Scoping Heritage Impact Assessment of the proposed Walker Bay Wind Energy Facility, Overstrand, Western Cape

Prepared for

Savannah Environmental (Pty) Ltd

26 September 2011

First Draft

Prepared by

Lita Webley and Tim Hart
Archaeology Contracts Office
Department of Archaeology
University of Cape Town
Private Bag
Rondebosch
7700

Tel: 021 650 2357
Fax: 021 650 2352
Email: Lita.Webley@uct.ac.za

Executive summary

ACO Associates cc was appointed by Savannah Environmental (Pty) Ltd to conduct a scoping level heritage assessment of portion 3 of the farm Groot Vlei 687, on the Uilkraal River inland of Gansbaai, Overstrand, Western Cape. The proponents propose to construct a wind energy facility of up to 11 turbines and supporting infrastructure.

The Overstrand Heritage Group conducted a heritage survey of the Overstrand region in 2009 and this report forms the basis of this scoping assessment.

The following heritage indicators will need to be assessed during the EIA process:

- Appointment of a palaeontologist to undertake a palaeontological assessment (either desktop or field study) of the area during the EIA phase;
- A field survey will be required during the EIA phase to determine whether there are any above ground pre-colonial and colonial archaeological remains which will be negatively impacted by the development. HWC will determine whether they require archaeological monitoring during the construction phase;
- The impact of the proposed WEF on the farm yard (including buildings, sheds, kraals, graveyards, etc) as well as surrounding farm homesteads, particularly those which have been identified as being of Grade 3A, B and C significance by the Overstrand Heritage Group during their 2009 survey, will need to be assessed;
- In terms of the visual impact of the turbines on the cultural landscape, which has been described as "Rural Farmland Landscape" the impacts are expected to be significant. The degree and nature of the impact is going to depend on how the wind turbines are arranged on the landscape, and the ability of the topography to absorb their presence. This is an issue which will need the involvement of a VIA specialist;
- The heritage specialist and visual impact specialist will need to assess the need for buffer zones around historic structures and along scenic routes.

If any changes are made to the layout of the facility after completion of the EIA process, then further archaeological fieldwork will be required.

If any human remains are uncovered during the construction of the facility, work will need to cease in that area, while Heritage Western Cape and the SAHRA Burials Unit are notified.

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.

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. She is also accredited with Principal Investigator status with the Association of Professional Archaeologists of Southern Africa.

GLOSSARY

Archaeology: *Remains resulting from human activities 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

1. Introduction

ACO Associates cc was appointed by Savannah Environmental (Pty) Ltd of behalf of the proponent Renewable Energy Systems (RES) Southern Africa to conduct a scoping level heritage impact assessment on portion 3 of the farm Groot Vlei 687, Walker Bay, Overstrand, South Africa (Figure 1). The proponents, RES are proposing to construct a wind farm of approximately 18 MW near Gans Bay in the Western Cape (please see attached location map). The wind farm, which could consist of up to 11 turbines each with a maximum generation capacity of 3 MW each, will be connected to the grid via a 66kv power line linking into an existing Eskom substation near Stanford, 10 km from the site.

The property on which the proposed wind farm will be constructed is 909 ha in size but only a small percentage of that would be developed.

This proposal has triggered a full EIA process, this report being the heritage component of the scoping study. At this early stage in the project, the layout of the proposed facility has not been finalised.

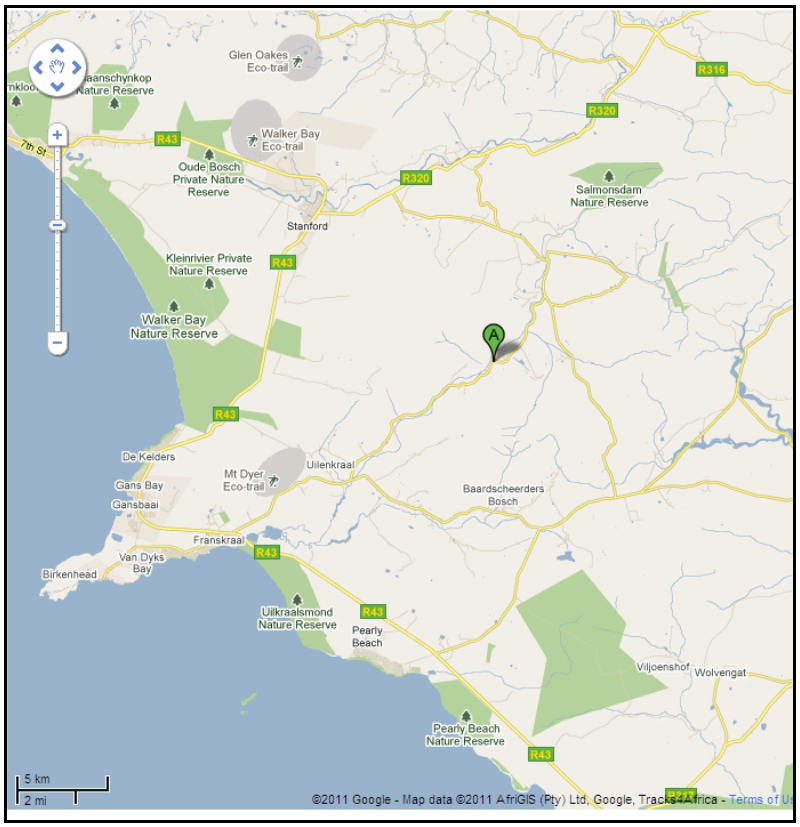

Figure 1: The location of the proposed facility to the east of Stanford and north-east of Gansbaai.

1.1 The Background of the project

South Africa is currently experiencing an energy crisis with the national electricity provider (Eskom) being unable to produce enough power to serve the nation's peak demand. In addition global warming caused by emissions of greenhouse gas has meant that the pressure is on globally to utilize clean and renewable energy resources.

1.1.1 The proposal

According to the background information supplied by Savannah Environmental (Pty) Ltd, a maximum of 11 turbines will be placed on the farm Groot Vlei 687.

Infrastructure associated with the wind energy facility will include:

- Wind turbines (between 80 m – 120 m hub height) and concrete foundations or rock adaptors to support them.
- Possibly small transformer outside each turbine tower. The transformer may be inside the tower, depending on what make and model of turbine which is deemed most suitable for the site. An external transformer would have its own foundation and housing around it.
- Crane hard standings.
- Cabling between the turbines, to be laid underground where practical.
- Internal access roads to each turbine.
- Workshop area for control, maintenance and storage.
- Temporary and permanent wind monitoring masts for calibration and site monitoring.
- Small mast for telecommunications.
- An on-site substation to facilitate the connection between the wind energy facility and the grid.
- New overhead power line to connect to Eskom's existing Stanford Substation, which is located approximately 10 km from the site.

Turbines will be optimally positioned to make the most of ambient wind conditions, but generally spaced several hundred meters apart. At present studies are ongoing to determine the optimal locations for wind turbines. Since wind turbines utilise such a small portion of the land surface, once the facility is established normal agricultural activity can take place on the land.

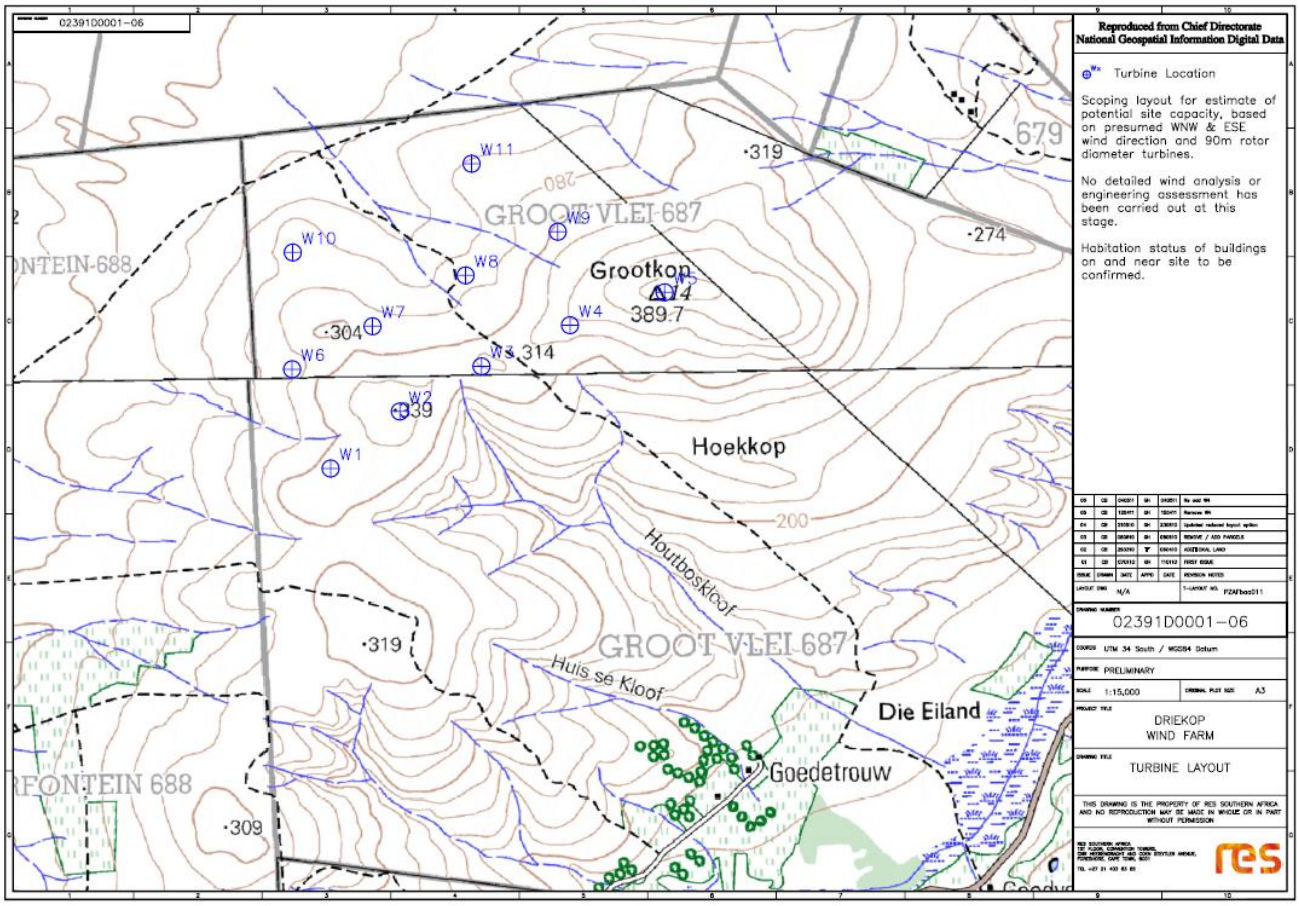

Figure 2: Map of a portion of the farm Groot Vlei 687 showing an indicative turbine layout (map provided by RES). The farm of Goedtrouw/Goedvertrouw is situated to the south of the WEF.

1.2 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.

The definitions for Grade 1, 2 and 3 heritage sites are provided in Section 7 of the NHRA.

Grade 1:	Heritage resources with qualities so exceptional that they are of special national significance;
Grade 2:	Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and
Grade 3:	Other heritage resources worthy of conservation.

All buildings and structures older than 60 years are protected in terms of Section 34 of the NHRA. The definitions of the three sub-categories of Grade 3 are derived from the Heritage Western Cape Guide, "A short guide to grading" (February 2007).

The grading system discussed by the OHLG with regard to local significance are:

Grade 3A	Buildings and sites of outstanding local significance
Grade 3B	Buildings and sites of considerable local significance
Grade 3C	Buildings and sites of some contextual local significance

1.3 The 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 the Overstrand Heritage Survey undertaken by the Overstrand Heritage Landscape Group (OHLG) for the Overstrand District Municipality in 2009.

A site inspection has not been carried out for the purposes of the scoping study. A more detailed survey will be required during the EIA process.

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 (to be handled by a separate study);
- Pre-colonial archaeology (Stone Age);
- Colonial period and historic archaeology – historic farm houses, wagon tracks, graves and cemeteries; etc;
- Living heritage – any places with intangible heritage related to cultural/ritual use of the landscape;
- The cultural landscape – in particular the ability of the landscape to accommodate up to 11 wind turbines in terms of the heritage values and scenic qualities of the area. This includes the impact of the project on scenic routes in the area.

1.4 Restrictions and assumptions

The study area has not been subject to a field survey. This will be conducted during the course of the full EIA. In the absence of a field survey, it is difficult to comment on the impact of the development on the surrounding heritage resources.

Although the OHLG surveyed the Built Environment and Cultural Landscape, they did not undertake a survey of archaeological resources in the Overstrand, save for a brief description of sites listed in the IZIKO site register. The authors noted that large areas of the Overstrand have not been systematically surveyed for archaeological sites.

2. The Receiving Environment

The Agulhas region consists of a fairly wide coastal plain separated by undulating hills from the Cape Folded Mountain Belt. The hills are formed of the quartzites and sandstones of the Table Mountain Group (TMG). There are also limestone ridges that flank these hills, which more properly form part of the coastal plain. The valley of the Uilkraal River consists of the sands derived from the weathering of the TMG (Schweitzer & Wilson 1982). The principle drainage of the area is the Uilkraal River which has its origins in the Perdeberg some 20 km to the north-east. The river is fed by three tributaries but its flow is much reduced by the requirements of agriculture. The vegetation is coastal fynbos but there are remnant forest communities in the valleys.

2.1 Palaeontology

In their review of the Archaeology of the Overstrand, Hart and Clift (2005) noted the following with respect to the palaeontology of the coastal zone: "The coastal zone of the Western Cape contains fossiliferous material throughout – anywhere where there is sand rich in calcium carbonates the fossilized bone of mammals, mollusc shells, and even traces of microscopic organisms are to be found. The reason for this is that calcium carbonate from the shell in sea sand is an excellent preservative of bone. Sensitive material is to found anywhere where are aeolianite or calcrete deposits, dune seas, or limestone rich coastal plains. Also important from a scientific perspective are the remnants of ancient landforms, shoreline regressions and transgressions that characterise much of our coast" (Hart & Clift 2005). Detailed palaeontological studies are also available for the proposed Nuclear 1 power station at Bantamsklip (Almond 2008).

However, these comments are all restricted to the coastal plain and may not be applicable to the study area – which is situated on the quartzites and sandstones of the Table Mountain Group (TMG).

2.2 Pre-colonial archaeology

The coastal plain of the Overstrand is considered to have a very rich archaeological heritage with the range of archaeological sites including shell middens, open sites, and cave sites and fish traps. Evidence indicates that this coastline and the adjacent interior were occupied by humans from at least the Middle Stone Age (Die Kelders) through the Later Stone Age to the historic times.

The archaeological site of Byneskranskop is situated in a limestone ridge on the lower reaches of the Uilkraal River, some 10 km south-west of the proposed development (Schweitzer & Wilson 1982). Excavations indicate that the site was occupied from approximately 13 000 years ago.

During a survey for the Bantamsklip Nuclear 1 site, Hart (2010) noted that Later Stone Age sites were observed in caves and rock shelters in the limestone complex inland of Bantamsklip and we can therefore anticipate more sites like Byneskranskop in this general area. He also identified at least 115 Later Stone Age shell middens along the coast.

Further to the south-west on the coast at Gansbaai is the archaeological site of Die Kelders (Schweitzer 1979). The lower levels of the site contain artefacts from the Middle Stone Age (MSA) and are well over 40 000 years old. The upper layers provided early evidence for domestic sheep (1600 years ago) and the introduction of pottery at the Cape. This is presumed to point to the ancestors of the Khoekhoen pastoralists. We know that Later Stone Age herders (Khoekhoe) would have frequented this coastline after 2000 ya. "It is likely that the later European farmers followed the same migration patterns as the indigenous herders, looking for suitable grazing and water resources" (OHLG 2009: 23).

The Overstrand Heritage Survey has indicated in their report that areas of high archaeological

sensitivity occur along the coastline but they do not comment on the inland areas of the Overstrand, which have not been surveyed.

2.3 History and Built Environment

The demand for livestock by the VOC soon depleted the herds of the Khoekhoen frequenting the Table Valley and surrounding area. During the 18th century stock farmers from the Cape expanded into the Overberg and the Overstrand to find Khoekhoe kraals for bartering sheep and cattle. The number of farmers in the Overberg led to the establishment of a *drostdy* at Swellendam in 1747. Towards the end of the 18th century and the beginning of the 19th century the number of farms in the Overberg more than doubled. The Cape became a British Colony in 1806. Caledon was established in 1811 and Napier, Bredasdorp and Riversdale in the late 1830s.

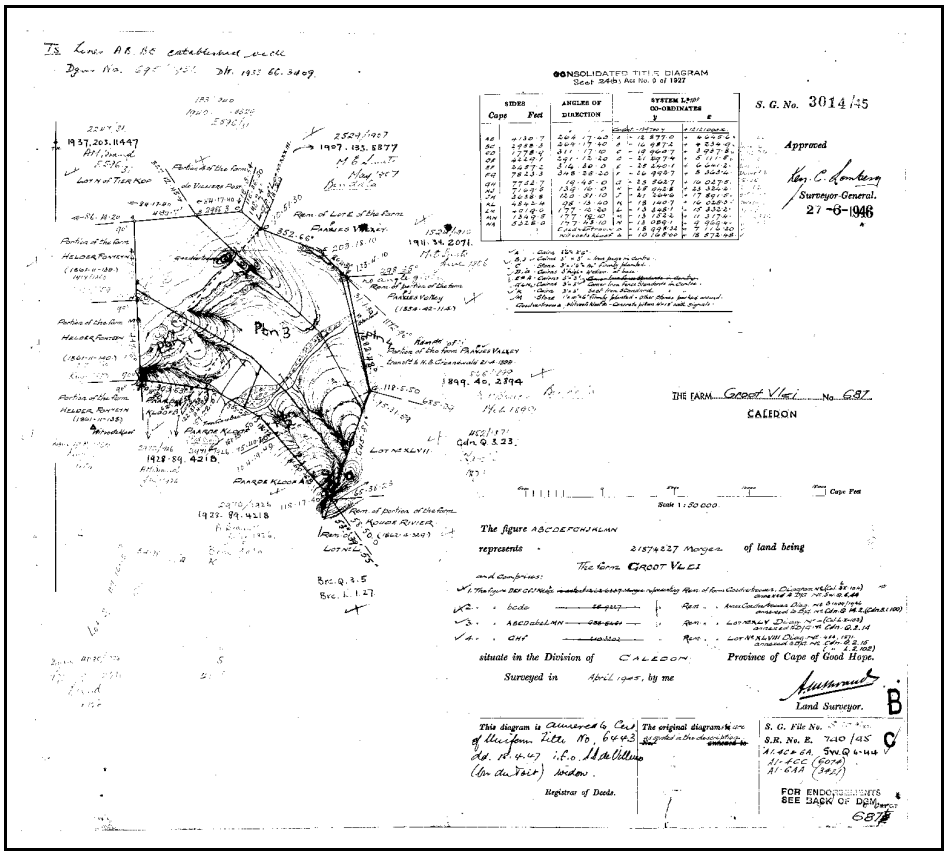

Figure 3: Surveyor General Diagram of Groot Vlei 687 (S.G. No 3014/45)

During the early 1830s, there is a spate of farms granted in quitrent in the study area. The OHLG report (2009) highlights the remoteness of the area, with at least two leper settlements (Hemel en Aarde valley and Wolvengat) established in the area. During the mid 19th century a town was established at Stanford which was situated on the junction of a wagon route to the coast. Grazing licences were issued as far a field as Baardskeerdersbos. By the second half of the 19th century, small villages had developed at Baardskeerdersbos, Gansbaai, and Hawston.

Baardskeerdersbos is situated on a tributary of the Boesmans River and is separated from the study area by the Palmietberg and Bakenkop. It was originally granted as a loan farm between 1725 and 1730 and was probably first permanently occupied by Phillip Fourie and his descendants from 1778. Most of the historical buildings are late 19th and early 20th century white-plastered mud-brick rectangular buildings with pitched roofs originally covered in thatch. It is considered a rural settlement of historical significance illustrating the expansion from a modest VOC loan farm into a town (OHLG 2009:106). It is characterised by its setting in the rural landscape and is a rare example of a village that has undergone relatively little development in the 20th century. This area, together with Elim, is strongly linked to the coast, with a tradition of the utilization of coastal resources such as fishing, cobble and shell fish

collecting, guano collecting and the collection of shipwrecked material.

The OHLG does not address the Uilkraal River valley directly, but it does consider the history of the coastal towns of Franskraal and Kleinbaai on the coast. Franskraal has its origins in the 19th century when it was the base for the collection of guano on Dyers Island. Kleinbaai postdates WWII. Both towns are important because of their coastal archaeology. Most of the villages along the coast were originally fishing villages, but as in the case of Hermanus and Gansbaai, many developed as recreation centres in the post WWII era. The development of the resort towns was accelerated by the construction of Clarence Drive (R44).

2.4 Burials and Graveyards

A large number of human remains have been found from archaeological contexts in this region. Fourteen fragmentary remains were found in excavations at Die Kelders and nine from Byneskranskop. In addition five were recovered from middens at Gansbaai and five from middens at Pearly Beach. One was excavated at Groot Hagelkraal in 1968 (Voigt 1972). This shows the likelihood of further human remains being uncovered during construction activities in this area.

The OHLG did not compile a comprehensive list of historical graves and cemeteries in the Overstrand as this was considered to fall outside the scope of their work, but they did list known graveyards and cemeteries in their database. There are family graveyards on farms adjoining the study area.

2.5 Cultural Landscape and Scenic Routes

Part of the Overstrand Heritage Survey consists of a landscape character assessment by Bernard Oberholzer Landscape Architect. In his baseline survey of landscape type and character, he mapped prominent landscape features and scenic resources, scenic routes, protected areas such as nature reserves, rural farmland, and settlement patterns forming part of the cultural landscape. He notes the importance of stands of exotic trees which were introduced by farmers to the Overstrand in the late 19th century as wind breaks.

He has characterised the Overstrand as having 3 generic landscape types. Of importance to this study is his description of the general area around the proposed Walker Bay WEF as the "Uilenkraal Foothills." The geology of this area is described as consisting of Cape granite, Malmesbury Group rocks and Bokkeveld shales which have weathered resulting in good soils and alluvium along streams and rivers. This has resulted in landforms which are described as "Mostly rolling topography with gentle slopes, incised by small rivers" (OHLG 2009:33).

The settlement pattern is described as "Mainly agricultural use in response to the productive soils and gentle slopes. Small, scattered settlements, such as those found at the Baardskeerdersbos". He specifically mentions the pockets of farming in the Uilkraals River valley. The farms in this valley include diary, vineyards farms and some are involved in tourism initiatives such as guest accommodation (OHLG 2009:34). This rural farmland contributes to the character and ambience of the Overstrand and has historical meaning relating to the origins of the region.

The landscape in the Uilkraal River Valley is termed "Rural Farmed Landscape" and the local road which winds up this valley is considered significant.

3. Impacts and Issues Identification

3.1 Palaeontology

Although the palaeontological potential of the coastal zone is rated as moderate to low by Almond (2008), less is known about the inland area and a specialist assessment will be required.

3.1.1 Nature of impact

Since palaeontological remains are generally deposited in geological strata which extend over large areas of the landscape, it is unlikely that the construction of the turbine, substation and control building foundations will destroy large areas of significant fossils. The construction of the facility may, however, expose fossil bearing horizons which will be of interest to palaeontologists.

3.1.2 Extent of impact

The construction is likely to expose fossil deposits over a limited area. The extent of the impact will need to be determined by a palaeontologist.

3.2 Archaeology

No archaeological survey has been undertaken in the Uilkraal River Valley and therefore the impact of the wind energy facility on the above and below-ground archaeology cannot be predicted.

3.2.1 Nature of impacts

The main cause of impacts to archaeological (and palaeontological) sites is physical disturbance of the material itself and its context. The heritage and scientific potential of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example, a deep excavation may expose archaeological artefacts, the artefacts are relatively meaningless once removed from the area in which they were found. Large scale excavations will damage archaeological sites, construction of roads and laydown areas, injudicious use of off-road vehicles can contribute to high levels of impact.

3.2.2 Extent of impacts

In the case of the proposed wind energy facility, it is expected that impacts will be limited (localised), but nevertheless possible. There is a chance that the deep excavations for the tower foundations could potentially impact buried archaeological material, similarly excavation of cable trenches and clearing of access roads could impact material that lies buried in the surface sand. Potential impacts caused by the power line, underground cabling, proposed access roads and laydown areas are similarly likely to be limited and local, however these will need to be physically searched and assessed during the EIA phase and the routes adjusted where necessary.

3.3 Colonial period heritage

The OHLG report (2009) has identified Grade 3A, 3B and 3C farms and buildings in the Uilkraal River Valley. There is the historic Uilenkraal loan farm on the lower reaches of the river, as well as important buildings in the upper reaches of the river, in an area termed Papiesvlei foothills and surrounds. The farms Paardeberg 663/2 and Papiesvlei 679/24 are located higher up the valley and both are considered to have Grade 3C status.

The farm Onderpaardeberg 663/5 has a number of Grade 3A buildings and a family cemetery. Most importantly, Goedvertrouw 687/7 (on Groot Vlei 687) has a building which is described as Grade 3A – and is described: "Significant in terms of layering, having its roots in an 18th century farm, situated on the foothills, near a permanent source of water" (Table 1 and end of

report). A photograph of the house is provided in Table 1 but its location, on the farm Groot Vlei will need to be verified by field observation.

3.3.1 Nature of impacts

Historic structures and graveyards are sensitive to physical damage such as demolition as well as neglect. Direct impacts, however, are not expected as a result of the proposed project. Historic buildings are also context sensitive, in that changes to the surrounding landscape will affect their significance. The presence of any historic structures and graveyards on the property will need to be identified and their significance assessed through a site inspection. If a Grade 3A building is located on the farm, the impact of the facility will be considered high.

3.3.2 Extent of Impacts

The extent of the impact is likely to be local, but due to the high value ascribed to farm buildings in the Uilkraals River Valley (ranging from Grade 3A to Grade 3C), the extent of the impact will be high.

3.4 Cultural landscape and sense of place

The cultural landscape in the Uilkraal River Valley has been described by Bernard Oberholzer Landscape Architect as a "Rural Farmed Landscape" and the local road which winds up this valley is considered significant.

In their guidelines for development in rural areas, the OHLG described the cultural landscape of the Overstrand and recommends that "any new interventions in rural landscapes need to understand the heritage significance of such landscapes and need to respond positively to the heritage values recognized" (OHLG 2009: 294). This includes careful consideration of new development rights outside of the urban edge and the subdivision of agricultural lands should be avoided at all costs.

3.4.1 Nature of impacts

Cultural landscapes are highly sensitive to accumulative impacts and development activities that change the character and public memory of a place. In terms of the National Heritage Resources Act a cultural landscape may also include a natural landscape of high rarity value and scientific significance. The construction of a wind energy facility in the Uilkraal River may result in profound changes to the overall sense of place of a locality, if not a region. The proposed activity is essentially a visual intrusion that is very difficult to measure. It is expected that some form of impact will take place, however this will need to be informed by a visual impact assessment.

3.4.2 Extent of impacts

Massed wind turbines, are without doubt conspicuous structures which will affect the atmosphere of the "place". While this impact may be considered local in terms of physical extent, there may be wider implications in terms of the change in "identity" of the area and the cumulative effect this could have on future tourism potential (not necessarily negative). This means that the potential for alteration to the cultural landscape and sense of place is considered an issue that will need further attention in the EIA phase.

4. Mitigation and conservation

4.1 Archaeological heritage

Only a very small percentage of the Overberg has been subject to archaeological survey. The point plot locations of archaeological sites tend to reflect the efficiency of the survey teams rather than the actual distribution of archaeological sites on the ground. The absence of archaeological sites on any given portion of the landscape can reflect that a particular area has not been searched rather that the area contains no archaeological material.

It is expected that much of the impacts to surface archaeological heritage (pre-colonial and colonial) will be controllable through avoidance of sensitive areas. Micro-adjustment of turbine footings, moderate deviations in service trenches, road alignments or power line towers are expected to be all that will be required in terms of mitigation of open pre-colonial/colonial sites. If for any reason mitigation by avoidance is not feasible, the usual process is to record and sample the archaeological site before any destruction is permitted.

4.2 Un-identified archaeological material, fossils and fossil bone

There is always a chance that archaeological material may be exposed during bulk excavation for services and foundations. All archaeological material over 100 years of age is protected and may only be altered or removed from its place of origin under a permit issued by SAHRA. In the event of anything unusual being encountered, the SAHRA archaeology unit must be consulted immediately so that mitigation action can be determined and be implemented if necessary (find-stop scenario). Mitigation is at the cost of the developer, while time delays and diversion of machinery/plant may be necessary until mitigation in the form of conservation or archaeological/palaeontological sampling is completed.

4.3 Built Environment

It is not expected that the built environment will be directly impacted by the proposal unless it becomes necessary to demolish structures (farm houses, sheds, etc) that are greater than 60 years of age. It is possible that farm houses will change use because of the activity, in which case application of the requirements of the NHRA is appropriate, the responsibility for which falls on the landowner. It is anticipated in most instances, it will be possible to adjust turbine locations to avoid direct impacts.

The most significant impact to the built environment may however be of a visual nature. The placement of the turbines against the slopes of the Uilkraal River valley may have a negative impact on the setting of various Grade 3A, 3B and 3C farmhouses in the valley.

Similarly, while it is generally possible to avoid historic farm graveyards, those graveyards belonging to the farm workers are sometimes difficult to identify as they may lack headstones and fences. Exhumation of graves is generally not recommended due to the legal processes which are required and it is preferable that they are avoided.

Wagon tracks, kraals, etc should be adequately recorded before they are damaged or destroyed.

4.4 Cultural landscape and Scenic Routes

International literature indicates that visual impact and changes to *sense of place* or *setting* are among the most contentious issues that the wind energy industry has had to face in terms of finding social acceptability within a given community (Roberta et al. 2007). Various nations in the developed world have developed best practice guidelines to deal with the kinds of complex impacts that wind energy facilities can have on the heritage and landscape qualities of an area.

Neither SAHRA nor HWC have developed policies with respect to heritage and renewable energy but the PGWC pilot study (CNdv 2006) concluded that wind energy facilities can have a profound impact on the landscape in terms of quality of place and it has recommended a buffer of at least 500 m between a wind turbine and heritage sites.

A recent decision by the Department of Environmental Affairs with respect to Wind Energy Facilities is provided below to illustrate the kinds of outcomes which may be anticipated:

In the Environmental Authorisation (12/12/20/1581) for the "West Coast 1 Wind Energy Facility" on the Vredenburg Peninsula (2010), the Department implemented a:

- 2 km buffer around the Provincial Heritage Site (Grade 2) of Kasteelberg;
- 2 km buffer along local roads, through the proposed wind energy facility, which have high scenic value.

A visual impact specialist will need to assess the impact of the wind energy facility on the cultural landscape of the Uilkraal River Valley (considered a Rural Farmed Landscape) as well as on the road travelling through the valley. Similar buffers may be recommended of between 500m and 2km. The OHLG report (2009) emphasises the importance of construction/development that must be sympathetic to the landscape, the estuaries, mountain slopes, and productive farmland (OHLG 2009).

5. Recommendations for the EIA process

Potential impacts are anticipated on the palaeontology and archaeology but mitigation may be possible. However, impacts to the built environment and cultural landscape may be high, and a visual impact assessment will be important in order to determine if the proposed activity is viable.

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.

A Palaeontological desktop assessment will be required to assess the palaeontological potential of the upper reaches of the Uilkraal River.

The proposed study area needs to be subject to a detailed survey by an archaeologist who will need to walk a pattern of transects over the site recording details and locations of any heritage material found. The significance of each find will need to be assessed along with the impacts of the proposed activity. Mitigation measures will need to be identified.

Proposed routes of linear infrastructure (access roads, underground services, power lines) will need to be ground-truthed to establish the impacts of the proposed activity and determine where mitigation (if any) will be required.

The colonial period historical significance of the site will need to be established through an assessment and grading of the built environment on the property and adjoining properties. The impact of the proposed WEF on the farm yard (including buildings, sheds, kraals, graveyards, etc) as well as surrounding farm homesteads, particularly those which have been identified as being of Grade 3A, B and C significance by the Overstrand Heritage Group during their 2009 survey, will need to be assessed

In terms of the visual impact of the turbines on the cultural landscape, which has been described as "Rural Farmland Landscape" the impacts are expected to be significant. The degree and nature of the impact is going to depend on how the wind turbines are arranged on

the landscape, and the ability of the topography to absorb their presence. This is an issue which will need the involvement of a VIA specialist.

The heritage specialist and visual impact specialist will need to assess the need for buffer zones around historic structures and along scenic routes.

If any changes are made to the layout of the facility after completion of the EIA process, then further archaeological fieldwork will be required.

If any human remains are uncovered during the construction of the facility, work will need to cease in that area, while Heritage Western Cape and the SAHRA Burials Unit are notified.

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. 2008. Palaeontological desktop study for Bantamsklip (W.Cape) and Thyspunt (E. Cape) Reactor Sites. Unpublished report for Arcus Gibb (Pty) Ltd.

CNdv Africa Planning & Design. May 2006. Towards a Regional Methodology for Wind Energy Site Selection. Prepared for the Provincial Government of the Western Cape. Reports 1 & 6.

Joberta, A. Laborgneb P., Mimlerb S. 2007. Local acceptance of wind energy: Factors of success identified in French and German case studies. European Institute for Energy Research, University of Karlsruhe, Emmy-Noether-Str.11, Karlsruhe, Germany.

Hart, T. & Clift, H. 2005. The management of archaeological heritage in the coastal zone with special reference to Overstrand. Unpublished report for Baumann and Winter Heritage Impact ASssessors.

Hart, T. 2010. Heritage Impact Assessment component of an EIA for the proposed Nuclear Power Station ('Nuclear 1') and associated infrastructure. Unpublished report for Arcus Gibb (Pty) Ltd.

Howard, L. & Phillips, K. Overberg Tapestry. Keith Phillips Publishing & Images: Helderberg.

Overstrand Heritage Landscape Group. December 2009. Overstrand Heritage Survey. Draft Report. Unpublished report prepared for the Overstrand Municipality.

Schweitzer, F.R. 1979. Excavations at Die Kelders, Cape Province, South Africa. Annals of the South African Museum 78(10):101-233.

Schweitzer, F.R. & Wilson, M.L. 1982. Byneskranskop 1: A late Quaternary living site in the southern Cape Province, South Africa. Annals of the South African Museum 88(1): 1-203.

Voigt, E. 1972. A burial on Groot Hagelkraal, Bredasdorp District, Cape. The South African Archaeological Bulletin 27(105/106):87-89.

Webley, L. & Hart, T. 2008. Heritage component of the Draft Environmental Scoping Report for the proposed Bantamsklip Transmission Lines. Unpublished report for Arcus Gibb (Pty) Ltd.

The Surveyor Generals Office, Cape Town.

Site Name	Farm number	Location	Suggested grading	Heritage significance	Photo
Akkedisberg Pass - Kleynerivier Pass		Paardeberg Mountain			
Salmonsdam Nature Reserve		Paardeberg mountains			
Beloftebos cemetery	663/2	Papiesvlei foothills Caledon Farms 34 27 '0.57"S 19 36' 19.82"E	3A	Social significance and historical layering in terms of religious attitudes and mortuary practices. Indication of isolation of small rural communities and symbol of cohesiveness/exclusion within the community.	
Onderpaardeberg	663/5	Papiesvlei foothills Caledon Farms 34 27' 33"S 19 35' 46"E	3A	Significant in terms of historical layering, being the remainder of an 18th century loan farm, situated on the foothills, near a permanent source of fresh water. Situated on old wagon/access routes linking the interior to the coast. Fairly intact fabric	
Onderpaardeberg cemetery	663/5	Papiesvlei foothills Caledon Farms 34 27' 29"S 19 35' 47"E	3A	Social significance and historical layering in terms of religious attitudes and mortuary practices. Indication of isolation of small rural communities and symbol of cohesiveness/exclusion within the community.	
Goedvertrouw	687/7	Papiesvlei foothills Caledon Farms 34 31' 0.42"S 19 32' 52.03"E	3A	Significant in terms of historical layering, having its roots in an 18th century farm, situated on the foothills, near a permanent source of fresh water. Situated on old wagon/access route linking the interior to the coast. Rural setting with Grootkop	

Table 1: Extract from the OHLG report (2009: Table 7.2.12 Papiesvlei foothills and surrounds)