

**Heritage impact assessment for the proposed
ESKOM 400KV ELECTRICITY TRANSMISSION LINE,
NEPTUNE TO POSEIDON SUBSTATIONS,
EAST LONDON TO COOKHOUSE,
EASTERN CAPE PROVINCE**



Fort Murray

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Declaration:

I, J.A. van Schalkwyk, declare that I do not have any financial or personal interest in the proposed development, nor its developers or any of their subsidiaries, apart from the provision of heritage assessment and management services.



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April 2011

EXECUTIVE SUMMARY

HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED ESKOM 400KV ELECTRICITY TRANSMISSION LINE, NEPTUNE TO POSEIDON SUBSTATIONS, EAST LONDON TO COOKHOUSE, EASTERN CAPE PROVINCE

In order to support increased electricity demand in the Eastern Cape, Eskom Transmission is planning to strengthen the existing network with additional 400kV capacity between the Poseidon Substation, east of Cookhouse to Neptune Substation north of East London in the Eastern Cape Province. The length of the route is approximately 200 km. Originally three alternatives were identified. In the western section a 65 km long alternative is located south of the main route. Later, an additional section eastward was added to this alternative. At the eastern end of the line alternatives, each less than 40 km long has been identified on both the northern as well as the southern side main corridor alternative.

Power lines on the scale required for a project such as this put particular constraints on heritage resources. It is anticipated that overall the impact of the development would largely be indirect, as it might only pass over or in close proximity of a heritage site or feature. The impact therefore would largely be visual. In other cases the impact will be direct as it would focus on a particular node, i.e. tower positions or access/ inspection roads. This would give rise to the physical disturbance of the material and its context.

Therefore, in accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by **Nemai Consulting** to conduct a Heritage Impact Assessment (HIA) to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to develop the power line, to assess the significance thereof and to consider alternatives and plans for the mitigation of any adverse impacts.

The aim of the survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the corridors in which it is proposed to develop an electricity transmission line.

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a pre-colonial element (Stone Age) as well as a much later colonial (Settler farmer) component. The second component is a semi-urban landscape dating to the colonial period.

The following heritage sites were identified in the study area:

- Pre-colonial archaeological sites dating to all phases of the Stone Age have been identified to occur in the study area. In some cases the impact of the development would only be indirect, e.g. the power line crossing over a site. In other areas of the proposed development, even though the impact will be focused on a particular node, i.e. tower positions or access/ inspection roads, it will give rise to the physical disturbance of the material and its context. This would result in irreplaceable loss of resources.
- Pre-colonial archaeological sites dating to all phases of the Iron Age are known to occur in the region, but none have been identified in the study area self. Similarly, in some cases the impact of the development would only be indirect, e.g. the power line crossing over a site. In other areas of the proposed development, even though the impact will be focused on a particular node, i.e. tower positions or access/ inspection roads, it will give rise to the physical disturbance of the material and its context. This would result in irreplaceable loss of resources.

- Colonial period or historic period heritage manifest in a wide variety. As the power lines are to cross a rural landscape for the most part, the impact would only be indirect, e.g. the power line crossing over a site. In other areas of the proposed development the impact will be focused on a particular node, i.e. tower positions or access/ inspection roads and will therefore give rise to the physical damage of the features or structures and its context.

Heritage sites are not only fixed features in the environment, occurring within specific spatial confines, but they are also finite in number. Avoiding of impacts on sites is therefore the preferred form of mitigation. In areas where a high density of sites occurs, if at all possible, exclusion zones where no development is to take place, should be set aside. If that is not possible, mitigation can only be achieved through archaeological investigation.

Based on the study, it is our conclusion that, from a heritage point of view, any of the identified routes or the alternatives would be suitable for development as the physical impact on heritage sites would be low and this can also be mitigated if necessary.

Therefore, for the project to continue, we propose the following:

- The management measures, as set out in Section 7 of this report should be implemented prior to construction taking place.
- A visual assessment of the route, taking the heritage sites into consideration, should be done in order to determine its possible impact on heritage tourism in the region.
- Mitigation should be based on avoiding of sites rather than anything else. In order to achieve this, a full “walk down” of the corridor must be done prior to construction taking place, to document all sites, features and objects, in order to propose adjustments to the routes and thereby to avoid as many impacts as possible.
- No impact on heritage sites, features or objects can be allowed without a valid permit from SAHRA.



J A van Schalkwyk
Heritage Consultant
April 2011

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GLOSSARY OF TERMS AND ABBREVIATIONS

TERMS

Study area: Refers to the entire study area as indicated by the client in the accompanying Fig. 1 & 2.

Stone Age: The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

Early Stone Age	2 000 000 - 150 000 Before Present
Middle Stone Age	150 000 - 30 000 BP
Late Stone Age	30 000 - until c. AD 200

Iron Age: Period covering the last 1800 years, when new people brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and they herded cattle as well as sheep and goats. These people, according to archaeological evidence, spoke early variations of the Bantu Language. Because they produced their own iron tools, archaeologists call this the Iron Age.

Early Iron Age	AD 200 - AD 900
Middle Iron Age	AD 900 - AD 1300
Late Iron Age	AD 1300 - AD 1830

Historical Period: Since the arrival of the white settlers - c. AD 1800 - in this part of the country

ABBREVIATIONS

ADRC	Archaeological Data Recording Centre
ASAPA	Association of Southern African Professional Archaeologists
BP	Before Present
CS-G	Chief Surveyor-General
EIA	Early Iron Age
ESA	Early Stone Age
LIA	Late Iron Age
LSA	Later Stone Age
HIA	Heritage Impact Assessment
MSA	Middle Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
SAHRA	South African Heritage Resources Agency

HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED ESKOM 400KV ELECTRICITY TRANSMISSION LINE, NEPTUNE TO POSEIDON SUBSTATIONS, EAST LONDON TO COOKHOUSE, EASTERN CAPE PROVINCE

1. INTRODUCTION

In order to support increased electricity demand in the Eastern Cape, Eskom Transmission is planning to strengthen the existing network with additional 400kV capacity between the Poseidon Substation, east of Cookhouse to Neptune Substation north of East London in the Eastern Cape Province. The length of the route is approximately 200 km. Originally three alternatives were identified. In the western section a 65 km long alternative is located south of the main route. Later, an additional section eastward was added to this alternative. At the eastern end of the line alternatives, each less than 40 km long has been identified on both the northern as well as the southern side main corridor alternative.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. According to Section 27(18) of the National Heritage Resources Act (NHRA), No. 25 of 1999, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site.

Power lines on the scale required for a project such as this put particular constraints on heritage resources. It is anticipated that overall the impact of the development would largely be indirect, as it might only pass over or in close proximity of a heritage site or feature. The impact therefore would largely be visual. In other cases the impact will be direct as it would focus on a particular node, i.e. tower positions or access/ inspection roads. This would give rise to the physical disturbance of the material and its context.

Therefore, in accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by **Nemai Consulting** to conduct a Heritage Impact Assessment (HIA) to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to develop the power line, to assess the significance thereof and to consider alternatives and plans for the mitigation of any adverse impacts.

This HIA report forms part of the Environmental Impact Assessment (EIA) as required by the EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and is intended for submission to the South African Heritage Resources Agency (SAHRA).

2. TERMS OF REFERENCE

The aim of this HIA, broadly speaking, is to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to develop the transmission line.

The scope of work for this study consisted of:

- Conducting of a desk-top investigation of the area, in which all available literature, reports, databases and maps were studied;

- A visit to the proposed development area.

The objectives were to

- Identify possible archaeological, cultural and historic sites within the proposed development area;
- Evaluate the potential impacts of construction, operation and maintenance of the proposed development on archaeological, cultural and historical resources;
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural or historical importance.

Table 1: Applicable category of heritage impact assessment study and report.

Type of study	Aim	SAHRA involved	SAHRA response
Heritage Impact Assessment	<p>The aim of a full HIA investigation is to provide an informed heritage-related opinion about the proposed development by an appropriate heritage specialist. The objectives are to identify heritage resources (involving site inspections, existing heritage data and additional heritage specialists if necessary); assess their significances; assess alternatives in order to promote heritage conservation issues; and to assess the acceptability of the proposed development from a heritage perspective.</p> <p>The result of this investigation is a heritage impact assessment report indicating the presence/ absence of heritage resources and how to manage them in the context of the proposed development.</p> <p>Depending on SAHRA's acceptance of this report, the developer will receive permission to proceed with the proposed development, on condition of successful implementation of proposed mitigation measures.</p>	Provincial Heritage Resources Authority	Comments on built environment and decision to approve or not
		SAHRA Archaeology, Palaeontology and Meteorites Unit	Comments and decision to approve or not

3. HERITAGE RESOURCES

3.1 The National Estate

The NHRA (No. 25 of 1999) defines the heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations that must be considered part of the national estate to include:

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, including-
 - ancestral graves;
 - royal graves and graves of traditional leaders;
 - graves of victims of conflict;
 - graves of individuals designated by the Minister by notice in the Gazette;
 - historical graves and cemeteries; and

- other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- sites of significance relating to the history of slavery in South Africa;
- movable objects, including-
 - objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - objects to which oral traditions are attached or which are associated with living heritage;
 - ethnographic art and objects;
 - military objects;
 - objects of decorative or fine art;
 - objects of scientific or technological interest; and
 - books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

3.2 Cultural significance

In the NHRA, Section 2 (vi), it is stated that “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This is determined in relation to a site or feature’s uniqueness, condition of preservation and research potential.

According to Section 3(3) of the NHRA, 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;
- its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- sites of significance relating to the history of slavery in South Africa.

A matrix was developed whereby the above criteria were applied for the determination of the significance of each identified site (see Appendix 1). This allowed some form of control over the application of similar values for similar sites.

4. STUDY APPROACH AND METHODOLOGY

4.1 Extent of the Study

This survey and impact assessment is concerned with cultural heritage resources (see Section 3 above) and covers the study area as presented in Section 5 and illustrated in Figure 1.

4.2 Methodology

4.2.1 Preliminary investigation

4.2.1.1 Survey of the literature

A survey of the relevant literature was conducted with the aim of reviewing the previous research done and determining the potential of the area. Some published books and papers deal with areas, events or groups of people in the larger region (e.g. Binneman 1996, 2001; Bryer & Hunt 1987; Butler 1974; Derricourt 1977; Hammond-Tooke 1958; Huffman 2007; Nogwaza, 1994; Playne 1910-1911; Richardson 2001; Webb 1998). Other sources are unpublished reports, mostly scoping studies and HIAs done in the region (Albany Museum n.d; Halkett et al 2010).

- All of these sources contributed some information on historic events in the larger region as well as on the location of specific heritage sites and features.

4.2.1.2 Data bases

The *Heritage Atlas Database*, the *Environmental Potential Atlas*, the *Chief Surveyor General (CS-G)* and the *National Archives of South Africa (NASA)* were consulted.

- Database surveys produced information on a number of sites located in the larger region of the proposed development.
- The original Title Deeds of some of the farms were located, but produced limited information of use such as the dating of farmsteads, etc.

4.2.1.3 Other sources

Aerial photographs and topocadastral and other maps were also studied - see the list of references below.

- Information of a very general nature were obtained from these sources

4.2.2 Field survey

The area that had to be investigated was identified by **Nemai Consulting** by means of maps.

As this is a linear development the survey was done by travelling the corridor as far as possible. This turned out not to be difficult as in most cases the corridor as well as the alternatives are easily accessible by means of roads and tracks.

4.3 Limitations

- In some sections dense vegetation has limited archaeological visibility.
- In many cases the proposed power lines will have a visual impact, i.e. indirect impact, on heritage sites. This is not addressed in this report as a separate report will be dealing with visual impacts.
- As the corridors are a kilometre wide, they were surveyed only in a general sense.
- The additional section (Alternative 4B) added to the alternative in the western section (Alternative 4) was not investigated during the field survey as it was only added by the client after the site visit has taken place.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1 Site location and description

The study area is located between the Poseidon Substation, east of Cookhouse to Neptune Substation north of East London in the Eastern Cape Province (Fig. 1).

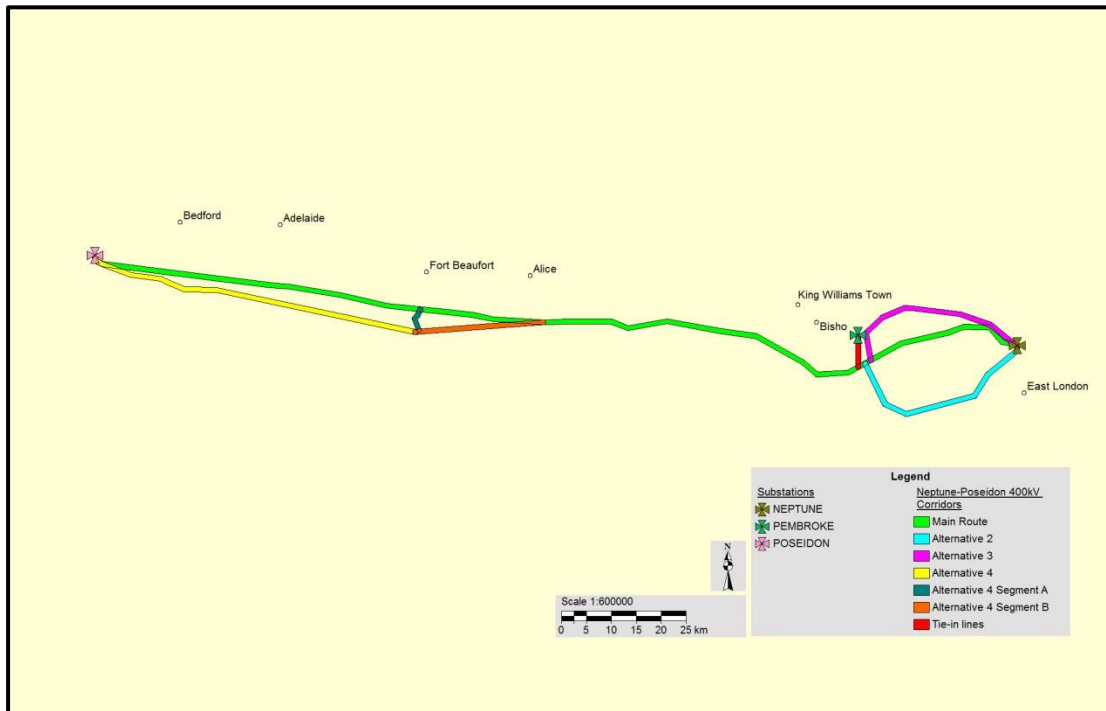


Fig. 1. Location of the study area in regional context.
(Map supplied by Nemai)

The length of the route is approximately 200 km. In addition to the main route, referred to as Alternative 1, a number of shorter alternatives were identified. Alternative two and three are located at the eastern end of the line, one north and one south of the main route. Each is less than 40 km long. In the western section a 65 km long alternative (Alternative 4) is located south of the main route. Later, an additional approximately 20 km section eastward was added to this alternative (Alternative 4B).



Fig. 2. Elements of the landscape through which the corridors pass.

5.2 Overview of the region

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a pre-colonial element (Stone Age and limited Iron Age occupation) and a much later colonial (settler farmer) element. The second component is a semi-urban landscape dating to the colonial period and recent past.

5.2.1 Rural landscape

The rural landscape has always been sparsely populated and it was only during the last couple of hundred years that people, through the application of specific economic strategies, succeeded to occupy sections of the region for any length of time.

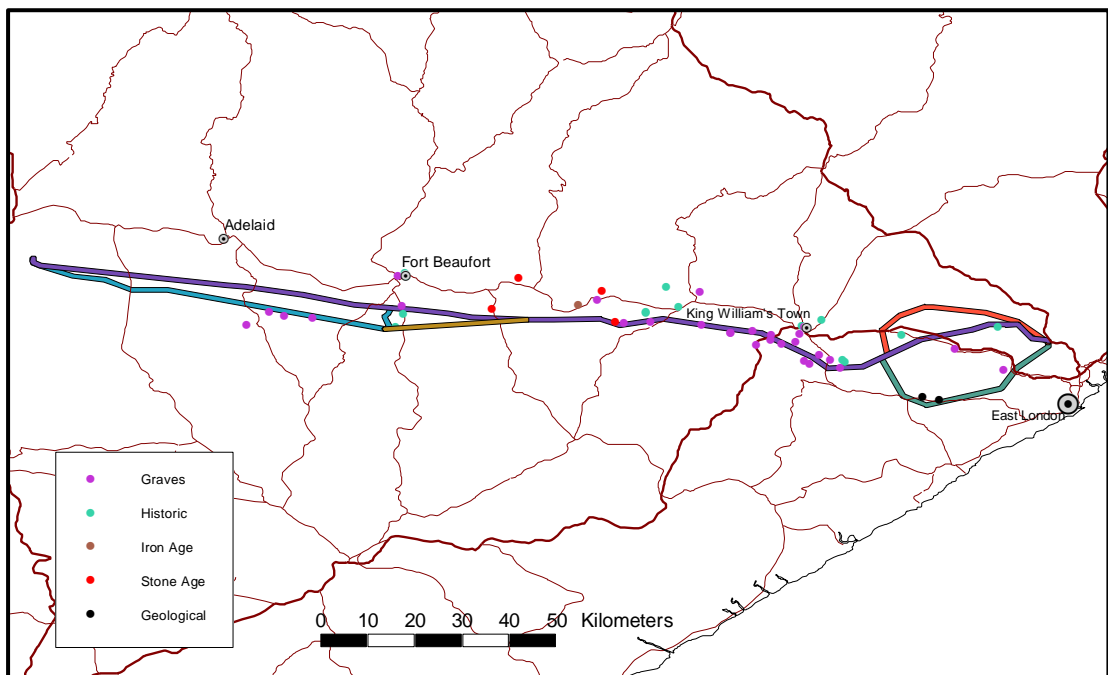


Fig. 3. Distribution of known sites of heritage significance.

- Geological sites

Geological sites usually get included in a palaeontological survey. However, two such sites have in the past been declared as provincial heritage sites and are therefore also included here.

The lime stone beds at these two sites contain numerous marine fossils dating to the late Cretaceous period. The position of these sites, at least 15 km inland from the current shoreline is a good indication of the drop in the sea level since then (Lubke & De Moor 1998).

NHRA Category	Archaeological and palaeontological sites
Protection status	
	General Protection - Section 35: Archaeology, palaeontology and meteorites



Fig. 4. The old quarry site at Lower Needs Camp.
(Photo: Google Earth)

- Archaeological sites

Archaeological sites in this area predominantly date to the Stone Age, although some sites dating to the Early Iron Age, sometimes referred to as early farmer communities, also occurs in the region.

NHRA Category	Archaeological and palaeontological sites
Protection status	
General Protection - Section 35: Archaeology, palaeontology and meteorites	

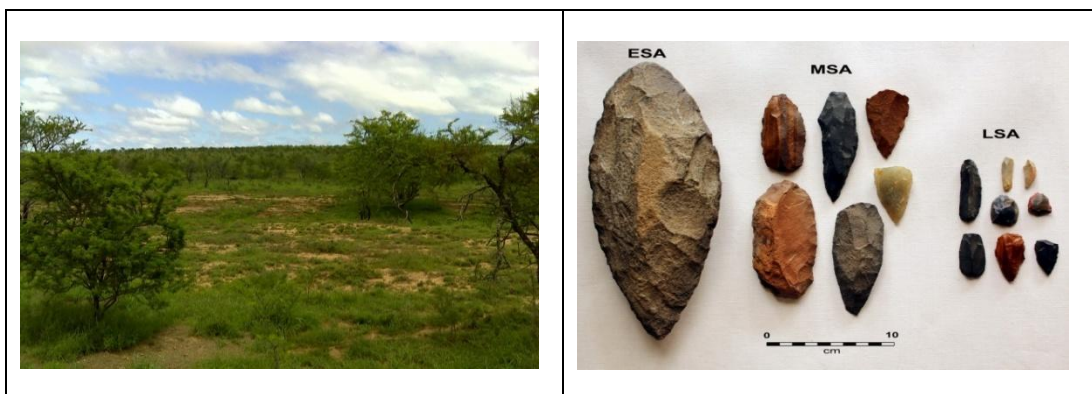


Fig. 5. View over the bank of a stream where MSA flakes were identified. The stone tools (on the right) are not from the region and are only used to illustrate the difference between Early (left), Middle (middle) and Later Stone Age (right) technology.

Human occupation of the larger geographical region took place since Early Stone Age (ESA) times. Tools dating to this period are mostly, although not exclusively, found in the vicinity of watercourses. The oldest of these tools are known as choppers, crudely produced from large pebbles found in the river. Later, *Homo erectus* and early *Homo sapiens* people made tools shaped on both sides, called bifaces. Biface technology is known as the Acheulean tradition, from St Acheul in France, where bifaces were first identified in the mid-19th century. Biface technology is found over a large area of Africa, some parts of India, Arabia and the Near East, as well as parts of western Europe. This is one of the longest-lasting technologies the world has known, spanning a period of more than 1,5 million years.

During Middle Stone Age (MSA) times (c. 150 000 – 30 000 BP), people became more mobile, occupying areas formerly avoided. The MSA is a technological stage characterized by flakes and flake-blades with faceted platforms, produced from prepared cores, as distinct from the core tool-based ESA technology. Open sites were still preferred near watercourses, but the people also became adept at exploiting the coastal resources, especially the shellfish.

Occupation of the region seems to have increased during the Later Stone Age (LSA). These people had even more advanced technology than the MSA people and therefore succeeded in occupying even more diverse habitats. A number of sites are known to occur in the region, located to the west and north of the study area. Also, for the first time (with a limited number of exceptions) we get evidence of people's activities derived from material other than stone tools. Ostrich eggshell beads, ground bone arrowheads, small bored stones and wood fragments with incised markings are traditionally linked with the LSA. The LSA people have also left us with a rich legacy of rock art, which is an expression of their complex social and spiritual beliefs.

These are found in a secondary context (open surface material), where they have been exposed in gravel terraces by rivers and streams. Normally this material is viewed to have a

low significance and the localities where they are found are referred to as find spots rather than sites.

Iron Age sites in the region dates to the Early Iron Age and are mostly located in the vicinity of rivers, where people exploited the rich alluvial soils for crop production. The people are grouped to belong to various facies of the Kalundu Tradition of the Early Iron Age (Huffman 2007).

They were followed from the 15th century onwards by groups that are recognisable in modern times, now loosely referred to as the Xhosa. These people were later concentrated in regions that later became known as the Ciskei and Transkei.

- Farmsteads

Research on colonial settlement in the region seems to be more focussed on what can be described as conventional history (Bryer & Hunt 1987; Butler 1974) and is less concerned with heritage sites and features.

Farmsteads are complex features in the landscape, being made up of different yet interconnected elements. Typically these consist of a main house, gardens, outbuildings, sheds and barns, with some distance from that labourer housing and various cemeteries. In addition roads and tracks, stock pens and wind mills complete the setup. An impact on one element therefore impacts on the whole.

NHRA Category	Buildings, structures, places and equipment of cultural significance
Protection status	
General Protection - Section 34: Structures older than 60 years	



Fig. 6. Examples of farmsteads identified in the region.

By the late 18th century some Dutch speaking settlers took up farms, but it was only with the arrival of the 1820 Settlers that population numbers started to take off. An investigation of the Title Deeds of most of the farms under consideration indicated that they were surveyed as early as the 1820s, implying that they would have been occupied by colonists since then.

The architecture of these farmsteads can be described as a modified English vernacular tradition that was brought by these settlers to the Eastern Cape region after the 1820s. Farm buildings were generally single storied but town houses often reached two floors. Walls were thick and built in stone and the ridged roof, thatched or tiled, was terminated at either end by simple linear parapet gables.

In some cases outbuildings would be in the same style as the main house, if they date to the same period. However, they tend to vary considerably in style and materials used as they were erected later as and when they were required.

As a result of the sporadic conflict that existed between local people and later settlers, many of these farmsteads were fortified. In addition to this, a large number of forts were established, ostensibly to defend the British colony from invading Xhosa, during a process that took place over a number of years.

It is accepted that the power line would not be built across a farmstead and the direct impact can therefore be considered to be low. However, it would have a big visual impact, which might be a problem for some land owners as they have or are planning to have some form of tourism activity on their property. The farmsteads are viewed to have a medium significance on a regional level.

- Cemeteries

Apart from the formal cemeteries that occur in municipal areas (towns or villages), a number of these, some quite informal, i.e. without fencing, occur sporadically all over. Many also seem to have been forgotten, making it very difficult to trace the descendants in a case where the graves are to be relocated.

NHRA Category	Graves, cemeteries and burial grounds
Protection status	
General Protection - Section 36: Graves or burial grounds	



Fig. 7. Examples of cemeteries and burial places.

Most of these cemeteries, irrespective of the fact that they are for land owner or farm labourers (with a few exceptions where they were integrated), are family orientated. They are therefore serve as important 'documents' linking people directly by name to the land.

The various cemeteries, burial places and graves are viewed to have a high significance on a local level.

- Infrastructure and industrial heritage

In many cases this aspect of heritage is left out of surveys, largely due to the fact that it is taken for granted. However, the land and its resources could not be accessed and exploited without the development of features such as roads, bridges, railway lines, electricity lines and telephone lines.

NHRA Category	Buildings, structures, places and equipment of cultural significance
Protection status	
General Protection - Section 34: Structures older than 60 years	



Fig. 8. The old bridge near Fort Beaufort.

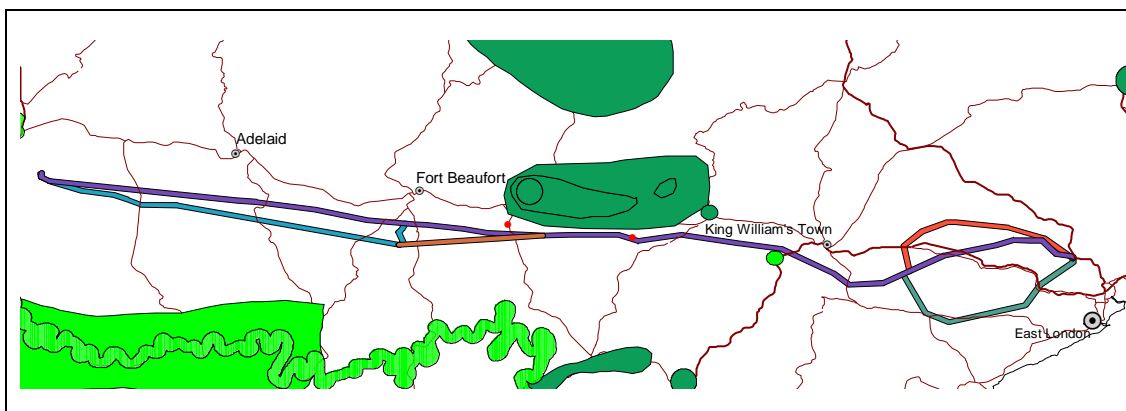
A variety of bridges, railway lines and other features that can be included in this category occur in or near the corridors. Most features that can be included in this category are located on the outer fringes of towns.

It is unlikely that the development of the power line would have a direct impact on any of these sites. However, it will have big visual impact, which would be detrimental from a tourism point of view.

- Intangible heritage

This is an area in which conflict played a huge role in shaping the future of the country as a whole. A number of so-called Border Wars took place in the region and this gave rise to a variety of categories of heritage, ranging from battle fields, forts and cemeteries.

NHRA Category	Buildings, structures, places and equipment of cultural significance
Protection status	
General Protection - Section 34: Areas to which oral traditions are attached or which are associated with intangible heritage	



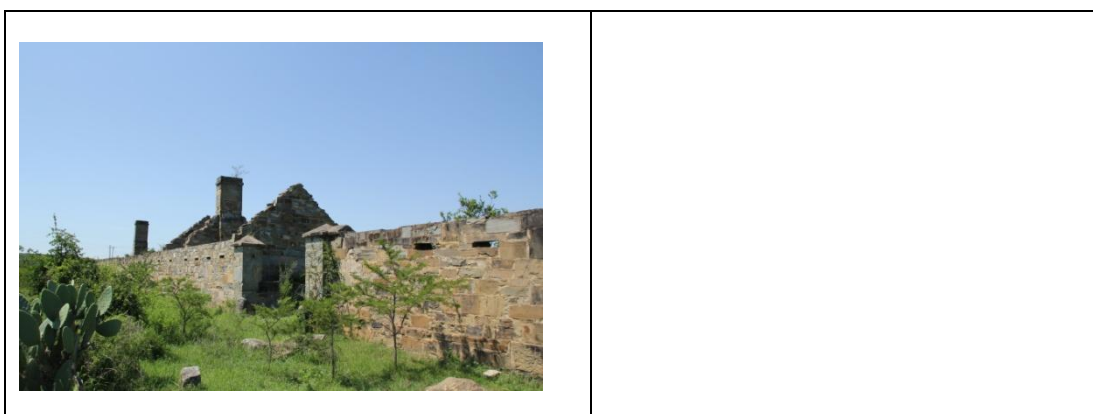


Fig. 9. Distribution of Border conflict sites – 1799-1819 and 1829-1849 and Fort Murray.
(Map after ENPAT)

5.3.2 Semi-urban landscape

The corridors pass in close proximity of the outskirts of a number of towns. This part of the study area falls within that zone usually located on the front edge of (city) urban-sprawl where the land previously used for agricultural use (only) have become subdivided into small holdings. What used to be a large single agricultural unit or farm now consists of tens of small properties. These units do not have their economic base in traditional agriculture but are sustained by a variety of land uses and economic activities with strong urban associations. This phenomenon happened in the past forty to fifty years. Therefore most of the built fabric dates from this period. The result is that any historic farmsteads older than 60 years that may have existed have either disappeared or have been 'upgraded'.

A section of the study area falls in what used to be the former Ciskei homeland. Although it is conventionally classified as a rural setting, population densification has increased during the past few decades allows it to be classified as semi-urban.

NHRA Category	Buildings, structures, places and equipment of cultural significance
Protection status	
General Protection - Section 34: Structures older than 60 years	

NHRA Category	Graves, cemeteries and burial grounds
Protection status	
General Protection - Section 36: Graves or burial grounds	

NHRA Category	Buildings, structures, places and equipment of cultural significance
Protection status	
General Protection - Section 37: Public Monuments and Memorials	



Fig. 10. Various heritage elements found in a semi-urban environment.

- East London:

Developed from a landing place for soldiers in 1845 during the War of the Axe. It was named East London in 1848 and achieved municipal status in 1873.

According to the various databases consulted it has more than 150 houses, buildings and other structures listed as provincial heritage sites or are viewed of conservation worthy status.

- Mdantsane

The town is said to be named after a Xhosa chief.

According to the various databases consulted it has approximately 10 houses, buildings and other structures listed as of conservation worthy status.

- King William's Town

Found in 1835 on the site of a mission station that was established in 1825. It became to headquarters of the Province of Queen Adelaide and in 1847 the capital city of British Kaffraria.

According to the various databases consulted it has approximately 250 houses, buildings and other structures listed as of conservation worthy status.

- Alice:

This town was founded on the loan farm of Elizabeth Scheepers and was named in honour of J A Uitenhage de Mist, Commisioner-General. The town attained municipal status in 1841.

According to various databases consulted it has approximately 50 houses, buildings and other structures listed as of conservation worthy status.

- Fort Beaufort:

The town was laid out in 1837 around a fort with the same name. It wased after the Duke of Beaufort, father of Lord Charles Somerset.

According to various databases consulted it has approximately 50 houses, buildings and other structures listed as of conservation worthy status.

- Adelaide:

Founded as military post in 1834 and achieved municipal status in 1986.

According to various databases consulted it has only 2 houses, buildings and other structures listed as provincial heritage sites, but it also have a large number that are viewed to be conservation worthy.

- **Bedford:**

The town was founded in 1854 on part of the farm Maasström, which belonged to Sir Andries Stockenström and was named by him after the Duke of Bedford. It became a municipality in 1856.

According to various databases consulted it only has approximately 5 houses, buildings and other structures listed as provincial heritage sites, with a few others that are viewed to be conservation worthy.

- **Cookhouse:**

Located on the west bank of the Great Fish River, which, until 1819 formed the eastern boundary of the Cape Colony. The origin of the name of the town is still debated.

According to various databases consulted it has approximately 15 houses, buildings and other structures listed as provincial heritage sites.

6. SITE SIGNIFICANCE AND ASSESSMENT

6.1 Heritage assessment criteria and grading

According to the NHRA, No. 25 of 1999, Section 2(vi), the *significance* of heritage sites and artefacts is determined by its aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential.

The NHRA stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act:

- **Grade I:** Heritage resources with qualities so exceptional that they are of special national significance;
- **Grade II:** Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and
- **Grade III:** Other heritage resources worthy of conservation, on a local authority level.

The occurrence of sites with a Grade I significance will demand that the development activities be drastically altered in order to retain these sites in their original state. For Grade II and Grade III sites, the application of mitigation measures would allow the development activities to continue.

A matrix was developed whereby the above criteria, as set out in Sections 3(3) and 7 of the NHRA, No. 25 of 1999, were applied for each identified site (see Appendix 1). This allowed some form of control over the application of similar values for similar sites.

6.2 Statement of significance

In terms of Section 7 of the NHRA, the sites currently known or which are expected to occur in the study area are evaluated to have the following significance:

- Geological sites are viewed to have a high significance on a regional level and have Grade II significance;

- Stratified Stone Age sites are viewed to have a high significance on a regional level and have Grade II significance;
- Farmsteads are viewed to have medium significance on a regional level and have Grade III significance;
- Graves and cemeteries are viewed to have high significance on a local level and have Grade III significance;
- Industrial heritage sites are viewed to have medium significance on a regional level and have Grade III significance.

6.3 Impact assessment

Impact analysis of cultural heritage resources under threat of the proposed development, are based on the present understanding of the proposed development.

Environmental Parameter	Pre-colonial: Stone Age sites	
Issue/Impact/Environmental Effect/Nature	Many sites are still unknown. Their potential and significance therefore unknown. The impact will be the physical disturbance of the material and its context. Impact will be focused on a particular node, i.e. tower positions or access/ inspection roads	
Extent	Local	
Probability	Definite	
Reversibility	Irreversible	
Irreplaceable loss of resources	The impact will result in significant loss of resources	
Duration	Permanent	
Cumulative effect	High cumulative impact	
Intensity/magnitude	Very high	
Significance Rating	Sites have a high significance on a region level – viewed as NHRA Grade II sites. Distinguish from find spots, which have low significance	
	Pre-mitigation impact rating	Post mitigation impact rating
Extent	2	2
Probability	3	3
Reversibility	4	4
Irreplaceable loss	3	3
Duration	4	4
Cumulative effect	4	4
Intensity/magnitude	4	2
Significance rating	80 (negative very high)	44 (negative medium)
Mitigation measures	All of these sites should be avoided as far as possible. Sites that cannot be avoided should be excavated in full by an archaeologist qualified in Stone Age archaeology.	

Environmental Parameter	Pre-colonial: Iron Age sites	
Issue/Impact/Environmental Effect/Nature	Only a few sites are known. Their potential and significance therefore unknown. The impact will be the physical disturbance of the material and its context. Impact will be focused on a particular node, i.e. tower positions or access/ inspection roads	
Extent	Local	
Probability	Definite	
Reversibility	Irreversible	
Irreplaceable loss of resources	The impact will result in significant loss of resources	
Duration	Permanent	
Cumulative effect	High cumulative impact	
Intensity/magnitude	Very high	
Significance Rating	Sites have a high significance on a region level – viewed as NHRA Grade II sites. Distinguish from find spots, which have low significance	
	Pre-mitigation impact rating	Post mitigation impact rating
Extent	2	2
Probability	3	3
Reversibility	4	4
Irreplaceable loss	3	3
Duration	4	4
Cumulative effect	4	4
Intensity/magnitude	4	2
Significance rating	80 (negative very high)	44 (negative medium)
Mitigation measures	All of these sites should be avoided as far as possible. Sites that cannot be avoided should be excavated in full by an archaeologist.	

Environmental Parameter	Colonial Period - farmsteads	
Issue/Impact/Environmental Effect/Nature	The various features are subject to damage. Easier to identify and therefore easier to avoid. Variety of interconnected elements makes up the whole. Impact on part therefore implies an impact on the whole	
Extent	Site	
Probability	Possible	
Reversibility	Partly reversible	
Irreplaceable loss of resources	Marginal loss of resource	
Duration	Long term	
Cumulative effect	Low cumulative impact	
Intensity/magnitude	Medium	
Significance Rating	Sites have a medium significance on a region level – viewed as NHRA Grade III sites.	
	Pre-mitigation impact rating	Post mitigation impact rating

Extent	1	1
Probability	2	2
Reversibility	2	2
Irreplaceable loss	2	1
Duration	3	3
Cumulative effect	2	1
Intensity/magnitude	2	2
Significance rating	24 (low negative)	20 (low negative)
Mitigation measures	Mitigation should take the form of isolating known sites and declare them as no-go zones with sufficient large buffer zones around them for protection. In exceptional cases mitigation can be implemented after required procedures have been followed.	

Environmental Parameter	Colonial Period – industrial heritage	
Issue/Impact/Environmental Effect/Nature	Different features are subject to damage. Most are unique – no alternatives or second examples. Easy to identify and therefore easy to avoid	
Extent	Site	
Probability	Possible	
Reversibility	Partly reversible	
Irreplaceable loss of resources	Marginal loss of resources	
Duration	Permanent	
Cumulative effect	Long term	
Intensity/magnitude	Medium	
Significance Rating	Sites have a medium significance on a region level – viewed as NHRA Grade III sites.	
	Pre-mitigation impact rating	Post mitigation impact rating
Extent	1	1
Probability	2	2
Reversibility	2	2
Irreplaceable loss	2	1
Duration	3	3
Cumulative effect	2	1
Intensity/magnitude	2	2
Significance rating	24 (low negative)	20 (low negative)
Mitigation measures	Mitigation should take the form of isolating known sites and declare them as no-go zones with sufficient large buffer zones around them for protection. In exceptional cases mitigation can be implemented after required procedures have been followed, but only as last case scenario	

Environmental Parameter	Graves, cemeteries and burial grounds	
Issue/Impact/Environmental Effect/Nature	The impact will be the physical disturbance of the features and its context. Many are hidden and forgotten, i.e. difficult to identify. Impact will be focused on a particular node, i.e. tower positions or access/inspection roads	
Extent	Local	
Probability	Probable	
Reversibility	Irreversible	
Irreplaceable loss of resources	Significant loss of resources	
Duration	Permanent	
Cumulative effect	Medium cumulative impact	
Intensity/magnitude	Very high	
Significance Rating	Sites have a high significance on a local level – viewed as NHRA Grade III sites.	
	Pre-mitigation impact rating	Post mitigation impact rating
Extent	1	1
Probability	2	2
Reversibility	4	4
Irreplaceable loss	3	3
Duration	4	2
Cumulative effect	3	1
Intensity/magnitude	4	1
Significance rating	68 (high negative)	13 (low negative)
Mitigation measures	Mitigation should take the form of isolating known sites and declare them as no-go zones with sufficient large buffer zones around them for protection. Plan of action should be developed if unknown burial places are discovered. In exceptional cases, relocation of graves can be implemented after required procedures have been followed.	

7. RECOMMENDED MANAGEMENT MEASURES

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the proposed development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted on can be written into the management plan, whence they can be avoided or cared for in the future.

7.1 Objectives

- Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft.

- The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during mining activities.

The following shall apply:

- Known sites should be clearly marked in order that they can be avoided during construction activities.
- The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.
- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;
- All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).

7.2 Control

In order to achieve the above, the following should be in place:

- A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage.
- Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.
- In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.

8. CONCLUSIONS

The aim of the survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the corridors in which it is proposed to develop an electricity transmission line.

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a pre-colonial element (Stone Age) as well as a much later colonial (Settler farmer) component. The second component is a semi-urban landscape dating to the colonial period.

The following heritage sites were identified in the study area:

- Pre-colonial archaeological sites dating to all phases of the Stone Age have been identified to occur in the study area. In some cases the impact of the development would only be indirect, e.g. the power line crossing over a site. In other areas of the proposed development, even though the impact will be focused on a particular node, i.e. tower

positions or access/ inspection roads, it will give rise to the physical disturbance of the material and its context. This would result in irreplaceable loss of resources.

- Pre-colonial archaeological sites dating to all phases of the Iron Age are known to occur in the region, but none have been identified in the study area self. Similarly, in some cases the impact of the development would only be indirect, e.g. the power line crossing over a site. In other areas of the proposed development, even though the impact will be focused on a particular node, i.e. tower positions or access/ inspection roads, it will give rise to the physical disturbance of the material and its context. This would result in irreplaceable loss of resources.
- Colonial period or historic period heritage manifest in a wide variety. As the power lines are to cross a rural landscape for the most part, the impact would only be indirect, e.g. the power line crossing over a site. In other areas of the proposed development the impact will be focused on a particular node, i.e. tower positions or access/ inspection roads and will therefore give rise to the physical damage of the features or structures and its context.

Heritage sites are not only fixed features in the environment, occurring within specific spatial confines, but they are also finite in number. Avoiding of impacts on sites is therefore the preferred form of mitigation. In areas where a high density of sites occurs, if at all possible, exclusion zones where no development is to take place, should be set aside. If that is not possible, mitigation can only be achieved through archaeological investigation.

Based on the study, it is our conclusion that, from a heritage point of view, any of the identified routes or the alternatives would be suitable for development as the physical impact on heritage sites would be low and this can also be mitigated if necessary. Therefore, for the project to continue, we propose the following:

- The management measures, as set out in Section 7 of this report should be implemented prior to construction taking place.
- A visual assessment of the route, taking the heritage sites into consideration, should be done in order to determine its possible impact on heritage tourism in the region.
- Mitigation should be based on avoiding of sites rather than anything else. In order to achieve this, a full “walk down” of the corridor must be done prior to construction taking place, to document all sites, features and objects, in order to propose adjustments to the routes and thereby to avoid as many impacts as possible.
- No impact on heritage sites, features or objects can be allowed without a valid permit from SAHRA.

9. REFERENCES

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9.4 Maps and aerial photographs

1:50 000 Topocadastral maps

Google Earth

APPENDIX 1: CONVENTIONS USED TO ASSESS THE IMPACT OF PROJECTS ON HERITAGE RESOURCES

Significance

According to the NHRA, Section 2(vi) the **significance** of heritage sites and artefacts is determined by its aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

Matrix used for assessing the significance of each identified site/feature

1. Historic value			
Is it important in the community, or pattern of history			
Does it have strong or special association with the life or work of a person, group or organisation of importance in history			
Does it have significance relating to the history of slavery			
2. Aesthetic value			
It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group			
3. Scientific value			
Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage			
Is it important in demonstrating a high degree of creative or technical achievement at a particular period			
4. Social value			
Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons			
5. Rarity			
Does it possess uncommon, rare or endangered aspects of natural or cultural heritage			
6. Representivity			
Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects			
Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class			
Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality.			
7. Sphere of Significance			
	High	Medium	Low
International			
National			
Provincial			
Regional			
Local			
Specific community			
8. Significance rating of feature			
1.	Low		
2.	Medium		
3.	High		

Significance of impact:

- low where the impact will not have an influence on or require to be significantly accommodated in the project design
- medium where the impact could have an influence which will require modification of the project design or alternative mitigation
- high where it would have a “no-go” implication on the project regardless of any mitigation

Certainty of prediction:

- Definite: More than 90% sure of a particular fact. Substantial supportive data to verify assessment
- Probable: More than 70% sure of a particular fact, or of the likelihood of that impact occurring
- Possible: Only more than 40% sure of a particular fact, or of the likelihood of an impact occurring
- Unsure: Less than 40% sure of a particular fact, or the likelihood of an impact occurring

Recommended management action:

For each impact, the recommended practically attainable mitigation actions which would result in a measurable reduction of the impact, must be identified. This is expressed according to the following:

- 1 = no further investigation/action necessary
- 2 = controlled sampling and/or mapping of the site necessary
- 3 = preserve site if possible, otherwise extensive salvage excavation and/or mapping necessary
- 4 = preserve site at all costs
- 5 = retain graves

Legal requirements:

Identify and list the specific legislation and permit requirements which potentially could be infringed upon by the proposed project, if mitigation is necessary.

APPENDIX 2. RELEVANT LEGISLATION

All archaeological and palaeontological sites, and meteorites are protected by the National Heritage Resources Act (Act no 25 of 1999) as stated in Section 35:

(1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA.

(2) Subject to the provisions of subsection (8)(a), all archaeological objects, palaeontological material and meteorites are the property of the State. The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collection policy acceptable to the heritage resources authority and may in so doing establish such terms and conditions as it sees fit for the conservation of such objects.

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

(4) No person may, without a permit issued by the responsible heritage resources authority-

- (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
- (c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
- (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

In terms of cemeteries and graves the following (Section 36):

(1) Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit.

(2) SAHRA must identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with the grave referred to in subsection (1), and must maintain such memorials.

(3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority-

- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- (b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.