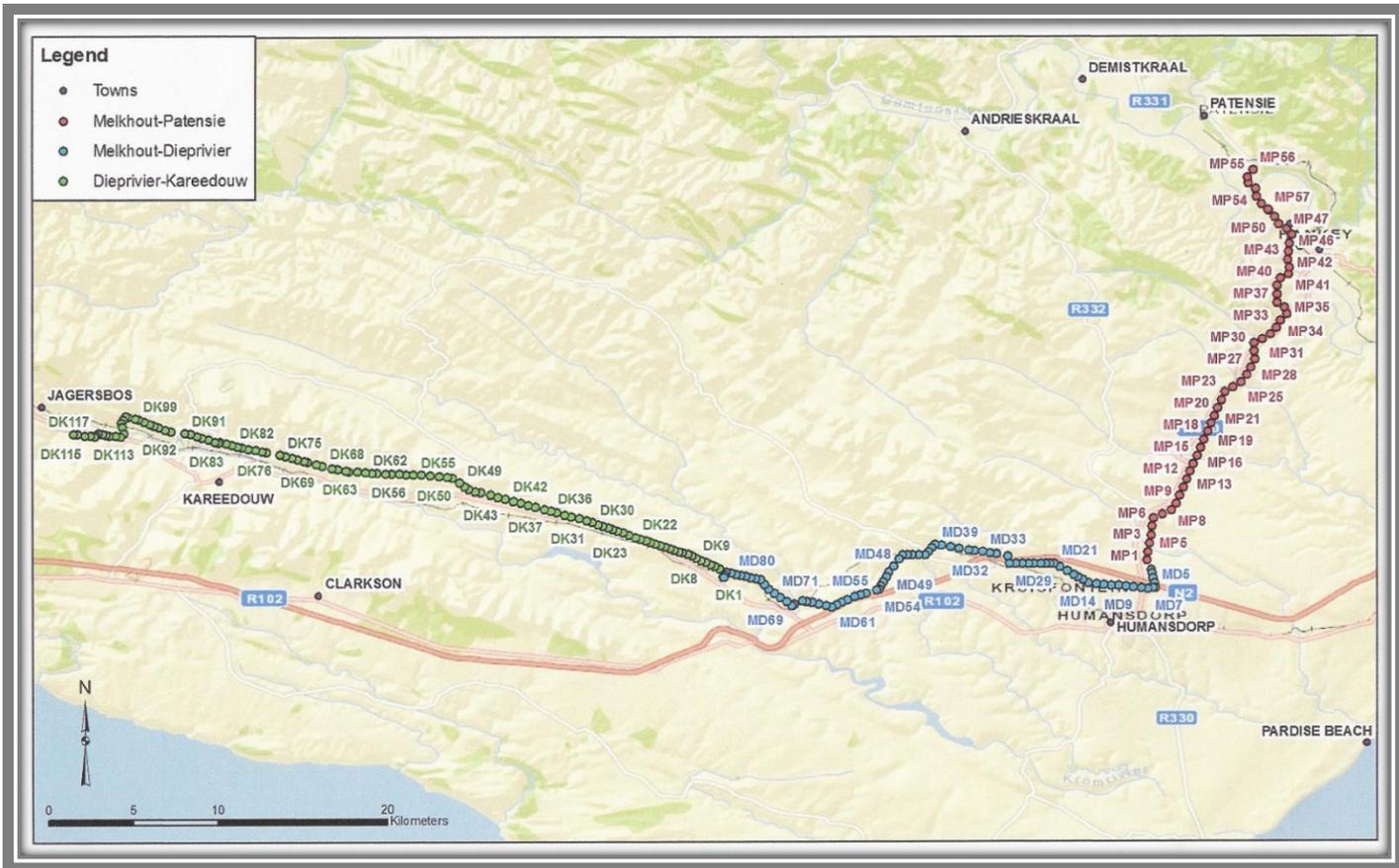


Figure 1 Patensie-Kareedouw power line, Eastern Cape, with the Melkhout-Dieprivier section indicated in blue.

Much of the proposed power line is located close to the N2 freeway, with a section along the Gamtoos Scenic Route. The Eastern Cape gets progressively wetter from west to east². The west is mostly semi-arid Karoo, except in the far south, which is temperate rainforest in the Tsitsikamma region. In the east rainfall is more plentiful and humidity increases, becoming more subtropical along the coast with summer rainfall. The landscape is extremely diverse, but most of the province is hilly to very mountainous. The western interior is largely arid Karoo, while the east is well-watered and green.

² <http://en.wikipedia.org/>

5 Method and approach

The methodology used for 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. Accordingly, the purpose of this HIA is to identify a preferred transmission line route based on the occurrence of, and potential impact on visually sensitive categories of heritage resource. However, SAHRA also requested a Palaeontological Impact Assessment; a desktop report by independent specialist Dr John Almond is included in full as Appendix E.

eThembeni staff members drove along the proposed power line route option from 7 to 9 March 2012. The significance of and potential impact on heritage resources were evaluated using the criteria in Appendix D. During the assessment of the potential impacts of the project on heritage resources, the following factors were taken into consideration:

- The constraints of fieldwork and a desktop study of a 100 metre wide servitude over the 26km long 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.
- Transmission power line routes should be chosen to minimise the requirements for new infrastructure such as access roads, which have the greatest permanent direct and indirect impact on the landscape⁴. This factor supports the previous observation in that new transmission lines located close to existing lines can share access and maintenance roads.
- 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 that may have high heritage significance due to their scientific values, but are generally not publicly celebrated as resources sensitive to visual change.
- A heritage practitioner should complete a 'walk-through' of the final selected power line route 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. 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.

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

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 networks⁵ 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.

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.

With due consideration of the above factors, we evaluated the following visually sensitive categories of heritage resource:

- Places to which oral traditions are attached or which are associated with living heritage.
- Historical settlements and townscapes.

⁵ Developed by the Western Cape Department of Environment and Cultural Affairs and Sport, September 2001.

- Landscapes and natural features of cultural significance (including places defined as a site, area or region; (groups of) buildings and open spaces).
- Battlefields.

The assumptions and limitations of this HIA are as follows:

- The description of the proposed project, provided by the client, is accurate.
- The public consultation process undertaken as part of the EIA is sufficient and adequate, and does not require repetition as part of the HIA.
- Soil surface visibility was moderate. 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 follow 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 SAHRA is required to disturb a heritage resource.
- 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, according to the precautionary principle.
- Human sciences are necessarily both subjective and objective in nature. eThembeni strives to manage heritage resources to the highest standards in accordance with national and international best practice, but recognise that our 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 take all reasonable precautions against such misuse.

6 Heritage Resources and Significance

Appendix C summarises the archaeological and historical context of the study area.

Landscapes

The proposed electrical infrastructure is located along the Gamtoos Scenic Route (Melkhout to the R330). This scenic route has high local and regional significance for its aesthetic and economic (tourism) values.

Palaeontology⁶

The potentially fossiliferous Baviaanskloof Formation and Lower Bokkeveld Group (Ceres Subgroup) are represented in the Melkhout-Dieprivier section of the proposed electrical infrastructure. Previous fieldwork in the Humansdorp region suggests that the former are usually poorly exposed, but might contain well-preserved plant material, while the Bokkeveld mudrocks are deeply weathered and cleaved, reducing the likelihood of well-preserved fossil biotas.

⁶ Refer to Appendix E for the full report.

7 Assessment of Impacts

Landscapes

Criteria	Unmanaged	Managed
Nature	Negative	Neutral
Extent	Medium	Low
Duration	High	High
Intensity	Medium	Low
Potential impact on irreplaceable resources	Low	Low
Consequence	Medium	Low
Probability	Medium to high	Low
Significance	Medium	Low

Palaeontology

Criteria	Unmanaged	Managed
Nature	Neutral to negative	Neutral
Extent	Low	Low
Duration	High	High
Intensity	Low to medium	Low
Potential impact on irreplaceable resources	Low	Low
Consequence	Low to medium	Low
Probability	Medium	Low
Significance	Low to medium	Low

8 Recommended mitigation

Landscapes

It is evident that that the location of the proposed electrical infrastructure potentially conflicts with the aforementioned guideline of the Western Cape Department of Environment and Cultural Affairs and Sport on the application of the EIA Regulations to structures associated with communication networks in the following respects:

- 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.

However, it is not clear whether either the Eastern Cape provincial government structures or SAHRA support this guideline. Furthermore, route location is constrained significantly by valuable agricultural land and centre pivot farming in the Gamtoos River valley. Accordingly, route location is a compromise between the imperative of improving electrical supply to farmers and other residents, and possible visual impacts on the scenic route. In fact, it appears that most of the power line alongside scenic routes has been routed sensitively in a landscape with a high absorption capacity; Figure 2 illustrates the topography in the vicinity of Melkhout Substation along the Gamtoos Scenic Route, where towers are proposed behind a ridge, invisible from the road.



Figure 2 Proposed tower positions along the Gamtoos Scenic Route.

In summary, we recommend strongly that towers are located such that they do not interrupt skylines, and are not visible from scenic routes.

General, including palaeontology

A heritage practitioner should complete a 'walk-through' of the final selected power line route 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 traditional burial places, and archaeological and palaeontological sites. 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.

9 Recommended monitoring

None at present.

10 Protocol for the identification, protection and recovery of heritage resources during construction and operation

It is possible that sub-surface heritage resources will be encountered during the construction phase of this project. The Project Engineer, 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); 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, Dr Mariagrazia Galimberti at SAHRA's Cape Town head office should be contacted (telephone 021 462 4502).
- The South African Police Services should be notified by a SAHRA 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 heritage impact assessment.

11 Conclusion

We recommend that the development proceed with the proposed heritage mitigation and have submitted this report to SAHRA 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 this Act 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.

Relevant staff members may be contacted at the SAHRA Cape Town head office (Mariagrazia Galimberti telephone 021 462 4502; MGALIMBERTI@sahra.org.za).

If permission is granted for development to proceed, the client is reminded that the NHRA requires that a developer cease all work immediately and follow the protocol contained in Section 10 of this report should any heritage resources, as defined in the Act, be discovered during the course of development activities.

12 Bibliography

- Binneman, J. N. F. 1985. Research along the south eastern Cape coast. In: Hall, S. L. & Binneman, J. N. F. *Guide to archaeological sites in the eastern and north eastern Cape*: 117-134. Grahamstown: Albany Museum.
- Binneman, J. N. F. 1996. *The symbolic construction of communities during the Holocene Later Stone Age in the south-eastern Cape*. Unpublished D.Phil. University of the Witwatersrand.
- Binneman, J. N. F. 1999. Results from a test excavation at Groot Kommandokloof Shelter in the Baviaanskloof / Kouga region, Eastern Cape Province. *Southern African Field Archaeology* 8: 100-107.
- Deacon, H. J. 1976. Where hunters gathered: a study of Holocene Stone Age people in the eastern Cape. Claremont: *South African Archaeological Society Monograph 1*.
- Prins, F. E. 1994-95. Climate, vegetation and early agriculturist communities in Transkei and KwaZulu-Natal. *Azania* 29-30: 179-186.
- Prins, F. E. and Granger, J. E. 1993. Early farming communities in northern Transkei: the evidence from Ntsitsana and adjacent areas. *Southern African Humanities* 5: 153-174.
- 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.

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)

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

- **Graves younger than 60 years** are protected in terms of Section 2(1) of the Removal of Graves and Dead Bodies Ordinance 7 of 1925 as well as the Human Tissues Act 65 of 1983. Such graves are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the Office of the relevant Provincial Premier. This function is usually delegated to the Provincial Member of the Executive Council for Local Government and Planning, or in some cases the MEC for Housing and Welfare.

Authorisation for exhumation and reinterment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. In order to handle and transport human remains the institution conducting the relocation should be authorised under Section 24 of the Human Tissues Act 65 of 1983.

- **Graves older than 60 years situated outside a formal cemetery administered by a local authority** are protected in terms of Section 36 of the NHRA as well as the Human Tissues Act of 1983. Accordingly, such graves are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of NHRA) is applicable to graves older than 60 years that are situated outside a formal cemetery administered by a local authority. Graves in the category located inside a formal cemetery administered by a local authority will also require the same authorisation as set out for graves younger than 60 years over and above SAHRA authorisation.

If the grave is not situated inside a formal cemetery but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws set by the cemetery authority must be adhered to.

The **protocol for the management of graves older than 60 years situated outside a formal cemetery administered by a local authority** is detailed in Section 36 of the NHRA:

- (3) (a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—
- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
 - (b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
 - (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.
- (4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.
- (5) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection (3)(b) 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.

(6) Subject to the provision of any other law, 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 Service 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

Project Infrastructure Co-ordinates

Melkhout-Dieprivier

Point no	Longitude (D°DM')	Latitude (D°DM')	Point no	Longitude (D°DM')	Latitude (D°DM')
1	24°33.5149' E	34°00.2351' S	63	24°40.1558' E	33°59.2677' S
2	24°33.5780' E	34°00.1359' S	64	24°40.2498' E	33°59.2071' S
3	24°33.6740' E	34°00.1000' S	65	24°40.3820' E	33°59.2291' S
4	24°33.8040' E	34°00.1296' S	66	24°40.5141' E	33°59.2511' S
5	24°33.9340' E	34°00.1591' S	67	24°40.6462' E	33°59.2731' S
6	24°34.0640' E	34°00.1887' S	68	24°40.7784' E	33°59.2951' S
7	24°34.1940' E	34°00.2182' S	69	24°40.9105' E	33°59.3171' S
8	24°34.3240' E	34°00.2478' S	70	24°41.0426' E	33°59.3391' S
9	24°34.4540' E	34°00.2773' S	71	24°41.1748' E	33°59.3611' S
10	24°34.5840' E	34°00.3069' S	72	24°41.3069' E	33°59.3831' S
11	24°34.7017' E	34°00.3513' S	73	24°41.4390' E	33°59.4051' S
12	24°34.7815' E	34°00.4417' S	74	24°41.5711' E	33°59.4271' S
13	24°34.8613' E	34°00.5321' S	75	24°41.7033' E	33°59.4492' S
14	24°34.9418' E	34°00.6220' S	76	24°41.8354' E	33°59.4712' S
15	24°35.0437' E	34°00.6955' S	77	24°41.9675' E	33°59.4932' S
16	24°35.1455' E	34°00.7689' S	78	24°42.0997' E	33°59.5152' S
17	24°35.2474' E	34°00.8424' S	79	24°42.2318' E	33°59.5372' S
18	24°35.3492' E	34°00.9159' S	80	24°42.3639' E	33°59.5592' S
19	24°35.4511' E	34°00.9893' S	81	24°42.4961' E	33°59.5812' S
20	24°35.5529' E	34°01.0628' S	82	24°42.5493' E	33°59.6666' S
21	24°35.6547' E	34°01.1363' S	83	24°42.5710' E	33°59.7774' S
22	24°35.7737' E	34°01.0947' S	84	24°42.6505' E	33°59.8311' S
23	24°35.8940' E	34°01.0441' S	85	24°42.7852' E	33°59.8302' S
24	24°36.0144' E	34°00.9949' S	86	24°42.9199' E	33°59.8293' S
25	24°36.1446' E	34°01.0237' S	87	24°43.0547' E	33°59.8284' S
26	24°36.2748' E	34°01.0526' S	88	24°43.1894' E	33°59.8275' S
27	24°36.4051' E	34°01.0814' S	89	24°43.3242' E	33°59.8266' S
28	24°36.5353' E	34°01.1102' S	90	24°43.4589' E	33°59.8257' S
29	24°36.6655' E	34°01.1391' S	91	24°43.5937' E	33°59.8248' S
30	24°36.7957' E	34°01.1679' S	92	24°43.7284' E	33°59.8239' S
31	24°36.9260' E	34°01.1967' S	93	24°43.8631' E	33°59.8230' S
32	24°37.0450' E	34°01.1488' S	94	24°43.9979' E	33°59.8221' S
33	24°37.1632' E	34°01.0949' S	95	24°44.1095' E	33°59.8838' S
34	24°37.2814' E	34°01.0411' S	96	24°44.2203' E	33°59.9477' S
35	24°37.3997' E	34°00.9872' S	97	24°44.3311' E	34°00.0115' S
36	24°37.5179' E	34°00.9333' S	98	24°44.4420' E	34°00.0753' S
37	24°37.6361' E	34°00.8795' S	99	24°44.5528' E	34°00.1392' S
38	24°37.7609' E	34°00.8379' S	100	24°44.6636' E	34°00.2030' S
39	24°37.8878' E	34°00.8000' S	101	24°44.7745' E	34°00.2668' S
40	24°38.0146' E	34°00.7621' S	102	24°44.8853' E	34°00.3307' S
41	24°38.1414' E	34°00.7242' S	103	24°44.9961' E	34°00.3945' S
42	24°38.2682' E	34°00.6863' S	104	24°45.1130' E	34°00.4450' S
43	24°38.3951' E	34°00.6484' S	105	24°45.2468' E	34°00.4587' S
44	24°38.4738' E	34°00.5656' S	106	24°45.3805' E	34°00.4723' S
45	24°38.5334' E	34°00.4650' S	107	24°45.5143' E	34°00.4860' S
46	24°38.5930' E	34°00.3643' S	108	24°45.6480' E	34°00.4997' S
47	24°38.6526' E	34°00.2637' S	109	24°45.7817' E	34°00.5134' S
48	24°38.7122' E	34°00.1630' S	110	24°45.9155' E	34°00.5271' S
49	24°38.7747' E	34°00.0637' S	111	24°46.0492' E	34°00.5408' S

50	24°38.8487' E	33°59.9700' S	112	24°46.1830' E	34°00.5545' S
51	24°38.9227' E	33°59.8762' S	113	24°46.3167' E	34°00.5682' S
52	24°38.9967' E	33°59.7824' S	114	24°46.4504' E	34°00.5819' S
53	24°39.0707' E	33°59.6886' S	115	24°46.5842' E	34°00.5956' S
54	24°39.1447' E	33°59.5948' S	116	24°46.7179' E	34°00.6093' S
55	24°39.2481' E	33°59.5467' S	117	24°46.8517' E	34°00.6230' S
56	24°39.3828' E	33°59.5475' S	118	24°46.9853' E	34°00.6347' S
57	24°39.5175' E	33°59.5483' S	119	24°47.1167' E	34°00.6099' S
58	24°39.6523' E	33°59.5490' S	120	24°47.2012' E	34°00.5599' S
59	24°39.7870' E	33°59.5498' S	121	24°47.1746' E	34°00.4498' S
60	24°39.9140' E	33°59.5376' S	122	24°47.1480' E	34°00.3398' S
61	24°39.9946' E	33°59.4477' S	123	24°47.1214' E	34°00.2298' S
62	24°40.0752' E	33°59.3577' S	124	24°47.0949' E	34°00.1198' S

Appendix C

Archaeological and Historical Context of the Study Area

The Stone Age⁸

No systematic Early and Middle Stone Age research has been undertaken in the proposed development area, hence the general nature of this section. Open air scatters of stone artefacts, probably with low heritage significance, could be expected in areas with minimal environmental disturbance.

South Africa's prehistory has been divided into a series of phases based on broad patterns of technology. The primary distinction is between a reliance on chipped and flaked stone implements (the Stone Age) and the ability to work iron (the Iron Age). Spanning a large proportion of human history, the Stone Age in Southern Africa is further divided into the Early Stone Age, or Paleolithic Period (about 2 500 000–150 000 years ago), the Middle Stone Age, or Mesolithic Period (about 150 000–30 000 years ago), and the Late Stone Age, or Neolithic Period (about 30 000–2 000 years ago). The simple stone tools found with australopithecine fossil bones fall into the earliest part of the Early Stone Age.

- The Early Stone Age

Most Early Stone Age sites in South Africa can probably be connected with the hominin species known as *Homo erectus*. Simply modified stones, hand axes, scraping tools, and other bifacial artifacts had a wide variety of purposes, including butchering animal carcasses, scraping hides, and digging for plant foods. Most South African archaeological sites from this period are the remains of open camps, often by the sides of rivers and lakes, although some are rock shelters, such as Montagu Cave in the Cape region.

- The Middle Stone Age

The long episode of cultural and physical evolution gave way to a period of more rapid change about 200 000 years ago. Hand axes and large bifacial stone tools were replaced by stone flakes and blades that were fashioned into scrapers, spear points, and parts for hafted, composite implements. This technological stage, now known as the Middle Stone Age, is represented by numerous sites in South Africa.

Open camps and rock overhangs were used for shelter. Day-to-day debris has survived to provide some evidence of early ways of life, although plant foods have rarely been preserved. Middle Stone Age bands hunted medium-sized and large prey, including antelope and zebra, although they tended to avoid the largest and most dangerous animals, such as the elephant and the rhinoceros. They also ate seabirds and marine mammals that could be found along the shore and sometimes collected tortoises and ostrich eggs in large quantities.

- The Late Stone Age

Basic toolmaking techniques began to undergo additional change about 40 000 years ago. Small finely worked stone implements known as microliths became more common, while the heavier scrapers and points of the Middle Stone Age appeared less frequently. Archaeologists refer to this technological stage as the Late Stone Age. The numerous collections of stone tools from South African archaeological sites show a great degree of variation through time and across the subcontinent.

The remains of plant foods have been well preserved at such sites as Melkhoutboom Cave, De Hangen, and Diepkloof in the Cape region. Animals were trapped and hunted with spears and arrows on which were mounted well-crafted stone blades. Bands moved with the seasons as they followed game into higher lands in the spring and early summer months, when plant foods could also be found. When available, rock

⁸ <http://www.britannica.com>; article authored by Colin J. Bundy, Julian R. D. Cobbing, Martin Hall and Leonard Monteath Thompson

overhangs became shelters; otherwise, windbreaks were built. Shellfish, crayfish, seals, and seabirds were also important sources of food, as were fish caught on lines, with spears, in traps, and possibly with nets.

Dating from this period are numerous engravings on rock surfaces, mostly on the interior plateau, and paintings on the walls of rock shelters in the mountainous regions, such as the Drakensberg and Cederberg ranges. The images were made over a period of at least 25 000 years. Although scholars originally saw the South African rock art as the work of exotic foreigners such as Minoans or Phoenicians or as the product of primitive minds, they now believe that the paintings were closely associated with the work of medicine men, shamans who were involved in the well-being of the band and often worked in a state of trance. Specific representations include depictions of trance dances, metaphors for trance such as death and flight, rainmaking, and control of the movement of antelope herds.

Iron Age⁹

Archaeological evidence shows that Bantu-speaking agriculturists first settled in southern Africa around AD 300. Bantu-speakers originated in the vicinity of modern Cameroon from where they began to move eastwards and southwards, some time after 400 BC, skirting around the equatorial forest. An extremely rapid spread throughout much of sub-equatorial Africa followed: dating shows that the earliest communities in Tanzania and South Africa are separated in time by only 200 years, despite the 3 000 km distance between the two regions. It seems likely that the speed of the spread was a consequence of agriculturists deliberately seeking iron ore sources and particular combinations of soil and climate suitable for the cultivation of their crops.

The earliest agricultural sites in KwaZulu-Natal date to between AD 400 and 550. All are situated close to sources of iron ore, and within 15 km of the coast. Current evidence suggests it may have been too dry further inland at this time for successful cultivation. From 650 onwards, however, climatic conditions improved and agriculturists expanded into the valleys of KwaZulu-Natal, where they settled close to rivers in savanna or bushveld environments. There is a considerable body of information available about these early agriculturists.

Seed remains show that they cultivated finger millet, bulrush millet, sorghum and probably the African melon. It seems likely that they also planted African groundnuts and cowpeas, though direct evidence for these plants is lacking from the earlier periods. Faunal remains indicate that they kept sheep, cattle, goats, chickens and dogs, with cattle and sheep providing most of the meat. Men hunted, perhaps with dogs, but hunted animals made only a limited contribution to the diet in the region.

Metal production was a key activity since it provided the tools of cultivation and hunting. The evidence indicates that people who worked metal lived in almost every village, even those that were considerable distances from ore sources.

Large-scale excavations in recent years have provided data indicating that first-millennium agriculturist society was patrilineal and that men used cattle as bridewealth in exchange for wives. On a political level, society was organised into chiefdoms that, in our region, may have had up to three hierarchical levels. The villages of chiefs tended to be larger than others, with several livestock enclosures, and some were occupied continuously for lengthy periods. Social forces of the time resulted in the concentration of unusual items on these sites. These include artefacts that originated from great distances, ivory items (which as early as AD 700 appear to have been a symbol of chieftainship), and initiation paraphernalia.

This particular way of life came to an end around AD 1000, for reasons that we do not yet fully understand. There was a radical change in the decorative style of agriculturist ceramics at this time, while the preferred

⁹ Whitelaw (1997). See also Prins and Granger (1993), Whitelaw (1991, 2009).

village locations of the last four centuries were abandoned in favour of sites along the coastal littoral. In general, sites dating to between 1050 and 1250 are smaller than most earlier agriculturist settlements. It is tempting to see in this change the origin of the Nguni settlement pattern. Indeed, some archaeologists have suggested that the changes were a result of the movement into the region of people who were directly ancestral to the Nguni-speakers of today. Others prefer to see the change as the product of social and cultural restructuring within resident agriculturist communities.

Whatever the case, it seems likely that this new pattern of settlement was in some way influenced by a changing climate, for there is evidence of increasing aridity from about AD 900. A new pattern of economic inter-dependence evolved that is substantially different from that of earlier centuries, and is one that continued into the colonial period nearly 500 years later.

Colonial rule¹⁰

By the closing decades of the 18th century, South Africa had fallen into two broad regions: west and east. Colonial settlement dominated the west, including the winter rainfall region around the Cape of Good Hope, the coastal hinterland northward toward the present-day border with Namibia, and the dry lands of the interior. Trekboers took increasingly more land from the Khoekhoe and from remnant hunter-gatherer communities, who were killed, were forced into marginal areas, or became labourers tied to the farms of their new overlords. Indigenous farmers controlled both the coastal and valley lowlands and the Highveld of the interior in the east, where summer rainfall and good grazing made mixed farming economies possible.

A large group of British settlers arrived in the eastern Cape in 1820; this, together with a high European birth rate and wasteful land usage, produced an acute land shortage, which was alleviated only when the British acquired more land through massive military intervention against Africans on the eastern frontier. Until the 1840s the British vision of the colony did not include African citizens (referred to pejoratively by the British as “Kaffirs”), so, as Africans lost their land, they were expelled across the Great Fish River, the unilaterally proclaimed eastern border of the colony.

The first step in this process included attacks in 1811–12 by the British army on the Xhosa groups, the Gqunukhwebe and Ndlambe. An attack by the Rharhabe-Xhosa on Graham’s Town in 1819 provided the pretext for the annexation of more African territory, to the Keiskamma River. Various Rharhabe-Xhosa groups were driven from their lands throughout the early 1830s. They counterattacked in December 1834, and Governor Benjamin D’Urban ordered a major invasion the following year, during which thousands of Rharhabe-Xhosa died. The British crossed the Great Kei River and ravaged territory of the Gcaleka-Xhosa as well; the Gcaleka chief, Hintsu, invited to hold discussions with British military officials, was held hostage and died trying to escape. The British colonial secretary, Lord Glenelg, who disapproved of D’Urban’s policy, halted the seizure of all African land east of the Great Kei. D’Urban’s initial attempt to rule conquered Africans with European magistrates and soldiers was overturned by Glenelg; instead, for a time, Africans east of the Keiskamma retained their autonomy and dealt with the colony through diplomatic agents.

However, after further fighting with the Rharhabe-Xhosa on the eastern frontier in 1846, Governor Colonel Harry Smith finally annexed, over the next two years, not only the region between the Great Fish and the Great Kei rivers (establishing British Kaffraria) but also a large area between the Orange and Vaal rivers, thus establishing the Orange River Sovereignty. These moves provoked further warfare in 1851–53 with the Xhosa (joined once more by many Khoe), with a few British politicians ineffectively trying to influence events.

Between 1811 and 1858 colonial aggression deprived Africans of most of their land between the Sundays and Great Kei rivers and produced poverty and despair. From the mid-1850s British magistrates held political power in British Kaffraria, destroying the power of the Xhosa chiefs. Following a severe lung sickness

¹⁰ <http://www.britannica.com>; article authored by Colin J. Bundy, Julian R. D. Cobbing, Martin Hall and Leonard Monteath Thompson

epidemic among their cattle in 1854–56, the Xhosa killed many of their remaining cattle and in 1857–58 grew few crops in response to a millenarian prophecy that this would cause their ancestors to rise from the dead and destroy the whites. Many thousands of Xhosa starved to death, and large numbers of survivors were driven into the Cape Colony to work. British Kaffraria fused with the Cape Colony in 1865, and thousands of Africans newly defined as Fingo resettled east of the Great Kei, thereby creating Fingoland. The Transkei, as this region came to be known, consisted of the hilly country between the Cape and Natal. It became a large African reserve and grew in size when those parts that were still independent were annexed in the 1880s and '90s (Pondoland lost its independence in 1894).

Under apartheid blacks were treated like “tribal” people and were required to live on reserves under hereditary chiefs except when they worked temporarily in white towns or on white farms. The government began to consolidate the scattered reserves into 8 (eventually 10) distinct territories, designating each of them as the “homeland,” or Bantustan, of a specific black ethnic community. The government manipulated homeland politics so that compliant chiefs controlled the administrations of most of those territories. Arguing that Bantustans matched the decolonization process then taking place in tropical Africa, the government devolved powers onto those administrations and eventually encouraged them to become “independent.” Between 1976 and 1981 four accepted independence—Transkei, Bophuthatswana, Venda, and Ciskei—though none was ever recognized by a foreign government. Like the other homelands, however, they were economic backwaters, dependent on subsidies from Pretoria.

Conditions in the homelands continued to deteriorate, partly because they had to accommodate vast numbers of people with minimal resources. Many people found their way to the towns; but the government, attempting to reverse this flood, strengthened the pass laws by making it illegal for blacks to be in a town for more than 72 hours at a time without a job in a white home or business. A particularly brutal series of forced removals were conducted from the 1960s to the early '80s, in which more than 3.5 million blacks were taken from towns and white rural areas (including lands they had occupied for generations) and dumped into the reserves, sometimes in the middle of winter and without any facilities.

Humansdorp¹¹

Humansdorp is a small town and surrounding district in the Eastern Cape with a population of around 35 000. It is part of the Kouga Local Municipality of the Cacadu District. The town is the centre of the district's light industry and farming. Humansdorp was founded in 1849, and was named after Johannes Jurie Human and Matthys Gerhardus Human, who were joint founders of the Dutch Reformed Church congregation there. The town's residential streets are lined with trees that were planted before the First World War by the then mayor, Ambrose Saffery. The Apple Express passes through Humansdorp. Heinrich Schörbeck (alias Hendrik Spoorbek / Skoorbek), was a seer, healer and magician who settled in the Humansdorp district around 1815. In Afrikaner folklore, he is commonly known as Hendrik Spoorbek / Skoorbek the “Towenaar” (Magician/Wizard).

¹¹ <http://en.wikipedia.org/>

Appendix D

Criteria for Determination of Significance of and Impacts on Heritage Resources

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 in 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.

Assessment of development impacts

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, as implied by the aforementioned examples. Although indirect impacts may be more difficult to foresee, assess and quantify, they must form part of the assessment process. The following assessment criteria have been used to assess the impacts of the proposed development on identified heritage resources:

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.

Appendix E

Desktop Palaeontological Impact Assessment

NATURA VIVA cc

Natur

Attention: Elizabeth Wahl and Len van Schalkwyk
eThembeni Cultural Heritage
Box 20057 Ashburton 3213 Pietermaritzburg

Date: 28 May 2012

KAREEDOUW – PATENSIE NEW 132 kV OVERHEAD TRANSMISSION LINE, EASTERN CAPE:

PALAEONTOLOGICAL HERITAGE ASSESSMENT

The proposed new 132 kV overhead transmission line (c. 90 km) and associated new substation developments between Kareedouw and Patensie are underlain by potentially fossiliferous bedrocks of Palaeozoic, Mesozoic and Caenozoic age that crop out within the Cape Fold Belt, Southern coastal plain and Gamtoos River Valley of the Eastern Cape (1: 250 000 geological map 3324 Port Elizabeth).

The Kareedouw – Dieprivier sector (35 km) runs along the grain of the Cape Fold Belt and is partially underlain by Early Devonian sediments of the Baviaanskloof and Gydo Formations that may contain early land plants and marine invertebrates respectively. However, given the tight folding here, it is quite likely that most of the original fossil content of these rocks has been destroyed by tectonism.

The potentially fossiliferous Baviaanskloof Formation and Lower Bokkeveld Group (Ceres Subgroup) are also represented in the Dieprivier – Melkhout sector (26 km) of the proposed new 132 kV line. Previous fieldwork in the Humansdorp region suggests that the former are usually poorly exposed, but might contain well-preserved plant material, while the Bokkeveld mudrocks are deeply weathered and cleaved, reducing the likelihood of well-preserved fossil biotas.

The Melkhout – Patensie sector (28 km) traverses a wide range of geological units. Table Mountain Group sediments in the southwest are generally poorly fossiliferous, as are Jurassic conglomerates of the Enon Formation (Uitenhage Group) on the southwestern side of the Gamtoos River Valley. Early Cretaceous Kirkwood Formation beds near Patensie may contain important fossils of dinosaurs and other terrestrial vertebrates as well as petrified wood, while older alluvial sediments of the Gamtoos drainage system are also potentially fossil-bearing.

Since likely impacts on fossil heritage along the proposed new 132 kV transmission line are mainly associated with excavations for the pylon footings, as well as the construction of new substations, it is recommended that a Phase 1 palaeontological field assessment of the final transmission line route be undertaken once the pylon positions have been finalized and *before* construction commences.

The resulting report should make recommendations regarding any necessary mitigation during the construction phase of the transmission line and associated infrastructure (*e.g.* recording, sampling of fossil assemblages, field monitoring of selected pylon positions).



John E. Almond

Palaeontologist (*Natura Viva* cc)

Appendix F

Specialist Competency and Declaration of Independence

Specialist competency

Len van Schalkwyk is accredited by the Cultural Resources Management section of the Association of Southern African Professional Archaeologists (ASAPA) to undertake AIAs in South Africa. He is also a member of the ASAPA Cultural Resources Management Committee for 2011 and 2012. 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 heritage impact assessments throughout South Africa, as well as in Mozambique.

Elizabeth Wahl has a BA Honours in African Studies from the University of Cape Town 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 UCT. 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, eThembeni Cultural Heritage, Dr John Almond and Natura Viva have no financial or personal interest in the proposed development, nor its developers or any of its subsidiaries, apart from in the provision of heritage impact assessment and management consulting services.