

# HERITAGE SCOPING ASSESSMENT FOR THE PROPOSED UYEKRAAL WIND ENERGY FACILITY NEAR VREDENBURG, VREDENBURG & HOPEFIELD MAGISTERIAL DISTRICTS, WESTERN CAPE

(Assessment conducted under Section 38 (8) of the  
National Heritage Resources Act (No. 25 of 1999) as part of an EIA)

Prepared for

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## EXECUTIVE SUMMARY

ACO Associates was requested by Savannah Environmental (Pty) Ltd to conduct a Heritage scoping study for the proposed Uyekraal Wind Energy Facility (WEF) in the Vredenburg and Hopefield Magisterial Districts. The WEF would comprise of up to 22 turbines and associated infrastructure and be situated on two properties some 10 km southeast of Vredenburg.

The site lies between Saldanha Bay and the Langebaanweg Fossil Park and appears to be composed of agricultural land, some of which is not currently being utilised. The R27 runs very close to its eastern edge, while an unnamed secondary road adjoins the site to its north.

A desktop review was conducted in order to create a heritage context from which the site could be assessed. No field survey was carried out.

Palaeontological material is highly likely to occur and impacts to this form of heritage would likely be both positive and negative. Significant deposits could lead to the need to alter turbine positions. Archaeological impacts are also likely, although due to ploughing of most of the site in the past any sites found are likely to be of low significance. No buildings are present on the site and no graves are obvious from aerial photographs. This does not preclude the possibility of finding unmarked pre-colonial graves. Impacts to the scenic environment are not of very great concern owing to the existence of various industrial developments in close proximity to the site.

Buildings present in the vicinity may be important, but it is unlikely that they would be significantly negatively affected by the proposed WEF. Imposition of a buffer may still be required depending on their significance.

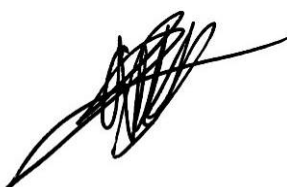
Three further studies are suggested for the EIA Phase. A Palaeontological Impact Assessment will need to assess the extent of impacts to fossil heritage that might occur as a result of excavations for the turbine foundations and other infrastructure. A Heritage Impact Assessment should document and assess the significance of all surface heritage material on the affected properties and recommend any mitigation that might be appropriate. Such mitigation could entail excavations, moving the relevant infrastructure or establishing buffer zones. A Visual Impact Assessment will need to assess the extent and significance of the impacts on the visual landscape.

### Declaration:

Mr Jayson Orton is an independent specialist consultant who is in no way connected with the proponent, other than in the delivery of consulting services. He has an MA in Archaeology and 11 years of working experience in heritage throughout the western half of South Africa, including several wind energy facility projects. He is accredited with the Association of Professional Archaeologists of Southern Africa (Membership No. 233) as follows:

- Principal Investigator: Shell Middens and Stone Age archaeology
- Field Director: Colonial period, Grave relocation, Rock art.

He has also engaged in several archaeological research projects along the west coast of South Africa.

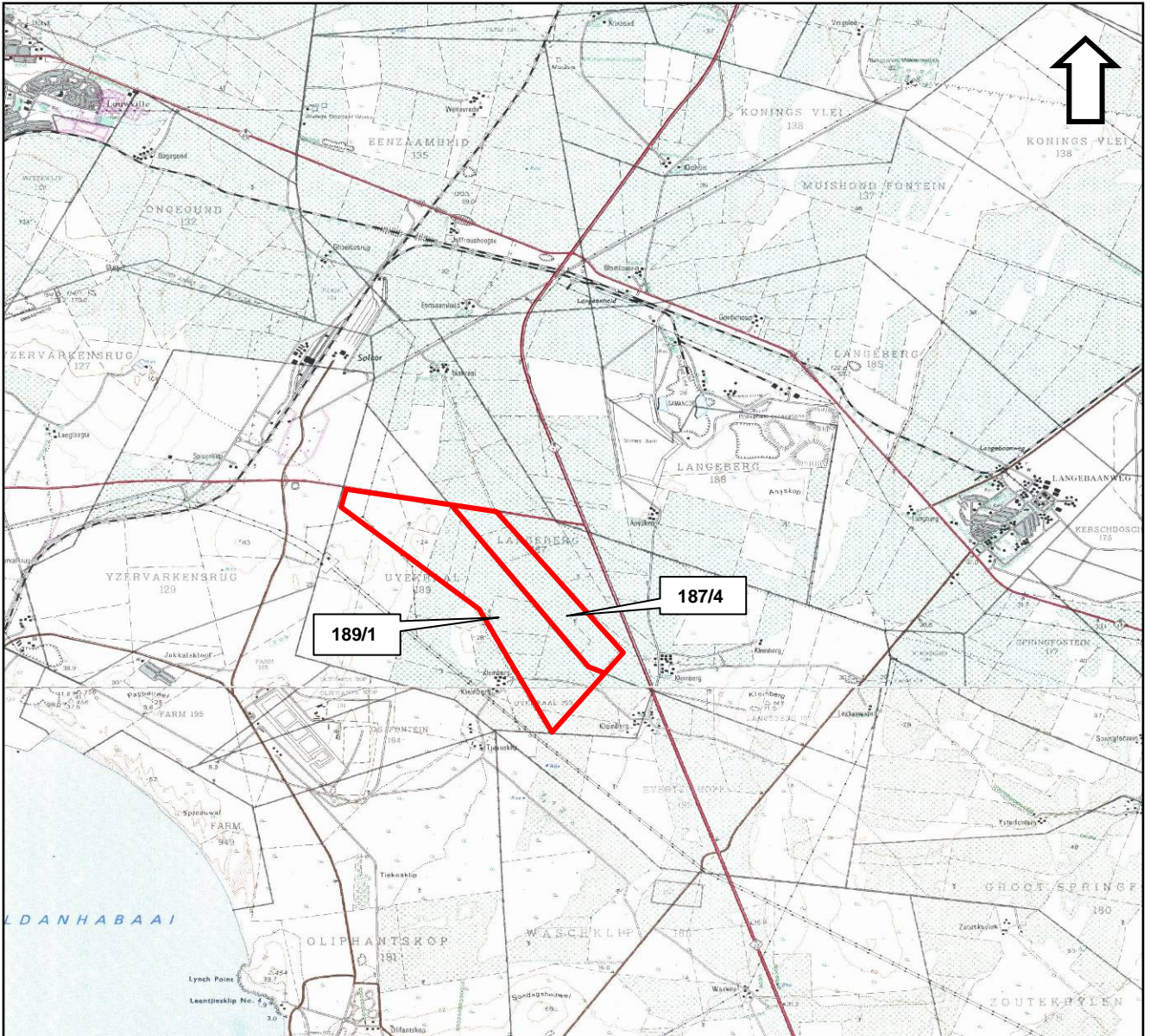


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# 1. INTRODUCTION

ACO Associates was requested by Savannah Environmental (Pty) Ltd to conduct a Heritage scoping study for the proposed Uyekraal Wind Energy Facility (WEF) in the Vredenburg and Hopefield Magisterial Districts (Figure 1). Two properties to the southwest of the intersection of the R27 and an unnamed secondary road are listed for inclusion in the project: Langeberg 187 Portion 4 and Uyekraal 189 Portion 1. The total land area is approximately 568 ha. No alternative sites are being considered for the development.



**Figure 1:** Map showing the location of the proposed Uyekraal WEF (Composite of 3218CA&CC Velddrif & 3317BB&3318AA Saldanha sourced from Chief Directorate Surveys and Mapping).

The proposed WEF would comprise of up to 22 turbines, a substation, a series of subsurface (where feasible) cables linking the turbines, overhead power lines to connect to the Eskom grid at the Blouwater substation, internal access roads to each turbine and a workshop and storage area. A proposed layout for the turbines is shown in Figure 2. An existing Eskom transmission line runs very close to the site and the power line from the WEF would connect into this existing line.



**Figure 2:** Aerial photograph showing the proposed turbine layout on the WEF site.

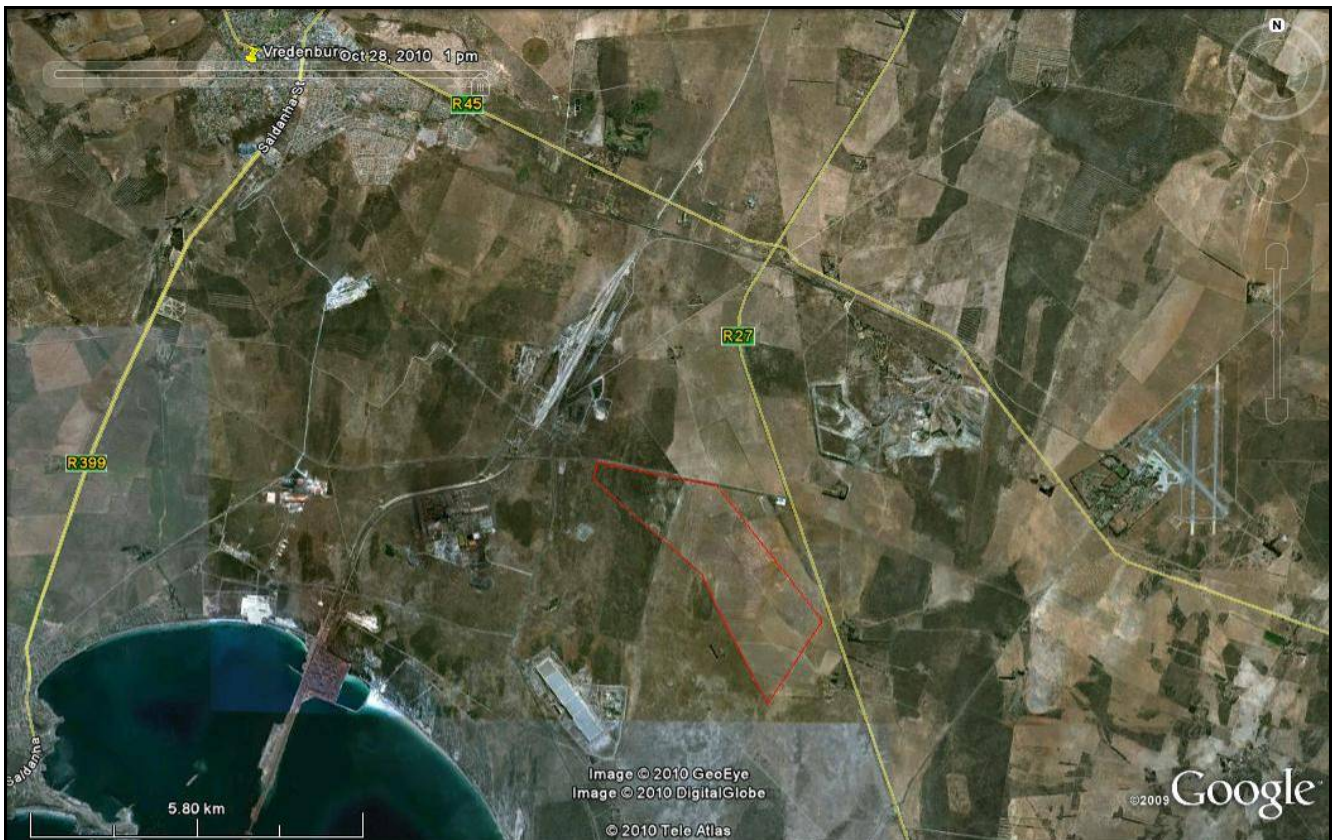
## 2. HERITAGE LEGISLATION

The National Heritage Resources Act (NHRA) No. 25 of 1999 protects a variety of heritage resources including palaeontological, prehistoric and historical material (including ruins) more than 100 years old (Section 35), human remains (Section 36) and non-ruined structures older than 60 years (Section 34). Landscapes with cultural significance are also protected under the definition of the National Estate (Section 3 (3.2d)).

The project is being conducted under the auspices of an Environmental Impact Assessment (EIA). As such, final decision making would rest with the Department of Environmental Affairs and Development Planning (DEA&DP) with Heritage Western Cape being required to provide comment on the heritage impact assessment study when complete. This would only take place after the current scoping phase.

### 3. DESCRIPTION OF THE AFFECTED ENVIRONMENT

Figure 3 shows an aerial view of the vicinity around the proposed WEF. The WEF is within 7 km of the edge of Vredenburg to the northwest and 8 km from the eastern part of Saldanha Bay to the west. The Langebaanweg Airforce Base is 6 km to the east. The study area itself is flat agricultural land. Although one part in the far northwest appears not to have been farmed, the remainder has been ploughed. Helme (2010) notes that this lack of ploughing is likely a result of extensive beds of calcrete close to the surface and that the tracks visible on aerial photographs are suggestive of livestock grazing.



**Figure 2:** Aerial view of the region showing the relationship between the study area and the local towns. Vredenburg is visible at top left, Saldanha Bay at lower left and the Langebaanweg Airforce Base at centre right.

### 4. METHODS

A review of existing literature was carried out to produce the heritage context in Section 5. This includes both published and unpublished reports. This contextual information forms the basis upon which the potential impacts associated with the proposed WEF are evaluated. Potentially sensitive areas are highlighted on a map in the conclusions. The project was conducted from the desktop only and no field survey component was carried out.

#### 4.1. Limitations and assumptions

Aside from the fact that no field survey was conducted, no limitations were experienced.

## **5. HERITAGE CONTEXT**

### **5.1. Palaeontology**

The general vicinity is highly significant in terms of palaeontological heritage with the Langebaanweg Fossil Park lying just to the east. Despite the richness of the five to six million year old fossils found there (Halkett & Hart 1999; Hendey 1969; Singer 1961), a survey of land just west of the proposed WEF did not yield any fossil material (Hart and Pether 2008). If fossils are present, they would most likely be buried. Several fossil-bearing geological formations are present in the study area and are described in detail by Hart and Pether (2008). Most significantly, these include the Elandsfontein, Varswater and Langebaan Formations. Hart and Pether note the range of material present to include pollen, which informs on palaeoenvironments, as well as the extensive faunal deposits such as are displayed at the Langebaanweg Fossil Park. Rogers (1983) describes the Uyekraal Shelly Sand Formation that occurs in the vicinity of Uyekraal. It has only been described from borehole data and no exposures have been examined.

Slightly further afield, some 15 km to the southeast, important fossils, including a human cranium, have been found at Elandsfontein (Klein 1988; Klein *et al.* 2007; Singer 1954; Singer & Wymer 1968). These fossils date within the last one million years. Other important fossil sites include Hoedjiespunt west of Saldanha Bay (Berger & Parkington 1995; Stynder *et al.* 2001) and Spreeuwalle on the coast just southwest of the study area (unpublished data referenced in Klein *et al.* 2007). Hoedjiespunt has two components: an upper shell midden with Middle Stone Age artefacts is archaeological, while a lower horizon contains bones likely accumulated by a hyena and is thus of palaeontological interest. Note that the most easily applied difference between palaeontology and archaeology is the association with humans in the latter.

### **5.2. Pre-colonial archaeology**

Along the coast in this part of South Africa several Middle Stone Age (MSA) shell middens have been identified (Avery *et al.* 2008; Berger & Parkington 1995). These are very important but are linked to the coast and thus similar finds would not occur in the current study area. Inland fossil sites such as Elandsfontein do include stone artefacts and thus have an archaeological component to them. Bifacial points associated with a period known as "Still Bay" have been found at a few localities on the Vredenburg Peninsula (Bateman 1946; Smith 2006). Isolated artefacts dating the Early (ESA) and Middle Stone Ages are regularly found throughout the Western Cape and are of little to no significance other than in that they document the range of occurrence of artefacts relating to each period.

Later Stone Age (LSA) material is more widely distributed and sites can be found in most areas. It is usually the case that sites are located in association with landscape features of one kind or another, be they silcrete outcrops where people have been quarrying stone for artefact manufacture or else rocky outcrops (in this area of granite) where shelter was sought. The latter is particularly evident at Kasteelberg 10 km northwest of Vredenburg and other smaller granite hills on the Vredenburg Peninsula (Sadr *et al.* 2003; Smith 2006; Smith *et al.* 1991). A recent survey that covered extensive tracts of land around the Kasteelberg Hill revealed rare isolated artefacts and very few meaningful concentrations of artefacts in open areas away from rocky outcrops (Webley *et al.* 2010). Another survey just east of the current study area yielded no surface archaeological material (Hart & Pether 2008), while a survey at the northern end of Saldanha Bay located just two ephemeral LSA sites (Hart 2003).

Another landscape feature that attracted prehistoric settlement is sand dunes. Some 20 km south of the study area Conard and Kandel (2006; Kandel & Conard 2005; Kandel *et al.* 2003) have described numerous occurrences of both MSA and LSA material located in deflating areas between the dunes. The same researchers have also worked in a large deflation at Anyskop, in the grounds of the Langebaanweg Fossil Park, where they found limited ESA and MSA artefacts as

well as numerous LSA artefacts and burnt stones indicative of hearths (Dietl *et al.* 2004; Kandel & Conard n.d.). The deflation lies atop a low hill that is underlain by a calcrete ridge (D. Halkett, pers. comm. 2010). Importantly, this site is located just 3 km away from the border of the proposed WEF.

Of course the pattern of sites associated with landscape features does not always hold true. In the town of Saldanha Bay, some 600 m from the coast and in a flat, open area, what might easily have been the most significant open shell midden on the Cape West Coast was found (Orton 2009). The area is flat today, but prior to modern development there might well have been something present that attracted people to the area, perhaps a small spring or even sand dunes. While almost the entire site was destroyed through construction activities, the tiny amount of material recovered showed that occupational spanning the last 6000 years occurred. Multiple burials were also present (Dewar 2010) but these were all clustered within a few centuries of 2000 years ago. Another significant open site found away from rocky outcrops is KFS5 (Fauvel-Aymar *et al.* 2006). This site was identified in ploughed land and contained material possibly suggestive of the presence of a Khoekhoe kraal.

LSA burials can occur almost anywhere, particularly in sandy substrate. People would likely have been buried at or very close to where they died and numerous burials have been reported from the Western Cape coast and adjacent hinterland (Morris 1992).

### **5.3. Colonial period**

Archaeological sites relating to the colonial period are generally rare with the most significant one from this region being Oudepost, a Dutch East India Company outpost on the Churchhaven Peninsula (Schrire *et al.* 1990). Historical records suggest that European settlers were living in the area from quite early on, but no other known historical archaeological sites are on record. A survey close to Saldanha Bay did find a scatter of late 19<sup>th</sup> or early 20<sup>th</sup> century glass and ceramics but these were not associated with anything (Orton 2007a).

### **5.4. Built environment**

The Vredenburg area has many farm houses and outbuildings dating to the 19<sup>th</sup> and 20<sup>th</sup> centuries but Fransen (2004) documents relatively few as significant heritage resources. No structures appear to be located on the proposed WEF site but some farm houses and outbuildings of unknown age do occur within 500 m of the site.

## **6. ASSESSMENT OF POTENTIAL IMPACTS**

Each aspect of heritage is considered separately but summarised in Table 2 below.

### **6.1. Palaeontology**

Given that palaeontological heritage is generally buried, it is difficult to estimate the degree to which such material might be impacted. However, given the frequency with which fossils have been encountered in the general area, it is anticipated that negative impacts will almost certainly occur. However, given the presence of an improperly described geological unit (Uyekraal Shelley Sand Formation), any excavation into this unit could provide a positive impact by allowing more detailed description and understanding of it from proper exposures.

The nature of impacts relates to disturbing and destroying fossil material through excavations, while the extent would be local.

Palaeontological impacts are generally easily mitigated through recording and possibly sampling the deposits into which excavations have been made. Due to the fact that palaeontological remains cannot be quantified from a surface survey, impacts to this category of heritage will not affect the decision to proceed with the proposed development.

Notwithstanding the above, it should be noted that it is difficult to accurately assess the impacts to palaeontology in this area without input from a professional palaeontologist. Almond and Pether (2008) rate the geological formations of this area as being of very high significance and recommend a scoping study prior to excavation.

## **6.2. Archaeology**

Prehistoric archaeological sites are unevenly distributed on the landscape, but most frequently are found to be associated with some sort of landscape feature. Given that the proposed WEF site is flat, open land and has mostly been ploughed (Helme 2010), it is expected that significant archaeological sites are unlikely to be encountered. Also, sites in ploughed areas will have had their integrity and research value reduced to some degree. The value of ephemeral or disturbed occurrences should not be underestimated, however (Orton 2007b), but they are generally far more easily and quickly mitigated. Sites found within the unploughed areas may be of more value, although it is not possible at this stage to determine whether such areas remain. It is not impossible that dunes and deflations might have been present in the WEF area at some point in the past and these may well have been occupied. Traces of these occupations would be easily detectable in the ploughed land. It is considered highly unlikely that colonial period archaeological resources would be encountered on the site. A quick scan of the 1938 aerial photography of the region shows fewer farmsteads than are present today suggesting a likely general rarity of colonial period heritage resources in the area.

It should be remembered that, unlike other environmental resources, archaeological sites are point resources and each one is unique.

The nature of impacts relates to disturbing and destroying archaeological material through excavations, while the extent would be local.

Although archaeological resources can, at times, have very high significance, they are the easiest to mitigate through excavation or, in the case of this project, adjusting the positions of the proposed infrastructure. This ensures that archaeological data are retained for further study and that impacts are reduced. A Phase 1 Archaeological Impact Assessment (AIA) will be required to determine how many specific sites might be impacted. This should include **all** components of the development, including turbines, cables, roads, power lines and substations. The AIA might result in some sites being recommended for preservation in which case appropriate mitigation would involve altering the position of the turbine. Such an occurrence is, however, extremely unlikely to occur. Given the nature of archaeological impacts and mitigation measures, these impacts are highly unlikely to affect the decision to proceed with the project.

## **6.3. Built environment**

No structures appear to be present on the site and no direct impacts to the built environment are expected. However, it is possible that nearby farm buildings could be significant and these might be negatively impacted indirectly as a result of their proximity to the proposed WEF. Such impacts, however, are unlikely to affect the decision to proceed with construction of the WEF.

## **6.4. Graves**

As mentioned above, unmarked pre-colonial graves can be found almost anywhere and could potentially be uncovered on the proposed WEF site. Colonial period graves are generally associated with farmhouses of which two are located a short way to the east of the site. It seems unlikely that any would be present on the study site and no evidence of ploughing around graves is currently visible on aerial photographs.

The nature of impacts to graves relates to their disturbance and possible destruction through excavations, while the extent would be local.

## **6.5. Cultural landscapes and sense of place**

The landscape around the study area is mostly dominated by agriculture and grazing land. Farmsteads are scattered throughout the area and a few tree lines and groves occur. The landscape lacks significant topography and is generally uninteresting to the eye. Within this agricultural landscape several industrial developments have been implanted. These include the large oil storage tanks to the southwest, the Saldanha Steel smelter to the west and the Namakwa Sands smelter to the northwest. Just north of the latter is the Salcor railway yard and associated infrastructure. Two substations are also present in this area, while a little further southwest is the iron ore terminal and harbour. Other light industrial facilities are also to be found between here and the town of Saldanha Bay. It is felt that the presence of a small WEF in this vicinity would not greatly alter the current cultural (industrial) landscape and should not affect the decision to proceed with the WEF.

The nature of impacts to these resources relates to the addition of man-made features to a landscape that has a particular character due to the presence in it of certain features, while the extent would most likely be local. The extent would be better determined through a Visual Impact Assessment.

## **6.6. Visual impacts and scenic routes**

As discussed above, the local landscape is dominated by agriculture, but with significant industrial infrastructure having been added. These latter developments lie to the west of the proposed WEF site, perhaps lending a suitable backdrop to the proposed WEF as viewed from the R27 (Figure 3). For much of its route the R27 is certainly regarded as a scenic route, but the presence of industrial infrastructure in relatively close proximity does detract significantly from the general air of openness that one experiences while travelling this route.

The nature of impacts to these resources relates to the addition of man-made features to a landscape that has particular aesthetic or visual value, while the extent would most likely be local. Again, the extent would be better determined through a Visual Impact Assessment.

## **7. FURTHER STUDIES AND POSSIBLE MITIGATION REQUIREMENTS**

Three heritage-related studies are required.

A Palaeontological Impact Assessment (PIA) will certainly be required, since the area is rich in fossil heritage which would quite likely be impacted by the proposed WEF. Mitigation of impacts would likely revolve around inspection and recording of all excavations by a palaeontologist, and possibly collection of significant fossils should they be revealed. There is a small chance that highly significant and extensive fossil beds such as those at Langebaanweg could be revealed. This would likely result in the need to alter turbine positions as appropriate.

A Heritage Impact Assessment (HIA) will need to identify heritage sites falling within the proposed footprints, assess their significance and recommend mitigation measures if appropriate. This study should incorporate both archaeology and relevant aspects of general heritage, although it is anticipated that the contribution of the latter will be very minor. Based on the outcome, some form of mitigation may be required. If moving the turbines and other infrastructure is not an option then mitigation would likely involve a program of excavations to recover archaeological material which would then be curated in the provincial museum. Analysis (and radiocarbon dating if appropriate) of the excavated material will need to be carried out. Archaeological mitigation will need to be conducted under a permit issued by Heritage Western Cape. Buffer zones may need to be proposed around any significant sites or structures (which might even occur off-site) where other suitable mitigation is not possible.

Unlike most WEF proposals, the Visual Impact Assessment (VIA) is not likely to be as significant as is often the case. Such a study would primarily seek to assess the spatial extent of the visual impact and the impact to sense of place. CNdV Africa (2006:13) state that “whilst encouraging large windfarms in appropriate rural locations, it is imperative to protect the scenic value of landscapes important to the tourism industry”. As a result of the already extensive industrial development in the vicinity, this report finds that the immediate area around the proposed WEF is unlikely to emerge as significant to the tourism industry and might be seen as an appropriate location (although not necessarily rural).

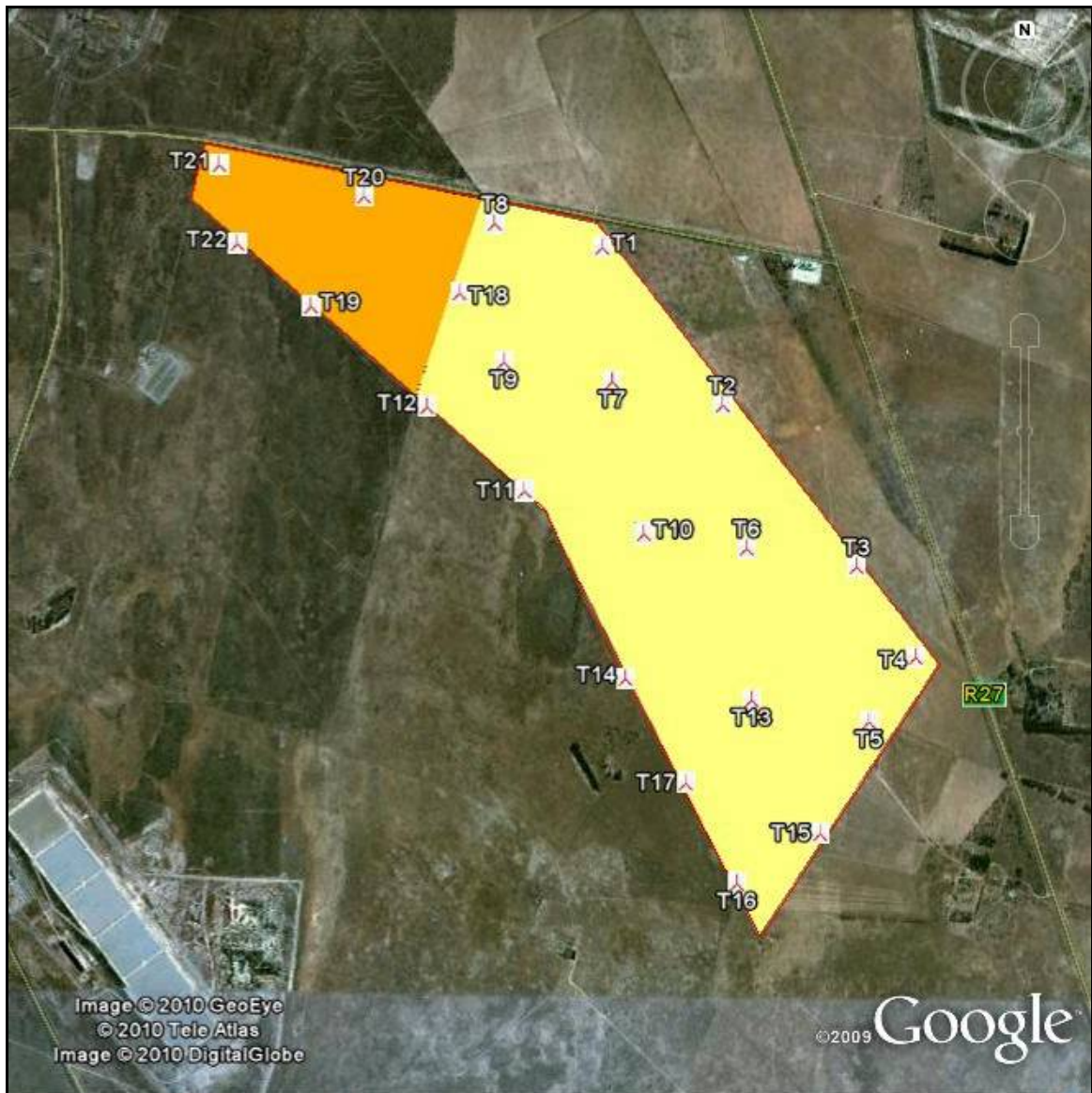


**Figure 3:** Aerial view of the area around and west of the proposed WEF showing other industrial facilities and infrastructure. The R27 road runs across the upper right hand side of the image.

## 8. CONCLUSIONS

The proposed WEF will result in impacts to heritage resources. Palaeontological resources will very likely be affected, while impacts to archaeology will probably be less significant. Impacts to both these types of heritage resources are easily mitigated and will not affect the decision to go ahead with the project at this stage, although they will need detailed assessment at the EIA Phase. A small chance of highly significant palaeontological resources being present does exist. The impacts to the landscape and the visual impacts are less easy to address, but these are not likely to be very highly significant given the existing industrial infrastructure in the vicinity. Figure 4 shows a sensitivity map. This is based on the assumption that all ploughed areas of the site are likely to be of lower significance and that the possibility of sites with better integrity being found will be higher in the unploughed area which also has more extensive calcrete. Sensitivity is

thus based mostly on palaeontology and archaeology. Visual and related impacts are not easily quantified without a VIA, but these are likely to not be of more than medium significance. Table 1 summarises the expected impacts.



**Figure 4:** Map showing the two different sensitivity ratings applied to the site based primarily on palaeontology and archaeology. Orange indicates Medium, while yellow is Low.

**Table 4:** Summary of expected impacts to heritage in the Uyekraal WEF study area.

<b>Heritage component</b>	<b>Expected extent of impact</b>	<b>Expected duration of impact</b>	<b>Expected intensity of impact</b>	<b>Expected probability of impact</b>	<b>Expected significance (no mitigation)</b>	<b>Expected significance (with mitigation)</b>	<b>Actions required</b>
Palaeontology	Local	Permanent	Low-Medium	High	Medium-High	Low	Phase 1 PIA*
Archaeology	Local	Permanent	Low-Medium	Medium	Medium	Low	Phase 1 AIA*
Built environment	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Cultural landscapes and sense of place	Local	Long term	Low-Medium	Definite	Medium	Low-Medium	VIA
Visual impacts and scenic routes**	Local	Long term	High	Definite	High	n/a	VIA

\* Note that the AIA will be incorporated within the HIA but that a separate specialist would be required to produce a PIA.

\*\* This assessment may differ from that provided by a visual impact specialist but is a best estimate based on current information.

## 9. REFERENCES

- Almond, J. & Pether, J. (2008). Heritage Western Cape Interim Technical Report (May 2008): Palaeontological Heritage of the Western Cape. Unpublished report prepared for Heritage Western Cape.
- Avery, G., Halkett, D., Orton, J., Steele, T. & Klein, R. (2008). The Ysterfontein 1 Middle Stone Age Rockshelter and the evolution of coastal foraging. *South African Archaeological Society Goodwin Series* 10: 66-89.
- Bateman, P. (1946). Archaeological notes on the Saldanha Bay district. *South African Archaeological Bulletin* 1: 41-45.
- Berger, L.R. & Parkington, J.E. (1995). A new hominid-bearing Pleistocene locality at Hoedjiespunt, South Africa. *American Journal of Physical Anthropology* 98: 601-609.
- Conard, N.J. & Kandel, A.W. (2006). The economics and settlement dynamics of the later Holocene inhabitants of near coastal environments in the West Coast National Park (South Africa). In Wotzka, H-P (ed) *Grundlegungen. Beiträge zur europäischen und afrikanischen Archäologie für Manfred K. H. Eggert*. Tübingen: Francke: 329- 355.
- Conard, N. J., T. J. Prindiville and A. W. Kandel. (1999). The 1998 fieldwork on the Stone Age archaeology and palaeoecology of the Geelbek Dunes, West Coast National Park, South Africa. *Southern African Field Archaeology* 8: 35-45.
- CNdV Africa. (2006). Strategic initiative to introduce commercial land based wind energy development to the Western Cape: towards a regional methodology for wind energy site selection. Unpublished report prepared for Provincial Government of the Western Cape. CNdV Africa.
- Dewar, G. (2010). Late Holocene burial cluster at Diaz Street Midden, Saldanha Bay, Western Cape, South Africa. *South African Archaeological Bulletin* 65: 26-34.
- Dietl, H., Kandel, A.W. & Conard, N.J. (2005). Middle Stone Age settlement and land use at the open-air sites of Geelbek and Anyskop, South Africa. *Journal of African Archaeology* 3: 233-244.
- Fauvelle-Aymar, F.-X., Sadr, K., Bon, F. & Gronenborn, D. (2006). The visibility and invisibility of herders' kraals in southern Africa, with reference to a possible early contact period Khoekhoe kraal at KFS5, Western Cape. *Journal of African Archaeology* 4: 253-271.
- Fransen, H. (2004). *The old buildings of the Cape*. Johannesburg & Cape Town: Jonathan Ball.
- Halkett, D. & Hart, T. (1999). West coast report on pilot excavations at 'E' Quarry, Langebaanweg Fossil Park, Langebaanweg. Unpublished report prepared for Earth Sciences Division, South African Museum. Archaeology Contracts Office, University of Cape Town.
- Hart, T. (2003). Heritage impact assessment of a portion of the farm Pienaars Poort owned by National Port Authority (NPA), Saldanha Bay. Unpublished report prepared for Philip Rosenthal, Environmental Engineer. Archaeology Contracts Office, University of Cape Town.
- Hart, T. & Pether, J. (2008). Phase 2 expansion of the Sishen - Saldanha Iron Ore Export Corridor, Saldanha Bay, Western Cape: heritage impact assessment (part 1), palaeontological impact assessment (part 2). Unpublished report prepared for Transnet. University of Cape Town: Archaeology Contracts Office.

- Helme, N. (2010). Botanical scoping assessment of site for proposed Uyekraal Wind Energy Facility near Saldanha, Cape West Coast. Unpublished report prepared for Savannah Environmental. Scarborough: Nick Helme Botanical Surveys.
- Hendey, Q.B. (1969). Quaternary vertebrate fossil sites in the south-western Cape Province. *South African Archaeological Bulletin* 24: 96-105.
- Kandel, A.W. & Conard, N.J. (n.d.). The archaeology of the Anyskop blowout of the West Coast Fossil Park. Unpublished report sourced accessed online at: <http://www.fossilpark.org.za/pdfs/academic-info-anyskop.pdf>. Accessed 01 November 2010.
- Kandel, A.W. & Conard, N.J. (2005). Production sequences of ostrich eggshell beads and settlement dynamics in the Geelbek Dunes of the Western Cape, South Africa. *Journal of Archaeological Science* 32: 1711-1721.
- Klein, R.G., Avery, G., Cruz-Uribe, C. & Steele, T. (2007). The mammalian fauna associated with an archaic hominin skullcap and later Acheulean artefacts at Elandsfontein, Western Cape Province, South Africa. *Journal of Human Evolution* 52: 164-186.
- Orton, J. (2007a). Archaeological and palaeontological assessment of two portions of a road alignment near Langebaan and Saldanha Bay, Vredenburg and Hopefield Magisterial Districts. Unpublished report prepared for The Environmental Partnership. University of Cape Town: Archaeology Contracts Office.
- Orton, J. (2007b). The sampling of ephemeral shell scatters in Namaqualand, South Africa. *South African Archaeological Bulletin* 62: 74-78.
- Orton, J. (2009). Rescue excavation at Diaz Street Midden, Saldanha Bay, South Africa. *Azania: Archaeological Research in Africa* 44: 107-120.
- Rogers, J. (1983). Lithostratigraphy of Cenozoic sediments on the coastal plain between Cape Town and Saldanha Bay. Technical Report of the Joint Geological Survey/University of Cape Town Marine Geoscience Unit 14: 87-103.
- Sadr, K., Smith, A., Plug, I., Orton, J. & Mutti, B. (2003). Herders and foragers on Kasteelberg: interim report on excavations 1999-2002. *South African Archaeological Bulletin* 58: 27 – 32.
- Schrire, C., Deetz, J., Lubinsky, D. & Poggenpoel, C. (1990). The chronology of OPudepost 1, Cape, as inferred from an analysis of clay pipes. *Journal of Archaeological Science* 17: 269-300.
- Singer, R. (1954). The Saldanha skull from Hopefield, South Africa. *American Journal of Physical Anthropology* n.s. 12: 345-362.
- Singer, R. (1961). The new fossil sites at Langebaanweg, South Africa. *Current Anthropology* 2: 385-387.
- Singer, R. & Wymer, J. (1968). Archaeological investigations at the Saldanha skull site in South Africa. *South African Archaeological Bulletin* 23: 63-74.
- Smith, A.B. (2006). Excavations at Kasteelberg and the origins of the Khoekhoen in the Western Cape, South Africa. Oxford: BAR International Series 1537.
- Smith, A.B., Sadr, K., Gribble, J. & Yates, R. (1991). Excavations in the South-Western Cape, South Africa, and the archaeological identity of prehistoric hunter-gatherers within the last 2000 years. *South African Archaeological Bulletin* 46: 71-91.

Stynder, D.D., Moggi-Cecchi, J., Berger, L.R., Parkington, J.E. 2001. Human mandibular incisors from the late middle Pleistocene locality of Hoedjiespunt 1, South Africa. *Journal of Human Evolution* 41: 369-383.

Webley, L., Orton, J. & Hart, T. 2010 Heritage impact assessment: proposed West Coast One Wind Energy Facility, Vredenburg District, Western Cape. Unpublished report prepared for Savannah Environmental. St James: ACO Associates.