

Draft Phase 1 Heritage Impact Assessment Report:

Proposed Kwasa Colliery Project Area,
Gert Sibande Magisterial District,
Mkondo Local Municipality,
Mpumalanga Province, South Africa

Contract No:

Prepared for

Jindal

Prepared by



**eTHEMBENI
CULTURAL
HERITAGE**

Len van Schalkwyk and Vicky Nardell
Box 20057 Ashburton 3213 Pietermaritzburg
Telephone Len 082 655 9077
Facsimile 086 672 8557 thembeni@iafrica.com

11 March 2015

MANAGEMENT SUMMARY

eThembeni Cultural Heritage was appointed by Jindal to undertake a Phase 1 Heritage Impact Assessment for the Proposed Kwasa Mine Project, as required by the National Environmental Management Act (Act No. 107 of 1998) as amended, in compliance with Section 38 of the National Heritage Resources Act (Act No.25 of 1999) as amended.

HERITAGE RESOURCE DESCRIPTIONS AND SIGNIFICANCE

Buildings and structures

The original farmhouse is located to the east of the proposed mining area. There are some associated communities living around the western boundary of the proposed mining area. There are also ruined workers' residences and outbuildings located around the northern side of the study area, associated with the abandoned colliery.

Burial grounds and graves

There are several family graves at the back of original Goed Hoep farmhouse, first occupied in 1872 by the Prigge family. not within the proposed mining boundary. There may be graves associated with the homesteads on the western boundary of the project area. If these residences are relocated away from the mining site, these graves would also need to be relocated. All human remains have high heritage significance at all levels for their spiritual, social and cultural values.

Archaeological sites

The proposed mining area is located upon dolerite slopes, making this landscape prone to lightning strikes and thus deterring people from settling here in the past. Extensive ploughing has disturbed the grasslands, upon which no isolated artefacts were located within the proposed project area.

Palaeontological sites

No palaeontological assessment was undertaken for this HIA, although the SAHRIS Palaeontological Sensitivity Map rates the area as having very high sensitivity and recommends a field assessment and protocol for finds.

ASSESSMENT OF DEVELOPMENT IMPACT

The following assessment of the potential impact of the proposed project on identified heritage resources is based on the assumptions that heritage resources will be damaged or destroyed if left unmanaged, and that impacts on discrete sites can be managed successfully. The impact assessment will require amendments once the methodology and infrastructure layout of the proposed development have been finalised.

Buildings and structures

Not applicable.

Burial grounds and graves

If communities located on the western boundary are relocated, associated graves around the families homesteads will also require disinterment and reburial.

Mitigation measures	Nature	Extent	Duration	Intensity	Irreplaceable resource loss	Consequence	Probability	Significance of impact
Unmanaged	Negative	Low	High	High	High	High	Medium-High	High
Managed	Neutral	Low	Low	Low	Low	Low	Medium	Low

Archaeological sites

Not applicable.

Palaeontological sites

Mitigation measures	Nature	Extent	Duration	Intensity	Irreplaceable resource loss	Consequence	Probability	Significance of impact
Unmanaged	Negative	Low-High	High	High	High	High	Medium-High	High
Managed	Neutral	Low	Low	Low	Low	Low	Medium	Low

RECOMMENDED MITIGATION

All of the following mitigation measures will require re-assessment once the methodology and infrastructure layout of the proposed development have been finalised.

Buildings and structures

Not applicable.

Burial grounds and graves

No human remains may be altered in any way without the prior permission of the next-of-kin and a permit from SAHRA.

Although the preferred option is always to manage graves *in situ*, it may be preferable to relocate graves in the event of a development involving large scale, ongoing environmental disturbance.

Archaeological sites

Not applicable.

Palaeontological sites

A full Palaeontological Impact Assessment of the proposed development should be undertaken prior to any construction activities.

RECOMMENDED MONITORING

None at present, although the heritage authority might request focussed or ongoing assessment of development activities to monitor heritage management.

CONCLUSION

From a heritage perspective there are no prohibitive factors preventing the proposed development. 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 10 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.....	6
5 ARCHAEOLOGICAL AND HISTORICAL SUMMARY.....	11
6 HERITAGE RESOURCES AND SIGNIFICANCE.....	16
BUILDINGS AND STRUCTURES.....	16
BURIAL GROUNDS AND GRAVES.....	17
ARCHAEOLOGICAL SITES.....	18
PALAEOLOGICAL SITES.....	18
7 ASSESSMENT OF DEVELOPMENT IMPACT.....	18
BUILDINGS AND STRUCTURES.....	18
BURIAL GROUNDS AND GRAVES.....	18
ARCHAEOLOGICAL SITES.....	18
PALAEOLOGICAL SITES.....	19
8 RECOMMENDED MITIGATION MEASURES.....	19
BUILDINGS AND STRUCTURES.....	19
BURIAL GROUNDS AND GRAVES.....	19
ARCHAEOLOGICAL SITES.....	19
PALAEOLOGICAL SITES.....	19
9 RECOMMENDED MONITORING.....	19
10 PROTOCOL FOR THE IDENTIFICATION, PROTECTION AND RECOVERY OF HERITAGE RESOURCES DURING CONSTRUCTION AND OPERATION.....	20
11 CONCLUSION.....	20
12 BIBLIOGRAPHY.....	21
APPENDIX A STATUTORY REQUIREMENTS.....	23
APPENDIX B ARCHAEOLOGICAL AND HISTORICAL CONTEXT OF THE STUDY AREA.....	28
APPENDIX C METHODOLOGY.....	31
APPENDIX D SPECIALIST COMPETENCY AND DECLARATION OF INDEPENDENCE.....	36

LIST OF FIGURES

FIGURE 1: EXTRACT FROM RELEVANT 1:50 000 MAP SHEET, INDICATING REGIONAL LOCATION OF DEVELOPMENT.....	7
FIGURE 2: REGIONAL LOCATION OF PROPOSED DEVELOPMENT SITE (SOURCE: EKOINFO CC).....	8
FIGURE 3: PROPOSED DEVELOPMENT SITE IN LOCAL CONTEXT (SOURCE: GOOGLE EARTH).....	9
FIGURE 4: ZONDERWATER SG DIAGRAM.....	14
FIGURE 5: VAN WYKS PAN SG DIAGRAM.....	15
FIGURE 6: THE LOCATIONS OF STRUCTURES AND GRAVES WITHIN THE STUDY AREA.....	17

LIST OF TABLES

TABLE 1: SUMMARY OF PROPERTY LOCATION DETAILS.....	6
TABLE 2: HERITAGE RESOURCES TYPES ASSESSED.....	16
TABLE 3: POTENTIAL IMPACTS ON GRAVES.....	18
TABLE 4: POTENTIAL IMPACTS ON PALAEOLOGICAL SITES.....	19

1 INTRODUCTION

eThembeni Cultural Heritage was appointed by Jindal to undertake a Phase 1 Heritage Impact Assessment of the proposed Kwasa Mine Project area, as required by the National Environmental Management Act (Act No. 107 of 1998) as amended (NEMA), in compliance with Section 38 of the National Heritage Resources Act (Act No. 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.

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

Kwasa Colliery is an abandoned colliery that was left in an un-rehabilitated state with old equipment, scrap metal, old coal dumps and rock heaps. Five shafts in the adit complex were left open and in an unsafe state and the area was also eroded by water erosion over the years. It is planned to re-establish a small, underground coal mine. It is planned to establish a wash plant on site. The mining methods will be board and pillar, using a coal cutter with minimal drill and blast. There will be no secondary mining of the pillars that would compromise the long term integrity of the roof.

The phase 1 heritage impact assessment will focus upon the undisturbed areas, namely the proposed Co-Disposal dump site; as well as the planned new roads and the proposed fresh water dam site.

4 PROJECT LOCATION AND ENVIRONMENTAL DESCRIPTION²

Kwasa Colliery is situated in the Gert Sibande Magisterial District which falls within the Mkondo Local Municipality in Mpumalanga. The coal reserve is located approximately 37 km south-west of the town of Piet Retief, 22 km due East of the town of Dirkiesdorp and 58 km East of the town of Wakkerstroom.

Table 1 summarises Distance to the Neighbouring Towns and Villages.

TABLE 1: SUMMARY OF DISTANCE TO NEIGHBOURING TOWNS & VILLAGES

Town	Distance
Dirkiesdorp	22 km
Piet Retief	31 km
Wakkerstroom	58 km



¹ Information obtained from the client.

² Information obtained from the client.

FIGURE 1: PROPOSED DEVELOPMENT SITE IN LOCAL CONTEXT (SOURCE: GOOGLE EARTH)

5 PHYSICAL PROJECT DESCRIPTION

Completed Activities

The development of the mine up to this point in time has been funded by Kwasa Mining Services (Pty) Ltd. The following activities had been completed approximately three years ago but would need to be refurbished:

- *Refurbishment of access road to the mine and shafts;*
- *Installation of Eskom power lines and transformers;*
- *Refurbishment of the underground workings, with*
 - a) roof stabilisation,*
 - b) conveyor system,*
 - c) ventilation infrastructure,*
 - d) water management.*
- *Fencing of the shafts;*
- *Development of access control; and*
- *Setting out of a stockpile and loading area in place.*

Planned Activities

Construction Phase

The following activities will be carried out during the construction phase:

- *Refurbishment and reconstruction of the water pollution control system;*
- *Construction of one fresh water storage dams;*
- *Construction of four pollution control dams (PCDs);*
- *Construction of the silt traps at each PCD;*
- *Transport to site and erection of a modular washing plant;*
- *Preparation of the discard management facility;*
- *Construction of offices and a change house;*
- *Commissioning of an existing weighbridge;*
- *New security house at main gate;*
- *Final trenching and berms;*
- *New runoff water catchment areas;*
- *Three freshwater towers and tanks;*
- *Installation of a new conveyor belt in the Alfred seam belt adit;*
- *Road signs;*
- *Water pumps and piping for PCDs and clean water storage dam;*
- *Security lights at gates.*
- *Five year contractual commitments for the supply and operation of crushing and screening equipment; and*
- *Five year contractual commitments for underground mining services.*

The facilities inside the operational area will be fenced such as the PCDs, fresh water dam, washing plant area, co disposal site and stockpile areas.

Operational Phase

Activities to be conducted during the operational phase of the mine are:

- *Underground board and pillar mining with continuous miner which will not involve blasting;*
- *Transportation of run-off mine from the shaft to crushing and screening area via a conveyor belt system;*
- *Crushing and screening of run-off mine;*
- *Stockpiling of the coal product;*
- *Spraying of water on access roads to suppress dust;*

- *Transportation of coal product to client via trucks;*
- *Cleaning of silt traps;*
- *Disposal of discard and silt at the Co-Disposal site;*
- *Toil stockpiling (hard and soft);*
- *Sewage management;*
- *Solid waste management; and*
- *Dirty water handling including pumping water from PCD 3 to the coal washing plant.*

Closure and Post Closure Phase

Activities to be conducted during the closure and post-closure phase of the mine are:

- *Plugging/sealing of the three adits (ventilation, access and exit);*
- *Removal of storage equipment;*
- *Cleaning and re-vegetation of the discard dump and product stockpile area at the plant;*
- *Removal of coal wastes;*
- *Demolition of unwanted (by the post-mining land users) infrastructure such as offices, change house, pollution control dams, access roads, high wall etc.;*
- *The pollution control dams will be cleaned before it is filled and re-vegetated;*
- *Landscaping and re-vegetation of disturbed areas; and*
- *Ground and surface water monitoring.*

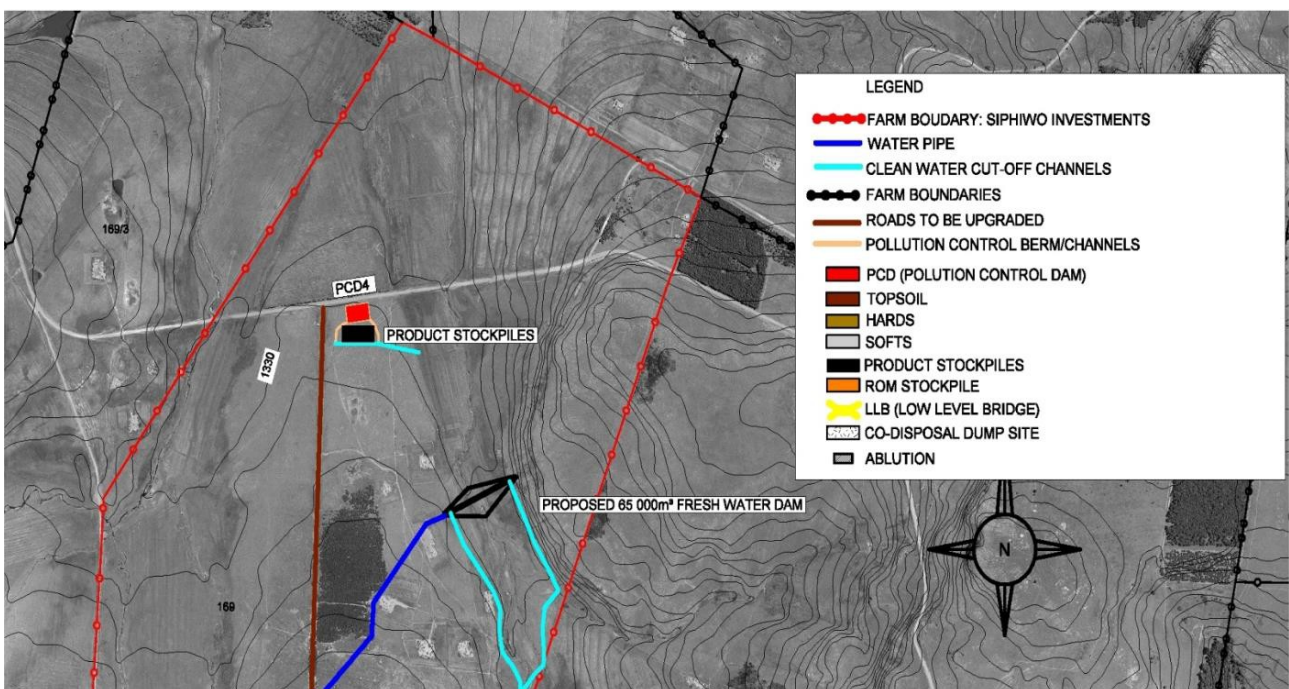


FIGURE 2: PRODUCT STOCKPILE AREA AT THE ACCESS GATE

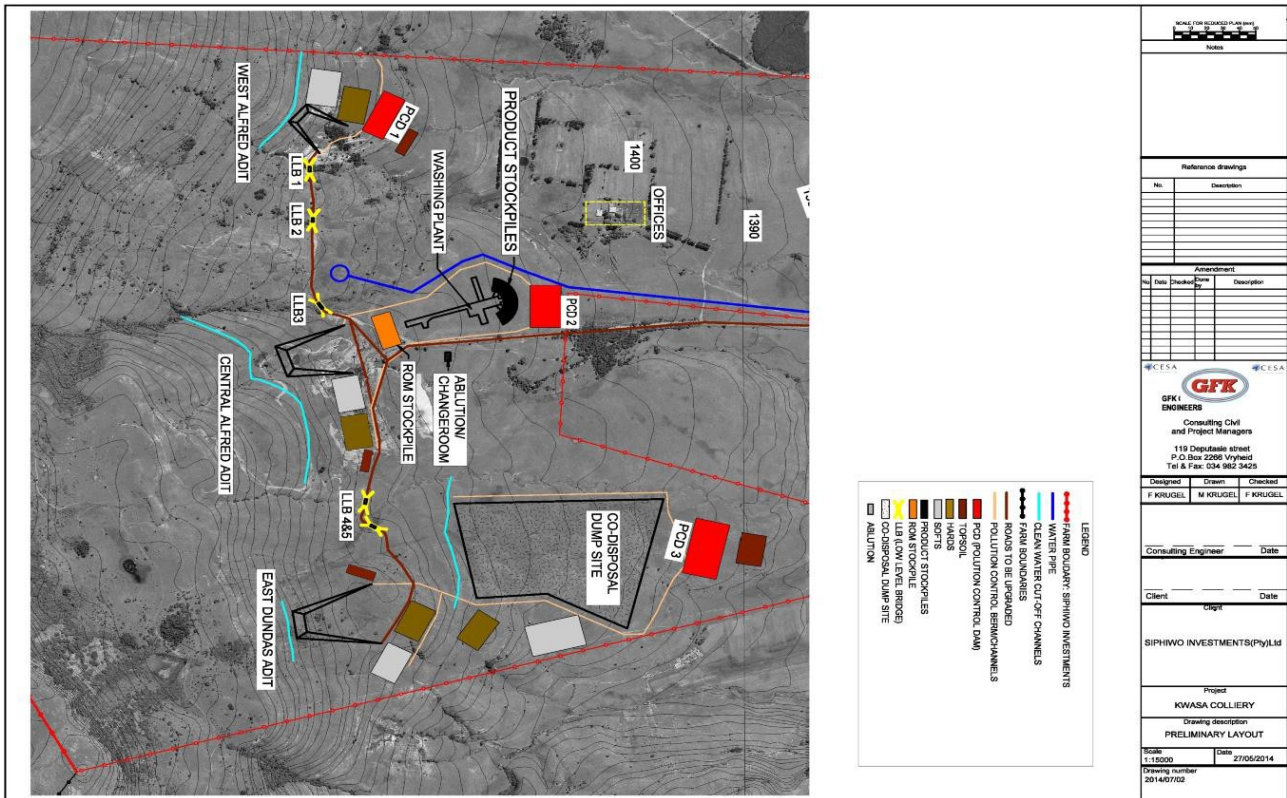


FIGURE 3: LAYOUT PLAN OF THE MINING AREA

6 HERITAGE RESOURCES AND SIGNIFICANCE

Whilst no development activities associated with the currently proposed project have yet begun at the time of our visit, the project area consists of an extension of the former mine and its associated construction activities. Table 2 summarises the heritage resource types assessed, and our observations. Overall the study area is located in a disturbed landscape, which has already been modified primarily by agricultural activities and secondarily by mining activities.

TABLE 2: HERITAGE RESOURCES TYPES ASSESSED

Heritage resource type	Observation
Places, buildings, structures and equipment	See below
Places associated with oral traditions or living heritage	None were identified within the proposed development area.
Landscapes	None were identified within the proposed development area.
Natural features	None were identified within the proposed development area.
Burial grounds and graves	See below
Ecofacts	None were identified within the proposed development area.
Geological sites of scientific or cultural importance	None were identified within the proposed development area.
Archaeological sites	See below
Palaeontological sites	See below
Historical settlements and townscapes	None were identified within the proposed development area.
Public monuments and memorials	None were identified within the proposed development area.
Battlefields	None were identified within the proposed development area.

BUILDINGS AND STRUCTURES

The Goed Hoep farmhouse and associated workers' residences and outbuildings are located on the western boundary of the proposed project area. Our informant Mr Eric Prigge is around 65 years old and his family have lived in the Goed Hoep farmhouse since 1872. However, the farm was divided between Mr Prigge's brothers several decades ago and more recently the Goed Hoep farmhouse was sold to a Mr Boshoff. Mr Prigge now leases a portion of the Goed Hoep farmland from Mr Boshoff. The buildings remain functional but will not be impacted by the proposed development.

BURIAL GROUNDS AND GRAVES

There are family graves located to the south of the Goed Hoep farmhouse, which is the original Prigge family cemetery and continues to be managed by Mr Eric Prigge. However, these will not be impacted by the proposed development.

The mPele family are labour tenants living on the eastern edge of the proposed development area. The mPele family have family graves around their homestead. The family is not expected to consider a relocation plan, but have been offered the option to do so should they consider this preferable.

All human remains have high heritage significance at all levels for their spiritual, social and cultural values. Ethembeni has informed the mPele family of their rights in terms of ancestral graves, making the family aware of land rights and grave rights.

ARCHAEOLOGICAL SITES

We identified four miscellaneous MSA flakes and a reduced core in the entire survey area. All of these artefacts were found close to drainage lines on calcrete hardpan surfaces and are weathered and water-worn. The source of MSA raw lithic material appears to be a nearby rocky outcrop.

We saw no evidence of LSA or Iron Age material; this paucity of archaeological remains corresponds to findings of other heritage surveys in the area and is related to the historical aridity described above.

The isolated MSA artefacts, located in secondary context, do not represent archaeological sites and have no heritage significance.

Mr Eric Prigge advised us of the presence of some rock art on the adjacent Roodwal Farm, which was once a part of the Goed Hoep Farm. However, a local forester / farm manager who recalls the rock paintings having once been visible here advised us that the very faded rock paintings are no longer present here, perhaps either on account of deterioration and fading of the paint or possibly as a result of the collapse of painted panels during a rockfall or similar natural damage. Roodwal is not impacted by this particular mining application, though another associated mining development has been proposed within this plot of farmland.

PALAEONTOLOGICAL SITES

No palaeontological assessment was undertaken for this HIA, although the SAHRIS Palaeontological Sensitivity Map rates the area as having very high sensitivity and recommends a field assessment and protocol for finds.

7 ASSESSMENT OF DEVELOPMENT IMPACT

The following assessment of the potential impact of the proposed project on identified heritage resources is based on two assumptions:

- Heritage resources will be damaged or destroyed if left unmanaged, and
- Impacts on discrete sites can be managed successfully.

The impact assessment will require amendments once the methodology and infrastructure layout of the proposed development has been finalised.

BUILDINGS AND STRUCTURES

Not applicable.

BURIAL GROUNDS AND GRAVES

Extensive developments such as mining activities potentially damage or destroy such places, or restrict the access of next-of-kin for health and safety reasons.

TABLE 3: POTENTIAL IMPACTS ON GRAVES

Mitigation measures	Nature	Extent	Duration	Intensity	Irreplaceable resource loss	Consequence	Probability	Significance of impact
Unmanaged	Negative	Low	High	High	High	High	Medium-High	High
Managed	Neutral	Low	Low	Low	Low	Low	Medium	Low

ARCHAEOLOGICAL SITES

Not applicable.

PALAEONTOLOGICAL SITES

Extensive developments such as mining activities potentially damage or destroy palaeontological sites if fossiliferous deposits are present.

TABLE 4: POTENTIAL IMPACTS ON PALAEONTOLOGICAL SITES

Mitigation measures	Nature	Extent	Duration	Intensity	Irreplaceable resource loss	Consequence	Probability	Significance of impact
Unmanaged	Negative	Low-High	High	High	High	High	Medium-High	High
Managed	Neutral	Low	Low	Low	Low	Low	Medium	Low

8 RECOMMENDED MITIGATION MEASURES

All of the following mitigation measures will require re-assessment once the methodology and infrastructure layout of the proposed development have been finalised.

BUILDINGS AND STRUCTURES

Not applicable.

BURIAL GROUNDS AND GRAVES

No human remains may be altered in any way without the prior permission of the next-of-kin and a permit from SAHRA.

Although the preferred option is always to manage graves *in situ*, it may be preferable to relocate graves in the event of a development involving large scale, ongoing environmental disturbance.

ARCHAEOLOGICAL SITES

Not applicable.

PALAEONTOLOGICAL SITES

A full Palaeontological Impact Assessment of the proposed development area should be undertaken prior to any construction activities.

9 RECOMMENDED MONITORING

None at present, although the heritage authority might request focussed or ongoing assessment of development activities to monitor heritage management.

10 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 / Environmental Practitioner 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 relevant SAHRA staff member (to be determined before construction starts) should be contacted.
- 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 HIA.

11 CONCLUSION

From a heritage perspective there are no prohibitive factors preventing the proposed development. 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 10 of this report should any heritage resources, as defined in the Act, be discovered during the course of development activities.

12 BIBLIOGRAPHY³

³ Please note that all references below that are not quoted in the text of this report are those informing our methodological approach, as stated in Appendix C.

APPENDIX A STATUTORY REQUIREMENTS

General

The Constitution of the Republic of South Africa (Act No. 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 to the proposed development:

- Physical Planning Act (Act No. 125 of 1991);
- Municipal Structures Act (Act No. 117 of 1998);
- Municipal Systems Act (Act No. 32 of 2000); and
- Development Facilitation Act (Act No. 67 of 1995) (DFA).

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

- National Environmental Management Act (Act No. 107 of 1998) (NEMA);
- National Heritage Resources Act (Act No. 25 of 1999) (NHRA); and
- Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) (MPRDA).

National Heritage Resources Act (Act No. 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; and
- 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 mean 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 fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925) as well as the Human Tissues Act (Act No. 65 of 1983) and 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 MEC 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 Act No. 65 of 1983 (Human Tissues Act).

Graves older than 60 years, but younger than 100 years fall under Section 36 of the NHRA as well as the Human Tissues Act and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (see below) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery administrated 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.

– 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 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 Remains⁴

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.

⁴ <http://www.worldarchaeologicalcongress.org/>

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.

APPENDIX B ARCHAEOLOGICAL AND HISTORICAL CONTEXT OF THE STUDY AREA

In archaeological terms 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), the ability to work iron (the Iron Age) and the Colonial Period, characterised by the advent of writing and in southern Africa primarily associated with the first European travellers (Mitchell 2002). 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 500 000–30 000 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 Stone Age⁵

o 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.

o Middle Stone Age

The long episode of cultural and physical evolution gave way to a period of more rapid change about 120 000 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 Middle Stone Age is perhaps most significant as the time period during which the first modern humans, *Homo sapiens sapiens*, emerged between 120 000 and 30 000 years ago. The Klasies River cave complex, located on the southern Cape coast contains the oldest remains of anatomically modern humans in the world, dating to around 110 000 years ago (Rightmire & Deacon 1991; Singer & Wymer 1982). Humans were anatomically modern by 110 000 years ago but only developed into culturally modern behaving humans between 80 000 and 70 000 years ago, during cultural phases known as the Still Bay and Howieson's Poort time periods or stone tool traditions.

⁵ <http://www.britannica.com>; article authored by Colin J. Bundy, Julian R. D. Cobbing, Martin Hall and Leonard Monteath Thompson.

o 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 Later Stone Age or LSA, which can be divided into four broad temporal units directly associated with climatic, technological and subsistence changes (Deacon 1984):

1. Late Pleistocene microlithic assemblages (40-12 000 years ago);
2. Terminal Pleistocene / early Holocene non-microlithic (macrolithic) assemblages (12-8 000 years ago);
3. Holocene microlithic assemblages (8 000 years ago to the Colonial Period); and
4. Holocene assemblages with pottery (2 000 years ago to the Historic Period) closely associated with the arrival of pastoralist communities into South Africa (Mitchell 1997; 2002).

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 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.

Elements of material culture characteristic of the LSA that reflect cultural modernity have been summarised as follows (Deacon 1984):

- Symbolic and representational art (paintings and engravings);
- Items of personal adornment such as decorated ostrich eggshell, decorated bone tools and beads, pendants and amulets of ostrich eggshell, marine and freshwater shells;
- Specialized hunting and fishing equipment in the form of bows and arrows, fish hooks and sinkers;
- A greater variety of specialized tools including bone needles and awls and bone skin-working tools;
- Specialized food gathering tools and containers such as bored stone digging stick weights, carrying bags of leather and netting, ostrich eggshell water containers, tortoiseshell bowls and scoops and later pottery and stone bowls;
- Formal burial of the dead in graves, sometimes covered with painted stones or grindstones and accompanied by grave goods;
- The miniaturization of selected stone tools linked to the practice of hafting for composite tools production; and
- A characteristic range of specialized tools designed for making some of the items listed above.

Iron Age⁶

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

⁶ Whitelaw (1997). See also Whitelaw (1991, 2009).

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 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.

APPENDIX C METHODOLOGY

Site survey

eThembeni staff conducted a site visit of the properties between 22-25 October 2013 and completed a controlled-exclusive surface survey where, 'sufficient information exists on an area to make solid and defensible assumptions and judgements about where [heritage resource] sites may and may not occur', and 'an inspection of the surface of the ground, wherever this surface is visible' (King 1978; see bibliography for other references informing methodological approach).

The assessment and survey was conducted both by walking systematic transects along the drainage lines and by driving the sand track network that accesses all parts of the study area. Areas along and adjacent to drainage lines were focused on as these would potentially be the location of past activity and settlement in the prevailing arid environment. Erosion gullies, aardvark, warthog and porcupine holes were inspected for sub surface cultural debris; and areas of uniform stands of pioneer vegetation were checked for evidence of past occupation or settlement. Surface visibility was generally good as the grass layer was reduced at the end of winter by a combination of herbivore feeding and trampling and that the summer rains had not yet begun.

We also spoke to Mr Gehard Human of Vanwyksvlei and Mr Gus Obbes of Zonderwater to obtain information about the history of human occupation of the farms. Geographic coordinates were obtained using a handheld Garmin global positioning unit (WGS 84).

Database and literature review

A concise account of the archaeology of the broader study area was compiled from sources including those listed in the bibliography. Heritage Impact Assessment reports relevant to the study area are 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
 - o Historic person;

- Social grouping;
 - Historic events;
 - Historical activities or roles; and
 - 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; and
 - 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.

Assumptions and limitations of this HIA

- The description of the proposed project, provided by the client, is 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 HIA.
- 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 10 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.

Declaration of independence

We declare that Len van Schalkwyk, Vicky Nardell 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.

