

KOEBERG INTEGRATION PROJECT

Heritage Impact Assessment for the construction of three 400kV transmission lines between Koeberg 2 and the Omega substation, Cape Town Metro, Western Cape (Ref: 12/12/20/1218)

Prepared for

Savannah Environmental (Pty) Ltd

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Prepared by:

Tim Hart, Lita Webley Harriet Clift & Liesbet Schietecatte

c/o Archaeology Contracts Office

Dept Archaeology UCT

7700

Email: Tim.Hart@uct.ac.za

Executive summary

The Archaeology Contracts Office of the University of Cape Town was appointed by Savannah Environmental (Pty) Ltd of behalf of Eskom to undertake Heritage Impact Assessment for the construction of three 400kV transmission power lines between the proposed Koeberg 2 power station and the Omega substation, a distance of 11 km.

This study suggests that in terms of palaeontology and archaeology, that although significant material does exist within the Strandveld zones, the threat to this material is limited as the sub-surface disturbance caused is limited to a few square meters per tower. The archaeological sites identified in the Groot Oliphants Kop area, mostly lie in modified landscapes and are of low significance.

In terms of the built environment and cultural landscape, there will be no physical impacts to heritage structures, but some increase in the visibility of transmission lines in the existing corridors. Provided that deviation 1 is not implemented, the only heritage structure that will be affected by visual impact is Oliphants Kop which is the site of already authorized activity in the form of the Omega sub-station under construction.

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

No fatal flaws have been identified.

Key recommendations

Palaeontology and buried archaeology – monitoring of tower footing excavations required, Eskom to contract an archaeologist or palaeontologist before construction to agree on a monitoring plan.

Surface archaeology – archaeologist to participate in undertake *walk-down* of near final alignment to “steer” impacts. Eskom to contract archaeologist to preferably work with line design team.

Impact to Oliphants Kop farm - Eskom to consult visual specialist/landscape architect to design transmission line routes for minimal impact to heritage buildings.

The use of the existing corridor is favoured over Deviation 1 which will cause increased landscape impacts with reference to both Oliphants Kop and Vaatjie heritage structures.

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 archaeologist with 10 years working experience at the ACO offices.

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
PHS	Provincial Heritage site

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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 heritage impact assessment for the construction of three 400kV transmission lines between the HV-yard at the proposed new Nuclear Power Station site (known as Koeberg 2) and the Omega Substation, a distance of approximately 11 km.

This proposal has triggered a full EIA process, this report being the heritage component of this study. There are two alternatives for the line route (Figure 2) and these are discussed more fully below.

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:

- Duynfontein (north of 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 in order to integrate the power station into the electricity grid.

1.1.1 The proposal

It is proposed to construct three 400kV transmission power lines between Koeberg 2 and the Omega substation (11 km). The preferred route follows the existing power lines. The alternative route (Deviation 1) travels due east before travelling south alongside the R307 to the Omega substation. The Omega substation is located on the farm Groot Oliphantskop (Farm 81).

The associated infrastructure which will accompany the installation of three 400kV transmission lines from Nuclear 2 to Omega will include the following activities:

- Construction of towers
- Service roads

1.1.2 The Scoping Study

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

- Significant potential areas of Cainozoic and Pleistocene palaeontology;

- Significant sites of Pleistocene archaeology and with less information available on the Holocene archaeology of the routes;
- Historical farmsteads such as Vaatjie (deviation 1) and Groot Oliphantshoek.
- Cultural landscapes characterised as rural agricultural and scenic routes such as the R307.

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

As a preliminary assessment it was recommended that the transmission lines follow the path of the existing transmission lines (southern route) as opposed to constructing new lines across unspoilt landscape (deviation 1). However, the cumulative impact of an additional three transmission lines will need to be assessed by a visual impact specialist.

2. Methodology for study

This study has been commissioned as the heritage component of an EIA. It assesses the identified range of impacts in terms of accumulated knowledge of the area. The source of information that is used for this process is based on scientific publications related to archaeological work undertaken on the farm Duynfontein as well unpublished reports on the history of the area. A survey of heritage resources has been conducted and *visual heritage indicators* (conservation-worthy buildings and places celebrated as heritage) identified and mapped. The study area has been subjected to comprehensive archaeological assessments in the past (a complete survey of the existing Koeberg – Omega servitude was completed by Hart and Lanham (Hart 2008) while Hart and Orton completed a comprehensive assessment of the proposed Omega site and surrounds at Groot Oliphantskop in 2004. In 2006 Halkett and Orton conducted a survey of archaeological sites on Vaatjie Farm.

The outcomes of the various specialist studies will dictate the most suitable servitude alignments within the 1km wide corridors.

Since the study area is approximately 1 km in depth, a final route walk-down will take place to make sure that any surface archaeological sites are identified and avoided during construction.

2.1. Assessing heritage in the context of transmission lines

The assessment of transmission lines in terms of heritage is methodologically unlike other impact assessments that involve assessing physical landscape disturbance. Since typically transmission lines evoke the greatest change to a landscape above the ground surface, the emphasis is to assess impacts to heritage that is visually sensitive. By this we mean places or structures that are publicly celebrated as heritage or have the potential to be publicly celebrated as such. Historic farms, iconic landscapes and views, places of conflict or celebration are therefore a focus of this assessment.

The following guiding principles are used;

In open landscape during daylight hours transmission lines (400 kV) on self-supporting towers are visible (but not necessarily intrusive) from a distance of up to 5 km. Figure 3 depicts transmission lines from a distance of 2 km.

CNdV and DEAP (2006) in their development of guidelines for the establishment of wind energy facilities in the Western Cape have suggested that a buffer zone of 1 km be established around significant heritage sites to minimise the change to “sense of place” (this is sometimes difficult to achieve in parts of the Western Cape such as the winelands where celebrated heritage places are common on the landscape). The point at which a transmission line may be perceived as intrusive or offensive, is a subjective judgment, however in our experience lines within 1 km of a reference point are noticeable but not necessarily intrusive. After 450 m the lines become increasingly intrusive and become visually dominating after 100 m (depending on topography).

The presence of pre-existing transmission lines in an area serves as a mitigatory factor (rather than a cumulative negative impact) in terms of establishing new transmission lines in the same area. In other words electrical infrastructure clutter is best confined to existing areas or corridors of vertical visual disturbance, rather than introducing new vertical visual disturbance to undisturbed landscape.

While archaeological and palaeontological sites share the potential to be publicly celebrated heritage places, they are less visible than structures in a landscape and are therefore less celebrated as tangible heritage with visual sensitivity. Since the impact on the land surface caused by transmission lines is very small, and reasonably adjustable at the level of final route selection, this study has focused on those aspects of heritage that are less easy to negotiate in terms of the proposed activity, namely heritage sites that are visually sensitive.

The direct impact on archaeological and palaeontological sites cannot be addressed at the EIA phase in specific terms as the servitude for the transmission lines first has to be situated within the 1 km wide corridor. Direct assessment of these impacts can only be determined at the line design and walk-down phase of the proposed activity. Mitigation can normally be achieved by micro-adjustment of tower positions and exclusion of sensitive areas.

2.2. Restrictions and assumptions

- Palaeontology. It is assumed that palaeontological remains recovered from Duinefontein may be uncovered in other areas.
- Saturation archaeological survey of the 1 km wide study area is unfeasible due to the large amount of land involved.
- It is assumed that the final route *walk-down* will allow for the protection of visible archaeological material through tower position adjustment.
- Access to the Kappa – Omega heritage study is restricted by the author of the study (Ms M. Patrick of Cape Archaeological Survey).

2.3. 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 HIAs" are not required where an EIA is carried out as long as the EIA contains an adequate HIA component that fulfils Section 38 provisions.

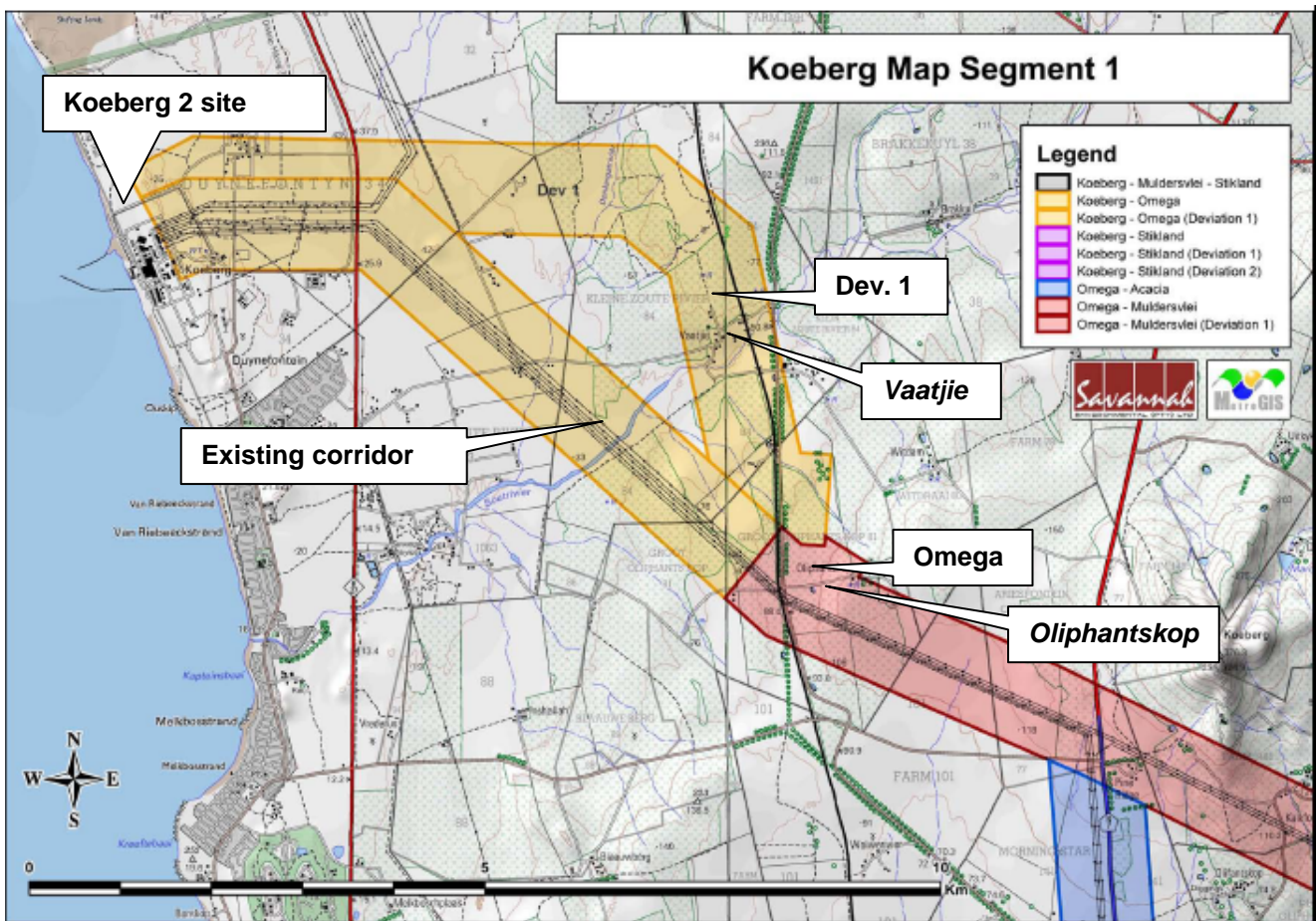


Figure 1 The orange areas indicate the proposed corridors which are the subject of this study.

3. Heritage indicators within the receiving environments

The scoping study identified the existing servitude as the preferred option for the construction of the additional three transmission lines. The alternative option, known as deviation 1 was also assessed for comparative purposes. The corridors under assessment which will receive the ~165 m wide Eskom servitude are 2 km in width.

3.2. Koeberg 2 – Omega (The preferred route)

The transmission lines commence at Koeberg-2 which is located on the farm Duynfontein 34, some 35km north of Cape Town on the Atlantic coast. The landscape in the vicinity of Duynfontein 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 or utilized in part for stock grazing. There is an existing servitude of ~150 m in width that accommodates the four existing transmission lines on self-supporting towers. This is kept clear of large vegetation and structures in accordance with

Eskom's servitude requirements.

3.2.1. Palaeontological heritage

The transmission lines will commence at the proposed Duinefontein nuclear site known as Koeberg 2. Two occurrences of Pleistocene fossil bone were found on the farm. 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. The heritage component of the draft Environmental Impact Report for the proposed new nuclear power station included the findings of a comprehensive survey conducted by the ACO on Eskom owned property (Hart 2010). It was determined that Pleistocene fossil occurrences were common in the coastal area to the north of the existing power station. Indications are that this material, which is visible in any place where the ferricrete horizons are exposed, will be encountered in excavations for bases of towers in areas to the west of the R27. Unfortunately, at present the exact location of the Koeberg 2 Nuclear Power Station is yet to be determined.

3.2.2. 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 fossilised animal bones dating between 400 000 and 250 000 years ago have been excavated (Klein et al 1999; Cruz-Urbe et al 2003). This site enjoys international significance. Recent surveys by Hart 2010 have shown that this early archaeological material tends to occur on un-transformed landscape between the coast and the Malmsbury shale underlain soils of the wheatlands – an area which will be traversed by the proposed transmission lines as they cross the Sandveld belt between Koeberg 2 site and the R27.

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.

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) containing stone tools, pottery and marine shell, however recent surveys by Hart (2010) has shown that within the Koeberg Private Nature Reserve, Late Stone Age pre-colonial material is sparse. This

condition applies to the existing servitude (the preferred option) until Omega is reached where a number of Late Stone Age sites have been recorded.

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.

3.2.3. The colonial period

The landscape inland of Koeberg is dominated by agricultural land which has its origin in early Dutch East India company grants and quitrents (the Farm Duynefontein 34 being one of them). The freeburgher farmers adopted a similar system of land use to the Khoekhoen and continued transhumant agriculture 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, and to the south outside the study area, 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 **Duynefontein**' 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. Hart (2010) found no evidence of any surviving historical archaeological material or structures with the Koeberg Nature Reserve, or along the preferred alignment.

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** (see Appendix A) date to slightly later. The original 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. Construction of the Omega Substation has already been authorised, having been subject to a separate environmental impact assessment (Eyethu 2005), however it must be noted that the substation is to be located some distance away from the farm yard which is to be conserved, and in all likelihood, continue to operate as a dairy/wheat farm.

Koeberg 2 – Omega Deviation 1: While both routes cross the farm **Kleine Zoute Rivier**, Deviation 1 will pass in close proximity to the farmhouse of Vaatjie, a 19th century farmhouse of local significance 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).

3.2.4. Cultural Landscape

The area between Koeberg and Omega falls within the West Coast - Swartland region and the landscape is characterised as rural and agricultural. 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). Generally, however the area does not enjoy the same status as, for example, the Cape Winelands area due to the rather fragmented quality of the landscape – tracts of alien overgrown land, patches of Strandveld Fynbos along the coast, a number of neglected farms used for little more than sand mining. The presence of the Koeberg NPS and the lines that already cross the landscape give this area a slightly industrial feel.



Figure 2 Vaatjie main house (left) and outbuilding (right).

4. Assessment of Impacts

4.2. Activities that will affect the heritage environment

The transmission lines 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 lines are 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.

The following potential impacts on heritage resources have been identified.

4.2.1. 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 which have since been published. The status of this material which was re-affirmed by Hart (2010).

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 the tower footprint are limited to a few square meters of disturbance.

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 highly local.

NATURE OF IMPACT:		
	Without mitigation	With mitigation
EXTENT	Local (1)	Local (1)
DURATION	Long term (4)	Long term (4)
MAGNITUDE	Small (1)	Small (1)
PROBABILITY	Unlikely (2)	Unlikely (2)
SIGNIFICANCE	Low (12)	Low (12)
STATUS	- Negative	+ Positive

REVERSIBILITY	Non-reversible	Non-reversible
IRREPLACEABLE LOSS OF RESOURCES?	No	No
CAN IMPACTS BE MITIGATED?	No	Yes
MITIGATION: There is positive benefit to be derived from checking excavations for tower footings for fossil material during construction. This allows development of spatial information that can feed into both research and future EIA processes.		
CUMULATIVE IMPACTS: The cumulative impacts are negligible as the size of the impact from the tower footings vs the size of the resource is negligible.		
RESIDUAL IMPACTS: N/a		

Table 1 Summary of impacts to palaeontological heritage

4.2.2. 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. Only 3 very low grade archaeological sites have been recorded in the proposed direct transmission line corridor between the R27 and the approach to Omega (Hart 2008), however archaeological sites have been documented at Groot Oliphants kop farm (Hart and Orton 2004). Impacts to these can be avoided in totality provided that tower footings are carefully placed. Details of this material are included in Appendix A.

Deviation 1. There are large dispersed scatters of Early Stone Age Material on the farm Vaatjie. Depending on where the towers are constructed, limited impacts are expected in the form of displacement of archaeological material.

Nature of impacts: The proposed activity may cause localised exposure and displacement of archaeological material, particularly within the Koeberg Nature Reserve, west of Omega and potentially in parts of deviation 1.

Extent of impacts: Given that the distribution of archaeological sites is generally sparse, and the fact that the chances of tower footings impacting them are low, only highly localised impacts at tower footings and also the service road alignment are likely, and most may through appropriate mitigation, be avoided altogether.

NATURE OF IMPACT: Impacts to archaeological material could involve localised displacement of material at tower footings or lateral disturbance of material by vehicles and service roads.		
	Without mitigation	With mitigation
EXTENT	Local (1)	Local (1)

DURATION	Long term (4)	N/a
MAGNITUDE	Small (1)	Small (1)
PROBABILITY	Unlikely (2)	Unlikely (2)
SIGNIFICANCE	Low (12)	Low (6)
STATUS	Neutral – negative	Positive
REVERSIBILITY	Non-reversible	Non-reversible
IRREPLACEABLE LOSS OF RESOURCES?	No	No
CAN IMPACTS BE MITIGATED?	Yes	Impacts can be avoided.
MITIGATION: An archaeologist should be involved with line design/walkdown phase to make sure that service roads and footings do not impact any of the 6 known archaeological sites in the corridors. Excavations for footings should be checked, especially within the Koeberg Reserve.		
CUMULATIVE IMPACTS: N/a		
RESIDUAL IMPACTS: N/a		

Table 2 Summary of impacts to Pre-colonial archaeological material

4.2.3. 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 (to the south outside of the study area) 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.

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.

The most profound impact a transmission line can cause (other than physical demolition of the heritage resource) is change to the sense of place – the rural qualities of an area, sense of remoteness, or feeling of history will be highly negatively affected by the massed presence of transmission lines with 1 km of the heritage site, depending on topography and context. Of concern in this respect is the effect of transmission lines (deviation 1) which is likely to pass within sight or even close to the historic farmstead at Vaatjie. Vaatjie still enjoys an open view to the west with minimal vertical disturbance of the visual space.

Extent of Impacts: The impact of destruction of heritage sites from the historical period can extend well beyond the immediate site. Views of transmission lines from vantages such as

historic places and known scenic areas can result in significant changes in sense of place to a historic place and detract from the originality of the resource and its setting. Sense of place impacts will persist for as long as the transmission line is present. Fortunately only Deviation 1 sees transmission lines pass in potentially close proximity to a historic farm at Vaatjie resulting in a negative visual impact to a grade 3a structure. The Omega sub-station combined with the effect of the 4 existing lines which approach and leave the area will make the approach to this farm a visually very busy area in terms of electrical infrastructure. The additional turn-in lines to Omega (subject of a separate report) will add to this resulting in a high local accumulative impact. A large amount of electrical development has already been authorised at Omega with the result that the approach to Oliphants Kop farm will be highly cluttered.

NATURE OF IMPACT:		
	Without mitigation	With mitigation
EXTENT	Local (1)	Local (1)
DURATION	Long term (4)	Long term (4)
MAGINITUDE	Moderate (6)	Low (4)
PROBABILITY	Probable (3)	Possible (3)
SIGNIFICANCE	Medium (33)	Low (27)
STATUS	– negative	- negative
REVERSIBILITY	reversible	Reversible
IRREPLACEABLE LOSS OF RESOURCES?	No	No
CAN IMPACTS BE MITIGATED?	Yes	
MITIGATION: Exclusion of deviation 1 will avoid impacts to Vaatjie. Careful line design will assist in keeping lines outside of the viewshed of Groot Oliphants Kop farm house. Keep tower forms consistent on existing corridors.		
CUMULATIVE IMPACTS: Yes. The amount of lines into the Groot Oliphants Kop areas will double, which together with the HV-yard infrastructure under development will create a maze of electrical apparatus.		
RESIDUAL IMPACTS: N/a		

Table 3 Summary of Impacts to built environment.

4.2.4. Cultural landscape and sense of place

Limited agriculture, primarily wheat farming is practiced in the area, but large parts of the landscape are still under Strandveld and/or alien vegetation with some areas utilized for grazing. There has therefore been limited transformation of the rural landscape. This area is termed the Koeberg Farms Cultural Landscape and is characterised by a remote landscape,

sparse historical farms (dating to as early as the 17th century) – predominantly stock farms, a sparse settlement pattern and a surrounding landscape of small holding subdivision. The area has a scruffy and fragmented quality in places with activities such as light industry, brick and clay mining, sand mining giving the area a slightly industrial feel.

Nature of impacts: In terms of both visual impact on the cultural landscape and sense of place, transmission lines on both alternatives will be highly intrusive as they approach the R27 (West Coast Road) and the R307 (old Mamre Road). The old Mamre road is considered a scenic route with its historical avenue of trees.

The preferred route will result in an additional three 400kV transmission lines (in addition to the existing four lines and potentially two turn-in lines) crossing both the R27 and R307. However, the existing route is preferred as it crosses the roads at a slight angle and would therefore only be visible for a short distance.

Deviation 1 will take the three proposed 400kV lines through a rural landscape which is currently not bisected by power lines. In addition, the three lines will be visible to motorists travelling along the scenic route to/from Mamre (R307) for a longer period as the lines will travel parallel to the road.

Extent of impacts: The extent of the impacts will vary along the length of the corridor depending on the topography. Since the existing Eskom servitude (4 lines) is already established and now a familiar element of the landscape, the addition of further 3 transmission lines may aggravate existing impacts through cumulative affect. The effect of this will be felt at every viewpoint from which the corridor may be seen. Despite this the re-use of the existing alignment and consolidation of the electrical infrastructure is far more preferable than creating a completely new corridor which will subject as yet un-impacted areas to a new visual intrusion. This will assist in conservation of unbroken expanses of countryside. Mitigation action (if needed) lies within the domain of visual impact assessment.

NATURE OF IMPACT: Impacts to archaeological material could involve localised displacement of material at tower footings or lateral disturbance of material by vehicles and service roads.		
	Without mitigation	With mitigation
EXTENT	Local (3)	Local (2)
DURATION	Long term (4)	Long term (4)
MAGINITUDE	Moderate (3)	Low-Moderate (2)
PROBABILITY	Probable (3)	Probable (3)
SIGNIFICANCE	Medium (36)	Low (24)
STATUS	- Negative	- Negative
REVERSIBILITY	Reversible	Reversible
IRREPLACEABLE LOSS OF RESOURCES?	No	No
CAN IMPACTS BE MITIGATED?	Yes	Impacts can be avoided.

<p>MITIGATION: It is recommended that in the interests of the conservation of landscape, existing corridors are used. Tower designs should be kept consistent within corridors.</p>
<p>CUMULATIVE IMPACTS: The massed transmission lines will be slightly more visible from a distance.</p>
<p>RESIDUAL IMPACTS: N/a</p>

Table 4 Summary of impacts to cultural landscape and sense of place.



Figure 3 Above: view of existing 400 kV transmission lines from the turnoff to Oliphants Kop Farm.

Below: View of existing 400 kV transmission lines from a distance of 3 km (R304)

5. Assessment of alternatives

The existing corridor. The existing corridor is favoured as it will not result in new impacts although there may be some compounding of visual impact due to additional transmission lines. In the interests of the conservation of the broader landscape this alternative is supported.

Deviation 1. Utilisation of this option will result in further fragmentation of the landscape and have negative visual implication for the historic farm Vaatjie, as well as greatly increased visibility from Oliphants Kop. This alternative is not supported.

No-go Alternative. This study finds that there are not fatal flaws in terms of the proposed activity. In heritage terms the no-go alternative will maintain the status quo and not result in further negative impacts, however this will be detrimental for security of power supply.

6. Impact Statement

6.2. Palaeontological Heritage

The proposed activity will have a limited and very localised impact on palaeontological heritage as the below ground surface disturbance is very small, and indications are that the resource itself extends over a number of square kms within the Koeberg Nature Reserve (Hart 2010). Palaeontologists generally welcome the opportunity to examine new construction holes and road cuttings as buried, fossiliferous geological strata may be exposed giving them an opportunity to gain scientific information. Although the impact of the proposed activity is small, there is a scientific benefit to be had in terms of the potential to gain further information about the extent of the Duinefontein fossiliferous deposits.

Mitigation:

- It is recommended that a palaeontologist make spot checks once construction (in particular excavation for tower bases) commences. This is pertinent to the sandy strandveld areas in and adjacent to Koeberg Nature Reserve.

6.3. Archaeological Heritage

While the Koeberg area is known to be rich in archaeological deposits, little is known of the sub-surface archaeology to the east and south-east as the two routes cross farmlands. Although the impact of the proposed activity is small, there is a scientific benefit to be had in terms of the potential to gain further information about the extent of the Duinefontein fossiliferous/archaeological deposits. It is recommended that an archaeologist make spot checks once construction (in particular excavation for tower bases) commences.

The surface archaeology of the both the preferred corridor and deviation 1 is relatively un-

profound being limited to scatters of ESA material and occasional Late Stone Age scatters in transformed land. The likelihood is that Impacts to this material can be avoided.

Mitigation:

- An archaeologist should be involved in the final *walkdown* phase of the line design to ensure that tower bases are not located on archaeological sites.
- It is recommended that an archaeologist make spot checks once construction (in particular excavation for tower bases) commences. This is pertinent to the sandy strandveld areas in and adjacent to Koeberg Nature Reserve.

6.4. Built Environment

The visual impact of the lines on heritage structures constitutes the greatest potential impact. Fortunately there are only two heritage structures located close to or within the proposed corridors. These are:

Oliphants Kop Farm. The construction of a large sub-station known as Omega has already been authorised on this Eskom owned farm. It is intended to act as a major electrical hub in the strengthening of the Western Cape grid. The entrance to the Oliphantskop Farm will be visually impacted by the sub-station, and further impacted by the turn in lines to the sub-station which will create substantial visual clutter. Fortunately the farm house does not face Omega which is some 600 m to the west.

Mitigation:

- It is preferable from a heritage perspective that the incoming transmission lines turn into Omega from the south west to protect views from Groot Oliphants Kop, provided this is technically feasible. It is also desirable that the exiting transmission lines leave Omega and as far away as can be accommodated south of the Oliphantskop hill.

Vaatjie Farm. Vaatjie farm lies in the middle of the proposed Deviation 1 corridor with the result that it will be visually impacted if this corridor is selected. Furthermore, Oliphants Kop Farm will look over deviation 1 and experience an undesirably altered view.

Mitigation:

- It is recommended that deviation 1 not be implemented.

6.5. Cultural landscape and sense of place

Since the Eskom servitude is already established in terms of the preferred alternative and now a recognised element of the landscape, the addition of further transmission lines will be an additional visual impact to an already impacted landscape. Re-use of the existing alignment

and consolidation of the electrical infrastructure is far more preferable than creating a completely new route such as deviation 1 which will subject the area to a new visual intrusion.

Mitigation action lies within the domain of visual impact assessment, however it is suggested that Deviation 1 be excluded. It is also recommended that tower designs be kept consistent to minimize visual clutter.

6.6. Cautionary: 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

7. Conclusions

This study suggests that in terms of palaeontology and archaeology, that although significant material does exist within the Strandveld zones, the threat to this material is limited as the sub-surface disturbance caused is limited to a few square meters per tower. In terms of the built environment and cultural landscape, there will be no physical impacts to heritage structures, but some increase in the visibility of transmission lines in the existing corridors. Provided that deviation 1 is not implemented, the only heritage structure that will be affected is Oliphants Kop which is the site of already authorized activity in the form of the Omega sub-station under construction.

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

No fatal flaws have been identified.

EMP – Heritage management planning

The objective of this section of the report is to provide a mechanism for the conservation of heritage and associated values within the context of the proposed activity. In terms of relatively low significance of identified impacts to heritage, minimal management action is necessary. Management of impacts in terms of landscape is best dealt with in terms of mitigation of visual impacts as per the findings of the relevant specialist report.

The fact that the archaeological sites identified in the servitude are already highly impacted and dispersed warrants no major action on the side of the proponent other than to take measures to avoid them during construction.

7.2. Action required during the proposed activity

Mitigation Action/control	Responsibility	Timeframe
Palaeontology and buried archaeology – monitoring of tower footing excavations.	Eskom to contract an archaeologist or palaeontologist.	At commencement of construction.
Surface archaeology – undertake <i>walkdown</i> of near final alignment to steer impacts.	Eskom to contract archaeologist to preferably work with line design team.	At time of line design once near final route is selected.
Impact to Oliphants Kop farm:	Eskom to consult visual specialist/landscape architect to design transmission line routes for minimal impact to heritage buildings.	During line design phase.

Performance indicator	A record be kept of all instances of accidental disturbance of heritage material, as well as post construction review of anticipated impacts on landscape context.
Monitoring	A daily log of monitoring be kept by the responsible archaeologist for submission to HWC for review by relevant committees. Compliance authority to check as per their discretion.

Emergency finds: Should any finds be unearthed during construction activity when an archaeologist is not present, an archaeologist and Heritage Western Cape should be informed immediately. The relevant contact person at Heritage Western Cape is Ms Celeste Booth (021 4839685). The person responsible for reporting any finds that evoke concern should be a senior person on site, or an environmental control officer who is on site during construction.

7.3. Human remains

Human remains can occur anywhere on the landscape. Most archaeologists retrieve several skeletons a year from various development projects around the province, so finds of this nature are not necessarily rare. Human remains are protected by several sets of legislation which means that certain protocols must be followed in the event of a find.

- 1) leave the remains in place, nothing should be moved
- 2) Cordon off the area
- 3) Call the state archaeologist at SAHRA (021 4624509)
- 4) Contact an archaeologist
- 5) Once an archaeologist has examined the find, the archaeologist/SAHRA should contact SA Police services and the state pathologist to report human remains

- 6) If the human remains are found to be a legitimate burial or a pre-colonial burial, an emergency exhumation permit will be issued by SAHRA or HWC (if exhumation is needed).
- 7) If a crime is suspected, a police docket will need to be opened.

8. References

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Koeberg – Omega (Extracted from Hart 2008)

Three archaeological sites were found. These were all on ploughed agricultural land towards the south. No material was seen on the sandy stretches of the servitude between Vaatjie and Atlantis. The area between Ankerlig and the entrance to the shooting range, where the lines turn south-west towards Koeberg is already heavily affected by construction of the railway line and station, the shooting range road and development of the industrial area.



Figure 3 Site 1 (left), large silcrete chunk and patinated informal ESA material (right)

Site 1 (S 33 41 44.1 and E 18 29 26.7).

This is an area of scattered silcrete chunks, varying in size up to 30 to 40cm, irregular cores and a number of flakes and bifaces of later ESA or perhaps MSA age. Conversation with the farmer revealed that it is very likely that the more finely made (and diagnostic) artefacts have been removed or collected some time ago. The silcrete is heavily patinated and iron-stained. There is no silcrete outcrop at this site although larger silcrete boulders up to a meter in diameter have been cleared from the field and piled to the one side, as is the general practice. It is likely that a silcrete raft once existed here, the material having been quarried to a minor extent by prehistoric people. The raft was probably removed by farmers while lands were being prepared. The site lies in a disturbed context and is not considered significant in heritage terms.

Site 2 (S 33 42 17.2 and E 18 30 17.7) A rather disturbed area extending from eastern



Figure 4 Disturbed area with silcrete boulder at site 2



Figure 5 Silcrete boulders at site 3

end, site GO7 (ACO report 2004), intersected by both the R304 and the Atlantis railway line, a distance of nearly 300 m. This area is underlain by "raft silcrete" which is exposed in places, particularly under the gum trees to the west of the railway line. There are some flakes on the surface and evidence of quarrying of the silcrete outcrops. No formal tools were seen but the size and patina of the artefacts suggest at least MSA age. Large silcrete boulders also occur alongside the R304.

The site lies in a disturbed context and is not considered significant in heritage terms.

Site 3 (S 33 42 11.5 and E 18 29 57.5)

Also associated with a low grade silcrete raft which has been quarried, the site extends along a low ridge for at least 200 m rarely reaching 50 m wide and overlain with sand in places. There are rather more artefacts here, but again, nothing formal or diagnostic was seen. This pattern is typical of quarry sites where formal artefact types are rare.

No significant archaeological material has been located in the sand mining area itself. We did however find occasional silcrete artefacts throughout the search zone. Three sites, were noted on the periphery of the mining area but are not believed to be directly implicated in the proposed activities (but we as yet have no final layouts). We include the positions with very brief descriptions of content to be taken into account in the planning of infrastructure and mining. The positions of the sites are shown on Figure 2.

8.2. KZR 1

33° 39' 40.9S 18° 29' 15.3E

A Late Stone Age site lying in a jeep track immediately adjacent to the northern boundary fence close to the Donkergats River (plate 1). Both quartz, quartzite and silcrete flakes and chips were noted and are the most common artefacts. In addition, one irregular core and a small side scraper made on quartz were observed. One sherd of Khoe pottery, and a small amount of marine shell fragments were also noted. The silcrete includes both grey and red types and is fine grained.

The scatter is not particularly dense but has been disturbed by the jeep track and placement of fence posts. We estimate that it covers an area of approximately 30 meters in diameter.

Impact: It is not clear at this stage if the site will be impacted by the proposed mining activities (primary). The position must be taken into account when transport routes and mining are planned.



Significance: No Late Stone Age sites have ever been collected/excavated in the area. The presence of a formal tool (scraper) means that the site could contain a diagnostic assemblage.

Recommendation: If mining will impact the site, it must be mitigated by way of surface collection and limited excavation.

8.3. KZR 2 a&b

(a) 33° 39' 58.3 18° 29' 16.3E

(b) 33° 40' 01.0S 18° 29' 16.3E

These are both highly disturbed Early Stone Age artefact scatters occurring on the lower slopes of a ploughed hill immediately adjacent to the jeep track and Donkergats River (plate 2). The scatter is fairly continuous but slightly denser patches are represented by the GPS co-ordinates. The artefacts originate from the deflation zone above the Malmsbury series and have been brought to the surface by ploughing. None of this material is found in the bed of the Donkergats River, but probably dips



below. We believe that the sands that line the bed of the Donkergats River are a fairly recent phenomenon probably supplemented by aeolian material. The scatter covers a large area (approximately 70x 20 meters). The artefacts consist of flakes, chunks and cores. A single small sub-classic biface (plate 5) was also located. Virtually all the material is made on silcrete and is for the most part heavily patinated and are frequently orange in colour. Fresh scars are likely to be due to plough damage.



Impact: The site will not be impacted by the proposed mining activities (primary). The position must be taken into account when

transport routes are planned.

Significance: Early Stone Age sites such as these are common and frequently found in cultivated land. Significance is low.

Recommendation: Take the position of the site into account during planning of transport and infrastructure. Although of low significance and disturbed by ploughing, damage to the site should be avoided.

9. Appendix A

Koeberg – Omega (Extracted from Hart T 2008 Heritage Impact Assessment for the proposed construction of 400 kV transmission lines between Ankerlig Power Station and the Proposed Omega sub station at Groot Oliphants Kop. HIA prepared by ACO for Savannah Environmental Pty (Ltd).

Three archaeological sites were found. These were all on ploughed agricultural land towards the south. No material was seen on the sandy stretches of the servitude between Vaatjie and



Figure 3 Site 1 (left), large silcrete chunk and patinated informal ESA material (right)

Atlantis. The area between Ankerlig and the entrance to the shooting range, where the lines turn south-west towards Koeberg is already heavily affected by construction of the railway line and station, the shooting range road and development of the industrial area. Site 1 (S 33 41 44.1 and E 18 29 26.7). This is an area of scattered silcrete chunks, varying in size up to 30 to 40cm, irregular cores and a number of flakes and bifaces of later ESA or perhaps MSA age. Conversation with the farmer revealed that it is very likely that the more finely made (and diagnostic) artefacts have been removed or collected some time ago. The silcrete is heavily patinated and iron-stained. There is no silcrete outcrop at this site although larger silcrete boulders up to a meter in diameter have been cleared from the field and piled to the one side, as is the general practice. It is likely that a silcrete raft once existed here, the material having been quarried to a minor extent by prehistoric people. The raft was probably removed by farmers while lands were being prepared. The site lies in a disturbed context and is not considered significant in heritage terms.

Site 2 (S 33 42 17.2 and E 18 30 17.7) A rather disturbed area extending from eastern end, site GO7 (ACO report 2004), intersected



Figure 4 Disturbed area with silcrete boulder at site 2



Figure 5 Silcrete boulders at site 3

by both the R304 and the Atlantis railway line, a distance of nearly 300 m. This area is underlain by "raft silcrete" which is exposed in places, particularly under the gum trees to the west of the railway line. There are some flakes on the surface and evidence of quarrying of the silcrete outcrops. No formal tools were seen but the size and patina of the artefacts suggest at least MSA age. Large silcrete boulders also occur alongside the R304.

The site lies in a disturbed context and is not considered significant in heritage terms.

Site 3 (S 33 42 11.5 and E 18 29 57.5)

Also associated with a low grade silcrete raft which has been quarried, the site extends along a low ridge for at least 200 m rarely reaching 50 m wide and overlain with sand in places. There are rather more artefacts here, but again, nothing formal or diagnostic was seen. This pattern is typical of quarry sites where formal artefact types are rare.

Extracted from Orton J. 2006 Heritage scoping study conducted on the farm Kleine Zoute Rivier near Atlantis. Unpublished ACO report prepared for Atlantic Sands.

No significant archaeological material has been located in the sand mining area itself. We did however find occasional silcrete artefacts throughout the search zone. Three sites, were noted on the periphery of the mining area but are not believed to be directly implicated in the proposed activities (but we as yet have no final layouts). We include the positions with very brief descriptions of content to be taken into account in the planning of infrastructure and mining. The positions of the sites are shown on Figure 2.

KZR 1

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The scatter is not particularly dense but has been disturbed by the jeep track and placement of fence posts. We estimate that it covers an area of approximately 30 meters in diameter.

Impact: It is not clear at this stage if the site will be impacted by the proposed mining activities (primary). The position must be taken into account when transport routes and mining are planned.

Significance: No Late Stone Age sites have ever been collected/excavated in the area. The presence of a formal tool (scraper) means that the site could contain a diagnostic assemblage.

Recommendation: If mining will impact the site, it must be mitigated by way of surface collection and limited excavation.



KZR 2 a&b

(a) 33° 39' 58.3 18° 29' 16.3E

(b) 33° 40' 01.0S 18° 29' 16.3E

These are both highly disturbed Early Stone Age artefact scatters occurring on the lower slopes of a ploughed hill immediately adjacent to the jeep track and Donkergats River (plate 2). The scatter is fairly continuous but slightly denser patches are represented by the GPS co-ordinates. The artefacts originate from the deflation zone above the Malmsbury series and have been brought to the surface by ploughing. None of this material is found in the bed of the Donkergats River, but probably dips below. We believe that the sands that line the bed of the Donkergats River are a fairly recent phenomenon probably supplemented by aeolian material. The



scatter covers a large area (approximately 70x 20 meters). The artefacts consist of flakes, chunks and cores. A single small sub-classic biface (plate 5) was also located. Virtually all the material is made on silcrete and is for the most part heavily patinated and are frequently orange in colour. Fresh scars are likely to be due to plough damage.



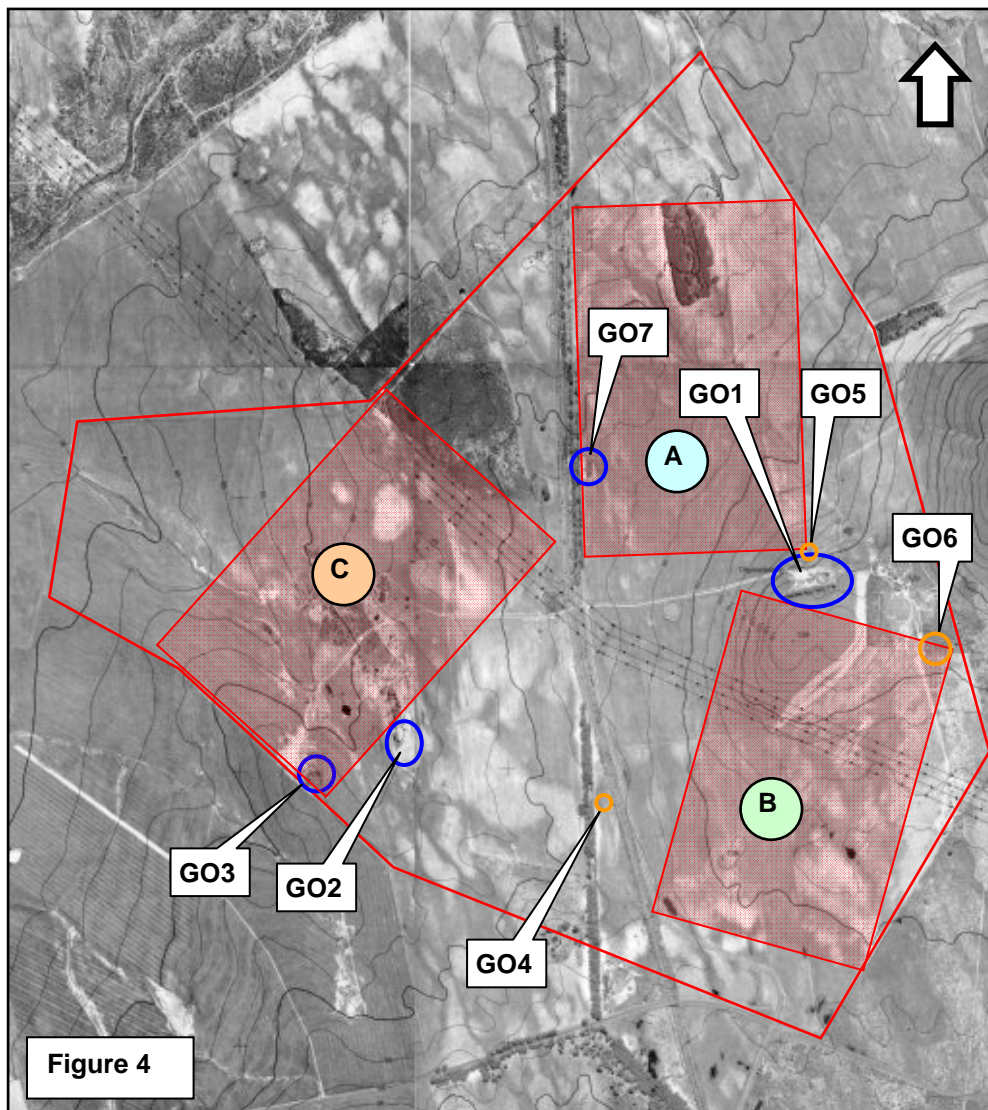
Impact: The site will not be impacted by the proposed mining activities (primary). The position must be taken into account when transport routes are planned.

Significance: Early Stone Age sites such as these are common and frequently found in cultivated land. Significance is low.

Recommendation: Take the position of the site into account during planning of transport and infrastructure. Although of low significance and disturbed by plowing, damage to the site should be avoided.

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

Several sites of archaeological and historical interest are located on the Groot Oliphantskop property. These include both Stone Age artefact scatters and historical structures. The position of these sites and the footprints of the three alternatives are indicated on Figure 4 (sites discussed in this report are ringed in blue and others are in orange). The site numbering scheme used by Kaplan (1996) is maintained and extended in the current report. Some sites located by Kaplan (1996) and recorded as being of low significance and are well away from the proposed development areas. While these are listed here, no further discussion of these sites is presented. All heritage sites are protected under the National Heritage Resources Act (Act 25 of 1999), but Heritage Western Cape is considering a grading system of sites to indicate their importance. This system has not yet been formalised, but provisional gradings using this system are provided here as a guideline. Grade 2 refers to sites of provincial significance, while Grade 3 sites are of local significance. A subdivision within Grade 3 indicates significant sites worthy of conservation (3a) and sites that are not particularly valuable from a historical or archaeological point of view (3b).



3318CB Melkbosstrand & 3318DA Philadelphia (Mapping information supplied by - Chief Directorate: Surveys and Mapping. Website: w3sli.wcape.gov.za)

GO7

This site is located on the edge of the field identified as Alternative A (S 33° 42' 13.2" E 18° 30' 24.4"; Plate 5). It consists of a low bushy rise and sandy area (Plate 5) that have escaped ploughing and farming, and on which was found a very small selection of stone artefacts. These artefacts are made on silcrete and probably date to the Middle Stone Age (MSA), although a single ESA core in quartzite was also seen. This site has very low importance and could be assigned a provisional grading of 3b.



GO3

This site is located just within the southernmost part of the area earmarked as Alternative C (S 33° 42' 49.7" E 18° 29' 43.6"; Plate 6). Should this alternative be chosen the site would be directly impacted. The site is located on a small hill (Plate 6) capped with a layer of silcrete (Plate 7) from which



Stone

Age people have obtained raw material for the manufacture of stone artefacts. Numerous flakes, blades, cores and other débitage items are present lying on and around the hill (Plate 8), signifying frequent use of the outcrop as a stone source. Artefacts dating to the MSA and LSA (Later Stone Age) are common, although the former probably dominates. The vast majority of artefacts are on silcrete collected directly from the outcrop, although some quartz pieces are also present. A few silcrete artefacts attributable to the ESA, including one hand-axe (Plate 9), also occur. The deflated area to the northwest of the hill also contains numerous artefacts. This site could be assigned a grade of 3a.

GO2

This site lies just outside the southeastern margin of Alternative C and should not be directly impacted by the erection of the substation here. The site should, however, be incorporated into the management plan for the farm as a whole, both during and after the construction phase. It is

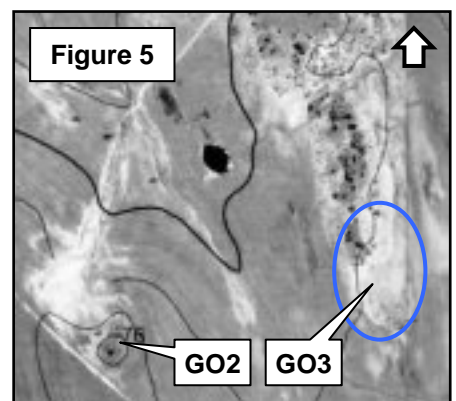
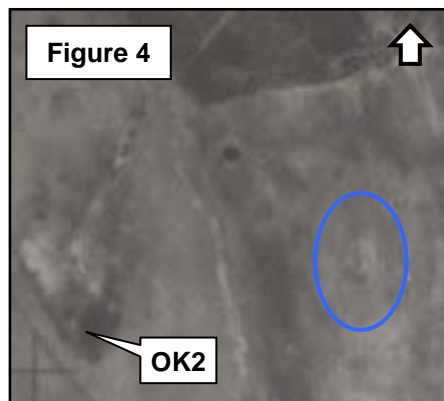


located immediately east of GO3 (S 33° 42' 49.5" E 18° 29' 59.1"; Plate 10) and consists of a sandy deflation containing a scatter of stone artefacts. These seem to be a mixture of MSA and LSA artefacts. Among the latter are three fragments of cobbles, each of which had been used as both a hammerstone and an upper grindstone (e.g. Plate 11), and one larger cobble that had been used as a lower grindstone and anvil (Plate 12). Plate 13 shows a single platform core, possibly of MSA origin. Kaplan (1996) reports that Mr D. Drury of the South African Museum excavated two human skeletons from this site, described as "a large sand dune" (Kaplan 1996: 3), sometime in the mid-20th century. It is interesting to note that the artefacts occur in a deflation which appears to be a relatively recent phenomenon as shown by the blue circles on Figures 4 and 5 (aerial photographs from 1938 and 2001 respectively). The hill (foreground in Plate 10) is currently entirely vegetated and has no archaeological material present on it at all. We are uncertain as to how to reconcile these facts with the site having been recorded as a sand dune in the past. With the current deflation of the site, it is thought that its integrity has been substantially altered by souvenir hunters, with many artefacts probably having been removed over the years. As such, the site could provisionally be graded 3b.



GO1

The built environment of the Groot Oliphantskop farm is here considered as one site since the impacts will be equally felt by all buildings concerned. The buildings lie immediately outside the south-eastern corner of Alternative A. As such they will not be

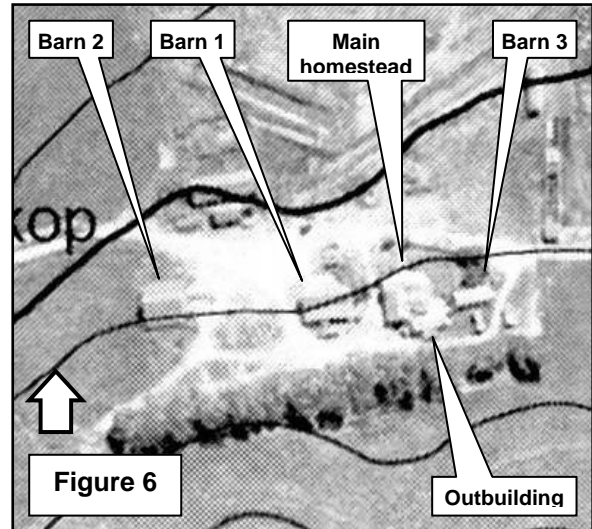


directly impacted by this alternative, but will receive indirect impacts. The built environment is undoubtedly the most significant and sensitive site on the farm and needs to be given careful consideration during the formulation of a management plan for the farm. The various buildings

will be discussed in turn. The GPS position (S 33° 42' 26.0" E 18° 30' 57.2") is taken next to the main homestead but all structures are indicated on Figure 6. The farm was originally granted in 1773 and a single dwelling is indicated on the survey diagram. It is possible that this original structure is contained within either the homestead or one of the other outbuildings.

Main homestead

The main dwelling house (Plate 14) is architecturally very interesting. The previous report by Kaplan (1996) identified the building as late 18th or early 19th century, an estimate with which we agree. The essential form of the building is T-shaped indicating that it had its origins in the Dutch occupation period styles of the 18th century. The seemingly organic growth of this building suggests that it may even have originally started out as a longhouse, in the form of the current front portion. Although various additions were made to the building in later years (e.g. small room on the left in Plate 15 and second wing and later stoep on the left in Plate 17), the T-shaped core still exists. The front stoep (Plates



14 & 16) was probably added in the early 20th century and it is quite likely that the original thatched roof was replaced with corrugated iron at the same time. If the building ever had a front gable, it may well have been removed at this time. There is a solder in the roof space which is accessed by an outside staircase built in stone against the eastern end gable (Plates 17 & 18). Most of the openings in the building have 19th century fenestration ranging from Victorian to Georgian apart from the modern additions to the "T" form which contain contemporary joinery. The farm house has a neat garden bounded by a vernacular style yard wall.

This farmhouse is a significant structure protected by section 34 of the National Heritage

Resources Act and is rendered additionally interesting by the fact that its historical layering is intact and it has not been “restored”. It is probably very old by South African standards and could be provisionally assigned grade 3a or even grade 2 status. The building is certainly worthy of conservation.

Old outbuildings

At least four of the outbuildings are old. The dates of 1937 on the barn immediately west of the main homestead (Barn 1; Plate 18 & 19) and 1933 on the barn to the southeast of the main dwelling (Barn 3; Plate 20) do not reflect the true age of the buildings. Rather they date the addition of the Cape Dutch revivalist gables to the already existing structures. Some of the joinery and fabric in the barns certainly predates the end of the 19th century and in all likelihood is earlier. Both the original structures were re-roofed when the gables were added resulting in loss of the original roof joinery. The barn dated 1937 has a modern shed added to its southern side. The last and western-most barn (Barn 2; Plate 21) probably also dates to at least the mid- to late 19th century. Its straight gables are quite likely older than the curved gables of the other barns. This barn has had modern sheds attached to either side.



Immediately south-east of the main house is a small outbuilding with an oven attached to it (Plate 22). This building is also old and is “reputed to be older than the main house” (Kaplan 1996: 4). Prior to the installation of a kitchen in the main homestead, this outbuilding may well have functioned as the farm kitchen.



The outbuildings are protected by section 34 of the National Heritage Resources Act as applied by Heritage Western Cape. A permit must be applied for and issued for their alteration or destruction.

20th century buildings

The other houses and farm outbuildings are clearly recent in origin and, although forming



part of the cultural landscape of the farm, are of no specific historical interest.

The following sites are listed and discussed by Kaplan (1996) and only briefly mentioned here. Their locations are indicated on Figure 4.

