Phase 1 Heritage Impact Assessment Report:

Proposed Upgrade of the Southern Wastewater Treatment Works, Merewent, eThekwini Metropolitan Municipality, KwaZulu-Natal

Prepared for

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28 March 2014

MANAGEMENT SUMMARY

eThembeni Cultural Heritage was appointed by Royal Haskoning DHV to undertake a Phase 1 Heritage Impact Assessment of proposed upgrades to a wastewater treatment works, as required by the National Environmental Management Act 107 of 1998 as amended, in compliance with Section 38 of the National Heritage Resources Act 25 of 1999 as amended.

HERITAGE RESOURCE DESCRIPTIONS AND SIGNIFICANCE

All proposed upgrades comprising this project are located in an area that has been subject to many decades of industrial development, including environmental disturbance on a massive scale, such as the construction of the uMlazi River Canal immediately to the south. It is highly unlikely that any discrete heritage resources, such as archaeological sites, would have been present in the area in the first place, since the reed beds of the uMlazi River and estuary would have been eschewed by hunter-gatherers and farmers in the past. Any such sites are likely to have been destroyed by periodic flooding of the river and more recent industrial earthworks.

All existing structures proposed for upgrade are industrial and utilitarian in nature, younger than 60 years, and have no heritage significance. Accordingly, no permits from Amafa are required to alter these structures.

The proposed development area has high palaeontological sensitivity requiring a field assessment and protocol for finds. However, Amafa aKwaZulu-Natali has indicated that this recommendation depends on the nature of the development and the environment and it is the responsibility of the heritage practitioner to assess the likelihood of impacts on palaeontological remains. We believe that the proposed development is unlikely to disturb such remains, since construction activities are likely to be restricted to deposits overlying potentially fossiliferous strata and/or deposits that have already been subject to massive environmental disturbance as described above (see Section 9 for a finds protocol).

ASSESSMENT OF DEVELOPMENT IMPACT

Not applicable.

RECOMMENDED MITIGATION

Not applicable.

RECOMMENDED MONITORING

Not applicable.

CONCLUSION

We recommend that the development proceed with no further heritage mitigation and have submitted this report to Amafa aKwaZulu-Natali in fulfilment of the requirements of the National Heritage Resources Act. The client may contact Ms Bernadet Pawandiwa at Amafa's Pietermaritzburg office in due course to enquire about the Council's decision.

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

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1 INTRODUCTION

eThembeni Cultural Heritage was appointed by Royal Haskoning DHV to undertake a Phase 1 Heritage Impact Assessment of proposed upgrades to a wastewater treatment works, as required by the National Environmental Management Act 107 of 1998 as amended (NEMA), in compliance with Section 38 of the National Heritage Resources Act 25 of 1999 (NHRA) (refer to Appendix A).

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

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

This report represents compliance with a full Phase 1 HIA (excluding a specialist palaeontological study) for the proposed development, for submission to Amafa aKwaZulu-Natali for review and comment.

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 DESCRIPTION[1]

The Southern Wastewater Treatment Works (SWWTW) receives the majority of its raw sewage effluent through three large (1500 mm diameter) trunk sewers, i.e. the Main Southern Trunk Sewer (referred to as the Jacobs Trunk Sewer), the Wentworth Valley Trunk Sewer and the Umlaas Trunk Sewer. Other smaller diameter pipelines coming to this Works includes those from Mondi and SAPREF (each separately discharging at the inlet of this Works) and Illovo (discharging closer to the outlet of this Works). The total average daily flow to this works is in the region of 130 Mega (million) litres per day and all the treated flows leaving this works are discharged directly to sea (by gravity and by pumping) through a 1500 mm diameter, 4.2 km long sea outfall.

The Umlaas Trunk Sewer which serves the areas of Chatsworth and Umlazi discharges effluent to this Works that is predominantly domestic in origin. The discharged flow [currently in the region of 35 Mega (million) litres per day] is immediately directed to a separate treatment facility where it undergoes preliminary, primary, secondary and tertiary treatment. The secondary and tertiary treatment processes are managed by a private entity (Veolia Water) who stores and sells the tertiary treated (or reclaimed) effluent to industry. All sludge generated from the treatment of this effluent is discharged to sea.

The Jacobs Trunk Sewer which serves the residential areas of Yellow Wood Park and Woodlands and the industrial areas of Jacobs and Mobeni discharges sewage effluent that is a combination of domestic and industrial in origin. The Wentworth Valley Trunk Sewer which serves the areas of the Bluff, Wentworth, Clairwood, Bayhead and Island View discharges sewage effluent that is also a combination of domestic and industrial in origin. The flows conveyed by these two trunk sewers [currently in the region of 95 Mega (million) litres per day] combine at the main inlet works and undergo preliminary treatment only (i.e. removal of screenings and grit) before being discharged to sea.

In addition to the pipeline discharge of sewage effluent to this works, smaller volumes of effluent are also discharged by various road tankers. The effluent discharged by these road tankers also undergoes preliminary treatment only before being discharged to sea.

Scope of Work Proposed for the Upgrade of the SWWTW

The aim of the proposed SWWTW upgrades is to reduce the quantity of suspended solids being disposed of to sea by affording primary treatment to the combined effluent discharges from the Jacobs and Wentworth Valley Trunk Sewers. This physical treatment process (through primary settling) will result in the organic load to sea being drastically reduced. The settled solids (referred to as primary or raw sludge) will then be removed and stabilised through a process of anaerobic digestion, before being dewatered. The options proposed for the disposal of the dewatered sludge are as follows:

- Removal off site to agriculture and/or landfill
- Thermal drying and then removal off site to agriculture.
- Manufacture of fertilizer through a separate sludge pelletizing process to be established on site by a private entity (unconfirmed at this stage) and then removal off site. This option may be investigated under a separate study to be undertaken by others and does not form part of this study nor the scope of work described hereunder.

The work will be undertaken in 2 phases, with Phase 1 being the immediate upgrade and Phase 2 being the future upgrade. The Phase 1 upgrade will result in the primary treatment of approximately 60 Mega (million) litres (or 63.5 %) of the present combined flow (i.e. 95 Mega [million] litres) being discharged from

[1] Information obtained from the client.

the Jacobs and Wentworth Valley Trunk Sewers. The solids (or sludge) to be removed will then be combined with that currently being removed from the treatment of the sewage effluent being discharged from the Umlaas Trunk Sewer, before being pumped to the anaerobic digesters. The biogas (which is made up of approximately 60 % methane and 40 % carbon dioxide) and emanating from the anaerobic digestion process will be stored in gas holders. The options proposed for the use of the biogas are as follows:

- Consumption of at least one third of the stored volume for heating of the sludge (as part of the digestion process) and flaring (or burning) of the remainder.
- Utilising most of the stored gas to dry the sludge through a mechanical thermal drying process and then using the waste heat from the drying process to heat the sludge. It is important to note that the drying of sludge would greatly reduce the road transportation requirements for removal of sludge off site.

The work to be completed under each phase is proposed as follows:

Phase 1:

a) Refurbish and bring back on line two out of six existing primary settling tanks.
b) Refurbish and bring back on line existing two anaerobic primary digesters and secondary digester and construct two new primary digesters and one secondary digester, all of same capacity as existing.
c) Refurbish and bring back on line existing raw sludge gravity thickener and construct a new gravity thickener of the same capacity.
d) Refurbish and bring back on line existing gas holder and construct a new gas holder of the same capacity.
e) Refurbish and bring back on line various existing (unused) electrical substation buildings and small pumping stations.
f) Establishing a new mechanical sludge dewatering facility on site and 2 x 150 000 litres fully enclosed steel sludge storage silos.
g) Establishment a new mechanical sludge thermal drying facility on site.
h) Provide additional effluent storage capacity of 23 000 000 litres at existing low level pumping station and install two new 350 kilowatt pumps.
i) Replace the last 70 m of the landline section of the sea outfall pipeline with new 2 x 1000 m diameter pipe.
j) Construct new road tanker effluent discharge bays in close proximity to the entrance of the Works.
k) Install new medium voltage and low voltage electrical cables and equipment.
l) Minor road works and a new access road.
m) The installation of a standby generator.

Phase 2:

a) Refurbish and bring back on line remaining four of the existing six primary settling tanks and construct two new primary settling tanks of the same capacity as existing.
b) Construct four new anaerobic primary digesters and two new secondary digesters, all of the same capacity as existing.
c) Construct a new raw sludge gravity thickener, of the same capacity as existing.
d) Construct a new gas holder.
e) Install additional mechanical sludge dewatering equipment.

4 PROJECT LOCATION AND ENVIRONMENTAL DESCRIPTION

The Southern Wastewater Treatment Works (SWWTW) is located at 2 Byfield Road, Merewent, on the north-eastern bank of the Umlaas Canal. The SWWTW is surrounded by a mixed development node of both residential and industrial developments.

TABLE 1 PROJECT LOCATION SUMMARY.

Local Municipality	n/a
District Municipality	eThekwini Metropolitan Municipality (ETH)
Surveyor General 1:50 000 map sheet	2930DD & 2931CC Durban
Co-ordinates	29° 57’ 25”S 30° 58’ 25” (approximate centre of development)

Figures 1-3 provide various images of the project location.

FIGURE 1 ANNOTATED AERIAL VIEW OF THE REGIONAL LOCATION OF THE PROPOSED DEVELOPMENT AREA (SOURCE: GOOGLE EARTH).

FIGURE 2 ANNOTATED AERIAL VIEW OF THE LOCAL LOCATION OF THE PROPOSED DEVELOPMENT AREA (SOURCE: GOOGLE EARTH).

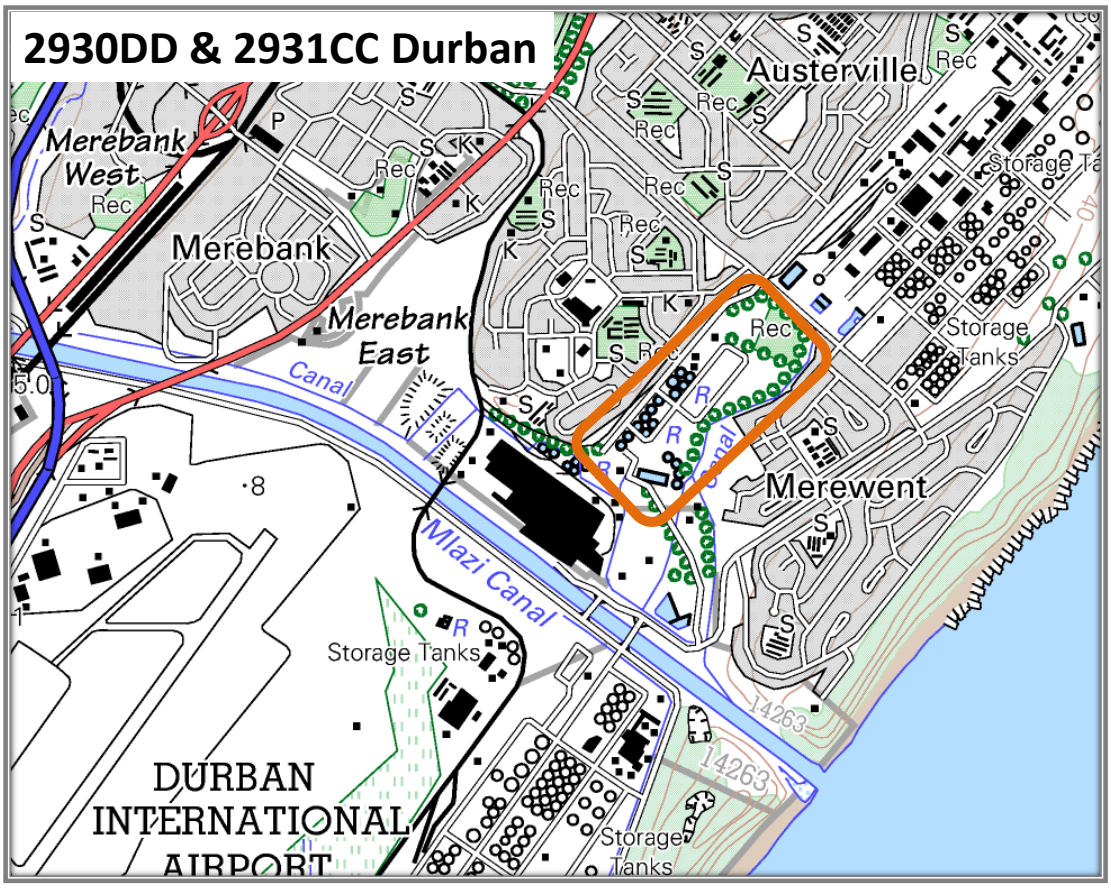

FIGURE 3 EXTRACT FROM RELEVANT 1:50 000 MAP SHEET, INDICATING LOCAL LOCATION OF PROPOSED DEVELOPMENT.

5 HERITAGE RESOURCES AND SIGNIFICANCE

No development activities associated with the proposed project had begun at the time of our visit. Table 2 summarises the heritage resource types assessed, and our observations.

TABLE 2 HERITAGE RESOURCES TYPES ASSESSED.

Heritage resource type	Observation
Places, buildings, structures and equipment	None were identified within the proposed development area.
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.
Traditional burial places	None were identified within the proposed development area.
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	None were identified within the proposed development area.
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.

All proposed upgrades comprising this project are located in an area that has been subject to many decades of industrial development, including environmental disturbance on a massive scale, such as the construction of the uMlazi River Canal immediately to the south. It is highly unlikely that any discrete heritage resources, such as archaeological sites, would have been present in the area in the first place, since the reed beds of the uMlazi River and estuary would have been eschewed by hunter-gatherers and farmers in the past. Any such sites are likely to have been destroyed by periodic flooding of the river and more recent industrial earthworks.

All existing structures proposed for upgrade are industrial and utilitarian in nature, younger than 60 years, and have no heritage significance (Figures 4-7). Accordingly, no permits from Amafa are required to alter these structures.

FIGURES 4-7 TYPICAL STRUCTURES WITHIN THE PROPOSED DEVELOPMENT AREA.

The proposed development area has high palaeontological sensitivity requiring a field assessment and protocol for finds. However, Amafa aKwaZulu-Natali (the PHRA) has indicated that this recommendation depends on the nature of the development and the environment and it is the responsibility of the heritage practitioner to assess the likelihood of impacts on palaeontological remains (J van Vuuren pers. comm.). We believe that the proposed development is unlikely to disturb such remains, since construction activities are likely to be restricted to deposits overlying potentially fossiliferous strata and/or deposits that have already been subject to massive environmental disturbance as described above (see Section 9 for a finds protocol).

6 ASSESSMENT OF DEVELOPMENT IMPACT

Not applicable.

7 RECOMMENDED MITIGATION MEASURES

Not applicable.

8 RECOMMENDED MONITORING

Not applicable.

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

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

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

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

- All construction within a radius of at least 20m of the indicator should cease. This distance should be increased at the discretion of supervisory staff if heavy machinery or explosives could cause further disturbance to the suspected heritage resource.
- This area must be marked using clearly visible means, such as barrier tape, and all personnel should be informed that it is a no-go area.
- A guard should be appointed to enforce this no-go area if there is any possibility that it could be violated, whether intentionally or inadvertently, by construction staff or members of the public.
- No measures should be taken to cover up the suspected heritage resource with soil, or to collect any remains such as bone or stone.
- If a heritage practitioner has been appointed to monitor the project, s/he should be contacted and a site inspection arranged as soon as possible.
- If no heritage practitioner has been appointed to monitor the project, the head of archaeology at Amafa's Pietermaritzburg office should be contacted; telephone 033 3946 543).
- The South African Police Services should be notified by an Amafa staff member or an independent heritage practitioner if human remains are identified. No SAPS official may disturb or exhume such remains, whether of recent origin or not.

- All parties concerned should respect the potentially sensitive and confidential nature of the heritage resources, particularly human remains, and refrain from making public statements until a mutually agreed time.
- Any extension of the project beyond its current footprint involving vegetation and/or earth clearance should be subject to prior assessment by a qualified heritage practitioner, taking into account all information gathered during this initial HIA.

10 CONCLUSION

We recommend that the development proceed with no further heritage mitigation and have submitted this report to Amafa in fulfilment of the requirements of the NHRA. According to Section 38(4) of the Act the report shall be considered timeously by the Council which shall, after consultation with the person proposing the development, decide–

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

The client may contact Ms Bernadet Pawandiwa at Amafa's Pietermaritzburg office (telephone 033 3946 543) in due course to enquire about the Council's decision.

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

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APPENDIX A STATUTORY REQUIREMENTS

General

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

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

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

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

KwaZulu-Natal Heritage Act 4 of 2008 (KZNHA)

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

National Heritage Resources Act 25 of 1999 (NHRA)

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

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

Heritage Impact Assessments

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

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

(i) exceeding 5 000m² in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

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

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

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

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

Definitions of heritage resources

The Act defines a heritage resource as any place or object of cultural significance i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This includes, but is not limited to, the following wide range of places and objects:

- living heritage as defined in the National Heritage Council Act 11 of 1999 (cultural tradition; oral history; performance; ritual; popular memory; skills and techniques; indigenous knowledge systems; and the holistic approach to nature, society and social relationships);
- ecofacts (non-artefactual organic or environmental remains that may reveal aspects of past human activity; definition used in KwaZulu-Natal Heritage Act 2008);
- places, buildings, structures and equipment;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features;

— geological sites of scientific or cultural importance;
— archaeological and palaeontological sites;
— graves and burial grounds;
— public monuments and memorials;
— sites of significance relating to the history of slavery in South Africa;
— movable objects, but excluding any object made by a living person; and
— battlefields.

Furthermore, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of—

— its importance in the community, or pattern of South Africa's history;
— its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
— its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
— its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
— its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
— its importance in demonstrating a high degree of creative or technical achievement at a particular period;
— its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; and
— its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.

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

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

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

Public monuments and memorials means all monuments and memorials:

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

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

Management of Graves and Burial Grounds

- **Definitions**

Grave

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

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

Burial ground

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

Cemetery

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

(a) where human remains are buried in an orderly, systematic and pre-planned manner in identifiable burial plots;

(b) which is intended to be permanently set aside for and used only for the purposes of the burial of human remains.

- **Protection of graves and cemeteries**

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

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

— **Procedures required for permission to disinter and rebury graves**

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

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

(a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and

(b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

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

(a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and

(b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

The Vermillion Accord on Human Remains[2]

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.

[2] http://www.worldarchaeologicalcongress.org/

APPENDIX B ARCHAEOLOGICAL 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 Age[3]

- 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.

- 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 (Singer & Wymer 1982; Rightmire & Deacon 1991). 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.

[3] http://www.britannica.com; article authored by Colin J. Bundy**,** Julian R. D. Cobbing, Martin Hall and Leonard Monteath Thompson.

- 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 Age[4]

Archaeological evidence shows that Bantu-speaking agriculturists first settled in southern Africa around AD 300. Bantu-speakers originated in the vicinity of modem 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

[4] Whitelaw (1997). See also Whitelaw (1991, 2009).

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 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.

Heritage, Archaeological and Paleontological Resources in the Durban South Basin area

Pre-colonial sites

Site records from the archaeological database of the Natal Museum indicate that pre-colonial settlement of the Durban South Basin area included ephemeral Early and/or Middle Stone Age occupation of higher-lying areas around the former Durban International Airport site. Later Stone Age and Early and Late Iron Age middens (concentrations of shellfish remains, stone and bone, often incorporating human remains) have also been recorded in the primary dune cordon (Whitelaw pers. comm.).

This settlement pattern probably reflects sporadic or seasonal pre-colonial exploitation of the rocky coastline and surrounding ecotypes (see Whitelaw 1991, 1997, 2009; Wright 2009). Seasonal inundation of the area between the uMlazi and Isipingo River mouths until well into the twentieth century created swamp-like conditions that discouraged permanent human occupation.

Most pre-colonial archaeological sites have been destroyed by modern industrial and residential developments, and it is likely that remaining significant sites, if any, will be located in areas of the foreshore covered in Coastal Dune Vegetation.

Palaeontology

The sedimentary sheath of the area proposed for development consists of the Cretaceous rocks unconformably overlain by the Pleistocene/Holocene Isipingo Formation (= Bluff/Berea formations) (Bell & Maud, 2000; Broad *et al.*, 2006; Roberts *et al.*, 2006; Bosman *et al.*, 2007; Ramsay & Miller, 2010).

The upper part of the Cretaceous succession is represented by marine Santonian–Maastrichtian deposits (Broad *et al.*, 2006; Bosman *et al.*, 2007) and is poorly studied in this area. It may contain rich invertebrate assemblage similar to that of the Trafalgar Beds (Ovechkina & Mostovski, 2010), as well as petrified wood and even vertebrate remains.

The Isipingo Formation consists of aeolianites, calcified beach and dune deposits of the total thickness of about 50–115 m (Roberts *et al.*, 2006). The sediments are quite variable and can be subdivided into shallow-marine/lagoonal, beach and various dune units (Roberts *et al.*, 2006; Ramsay & Miller, 2010). Towards the south end of the Durban Bluff, freshwater interdune deposits occur within the aeolianite succession. Holocene oyster beds occur at Reunion Rocks (Roberts *et al.*, 2006). An elephant tusk dated to about 112 ± 23 Ky was recovered in the same area south of the uMlazi Canal (Ramsay *et al.*, 1993).

Maritime archaeology

Shipwrecks were common in the general area from the earliest times of the economic and colonial expansion of Europe into the rest of the world after the 15th century. Since Portuguese explorers rounded the southern tip of Africa more than 500 years ago in their quest for a sea-route to the East, thousands of ships of many nationalities have circumnavigated Africa, and shipping casualties on the South African coast were frequent. Archival research has already identified more than 2700 wrecks of vessels from 37 different nations. Known wrecks in or close to the study area include those of the Good Hope, sunk in May 1685 off Durban harbour, and the Cooper Light, an old whaling ship that lies just south of the Durban Bluff at a depth of about 27m.

Establishment of Durban International Airport

In March 1944 the site chosen for Durban's new national airport was revealed to the Mayor of Durban by the General Manager of the Railways and work was begun there in November (http://www.fad.co.za/Resources/aviation/DurbanAirHistory.asp). It was necessary to have the uMlazi River deviated before being able to complete the airport and so a new outlet channel through the Bluff ridge to the sea was started. By February 1951 work on the Bluff cutting was proceeding at a rapid rate and the sides of the channel which were to be used to divert the uMlazi River had been fortified with cement. No buildings had yet been put up there. One runway was ready by April and in May it was announced that Skymasters would land there as from August 1. It was also announced that there were now fever precautions at the airport.

The airport was named Reunion Airport when it was opened in 1951, but later renamed by the apartheid government after the first (Afrikaner) Prime Minister of the Union of South Africa. The Louis Botha International Airport was co-located with AFB Durban, an airbase of the South African Air Force from September 1956. The airport was renamed the Durban International Airport with the advent of democracy in 1994. Durban International Airport handled its final flight on 30 April 2010 and all flights transferred to King Shaka International Airport in a single, overnight move.

APPENDIX C METHODOLOGY

Site survey

eThembeni staff members inspected the proposed activity area on 18 February 2014 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 be' and 'an inspection of the surface of the ground, wherever this surface is visible, is made, with no substantial attempt to clear brush, turf, deadfall, leaves or other material that may cover the surface and with no attempt to look beneath the surface beyond the inspection of rodent burrows, cut banks and other exposures that are observed by accident' (King 1978; see bibliography for other references informing methodological approach).

The site survey comprised a visual survey of the proposed activity area. Geographic coordinates were obtained using a handheld Garmin global positioning unit (WGS 84).

Database and literature review

No archaeological site data was available for the project area from the SAHRIS database. 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

No HIAs are listed on SAHRIS within 5 km of the study area.

Assessment of heritage resource value and significance

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

Grade I Sites (National Heritage Sites)

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

a) Of outstanding significance in terms of one or more of the criteria set out in section 3(3) of the NHRA;
b) Authentic in terms of design, materials, workmanship or setting; and is of such universal value and symbolic importance that it can promote human understanding and contribute to nation building, and its loss would significantly diminish the national heritage.

1. Is the site of outstanding national significance?
2. Is the site the best possible representative of a national issue, event or group or person of national historical importance?
3. Does it fall within the proposed themes that are to be represented by National Heritage Sites?
4. Does the site contribute to nation building and reconciliation?
5. Does the site illustrate an issue or theme, or the side of an issue already represented by an existing National Heritage Site – or would the issue be better represented by another site?
6. Is the site authentic and intact?
7. Should the declaration be part of a serial declaration?
8. Is it appropriate that this site be managed at a national level?
9. What are the implications of not managing the site at national level?

Grade II Sites (Provincial Heritage Sites)

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

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

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

(a) places, buildings, structures and immovable equipment of cultural significance;
(b) places to which oral traditions are attached or which are associated with living heritage;
(c) historical settlements and townscapes;
(d) landscapes and natural features of cultural significance;
(e) geological sites of scientific or cultural importance;
(f) archaeological and palaeontological sites; and
(g) graves and burial grounds.

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

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

Grade III (Local Heritage Resources)

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

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

Grade IIIA

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

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

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

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

Grade IIIB

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

Grade IIIC

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

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 9 of this report should any heritage resources, as defined in the Act, be discovered during the course of development activities.
- No subsurface investigation (including excavations or sampling) were undertaken, since a permit from Amafa is required to disturb a heritage resource.
- eThembeni is not able to provide a specialist palaeontological assessment for this project and informed the client as much at the time of quotation.
- A key concept in the management of heritage resources is that of non-renewability: damage to or destruction of most resources, including that caused by bona fide research endeavours, cannot be reversed or undone. Accordingly, management recommendations for heritage resources in the context of development are as conservative as possible.
- Human sciences are necessarily both subjective and objective in nature. eThembeni staff members strive to manage heritage resources to the highest standards in accordance with national and international best practice, but recognise that their opinions might differ from those of other heritage practitioners.
- Staff members involved in this project have no vested interest in it; are qualified to undertake the tasks as described in the terms of reference (refer to Appendix D); and comply at all times with the Codes of Ethics and Conduct of the Association of Southern African Professional Archaeologists.
- eThembeni staff members take no personal or professional responsibility for the misuse of the information contained in this report, although they will take all reasonable precautions against such misuse.

APPENDIX D SPECIALIST COMPETENCY AND DECLARATION OF INDEPENDENCE

Specialist competency

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

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

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

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

Declaration of independence

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