

Scoping Heritage Impact Assessment for the construction of two
400kV transmission lines between Koeberg 2 and the Stikland
substation, Cape Town Metro, Western Cape (Ref: 12/12/20/1219)

Prepared for

Savannah Environmental (Pty) Ltd

26 October 2009

Draft



Prepared by:

Tim Hart, Lita Webley & Liesbet Schietecatte
Archaeology Contracts Office
Department of Archaeology
University of Cape Town
Rondebosch
7001
Email: Tim.Hart@uct.ac.za

Harriet Clift
7 Pypies Plein
Devils Peak
Cape Town
8000

Email: harriet@hclift.co.za

Executive summary

The Archaeology Contracts Office of the University of Cape Town Office was appointed by Savannah Environmental (Pty) Ltd of behalf of Eskom distribution to undertake a scoping report for the construction of two new 400kV transmission power lines between the HV-yard at the proposed new Nuclear Power Station (to be known as Koeberg 2 nuclear power station) and the Stikland Substation.

The following heritage indicators were identified were identified during this scoping study:

- Significant areas of Caenozoic and Pleistocene palaeontology;
- Significant sites of Pleistocene archaeology and with less information available on the Holocene archaeology of the various alternatives;
- Historical farmsteads such as Vaatjie, Groot Oliphantshoek, Rondeboschjes Berg etc which will require background research and site visits to determine significance and possible impacts;
- Cultural landscapes characterised as rural agricultural and scenic routes such as the R307.

The impact of the construction of new service roads is likely to be greater than the construction of the towers on the below ground heritage resources.

As a preliminary assessment it is recommended that the transmission lines follow the path of the existing transmission lines (southern route) as opposed to constructing new lines across unspoilt landscape. However, the cumulative impact of an additional transmission lines running in parallel with existing lines will need to be assessed by a visual impact specialist during the EIA phase.

The HIA component, as part of the EIA process, will need to include:

- Palaeontological desktop review and possible spots checks along the route during construction of the roads;
- An archaeological impact assessment will be required for the service roads and spot checks will be needed during the construction of the towers;
- An archival study needs to be undertaken of the farms which will be crossed by the towers to identify significant features;
- A visual impact assessment will be required to determine the visual impact of the transmission lines on the cultural landscape (rural and agricultural), the R307 scenic route and historical farms and associated infrastructure. It is proposed that this is integrated within the heritage study.

Declaration:

Mr Tim Hart and Dr Lita Webley are independent specialist consultants who are in no way connected with the proponent, other than delivery of consulting services.

Tim Hart (MA) is an archaeologist with 22 years of working experience in heritage throughout southern Africa. He is accredited with Principal Investigator status with the Association of Professional Archaeologists of Southern Africa.

Lita Webley (Phd) is an archaeologist with 30 years of working experience. Having served previously as Director of the Albany Museum, she is familiar with the history of the area and local heritage issues. She is also accredited with Principal Investigator status with the Association of Professional Archaeologists of Southern Africa.

Liesbet Schietecatte (MA, MSC) is an historical archaeologist with 10 years working experience at the ACO offices in South Africa and Belgium.

Harriet Clift (MA) is an archaeologist who specializes in historical and archival research and cultural landscape studies.

GLOSSARY

Archaeology: *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.*

Early Stone Age: *The archaeology of the Stone Age between 700 000 and 2500 000 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 25 of 1999.*

Holocene: *The most recent geological time period which commenced 10 000 years ago.*

Late Stone Age: *The archaeology of the last 20 000 years associated with fully modern people.*

Middle Stone Age: *The archaeology of the Stone Age between 20-300 000 years ago associated with early modern humans.*

National Estate: *The collective heritage assets of the Nation*

Palaeontology: *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 – the compliance authority which protects national heritage.*

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.*

Wreck (protected): *A ship or an aeroplane or any part thereof that lies on land or in the sea within South Africa is protected if it is more than 60 years old.*

ACRONYMS

DEA	Department of Environmental Affairs
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
LSA	Late Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency

CONTENTS

1. Introduction	7
1.1 The need for the project.....	7
1.1.1 The proposal	7
1.2 The receiving environment	8
1.2.1 Palaeontological heritage	8
1.2.2 Pre-colonial heritage	9
1.2.3 The colonial period	9
1.2.4 Cultural Landscape	11
2. Methodology for study	11
2.1 Restrictions and assumptions.....	12
2.2 Legislative context	12
3. Findings	12
3.1.1 Palaeontology	13
3.1.2 Nature of impacts	13
3.1.3 Extent of impacts	13
3.2 Pre-colonial archaeology	13
3.2.1 Nature of impacts	13
3.2.2 Extent of impacts	13
3.3 Colonial period heritage	13
3.3.1 Nature of impacts	13
3.3.2 Extent of Impacts	14
3.4 Cultural landscape and sense of place	14
3.4.1 Nature of impacts	14
3.4.2 Extent of impacts	14
4. Mitigation and conservation	14
4.1 Palaeontological Heritage	14
4.2 Archaeological Heritage.....	15
4.3 Un-identified archaeological material, fossils and fossil bone.....	15
4.4 Built Environment	15
4.5 Cultural landscape and sense of place	15
5. Conclusions	15
5.1 Further work	15
6. References	16

1. Introduction

The Archaeology Contracts Office of the University of Cape Town was appointed by Savannah Environmental (Pty) Ltd of behalf of the proponent Eskom to conduct a scoping level heritage impact assessment (the identifications of issues) for the construction of two new 400kV transmission lines between the HV-yard at the proposed new Nuclear Power Station site (known as Koeberg 2) and the Stikland substation.

This proposal has triggered a full EIA process, this report being the heritage component of the scoping study.

1.1 The need for the project

South Africa is currently experiencing an energy crisis with the national electricity provider (Eskom Holdings Limited) being unable to produce enough power to serve the nation's peak demand or projected needs to satisfy a 6% growth rate. Eskom is investigating the feasibility of establishing new conventional nuclear power stations at:

- Duynefontein (next to the existing Koeberg 1 facility)
- Bantamsklip (near Gansbaai)
- Thyspunt (near St Francis Bay)

Eskom Transmission is investigating possible transmission line options for each of these three sites.

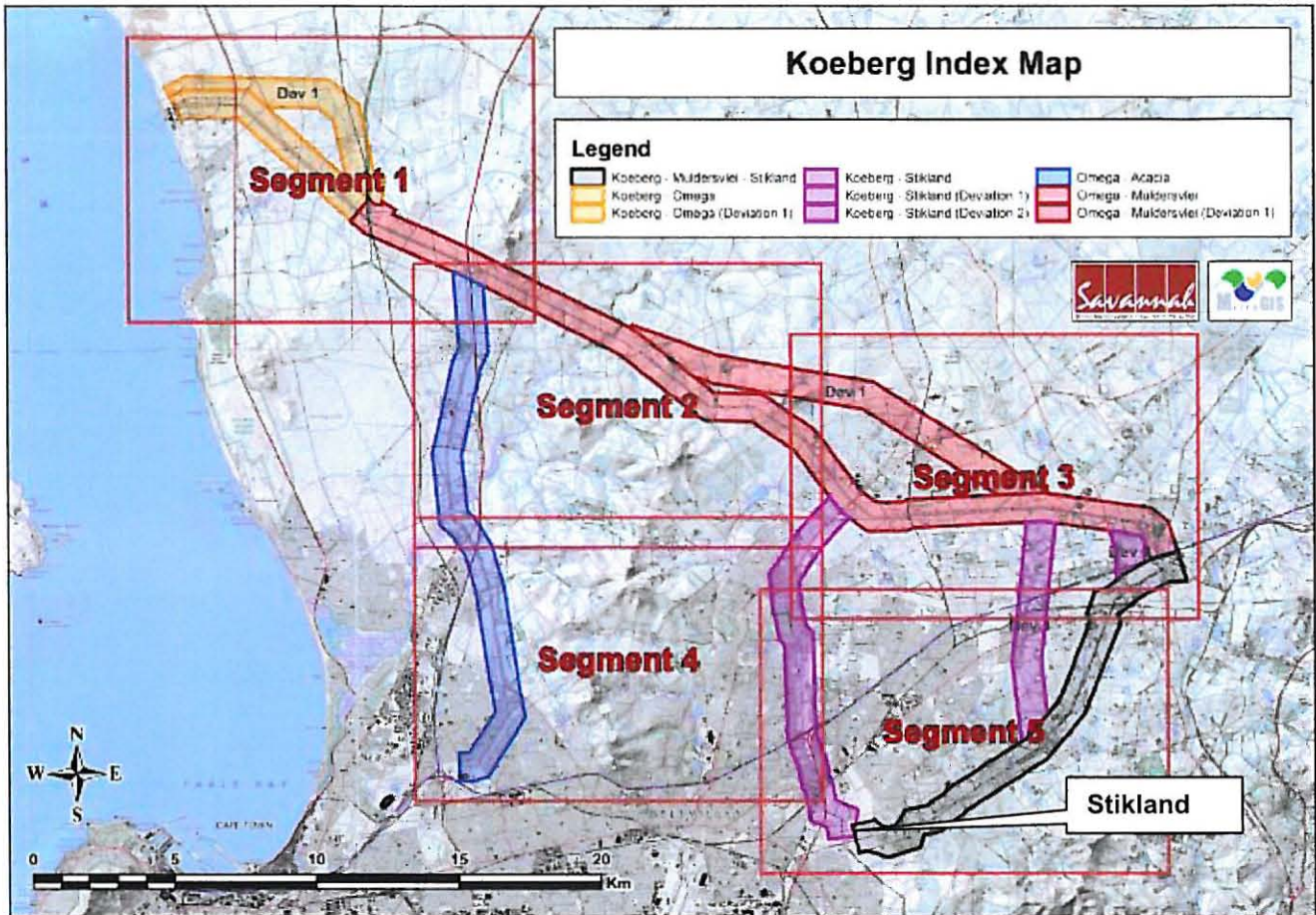
1.2 The Proposal

There are a number of alternatives proposed for the two lines from Koeberg 2 to Stikland. (Fig. 1). From Koeberg, the lines follow an easterly direction toward the Muldersvlei substation (red line). There are two alternatives for this route, along existing power lines or further to the north (Deviation 1). Three alternatives are proposed for taking the powerlines from the red line to the Stikland substation which is located to the south-west of Muldersvlei (Fig. 1). They are indicated as three purple corridors running southward. The first purple corridor follows the R302, travels along the Kuilsrivier, and crosses the N1 and R101 before joining the Stikland substation. The second purple (Deviation 1) corridor travels south through small holdings at Vermont and Monta Rosa, before crossing the N1 over Cyrus, Craigmore, Geduld then over the R101 past Bella Visa and Houdenmond to join the Muldersvlei-Stikland line. The third purple corridor (Deviation 2) runs very close to the existing Koeberg lines entering the Muldersvlei substation. They run along the R304 and cross Damarakloof.

The associated infrastructure which will accompany the installation of the two new 400kV transmission lines will include the following activities:

- Construction of towers (design to be determined).
- Service roads and 150 m wide servitude.
- Temporary camp sites for construction crews

The exact location of these activities has not yet been determined.



.Figure 1: The various alternative routes for the two transmission lines from Koeberg 2 to Stikland are indicated above in segments 1-5. The two yellow alternatives, two red alternatives and three purple alternative corridors are applicable. Map of the Study area supplied by Savannah Environmental.

1.3 The receiving environment

The transmission lines commence at Koeberg which is located on the farm Duynefontein 34, some 35km north of Cape Town on the Atlantic coast. The landscape in the vicinity of Duynefontein comprises large tracts of coastal Fynbos and an active dune field. Other than the coastal dunes, the topography is relatively flat. The transmission lines will cross the R27 then onto a rural landscape of undulating plains covered in wheat fields and/or un-cultivated land, often alien infested for stock grazing. There is an existing servitude of 150 m in width that accommodates the existing transmission lines. This is kept clear of large vegetation and structures. The Lines follow a route in an easterly direction to the north of the Durbanville Hills, crossing rolling wheat fields and pastures. Many of these farms were first granted in the early 18th century and may contain historic buildings. This would need to be verified by the site visits. As the lines swing southward, they cross vineyards and small holdings and then enter into the urban sprawl of Durbanville and Kraaifontein.

1.3.1 Palaeontological heritage

The transmission lines will commence at the existing nuclear site. Two occurrences of Pleistocene fossil bone were found on the farm Duynefontein.. These are the sites known to archaeologists as *Duinefontein 1*, a possible Pleistocene Hyena den with an associated fossil fauna assemblage, and *Duinefontein 2*, a known and important Pleistocene palaeontological site with archaeological material (see below). Their significance is currently being assessed in the ongoing Nuclear 1 EIA.

1.3.2 Pre-colonial heritage

The archaeological site of Duinefontein 2 is significant because of the discovery and scientific excavation of buried late Acheulian land surfaces. Numerous stone artefacts dating to the Acheulian (Early Stone Age) and fossilized animals bones dating between 400 000 and 250 000 years ago have been excavated (Klein et al 1999; Cruz-Uribe et al 2003). This site enjoys international significance.

It is anticipated that the area traversed by the transmission lines will contain artefactual material dating to the Early Stone Age and Middle Stone Age of the Pleistocene epoch (*3 million – 20 000 years ago*). Indeed, Halkett (2006) has reported on the discovery of an ESA stone tool scatter on the farm Vaatjie (Portion 84 of Kleine Zoute Rivier), which will be crossed by the alternative route (Deviation 1). Early Stone Age material is often noted in eroded areas, or on terraces in river valleys. Under very rare circumstances it is found in undisturbed contexts in association with fossil bone. Such sites enjoy high status in research terms as they have the potential to produce significant information about early human behaviour. Halkett & Attwell (2009) have reported on isolated occurrences of Early and Middle Stone Age implements on the farms Fisantekraal (Phesantekraal) and Joostenberg Vlakte to the north and west of the Durbanville Hills.

The coastal regions of the South Western Cape were occupied in pre-colonial times by peoples who exploited marine resources for their livelihood. Human occupation of the coast is archaeologically reflected in the thousands of shell midden sites and rock shelter deposits that mostly date after the last 6000 years. This period is called the Later Stone Age. Halkett (2006) has confirmed the present of an LSA site on the farm Vaatjie (Deviation 1 of yellow corridor) containing stone tools, pottery and marine shell. LSA material has been recovered from Klipheuwel (Hart 2008), off the R304 and close to Development 2 (purple corridor).

About 2000 years ago the economic order changed with appearance of Khoekhoen herder groups in the Western Cape. These peoples included the CochoQua, whose territory stretched from Saldanha Bay to Vredenburg, and the ChariGuriQua or GuriQua who occupied the lower Berg River area, St Helena Bay and points around Piketberg. The Khoekhoen moved seasonally with their herds between coastal and interior grass lands because the Cape soils are deficient in certain minerals.

1.3.3 The colonial period

The landscape inland and to the north of Koeberg is dominated by agricultural land which has its origin in early Dutch East India company grants and quitrents (the Farm Duynfontein 34 being one of them). The freeburgher farmers adopted a similar system of land use to the Khoekhoen and continued into the modern era, when commercially produced feeds and supplements rendered this practice unnecessary.

The VOC established a number of outposts on the boundaries of the settlement to facilitate the exploitation of natural resources (wood, fish etc), trade cattle with the local Khoekhoen as well as control the trade between the freeburgher farmers and the local Khoekhoen. The farm Oliphantskop may be associated with mid 17th century VOC outpost, Keert de Koe c1659.

Some of the original farm boundaries can be still be identified within the contemporary cadastral layout of the area. However, along the southern portion of the west coast many of the early farms have become sub-divided and broken up by developments such as Atlantis Industrial Township. A number of notable farm names and associated structures have survived - Groot Olifantskop (Keert de Koe), Vaatjie, Brakkefontein and Donkergat. Within this area, research into the heritage of early colonial settlement is limited with only site identification surveys being completed to date.

The earliest colonial period history pertaining to the Koeberg study area is reflected in primary archival documentation. Hermanus Dempers became an 'inhabitant and owner of the 'Opstal' on the loan place named **Duynfontein**' in 1799, but it is unclear who the first grantee was. When the property was surveyed in 1834 for the quitrent grant, there is no indication of

houses or any built structures. The colonial period history of Duynefontein is interesting; however it does not reveal any particular significance in terms of associations with events, or important historical personalities.

The farm Kleine Oliphantskop (close to the site of the Omega substation under construction) was granted in 1698. The historical farm werf and setting of **Groot Oliphantskop** dates to slightly later. The T-shape of the main house indicates an origin in the Dutch occupation period of the 18th century (Orton & Hart 2004). Various additions and changes appear to have been made to the building, with most of them probably dating to the early 20th century. This structure can be regarded as the single most important heritage resource on the farm. Three outbuildings of significant antiquity are also present. Two of these barns have gables dated to the 1930's but it is clear that both buildings are much older, probably dating to the mid- to late 19th century. There are also two stone-lined wells and a farmyard cemetery on the property.

The proposed Koeberg transmission line runs through the area to the north/ northwest of the Tygerberg. The western portion of this area was significant in the early history of the refreshment station at the Cape particularly in terms of the cattle route between the Cape and the grazing lands along the west coast and the interior. By the time the refreshment station had been established in 1652, there was already a tradition amongst the Cape Khoekhoe of moving their herds of stock between the interior and coastal grazing lands¹, which was strengthened by trade opportunities from the 16th century onwards with passing ships on route from Europe to the East.

A number of VOC outposts were established in this area: Keert de Koe, established at the mouth of the Salt River in 1659, guarded the entry of the Khoekhoe into the Table Bay as well as attempting to control trade between the freeburghers and the Khoekhoe (Sleigh 1993). Other VOC outposts were established at Paarden Island (De Kijkuit c1659), Tableview (Rietvallei c1660), Bommelshok (c1676), Milnerton (Jan Biesjies Kraal c1685), Kuilsrivier (de Kuilen pre 1700). A number of cattle posts were later re-granted as farms, of which Phisantekraal and possibly Oliphantskop may be examples. Kuilsrivier is also situated on an early VOC outpost, which was sold to Olaf Berg in 1700.

While both routes cross the farm **Kleine Zoute Rivier**, Deviation 1 (yellow) will pass in close proximity to the farmhouse of Vaatjie which is located on Portion 84 of Kleine Zoute Rivier. According to survey diagrams, the Loan Place was granted in 1836 and crossed by a "main wagon route" (The Surveyor General).

The area to the north west of Kuilsriver and Durbanville (Halkett & Attwell 2009) was the site of a number of early land grants. The two red corridors diverge at the farm **Kuiperskraal** which was granted in 1702 and **Welgegund** which dates to 1743 (Guelke 1987). These are all early freehold farms and so there is archaeological potential and important historical layering of the landscape.

Although a few farms were granted in this area in the late 17th century (specifically Klein Oliphants Kop, Phesantekraal, Diemersdal and Mosselbank), the expansion of the settlement into this area dates to the early decades of the 18th century (specifically Brakkefontein, Kuiperskraal, Rondeboschje, Ligtenburgh, Hercules Pillar and Waarborg between 1702 and 1705, with Brakkenfont, Brakkekuil, Rust Plaats being granted between 1714 and 1715) (Guelke 1987). A series of signal cannons were used to call outlying farmers to Cape Town in times of trouble; a canon was situated on the farm Rondeboschje. Deviation 1 of the purple corridor crosses the farm of Houdenmond which dates to 1701 (Guelke 1987).

The occupation of the Cape by the British, first in 1795 and again in 1806, heralded British colonialism. The British actively expanded the settlement at the Cape, granting additional farms, establishing towns and encouraging immigration. During the early half of the 19th century, Durbanville was established as a town. During the same time, fishing villages were established eg at Blaauberg, although the practice of seasonal visits to the coastal areas by

farmers from the interior, is one that has its roots in the earlier migration practices of the Khoekhoe moving their herds on a seasonal round between the coast and the interior.

The end of the 19th century saw the formalization of the road network, development of the rail transport extending as far as Wellington. Small urban nodes also developed around the railway stations eg Kraaifontein. Associated with these infrastructural improvements, was an increase in urban development eg Milnerton, Brackenfell, Kuilsrivier and Parow.

In the 1920s this trend increased, with the residential areas of Milnerton and Parow expanding and additional suburbs laid out at Brooklyn, Rugby, Blauwbergstrand and Melkbosstrand. The area to the north/ northwest of the Tygerberg was still predominately agricultural, being mixed cattle and grain farms.

The period around the Second World War saw an increase in residential and suburban development with Tableview being laid out on the approximate location of the old Rietvlei outpost (Rennie & Scurr 2001). Joostenberg Vlakte was laid out as a small holding area in the 1940s, particularly for the cultivation of flowers (Winter 2002).

The declaration of the Group Areas Act and its related town planning strategies, resulted segregated towns and limited access to coastal resources for most of the inhabitants of Cape Town and surrounds. The modern suburbs within the study area were developed during this period as 'white residential' areas. Edgemoed, Platteklouf and Montevista are relatively recent residential developments dating to the last 20-odd years. In 1996 the Tygerberg Municipality was formed, incorporating the smaller municipalities of Goodwood, Parow, Durbanville and Bellville.

1.3.4 Cultural Landscape

The area between Koeberg and Omega falls within the Swartland region and the landscape is characterised as rural and agricultural. Settlement patterns are sparse. There are historical villages (Philadelphia) and old farm werfs (such as Vaatjie, Brakkefontein) dotted across the undulating landscape and a number of historic routes bisect the area Hart & Clift (2008). Almost certainly others will be identified during future studies.

The section from Kuiperskraal to Mount View passes along the northern edge of the Durbanville Hills. This area is characterised by undulating hills covered in wheat fields and pastures. Further to the south, the landscape is covered in vineyards and there are houses with Classic Cape Dutch architectural style and historical tree plantings. This area is significant for the intactness of landscape, its cultural continuity and the concentration of conservation worthy homesteads.

The final section from Mount View to Muldersvlei enters the Joostenbergs Vlakte, an area with a long history of small holdings. Halkett & Attwell (2009) have characterised the landscape around Joostenberg Vlakte as unused agricultural lands, an undulating topography with distant views of the mountains. They have described the area as having limited heritage and scenic significance although the landscape currently possesses a sense of openness particularly enhanced by the land slopes towards the south west from the R312.

The area in the immediate vicinity of the Stikland substation is located on the M23 (Bottelary Rd). The landscape around the substation is described as undeveloped farms and small holdings.

2. Methodology for study

This study has been commissioned as a scoping assessment that attempts to predict the possible range of impacts and identify issues in terms of accumulated knowledge of the area. The source of information that is used for this process is based on historic maps and unpublished reports on the history of the area.

A more detailed survey (which will take place during the EIA phase) will be required for a more complete understanding of the historical settlement in the area.

2.1 Restrictions and assumptions

The alternative routes have not been subjected to a site visit, however the area is well known to the team who have done previous work. Fieldwork will be conducted during the course of the full EIA. The primary heritage resources that represent the issues that will need to receive detailed attention during the EIA phase are determined to be as follows:

- Palaeontology. It is assumed that there may be palaeontological remains, such as that recovered from Duinefontein, in other areas.
- Pre-colonial archaeology (Stone Age). Scatters of ESA, MSA and LSA stone tools at sites such as Vaatjie, Fisantekraal and Klipheuwel Medallion suggest that similar material may occur elsewhere.
- Colonial period and historic archaeology – historic farm houses, wagon tracks, early roads, etc. It is assumed that some of the historic farmsteads which have been identified on the survey diagrams for the area (such as Rondeboschjes Berg), still exist and retain some of their original fabric. Their status will have to be determined through physical inspection.
- The cultural landscape – in particular the ability of the landscape to accommodate up to two additional 400kV transmission lines in terms of the heritage values and scenic qualities of the area will need to be investigated through a site inspection. It is assumed that the impact of the lines, particularly along Deviation 1 (red) and Deviation 2 (purple) will be significant.

2.2 Legislative context

The basis for all heritage impact assessment is the National Heritage Resources Act 25 (NHRA) of 1999, which in turn prescribes the manner in which heritage is assessed and managed.

Loosely defined, *heritage is that which is inherited*. The National Heritage Resources Act 25 of 1999 has defined certain kinds of heritage as being worthy of protection, by either specific or general protection mechanisms. In South Africa the law is directed towards the protection of human made heritage, although places and objects of scientific importance are covered. The National Heritage Resources Act also protects intangible heritage such as traditional activities, oral histories and places where significant events happened. Generally protected heritage which must be considered in any heritage assessment includes:

- Cultural landscapes
- Buildings and structures (greater than 60 years of age)
- Archaeological sites (greater than 100 years of age)
- Palaeontological sites and specimens
- Shipwrecks and aircraft wrecks
- Graves and grave yards
- Living heritage

Section 38 of the NHRA requires that Heritage Impact Assessments (HIA's) are required for certain kinds of development such as rezoning of land greater than 10 000 sq m in extent or exceeding 3 or more sub-divisions, or for any activity that will alter the character or landscape of a site greater than 5000 sq m. "Standalone HIA's" are not required where an EIA is carried out as long as the EIA contains an adequate HIA component that fulfils Section 38 provisions.

3. Findings

A desktop review of the literature suggests the following potential impacts on heritage resources.

3.1.1 Palaeontology

The area around the existing Koeberg nuclear power station was subjected to detailed studies in the 1970s and the palaeontological potential of the area resulted in a number of scientific studies cumulating in significant discoveries. These have been published in academic journals. The palaeontological potential of the area enjoys high significance.

3.1.2 Nature of impacts

It is not anticipated that the construction of the towers will impact on the below ground palaeontological heritage to any significant degree as their footprint is quite small. However, service roads may extend into fossil rich geological strata which rise to the surface in some areas. There are at least three buried horizons (ancient land surfaces) representing different ages in the Pleistocene and Holocene – and these may be uncovered and material may be destroyed.

3.1.3 Extent of impacts

The construction of the transmission lines will impact on relatively small areas of the potential fossil rich area and the extent of the impact is therefore likely to be local.

3.2 Pre-colonial archaeology

The association of Early Stone Age implements with fossil rich bone accumulations is comparatively rare in archaeological terms, and the Duinefontein 2 site is therefore highly significant. Very little archaeological research has been done in the rest of the affected area and we are therefore limited in our ability to predict possible impacts. We know of ESA, MSA and LSA stone tools scatters on a number of farms in the region but these have all been identified as a result of development pressures and none have been subjected to rigorous scrutiny.

3.2.1 Nature of impacts

Archaeological sites, unlike palaeontological deposits, are generally limited in size and there is therefore greater potential for a pylon to be constructed on a site, resulting in its destruction. Similarly, the construction of service roads may destroy a site.

3.2.2 Extent of impacts

Archaeological sites such as those at Duinefontein 2 are considered to be of national importance and their destruction would impact negatively on the National Estate. Small, localised scatters such as those at found across the area, are of local interest but a permit from SAHRA will still be required for their destruction and mitigation may be required if they are considered to be in context.

3.3 Colonial period heritage

Settlement of the landscape during the colonial period commenced during the 18th century with the establishment of loan farms close to rivers and springs, but rapidly expanded until all the land was sub-divided and under private ownership. Some of the old werfs in this area, such as Groot Oliphantskop, Brakkefontein and Vaatjie retain elements of their 19th century fabric such as farm houses, sheds, wells and family cemeteries. The early maps also indicate the location of old wagon tracks, however it is unlikely that any of these have survived agricultural practices. There are numerous old loan farms which will be traversed by the proposed transmission lines

3.3.1 Nature of impacts

The construction of transmission lines and service roads generally avoid above ground structures such as houses and they are unlikely to be physically impacted. However, sometimes colonial period heritage sites are not easily identifiable (i.e. the graves of farm workers may lack headstones) and they are accidentally destroyed during construction of

towers or roads.

3.3.2 Extent of Impacts

The impact of destruction of heritage sites from the historical period often extends well beyond the immediate site. View of power lines from vantages such as historic places and known scenic areas can result in significant changes in sense of place. Physical destruction of places of memory such as a cemetery may halt development for a considerable time period and impact on the attitude of local residents toward the development.

3.4 Cultural landscape and sense of place

Primarily wheat cultivation is practiced in the area between the Omega substation and Joostenberg Vlake, but large parts of the landscape are still under indigenous and alien vegetation with some areas utilized for grazing. There has therefore been limited transformation of the rural landscape with isolated farmsteads scattered among undulating wheat lands. Further south the Durbanville cultural landscape is characterised by historical farms first granted as early as the 17th century – predominantly as stock farms, a sparse settlement pattern and a surrounding landscape of small holding subdivision. To the south, and closer to the urban development of Durbanville and Kuilsrivier, are many small holdings with vineyards. Although some distance from the proposed line options, the Tygerberg Hills area is considered to be an aspect of the “Cape Winelands Cultural Landscape” which has been mooted for declaration as a National Heritage site.

3.4.1 Nature of impacts

In terms of both visual impact on the cultural landscape and sense of place, transmission lines on both red corridor alternatives will be highly intrusive. There are already existing transmission lines in the southern corridor, and this is preferred to the northern corridor which crosses a more pristine landscape.

With regard the three alternative purple corridors, the preferred route along the Kuilsrivier and eastern slopes of the Durbanville Hills will travel along a river corridor in densely settled suburban areas. It is possible that the impact of the transmission lines will be absorbed by the dense clutter of the environment. However, it is also likely that there will be significant resistance from both residents and conservationists due to the impact on the Kuilsrivier system. Deviation 1 crosses a number of small holdings and may be more visually intrusive, particularly to motorists, as this landscape is not as fragmented. Deviation 2 approaches the Muldersvlei substation close to the existing route. It is preferable that the lines cross the N1 to the west of the existing lines. The historic farm of Joostenberg is located to the east, and no further encroachment of transmission lines should be permitted.

3.4.2 Extent of impacts

Cultural landscapes are highly sensitive to accumulative impacts and for this reason adding additional transmission lines to existing routes may be as intrusive as constructing them in a new area. This would only be resolved through a visual impact assessment.

4. Mitigation and conservation

Heritage sites, by their nature, are generally not renewable and once destroyed cannot be recovered. For this reason, a cautious approach is taken and it is recommended that highly significant sites are conserved (no-go option), and if this is not possible, that mitigation is undertaken.

4.1 Palaeontological Heritage

Palaeontologists generally welcome the opportunity to examine new construction holes and road cuttings as buried, fossiliferous geological strata may be exposed. It is recommended that

a palaeontologist make spot checks once construction commences.

4.2 Archaeological Heritage

Very few areas along the various alternative routes have been sampled through survey work and virtually nothing is known of the archaeology, although it is likely to be insignificant in areas subjected to agriculture and urbanisation. An archaeological impact assessment will be required for the service roads, and spot checks may be required for the construction of the towers.

4.3 Un-identified archaeological material, fossils and fossil bone

All archaeological material is protected by Section 38.5 of the National Heritage Resources Act and it is an offense to destroy material. If archaeological material (including graves) is uncovered, all work must cease in that area, while the relevant heritage authorities are notified. Rescue mitigation may be required, for the cost of the developer.

4.4 Built Environment

While it is unlikely that the transmission lines or access roads will be constructed in such a way that they impact directly on existing buildings (farm houses, sheds, kraals, wells, cemeteries, etc), the visual impact of the lines on these structures needs to be evaluated and mitigated if this is required. Mitigation may involve identifying alternatives that have less impact.

4.5 Cultural landscape and sense of place

It is recommended that a visual impact assessment is conducted and that the practitioner works closely with the heritage practitioner to assess the various routes and to determine the impact of the transmission lines on the cultural landscape (including historic werfs and scenic routes).

5. Conclusions

This desk top study suggests that in terms of palaeontology and archaeology, significant sites do exist and may be negatively impacted by the towers and associated infrastructure. Impact assessments, undertaken during the EIA phase, will identify possible red flag areas and the mitigation measures suggested in this report may need to be refined.

In terms of the built environment and cultural landscape, it is recommended that a visual impact assessment is conducted and that the results are integrated with the heritage study.

In terms of alternatives, the use of existing servitudes is strongly supported as opposed to further incursion into new countryside.

In terms of the information available at this time, no fatal flaws are anticipated.

5.1 Further work

The EIA phase study needs to fulfill the requirements of heritage impact assessment as defined in section 38 of the NHRA. This means that the assessment has to cover the full range of potential cultural heritage as defined by the term "culture" contained in the National Heritage Resources Act 25 of 1999.

The HIA will assess the significance of the heritage resources along the various alternative routes. Proposed routes of linear infrastructure (access roads, position of the towers) will need to be ground-proofed to establish the impacts of the proposed activity and determine where mitigation (if any) will be required.

In terms of cultural landscape, the EIA process will need to include a visual impact assessment.

Follow up heritage work such as monitoring of excavations or archaeological sampling may be required as part of an environmental management plan depending on the findings of the EIA.

6. References

Almond, J. & Pether, J. 2008. Palaeontological Heritage of the Western Cape. Interim Technical Report for Heritage Western Cape.

ACO. 1998. Phase 1 Archaeological Assessment of a portion of Main Rd 174 N1 to Klipheuwel.

Bulpin, TV. 2001. Discovering Southern Africa

Cruz-Uribe, K., Klein, R.G., Avery, G., Avery, M., Halkett, D., Hart, T., Milo, R.G., Sampson,

C.G. & Volman, T. 2003. Excavations of buried Late Acheulian (mid-Quaternary) land surfaces at Duinefontein 2, Western Cape Province, South Africa. *Journal of Archaeological Science* 30:559-575.

Duminy, JP. 1979. Twilight over the Tygerberg. Salt River: Mills Litho (Pty) Ltd.

Fransen, H. 2004. A guide to the Old Buildings of the Cape. Cape Town: Jonathan Ball Publishers

Geulke, L. 1987. The southwestern Cape Colony 1657-1750. Freehold Land Grants.

Halkett, D. 2006. A heritage scoping study of proposed sand mining on the farm Kleine Zoute Rivier, Portion 84, near Atlantis.

Hart, T & Clift, H. 2008. Draft EMF for District B & C: City of Cape Town.

Halkett, D. & Attwell, M. 2009. Heritage and Archaeological Impact Assessment of the proposed Garden City New Town Development on Portions 3, 4, 7, 8, 15 and 19 of Farm 724 and Portion 3 of Farm 168, Kraaifontein.

Hart, T. 2008. Archaeological Impact Assessment of Portion 27 of the Farm Joostenberg Vlakte 727.

Hart, T., Attwell, M. & Orton, J. 2008. Heritage Impact Assessment for the proposed subdivision of the remainder of Farm Radio 918, Klipheuwel, Malmesbury Magisterial District, Western Cape.

Kaplan, J. 1996. Archaeological and cultural impact assessment: Omega Substation. Unpublished report prepared for Ninham Shand Consulting Engineers. Agency for Cultural Resource Management, Riebeeck West.

Klein, R.G., Avery, G., Cruz-Uribe, K., Halkett, D., Hart, T., Milo, R.G. & Volman, T.P. 1999. Duinefontein 2: an Acheulian site in the Western Cape Province of South Africa. *Journal of Human Evolution* 37: 153-190.

Orton, J. & Hart, T. 2004. Heritage scoping study of the farm Groot Oliphantskop (Farm 81) for the proposed Omega substation, Western Cape.

Orton, J. 2008. Heritage statement for Erf 1691 and Erf 1740, Fisantekraal (Durbanville).

Unpublished report prepared for Guillaume Nel Environmental Consultants. Archaeology Contracts Office, University of Cape Town.

Rennie Scurr Ardendorf Architects & Peter Buttgens Architects 2005. Tygerberg Heritage Mapping Project. Preliminary Survey. Unpublished report prepared for the Heritage Resources Section of the Environmental Management Branch of the City of Cape Town.

The Surveyor Generals Office, Cape Town.

Sleigh, D. 1993. Die Buiteposte. Cape Town: HAUM

Winter, S. 2002. Oosterberg Heritage Mapping Project. Unpublished report prepared for the Heritage Resources Section of the Environmental Management Branch of the City of Cape Town.

Impact of the proposed Koeberg transmission lines on Heritage Resources

Segment 2:

This segment cuts through a cluster of freehold farms granted in the early decades of the 18th century and the following historic homesteads may be impacted:

Farm name	Proposed grading	Comment
Kuiperskraal	3A or 3B	Granted in 1702 to Hendrick Moller/Muller. Farm complex dates to late 18 th century, but possibly older fabric (Fransen 2004:317).
Sondagsfontein	3B	Originally granted as Rondebosje aan de Tygerberd in 1705 to Elsje van Suurwaarden. The main dwelling is T-shaped, dates to 1743, but has been much altered, but the outbuildings are still in tact (Buttgens 2005; Fransen 2004:318).
Welgegund	3B	c1743 (Buttgens 2005).
Vrymansfontein	3C	Farm dates to c1739. Older cores evident, but buildings much altered (Buttgens 2005).
Spes Bona	3C	Subdivision of Vrymansfontein (Buttgens 2005)
Rondebossieberg	3B	Consisting of 18 th century main dwelling and late 19 th century outbuildings, although possibly with older cores (Buttgens 2005).

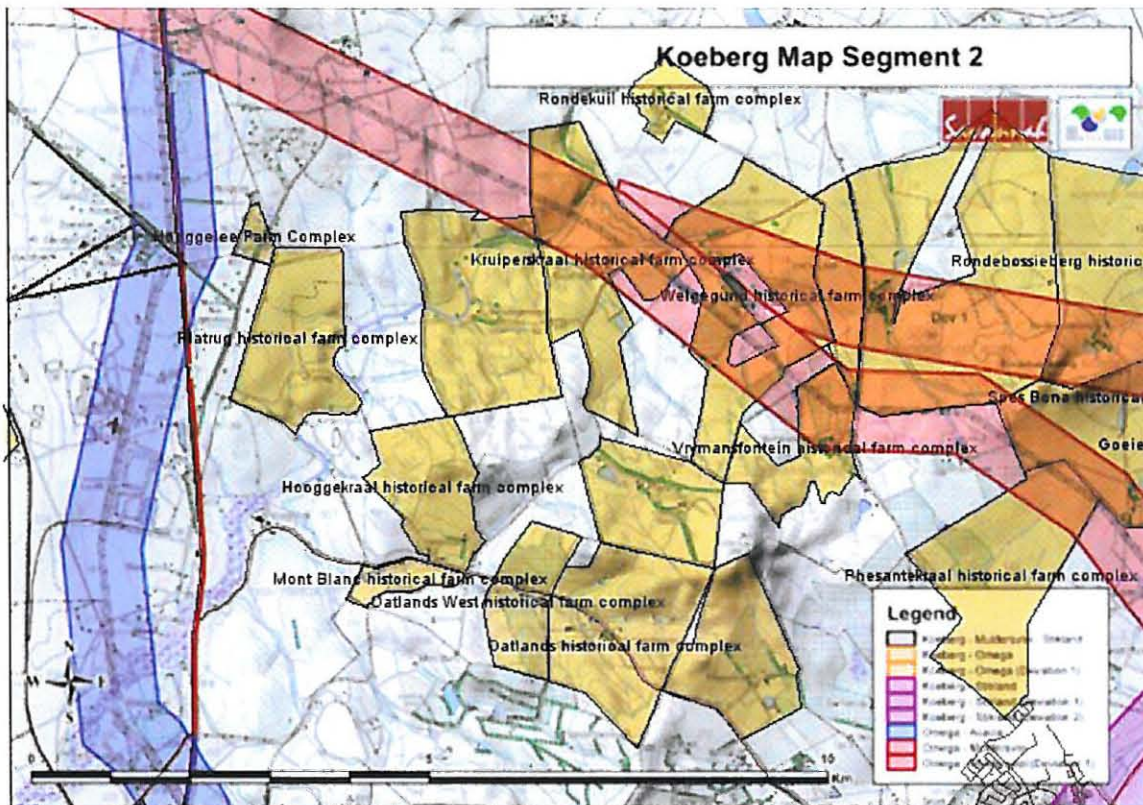


Figure 2: Overlay of the City of Cape Town's Heritage Inventory Erven with the proposed transmission lines. The areas shaded yellow represent erven that have been identified by the CoCT Heritage Resources Department as having heritage value.

Segment 3

This segment cuts through a cluster of freehold farms granted in the early decades of the 18th century and the following historic homesteads may be impacted:

Farm name	Proposed grading	Comment
Goeieverwachting	3C	(Buttgens 2005)
Grootfontein	Ungraded	Tygerbeg Heritage Mapping Project (Buttgens 2005).
Lichtenburg		
Matjieskuil	2	(Winter 2002) – not certain this is the correct farm.

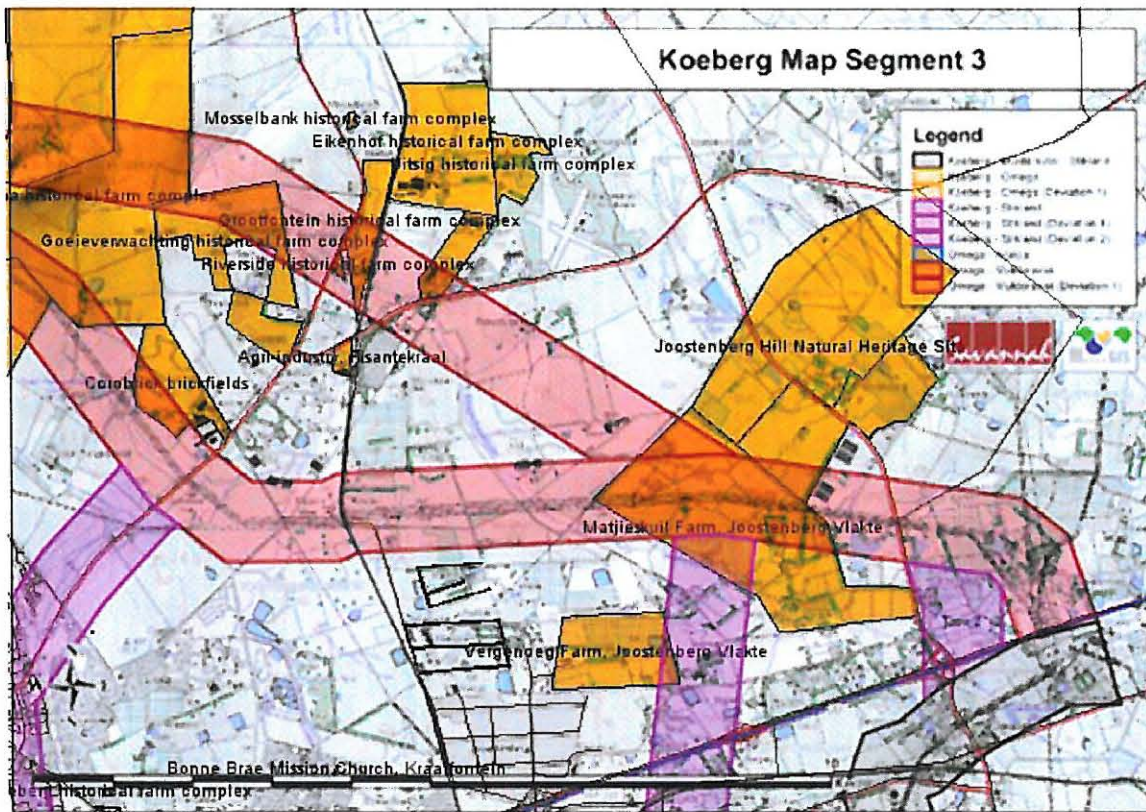


Figure 3: Overlay of the City of Cape Town's Heritage Inventory Erven with the proposed transmission lines. The areas shaded yellow represent erven that have been identified by the CoCT Heritage Resources Department as having heritage value.

Segment 5

Stikland line

The proposed Stikland line lies within the Kuilsrivier river corridor. This is a significant green corridor and has been allocated a grade of 3A (Winter 2002: There is already a transmission line in this corridor and the accumulated visual impact needs to be investigated).

Stikland Deviation 1

The City of Cape Town's Heritage Inventory database appears not to extend beyond Brackenfell. This line does run through the southern extent of the proposed Joostenberg Vlakte cultural landscape which includes a number of early farms.

Farm name	Proposed grading	Comment
Joostenbergvlakte Cultural Landscape	3C	(Winter 2002)
Houden mond/Houden bek (now Bellevue)	2 (PHS)	Granted in 1701 to Christoffel Groenewald. T-shaped house built c1803.

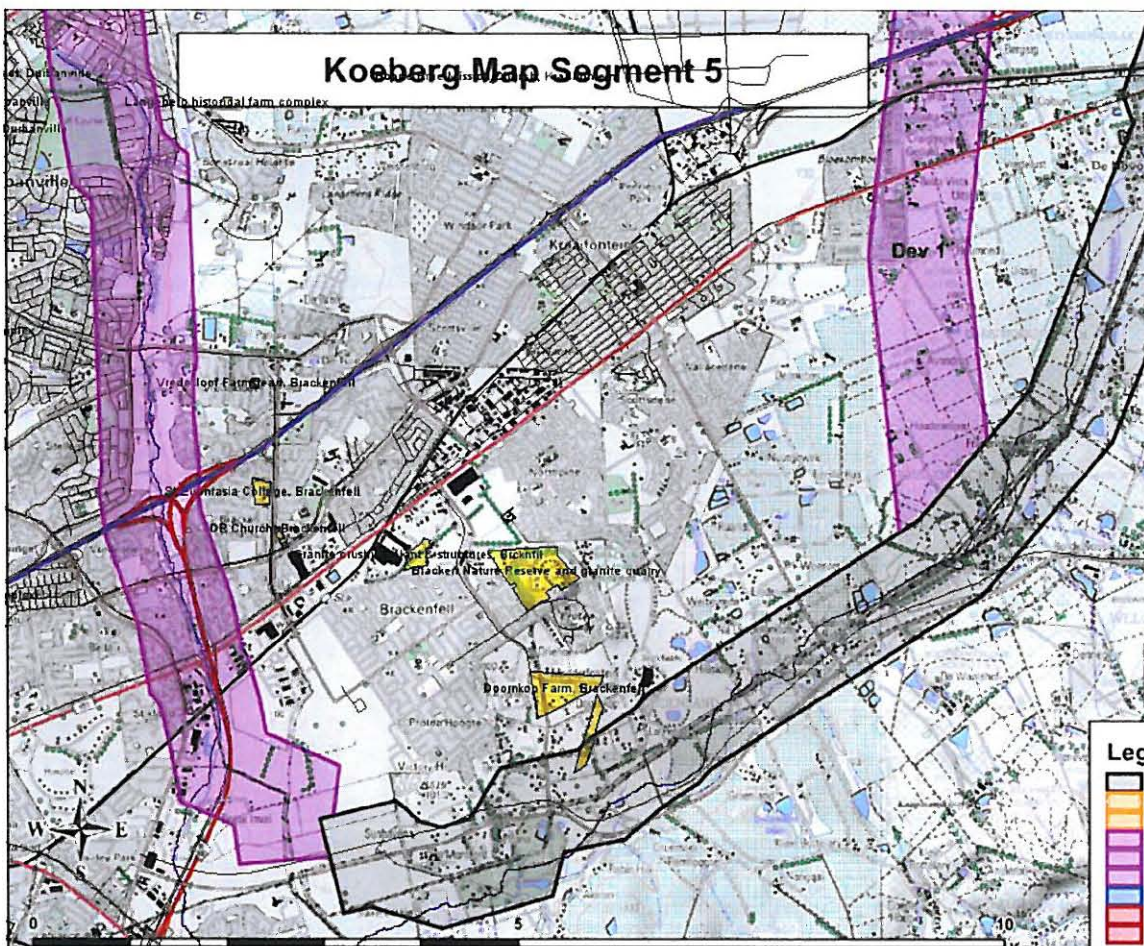


Figure 4: Overlay of the City of Cape Town's Heritage Inventory Erven with the proposed transmission lines. The areas shaded yellow represent erven that have been identified by the CoCT Heritage Resources Reserve Department as having heritage value.

HERITAGE RESOURCES	CHARACTERISTICS	HERITAGE SIGNIFICANCE	HERITAGE ISSUES & CONCERNS & COMMENTS
Koeberg Farms Cultural landscape	<ul style="list-style-type: none"> • Remote landscape • Historical farms dating to 17th century – predominantly stock farms • Relatively poor ecological potential • Sparse settlement pattern illustrated by Dassenberg, Rondeberg, Langerug, Klipvlei and Mesech historical homesteads, • Surrounding landscape of small holding subdivision 	<ul style="list-style-type: none"> • Historical layering • Historical archaeological potential • Significance of individual farmstead 	<ul style="list-style-type: none"> • Retention of sense of sparse settlement pattern and remoteness should be maintained • Development based on large stands with a focus on maintaining open spaces • At minimum of Notification of Intent to Develop required • Special attention would be built environment and visual impact • Low risk archaeological and palaeontological potential
Areas of archaeological potential	<ul style="list-style-type: none"> • The coastal zone: including dune field between Melkbosstrand and Blauwbergstrand, Duynefontein and potentially shell middens against every rocky point along this coastline. 	<ul style="list-style-type: none"> • Cenozoic coastal palaeontology • Archaeological and palaeontological • Scenic • Nature Reserve 	<ul style="list-style-type: none"> • Protected in part by Nature conservancy • Threat of increased coastal industrial and residential property development. Requires full HIA with palaeontological and archaeological emphasis
	<ul style="list-style-type: none"> • Flat, featureless landscape partially incorporating Atlantis industrial area 	<ul style="list-style-type: none"> • Early farm at Vaatjie and Brakkefontein, however the landscape has become fragmented and alien invested • Low to moderate archaeological and palaeontological risk 	<ul style="list-style-type: none"> •
Scenic Routes R307	<ul style="list-style-type: none"> ▪ Historical tree avenue ▪ Scenic route 	<ul style="list-style-type: none"> ▪ Historical access route from the Cape to the Saldanah 	R307 though Atlantis retains historical tree plantings, but surrounds very degraded.

		Bay coastal areas ▪ Association with Mamre originally as VOC outpost and later as Moravian Mission Station	Potential for improvement
--	--	---	---------------------------