

# **SCOPING HERITAGE ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF A 400 kV TRANSMISSION LINE BETWEEN ANKERLIG POWER STATION (ATLANTIS) AND THE PROPOSED OMEGA SUBSTATION, GROOT OLIFANTSKOP.**

(Assessment conducted under Section 38 (8) of the  
National Heritage Resources Act as part of an EIA.)

Prepared for

Savannah Environmental Pty (Ltd).  
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## EXECUTIVE SUMMARY

The Archaeology Contracts Office (ACO) was appointed by Savannah Environmental to undertake an Heritage Impact Assessment for the construction of a 400kV transmission line between Ankerlig Power Station (situated at Atlantis Industrial Area) and the proposed Omega substation which is to be built on the farm Groot Olifantskop. Three alternative transmission line routes have been proposed. These are:

- Option A which runs parallel mainly to the existing Atlantis-Koeberg 1&2 and Koeberg-Stickland 1 electrical servitudes
- Option B which is an entirely new alignment running from Atlantis southwards through a new servitude before joining the Koeberg - Stickland 1 servitude to Omega
- Option C which runs parallel to the existing Atlantis railway which passes close to Omega.

While none of the proposed routes have been examined in detail at this time (scoping), the general area has been subject to a number of studies in recent years which permit a conclusion to be reached in terms of the comparative sensitivity of the three options. Areas of heritage significance within all the proposed option corridors are limited which means that highly significant impacts are not expected to occur on any of them. However, as a general principal it is desirable to utilise existing disturbed areas rather than create new impacts to the landscape and what lies in or on it.

Option C which uses the disturbed corridor of the Atlantis railway is favoured due to its directness, and known low heritage potential.

Option A is also considered satisfactory as it also runs parallel mostly an existing corridor which has already been disturbed.

Option B is least favoured as it will create a new set of landscape impacts as well as possible disturbance of archaeological material.

## Glossary

**Archaeological material** *Remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.*

**Calcrete** *A soft sandy calcium carbonate rock related to limestone which often forms in arid areas.*

**Early Stone Age** *A very early period of human development dating between 300 000 and 2.6 million years ago.*

**Fossil** *Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.*

**Heritage** *That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act of 2000).*

**HWC (Heritage Western Cape)** *The provincial compliance agency responsible for the conservation of heritage resources.*

**Late Stone Age (LSA)** *In South Africa this time period represents fully modern people who were the ancestors of southern African Khoekhoen and San groups (40 000 – 300 years ago).*

**Middle Stone Age (MSA)** *An early period in human history characterised by the development of early human forms into modern humans capable of abstract thought process and cognition 300 000 – 40 000 years ago.*

**Midden** *A pile of debris or dump (shellfish, stone artefacts and bone fragments) left by people after they have occupied a place.*

**Palaeontological** *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.*

**Pleistocene** *A geological time period (of 3 million – 20 000 years ago).*

**SAHRA** *South African Heritage Resources Agency.*

**Structure (historic)** *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. Protected structures are those which are over 60 years old.*

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## **1. INTRODUCTION**

The Archaeology Contracts Office (ACO) was appointed by Savannah Environmental to undertake a scoping level Heritage Impact Assessment (HIA) for the proposed construction of an electrical transmission line between Ankerlig Power Station at Atlantis Industrial area and the Omega Substation which is to be located at Farm Groot Olifantskop in the Klipheuvall area. This HIA is part of an Environmental Impact Assessment (EIA) process which is being carried out by Savannah Environmental for the proponent, Eskom.

## **2. TERMS OF REFERENCE**

This study has taken place in order to fulfil the following goals:

- Take cognisance of the guideline for involving heritage specialists in the EIA process (Winter & Baumann 2005) in developing the approach to the heritage assessment;
- Review previous heritage investigations undertaken in the area;
- Compile a report including:
  - An overview of the local and regional heritage context of the area in terms of archaeological, palaeontological and cultural landscapes;
  - An overview of any unique or significant sites/aspects/artefacts encountered;
  - An initial assessment of the possible significance of the impacts of the alternative options based on a desktop study.
  - Identify the most suitable alternative in heritage terms.

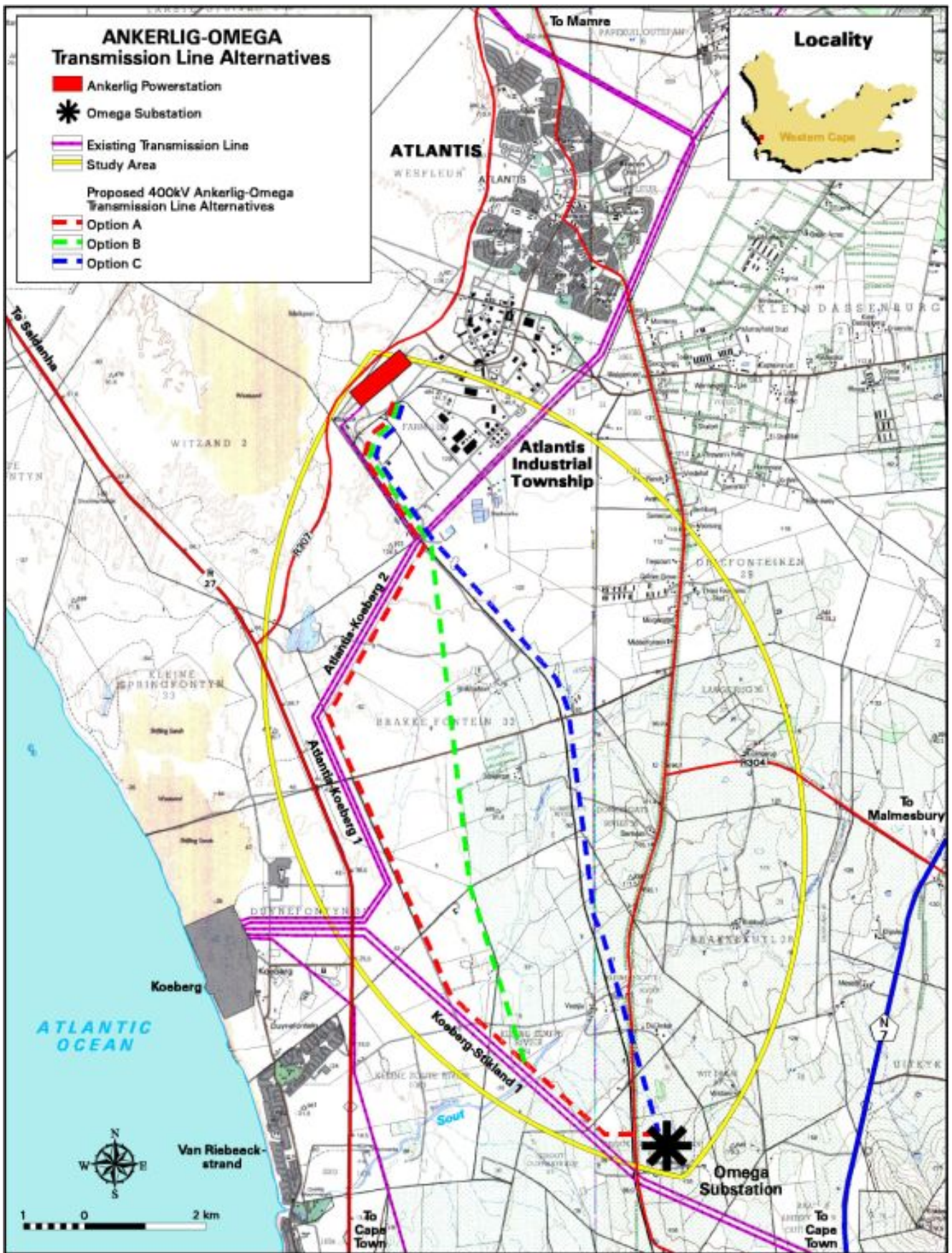


Figure 1: Location of the study areas.

### 3. HERITAGE LEGISLATION

The National Heritage Resources Act (NHRA) (No. 25 of 1999) protects a variety of heritage resources including all palaeontological or prehistoric material, historical artefacts and structures and human remains. Section 38 of the Act states that Heritage Impacts Assessments (HIAs) are required for certain kinds of development including:

- the construction of a road, wall, power line, pipeline, canal or other similar linear development or barrier exceeding 300 m in length;
- the construction of a bridge or similar structure greater than 50 m in length;
- any development or other activity which will change the character of a site –
  - exceeding 5 000 m<sup>2</sup> in extent;
  - involving three or more existing erven or subdivisions thereof;
  - involving three or more erven or divisions thereof which have been consolidated within the past five years; or
- the re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent.

The current project involves electrical transmission lines longer than 300 m.

Stand alone HIAs are not required where an EIA is carried out as long as the EIA contains an adequate HIA component that fulfils the provisions of Section 38. In such cases only those components not addressed by the EIA should be covered by the heritage component. The South African Heritage Resources Agency (SAHRA) is responsible for the protection of National Heritage Sites (grade 1 sites) as well as all historic graves and human remains. HWC is responsible for the management and protection of all Provincial Heritage Sites (grade 2 sites), generally protected heritage and structures (grade 3a – 3c sites) and prehistoric human remains. Disturbance or destruction of any protected heritage material will require a permit issued by the relevant authority.

In terms of the NHRA, the definitions of protected heritage material covered by the various sections are as follows:

- In Section 34, "**Structure**" 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. All such structures greater than 60 years of age are protected. Note that in terms of the legislation all renovations, alterations or changes to any protected structure will also require a permit.
- In Section 35, "**Archaeological**" refers to any material remains resulting from human activity which are older than 100 years of age, in a state of disuse and are in or on land. It includes artefacts, human and hominid remains and artificial features and structures. This means that an archaeological site is any area where there are artefacts (objects made by human hand) and/or ruins that are over 100 years of age. In terms of rock art it includes all area within 10 m of the art.

- In Section 35, "**Palaeontological**" includes 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. The term fossil means mineralised bones of animals, shellfish, plants or marine animals and a trace fossil is the track, footprint or cast of a fossil organism that is preserved in stone or consolidated sediment.
- In Section 36, "**Burial Grounds and Graves**" means any place of interment and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such place. Note that although isolated **human remains** are not included here, they are protected by other legislation such as the Exhumations Ordinances (12 of 1980) and the Human Tissues Act (No. 65 of 1983).
- "*Cultural landscapes*" are also protected by the Act. Any "**Place**" (site, area, region, structure or group of structures or open space) with "**Cultural significance**" (aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance) can be regarded as a cultural landscape. The compliance authority is permitted to intervene and comment on the design and aesthetic qualities of any development that forms part of, or is within sight of, a heritage place or site.

## 4. PROJECT DESCRIPTION

### 4.1. The study area

The study area (Figure 1) consists of a parcel of land situated between the R27 (west) and the N7 (east). The northern extent is the industrial township of Atlantis and towards the south, Blaauberg Hill and the Melkbos area. Within this envelope lies a variety of landscapes – farm lands, brickfields, the Western Province Shooting Range as well as tracts of *sandveld* which have been infested with alien vegetation. Apart from the Blaauberg Hills to the south, the terrain is largely flat punctuated by occasional dune fields. Where agriculture is not taking place, alien plant species are prolific.

### 4.2. The need for the study

Eskom is in the process of expanding generation and distribution capacity in South Africa. This has involved the recent construction of the Ankerlig Open Cycle Gas Turbine facility at Atlantis as well as strengthening the electrical transmission network which will see the building of a key new substation "Omega" on the Eskom owned farm, Groot Olifantskop. The proposal is the construction of a new 400 kV transmission line linking Ankerlig Power Station with the Omega Substation – a direct distance of 12 km. The purpose of this scoping assessment is to examine three possible options for the proposed transmission line route.

### 4.3. Activities that will affect the heritage environment

The proposed transmission line will consist of overhead cables suspended from towers placed



400-500 m apart. Each steel tower will need to be mounted on concrete footings set into the ground surface. Hence each point of land surface disturbance is confined to the few square meters of the towers bases. The actual servitude will require a service road (normally an unpaved track) while the corridor will have to be cleared of tree cover. During construction the landscape will be subject to a period of temporary disturbance when construction equipment is brought onto site for building of the towers and lifting of the cables.

Heritage sites can be negatively affected through disturbance of the land surface, destruction of significant structures and places as well as any action that will alter the feel and appearance of an historic place or building. Hence, transmission line is likely to result in moderate impacts to the land surface during the construction phase but permanent changes in terms of visual impacts and changes to the feel of a landscape.

## 5. ROUTE OPTIONS

The three possible options identified for the transmission line route are as follows:

**Option A** runs parallel to the existing servitude from Ankerlig down the Atlantis railway line before continuing in a south westerly direction along the existing Koeberg 1 servitude. The servitude along the railway line has already been subject to a heritage impact assessment by the ACO in 2006 and was found not to be sensitive. The route follows the Koeberg 1 and 2 servitudes (in already disturbed corridors of land) until it reaches Duinenfontein where a short portion of new servitude will be required to link the route with the existing Koeberg-Stickland 1 servitude which passes very close to the Omega substation.

**Option B** follows the existing servitude from Ankerlig down the Atlantis railway line and then cuts directly southwards over the farms Brakkefontein and Vaatjie, Klein Sout Rivier before intersecting with the afore-mentioned Koeberg – Stickland 1 servitude. Although this route is very direct it will require a new power line servitude for much of the way.

**Option C** follows the Atlantis railway line all the way until it reaches the farm Groot Olifantskop (Omega substation). It passes through the properties Brakkefontein, Donkergat, Apollo Brickfields, Vaatjie. Although the railway line corridor provides a convenient corridor of prior disturbance, the transmission line will require a new servitude.

## 6. METHOD

This study is based on information gained from a team inception workshop, site inspection, as well as several studies that have already been completed on land within the study area. No specific heritage surveys have been carried out for this project at this stage, as sufficient information was obtainable from existing information.

## **6.1. Information base**

The Ankerlig Power Station site, power station expansion site and transmission line linkages have been subject to previous heritage impact assessments completed as part of EIAs by Hart and Orton (2005-2007).

The farm Brakkekloof has been subject to a heritage impact assessment (as part of an EIA) by Hart and Halkett (2004) for expansion of aspects of the Western Province Shooting Range.

The farms Donkergat, Brakkefontein and Apollo brickfields sites were the subject of a heritage impact assessment as part of an EIA by Halkett and Orton (2005) for the establishment of a new landfill site.

A portion of the farm Vaatjie has been subject to an assessment by Halkett, Orton and Hart (2006) for the purpose of a proposed sand mine.

Portions of the farm Groot Olifantskop have been subject to assessments by Kaplan (ACRM), Hart and Orton (ACO) (2004-2006) as part of the EIA process for the proposed Omega substation.

Extensive research studies involving the ACO team have taken place on the Farm Duinefontein in recent years.

Orton has just completed a heritage impact assessment for the proposed expansion of the waste water treatment works of the Blaauberg-Melkbos areas (2007).

Halkett has made important observation with respect to open archaeological sites on property adjoining Vaatjie (2006)

## **6.2. Limitations**

It must be emphasised that this is a scoping assessment that is based on existing information and an initial site inspection rather than detailed field assessment.

## **7. BACKGROUND TO LOCAL HERITAGE**

### **7.1. Palaeontology**

The mineralised bones of ancient fauna are often found in this region of the Cape west coast. Fossils are regularly encountered between Woodstock beach, near Cape Town, and Saldanha Bay to the north of Yzerfontein. These include the material excavated from sites such as Elandsfontein (Singer & Wymer 1968), Duinefontein 2 (Klein *et al.* 1999) and Langebaanweg (Halkett & Hart 1999; Hendey 1969; Singer 1961). Fossil bones were also seen at Bakoond (Orton 2007) and Tygerfontein (Halkett & Hart 1995), both to the south of Yzerfontein, and a large collection has been made from an occurrence at Melkbosstrand (Hendey 1968). Material from the Milnerton

beach area has also been recorded (Avery 1995; Broom 1909). Fossil material at Milnerton includes terrestrial and marine fauna, as well as shell deposits (Avery 1995). Many of these occurrences occur near the surface, with the Melkbosstrand material having been exposed by wind deflation on an old marine terrace some 5 to 6 m above sea level (Hendey 1968). The Duinefontein 2 material occurs buried within red Pleistocene sands immediately north of the Koeberg power station within about 0.7 m of the surface (Klein *et al.* 1999), however it is not clear how far inland the fossiliferous deposits extend.

## 7.2. Archaeology

Due to the rapid urban expansion of greater Cape Town, little formal archaeological academic research work has been carried out in the general vicinity of the study area; however various impacts assessments have led to the accumulation of some knowledge. Although southern Africa has been occupied by hominids for more than one million years, little evidence of the earliest occupation is preserved within the local region. The fossil site of Duinefontein 2 in the Koeberg Private Nature Reserve contains Early Stone Age (ESA, >200 thousand years ago (kya)) artefacts and similar isolated items are routinely found in ploughed fields across the south-western Cape. Kaplan (1996, 2000b) reports ESA artefacts from farmlands near the study area.

Middle Stone Age (MSA, 200kya – 20kya) artefacts were found in association with the Melkbosstrand fossils (Hendey 1968) indicating at least some MSA presence in the area. MSA artefacts of the Stillbay type have also been collected in the region of Maitland just south of the study area (Goodwin 1926, 1928) and at a site described as being between Milnerton and Maitland (Goodwin & Van Riet Lowe 1929). Artefacts thought to date to the MSA were observed at Groot Oliphantskop to the east of the Melkbosstrand WWTW (Orton & Hart 2004) and in the region of Vissershok (Kaplan 2002a).

In general, Later Stone Age (LSA, <20kya) sites are far more commonly encountered than earlier material. This may be largely due to burial of older sites beneath recent sand. The only formal excavations to have taken place at an LSA site are those in the near coastal dunes of the Atlantic Beach Golf Estate, just northwest of Blaauwberg Hill and at Melkbosstrand. At the Atlantic Beach sites late Holocene LSA occupation probably pertaining to the Khoekhoen people was found. The sites were located in the high sand dunes and consisted of shell middens and associated artefacts. The lowest shell layers were dated to about AD 700 to AD 750 at AB1 and about AD 1050 at AB3 (Sealy *et al.* 2005). Kaplan (2000a) and Gray (2000) conducted excavations in a shell midden with material probably dating back to the mid-Holocene but this has never been studied further. Hendey (1968) and Avery (1995) also mention the existence of LSA shell middens among the coastal dunes and photographs of Bloubergstrand from the early 1900s in Duminy (1979) show the kind of dunes that would undoubtedly have housed LSA middens. The Atlantic Beach sites are approximately 1.3 km from the sea so the chance of finding further sites within the study area does exist.

LSA artefacts have also been noted from the vicinity of Maitland (Goodwin & Van Riet Lowe 1929), the farm Groot Oliphantskop – site of the Omega substation (Kaplan 1996; Orton & Hart 2004) as well as other farms in the area (Kaplan 2004). Halkett (per comm.) reports the

presence of Early Stone Age scatters on the farm Vaatjie as well as substantial Late Stone Age open sites on an adjoining property. Early Stone Age material has also been located on the farm Brakkefontein just south of Atlantis (Halkett 2005).

Two burials were reportedly excavated from the Groot Oliphantskop farm in the mid-20<sup>th</sup> century (Kaplan 1996). Morris (1992) has catalogued human burials from South Africa and records numerous burials from the Milnerton (13 listed), Blaauwberg (20 listed) and Melkbosstrand (22 listed) areas. Others have also been recorded in recent years (e.g. Avery 1995; Deacon & Goosen 1997; Kaplan 2000a, 2002b; Yates 2001) and continue to be found at new development sites.

### **7.3. History**

During the early years of the Cape Colony the Dutch settlers made use of the area for grazing but they are unlikely to have left any trace of this use. Early land grants resulted in the construction of farm buildings but not many remain intact today. Those at Groot Oliphantskop are, however, excellent and well preserved examples (Orton & Hart 2004) and, although now modified, the farmstead immediately north of the Blaauwberg Hill also relates to historical occupation of the area. There are excellent examples of vernacular farm structures on the farm Brakkefontein as well as Vaatjie.

The most significant historical event to take place in the area was the Battle of Blaauwberg which occurred in early January 1806. This battle signalled the end of the Dutch occupation of the Cape when the British forces landed at Melkbosstrand, marched over the saddle at the north-eastern edge of Blouberg Hill and defeated the Dutch in a battle among the sand dunes to the east of Kleinberg. This event took place just south of the study area and will not be affected by the proposed activity.

## **8. COMPARATIVE IMPACTS OF THE ROUTE OPTIONS**

**Option A:** Very little heritage material has been recorded on or close to the alignment of Option A. Orton (2007) has described various ephemeral Late Stone Age sites along the R27, however very few of these are worthy of further investigation. A single significant archaeological site (termed by Orton as site 11) is known to exist on Olifants Kop. This is described in detail in appendix A. Option A runs parallel to an already existing corridor which does not lie close to any significant historical sites or places of tourism potential. In heritage terms it is considered appropriate for the proposed activity.

**Option B** passes directly through or close to the farms Brakkefontein and Vaatjie, both of which contain known archaeological material as well as historic structures. While the archaeological sites consist primarily of ESA open scatters which are of limited heritage and scientific value, concern is expressed that the landscape context of historic structures at Brakkefontein and Vaatjie will be compromised by the visual intrusion of the power line. While option B is by no means a “no go option” it is considered to be more problematic than either options A or C and is therefore the least favoured of the three alternative routes.

**Option C** follows the existing railway line from Atlantis before branching off to the Omega substation on the Farm Groot Olifantskop. No archaeological sites have been recorded along the alignment. The use of an existing area of disturbance and prior landscape impact will decrease the likelihood of new impacts occurring to the surrounding properties. This option is therefore considered suitable for the proposed activity. Due to the fact that Option C is a relatively direct and shorter route than Option A, the possibility of any impacts on heritage sites occurring is considered to be less. Option C is therefore the most favoured route in heritage terms.

## 9. FURTHER WORK

Generally the impact of transmission lines on tangible heritage is small due to the small footprint of ground surface disturbance caused by the building of tower footings. Impacts to heritage such as surface archaeological sites can be resolved through adjusting the positions of tower bases. More difficult to resolve are cultural landscape impacts that will occur if routes close to historic properties are selected. Mitigation is not possible to resolve short of shifting entire corridors to avoid impacts to sense of place.

**Option A** is not expected to cause any significant impacts to heritage. Assessment of impacts is likely to be straightforward with very little mitigation or heritage management work required.

Assessment of impacts for **Option B** is likely to be more difficult requiring archival investigation of historic buildings close to the route, physical survey and preliminary recording of historic buildings as well as assessing the impact of the activity on archaeological sites known to exist in the area. There is a strong likelihood that negative impacts will occur and that mitigation action in the form of sampling archaeological sites will be needed and/or the adjustment of the route in places.

**Option C** is not expected to cause any significant impacts to heritage. Assessment of impacts is likely to be straightforward with very little mitigation or heritage management work required.

Attention is drawn to the presence of an ancient ESA quarry at Groot Olifantskop. Site 11 needs to be avoided and protected during any construction activities. Co-ordinates and description are included in Appendix A.

## 10. CONCLUSION

None of the transmission line options can be considered to be fatal flaws in heritage terms, however option B has the potential to cause the greatest level of impact to the historic cultural landscape of early farming as well as pre-colonial archaeology.

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Cape Archives: SAL.KCA.CPA.c1806

## APPENDIX A

(after Orton 2007)

Site 11 (Silcrete quarry)

Location: 33° 42' 49.8" S 18° 29' 42.9" E

Farm name: Groot Oliphants Kop 81

This site is a very impressive Stone Age quarry that has been recorded as part of other assessments undertaken in the area (Kaplan 1996; Orton & Hart 2004). It consists of a large silcrete outcrop that, through weathering of the surrounding landscape, stands proud of the surface (Figure 2). It is surrounded by many millions of flaked artefacts and broken fragments of silcrete as well as a fair number in quartz. The total diameter of the artefact scatter surrounding this site is some 200 m.



**Figure 2:** The quarried silcrete outcrop at Site 11.