

SCOPING HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED OLIFANTS RIVER WIND ENERGY FACILITY, VREDENDAL MAGISTERIAL DISTRICT, 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

Savannah Environmental (Pty) Ltd

PO Box 148
Sunninghill, 2157
Phone (011) 2346621
Fax (086) 684 0547

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Prepared by

Jayson Orton

ACO Associates

8 Jacobs Ladder
St James
Cape Town
7945

Phone (021) 650 2357
Fax (021) 650 2352
Email Jayson.Orton@uct.ac.za

EXECUTIVE SUMMARY

ACO Associates CC was requested by Savannah Environmental (Pty) Ltd to assess the potential impacts that might occur through construction of a wind energy facility (WEF) near the mouth of the Olifants River in southern Namaqualand (Figure 1). The project is to be known as the 'Olifants River Wind Energy Facility' and the chosen site lies over three properties as follows:

- Remainder of Olifants River Settlement 618;
- Remainder of Zoutpansklipheuwel 268; and
- Portion 1 of Zoutpansklipheuwel 268.

The facility would include up to 115 turbines and have a maximum generating capacity of approximately 350 MW. The total area under consideration is approximately 3000 ha in extent.

The site is a large area in the lower Olifants River valley near the settlements of Ebenhaezer and Koekenaap and lies on both sides of the river.

Heritage is very likely to occur in the project area and will be impacted by the proposed WEF development. Palaeontology could occur anywhere and will need specialist assessment. Archaeological remains could also occur anywhere but are likely to be more significant closer to the river. General heritage issues are likely to be of greatest significance closer to the river and relate to the erosion of the context of the agricultural landscape and settled areas. Visual impacts are likely to be significant over the entire project area.

The north-western part of the site is considered likely to have the least significant impacts to archaeology and general heritage and might be favoured for development. This is not necessarily the case for visual impacts though since the landscape has a very limited ability to absorb structures as large as wind turbines.

A full heritage impact assessment should be commissioned during the EIA Phase of the project and this will need to incorporate a specialist desktop palaeontological study, an archaeological field study and a visual assessment. The latter should consider as visual receptors areas deemed to be of higher significance in its assessment of visual impact. No areas are considered to be no-go areas, although ultimately the degree of visual impact may suggest that the project is not feasible.

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1. INTRODUCTION

ACO Associates CC was requested by Savannah Environmental (Pty) Ltd to assess the potential impacts that might occur through construction of a wind energy facility (WEF) near the mouth of the Olifants River in southern Namaqualand (Figure 1). The project is to be known as the 'Olifants River Wind Energy Facility' and the chosen site lies over three properties as follows:

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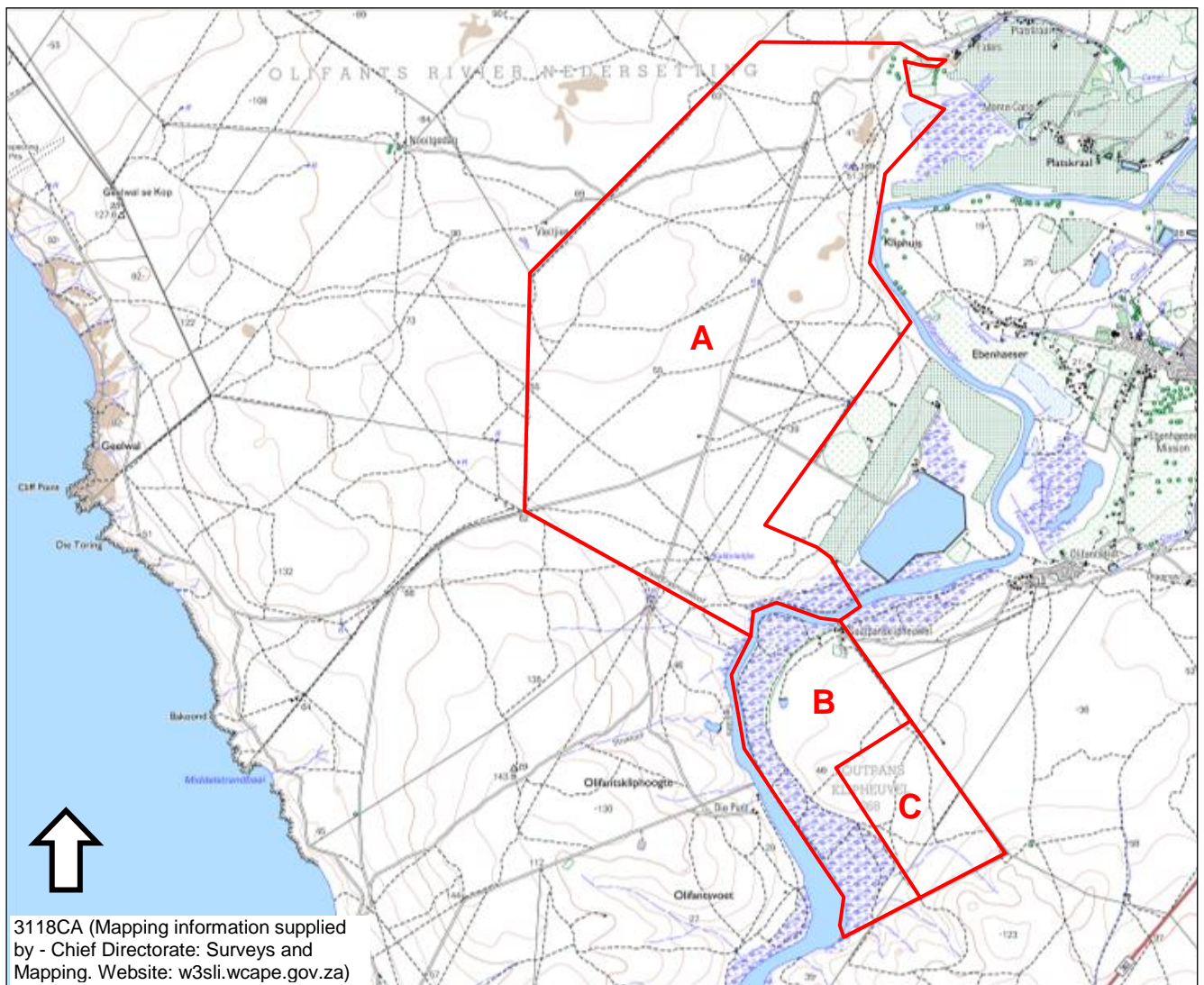


Figure 1: Map showing the location of the site and the three land parcels under consideration. A: 618/Rem., B: 268/Rem., C: 268/1.

The facility would require the following:

- concrete foundations to support the turbine towers which would be up to 100 m tall;
- cables between the turbines (underground where feasible);
- an on-site substation;
- overhead power lines to link the facility to the grid;
- an access road to the facility from local roads;

- internal access roads to each turbine; and
- a workshop area for maintenance and storage.

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 older than 60 years and located outside of a formal cemetery administered by a local authority (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)). Section 38 (2a) states that if there is reason to believe that heritage resources will be affected then an impact assessment report must be submitted. This report serves a scoping report within the overall Environmental Impact Assessment process but a Heritage Impact Assessment would need to be submitted at a later stage to fulfil that requirement if appropriate.

Since the project is subject to an Environmental Impact Assessment, Heritage Western Cape (HWC) is required to provide comment on the proposed project in order to facilitate final decision making by the Department of Environmental Affairs (DEA).

3. METHODS

This report was prepared from the desktop making use of data already on record from other projects conducted in the area.

3.1. Limitations

The lack of fieldwork is not considered a significant limitation at this stage, since enough is known of the area's heritage resources to make a reasonable judgement. The author is also well acquainted with the general region.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The site is a large area located between 6.7 km and 16.0 km northeast of the mouth of the Olifants River in southern Namaqualand. The area is generally characterised by very low relief and gently undulating terrain. The river cuts through an otherwise dry landscape with very low bushes, usually no more than knee-high.

Along the river itself there is much farming activity with cultivated fields extending more than 1.5 km from the river in places, but in the vicinity of the site this figure is generally much smaller with some uncultivated areas adjoining the river (Figure 3). Agriculture is either grapes or vegetables. much of the unploughed land is used for grazing of small stock.

5. HERITAGE CONTEXT

5.1. Palaeontology

Through examination of the geology map in Almond and Pether (2008) it is apparent that the site lies at or very close to the intersection of three different geological groups: The Namaqua Metamorphic Province, The Gariiep Supergroup and the Cape Supergroup. The first is non-fossiliferous, while the second is of low palaeontological significance and requires no action. The Table Mountain rocks of the Cape Supergroup, however, are of more significance and some units within this group are known to contain important fossils.

House (pers. comm. 2011) has recently excavated at a fossil hyaena lair along the coast. The site is located beneath a capping of calcrete and similar occurrences would probably not be found on the proposed WEF site.



Figure 2: View from the R363 looking southwest towards the site which would be located on the skyline. The very flat topography is clear. This is the nearest view of the site that can be obtained from Google Earth Street View.

5.2. Pre-colonial archaeology

Little archaeological research has been undertaken in close proximity to the proposed site, although one scoping field survey did pass through the area on the southern side of the Olifants River. Two other sites are known within the study area on the north side of the river. These known sites in close proximity to the study area are discussed below, followed by a broader discussion of other archaeology known from the wider area.

ON001

This site would undoubtedly have been the most significant archaeological site in the wider region had it not been all but completely destroyed through illegal activities by the landowner. It was visited on 6th June 2010. The site is a rock shelter overlooking a bend of the Olifants River and located in a band of resistant sandstone. A massive archaeological deposit was no doubt once present but the vast majority of this has been removed and replaced by a cement amphitheatre (Figure 5). Electrical fittings have been fastened to the roof. The local context of the site has also been destroyed through development of various facilities.

Deposit still clings to the roof of the cave in the rear (Figure 6) indicating that extensive volumes must have been removed and a collection of bones, including human bones, has been assembled on the side of the shelter (Figure 7). Rock art is present on the roof (Figures 8 & 9).

ON002

This is a small shelter some 190 m to the north of ON001 in the same rock band (Figure 10). Some rock art is faintly visible (Figure 11) and a selection of marine shells and stone artefacts is visible in the surrounding sand.



Figure 3: Aerial view of the study area showing the location of the site (red polygon), local agricultural areas (green land) and natural vegetation (brown land).

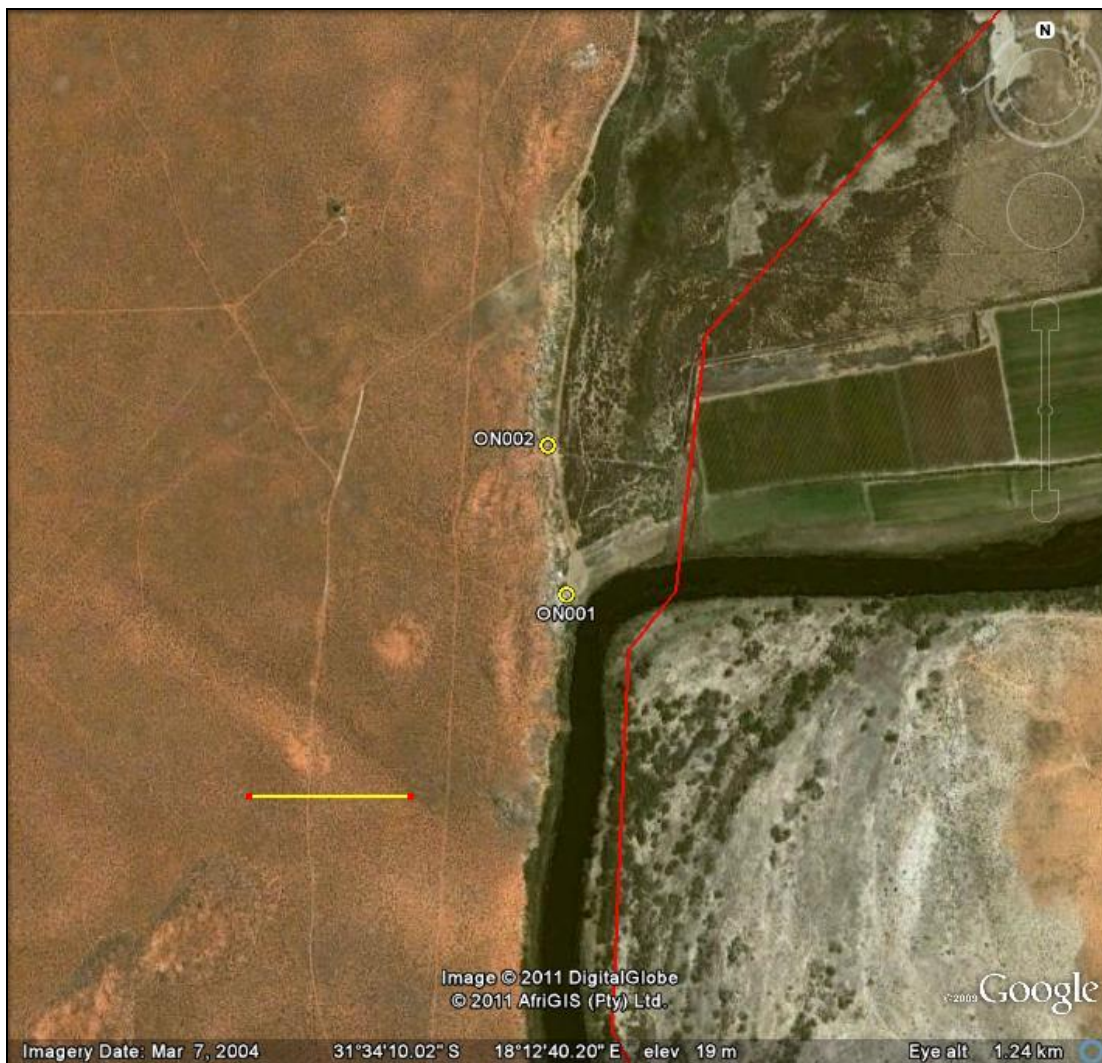


Figure 4: Part of the northern area showing sites already on record there. The yellow bar for scale is 200 m.



Figure 5: View out of the mouth of the ON001 site. Photo: 02.06.2010.



Figure 6: View of the interior of ON001. Photo: 02.06.2010.



Figure 7: A rock art panel on the roof of the ON001 cave. Scale in cm. Photo: 02.06.2010.

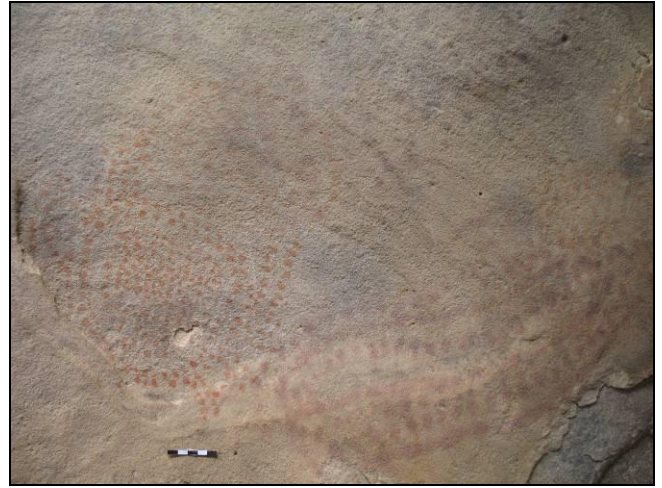


Figure 8: A second rock art panel on the roof of the ON001 cave. Photo: 02.06.2010.



Figure 9: Bones collected up on the side of the ON001 site. At least one human bone is lying exposed in this cluster. Photo: 02.06.2010.



Figure 10: The shelter at ON002.



Figure 11: Rock art at ON002.



Figure 12: Part of the southern area showing sites already on record there. The yellow bar for scale is 500 m.

CA07

Yates (2003) describes this occurrence as a dense scatter of ESA and/or MSA artefacts including small hand-axes, flakes with prepared platforms and various cores, flakes and blades. The artefacts were found within an area of alluvial gravels on the palaeo-terrace of the Olifants River. The site lies outside of the project area, some 1.7 km to the east, but is probably representative of the kind of material that might be located elsewhere that similar alluvial gravels are exposed.

CA09, CA10, CA11

These three points together marked a diffuse and fragmented LSA shell scatter with the central one indicating the position of a possible cairn (Yates 2003). Location of these points on Google Earth shows a ploughed field which may be recent covering part of the area. The site was observed to contain pottery, ostrich eggshell and manuports. A background scatter of MSA items was also evident in the vicinity.

CA12

This site is another diffuse and fragmented LSA shell scatter (Yates 2003). Ostrich eggshell fragments, silcrete flaked artefacts and some cobbles were noted on site and a background scatter of MSA items was also evident. This site lies just within the proposed WEF area.

CA13

At this point, alongside an old prospecting pit, Yates (2003) noted ESA and MSA material lying on an eroded/deflated surface. This observation is no doubt very typical of what has been seen to the north of the Olifants River (see below).

Other areas

Further afield, shell middens and other archaeological sites are known to occur along the tops of the coastal cliffs to the west (personal observation) as well as in dune areas along the shoreline to the north (Hart 1999, 2003; Parkington & Poggenpoel 1991). Most are revealed in areas where wind erosion has resulted in deflation and particularly important in this area is the possibility of Middle Stone Age sites with preserved bone and maybe shell (Halkett 2000). Other similar sites are known from the southern Namaqualand coastline a little further to the north (Halkett *et al.*, 1993; Hart & Halkett 1999). How far inland such sites might occur is completely unknown, but they are more likely to occur closer to the coast.

Some 11 km north of the present study area Hart (2007) recorded small Later Stone Age shell scatters clustered around small pans lying about 3.5 km inland of the coast. This pattern of sites has not been recorded elsewhere in the area and these sites carry high archaeological significance. Elsewhere along the west coast of South Africa shell middens are regularly found several kilometres inland and at the Sout River, 46 km northwest of the study area, they have been found 6 km from the shore (Orton 2010b). There the river may have been the reason for that settlement location and along the Orange River shell middens have been recorded all along the south bank up to 2.5 km inland but almost 4 km from the coast along the river bank (Orton 2010c). We may expect a similar pattern along the Olifants River. Hart (2007) and Orton (2010a) also noted the presence of Early and Middle Stone Age artefacts around the deflated and eroded edges of borrow pits. These indicate that such artefacts are probably widely present on the landscape beneath the surface sands and will be exposed anywhere that excavations penetrate deep enough – in these cases usually only up to about 0.5 m. Such artefacts are thought to occur very widely and their poor context means they are of little archaeological significance.

Large parts of the proposed site appear to have heuweltjies¹ on the surface. Recent work in other parts of Namaqualand has shown that Middle and Early Stone Age artefacts are regularly found associated with the heuweltjies. It is as yet unknown why this relationship occurs. In one area, near Klawer, Orton (2011a) also found Later Stone Age material associated with them. A similar pattern may prevail in this area, although this remains to be tested. The nearest heuweltjies examined are between Vredendal and Lutzville where ESA and probably MSA material was associated with them (Orton 2011b).

5.3. Historical archaeology

The Cape Colony was expanded to the Olifants River from quite an early date so, unlike many other parts of southern Namaqualand, historical archaeology is quite likely to be found here. The settlement of Ebenhaezer is located close by, some 2.5 km to the east of the site and we know from Yates (2003) that several historical graveyards are located in the vicinity. Although historical archaeological remains are not yet documented in the area, one would expect to find kitchen

¹ Heuweltjies are ancient termitaria that occur as harder soil in low mounds; they are typical of South Africa's drier parts. They are generally lightly calcretised through interaction of groundwater with the more alkaline soil of the mound (Moore & Picker 1991).

dumps associated with older houses and ruins. An example is known from the central Knersvlakte where a dump associated with a ruin contains extensive quantities of animal bone along with some marine shells and occasional historical artefacts. When no longer useable or easily repairable, old ruins are also considered as archaeology. There could well be such finds within the study area, particularly in the neighbourhood of other structures.

5.4. Built environment

Although Fransen (2004) lists no significant buildings from this area – the nearest is in Vredendal – this does not mean that there will not be old structures with local significance present in the study area. The only structures within the proposed WEF area as visible on Google Earth are those of the Soutpansklipheuwel werf (Figure 13). From their roofs there may well be structures here dating to the late 19th century. Because wind turbines are as large as they are, their impacts in terms of erosion of sense of place extend far wider than just the land area under consideration. This means that other buildings in proximity should also be examined. As mentioned, the settlement of Ebenhaezer is located immediately to the east (see Figure 1).



Figure 13: Aerial view of the Soutpansklipheuwel farm werf.

5.5. Graves

Graveyards are present in the area as documented by Yates.

CA08

This point marks five graves, one of which dates to the 1960s. The other four are thought to be early 20th century. This point lies right at the edge of the proposed development area but other informal graveyards have also been recorded by Yates (2003) in the region. Graves are probably common in the area due to the presence of the settlement of Ebenhaezer on the southern bank of the river and just east of the site.

Pre-colonial graves, usually completely unmarked, can be found almost anywhere on the landscape where substrate suitable for excavation exists. One burial is on record from the area, although it is not known where exactly this was recovered from. It is described as being from "Waterbakke, near Lutzville" and was said to be an "isolated grave just above the high water mark" (Morris 1992: 64).

5.6. Cultural landscapes and sense of place

The proposed WEF area does not include any major agricultural lands within its bounds, but nonetheless, a significant agricultural landscape exists in the region. Although relatively recent in origin, the agriculture is focused on the wine industry, it has tourism value and it very strongly defines the lower Olifants River valley. The region is centred around Vredendal and Lutzville, the two bigger towns, but includes the villages of Koekenaap and Ebenhaezer which lie closer to the study area (Figure 14). The latter is perhaps of most importance due to its proximity to the WEF site but the village is quite recent as shown by the 1958 aerial photographs (Figure 15). The contrast between agriculture and natural vegetation is very stark as is evident from Figure 14 and wind turbines would introduce an industrial element to this strongly agricultural landscape.



Figure 14: Aerial view of the wider region showing the nearby towns, villages, winelands and other agricultural areas. The yellow bar for scale is 5 km.

The region is also very scenic, largely because of the winelands and undisturbed natural space. The R362, which passes to the south of the site, can be regarded as a scenic route. It links Lutzville to the coastal towns and settlements of Papendorp, Strandfontein and Doringbaai.

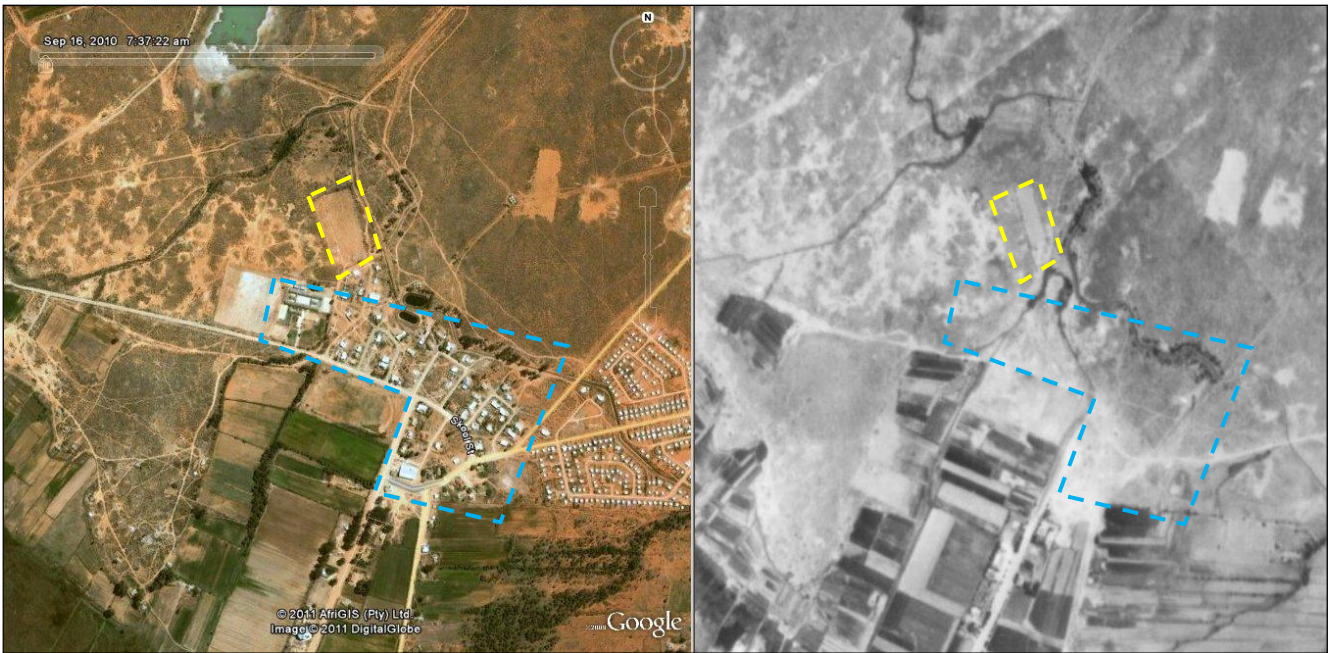


Figure 15: Comparison between modern and 1958 aerial photographs showing that the settlement of Ebenhaeser is relatively recent in origin. The village area (blue) and graveyard (yellow) are highlighted.

6. FINDINGS AND FURTHER REQUIREMENTS

6.1. Palaeontology

Fossils are likely to be encountered in certain rocks in the vicinity and a palaeontological study should be done. This will almost certainly take the form of a desktop study which would serve to inform the proponent on the nature of impacts that could be expected and the type of mitigation that might be required as a result.

6.2. Archaeology

Archaeological sites are very likely to be impacted by the proposed development. However, the vast majority of these are certain to be of generally low, local significance and, if necessary, could be easily mitigated. This would apply more strongly to sites with shell which are usually more likely to preserve other aspects of archaeological heritage besides stone artefacts. There is a small chance that important shell middens could be encountered close to the river and these would need mitigation if they cannot be avoided by the proposed development. It is likely that further significant sites will be present along the cliff band alongside the river but these would not be impacted by the development.

Areas where older stone artefacts are found associated with alluvial gravels are less likely to require any form of mitigation, but if particularly high densities are encountered then some sort of record of the artefacts present may be necessary, even if the data is collected on site with no sampling being undertaken.

Historical archaeology is more likely to be encountered in close proximity to the existing settled areas and thus unlikely to be impacted by the turbines and associated infrastructure.

A Phase 1 ground survey of the proposed layout will be required in order to locate any archaeological sites or materials that may be impacted. The archaeology can then be assessed for significance and mitigation measures proposed if necessary. Many archaeological occurrences of

low significance can be recorded during the Phase 1 survey and would be unlikely to need Phase 2 mitigation but the possibility of highly significant sites does exist.

6.3. Built environment

No built structures should be directly impacted by the proposed development but indirect impacts in terms of the erosion of context will be felt. This will need to be explored and the significance of the various buildings in the vicinity would need to be established through ground survey.

6.4. Graves

It is unlikely that known informal graveyards will be impacted by the proposed WEF but the possibility of encountering unmarked pre-colonial graves does exist, particularly in the loose sands of the Sandveld. A ground survey would document any graveyards or isolated graves that can be found in the vicinity but unmarked pre-colonial graves might only be found during excavation of turbine foundations.

6.5. Cultural landscapes and sense of place

This aspect is very difficult to deal with since mitigation is seldom possible. Moving some turbines or restricting the area of development to one part of the study area may help. A Visual Impact Assessment would be of assistance in this regard and the assessment should take into consideration significant aspects of heritage such as the cultural landscape and the settlements as well as the R362 scenic route.

7. CONCLUSIONS AND RECOMMENDATIONS

This site may be difficult to use for the proposed development. Without doubt, the southern part of the site and areas close to the river will be most sensitive. Development of the high ground to the northwest, although still likely to produce significant visual impacts, may help to reduce some of the other heritage-related impacts.

From the point of view of archaeology and palaeontology there are no areas that are likely to be particularly highly sensitive and none are considered to be no-go areas. Keeping the development away from the river will certainly help reduce archaeological impacts (Figure 17).

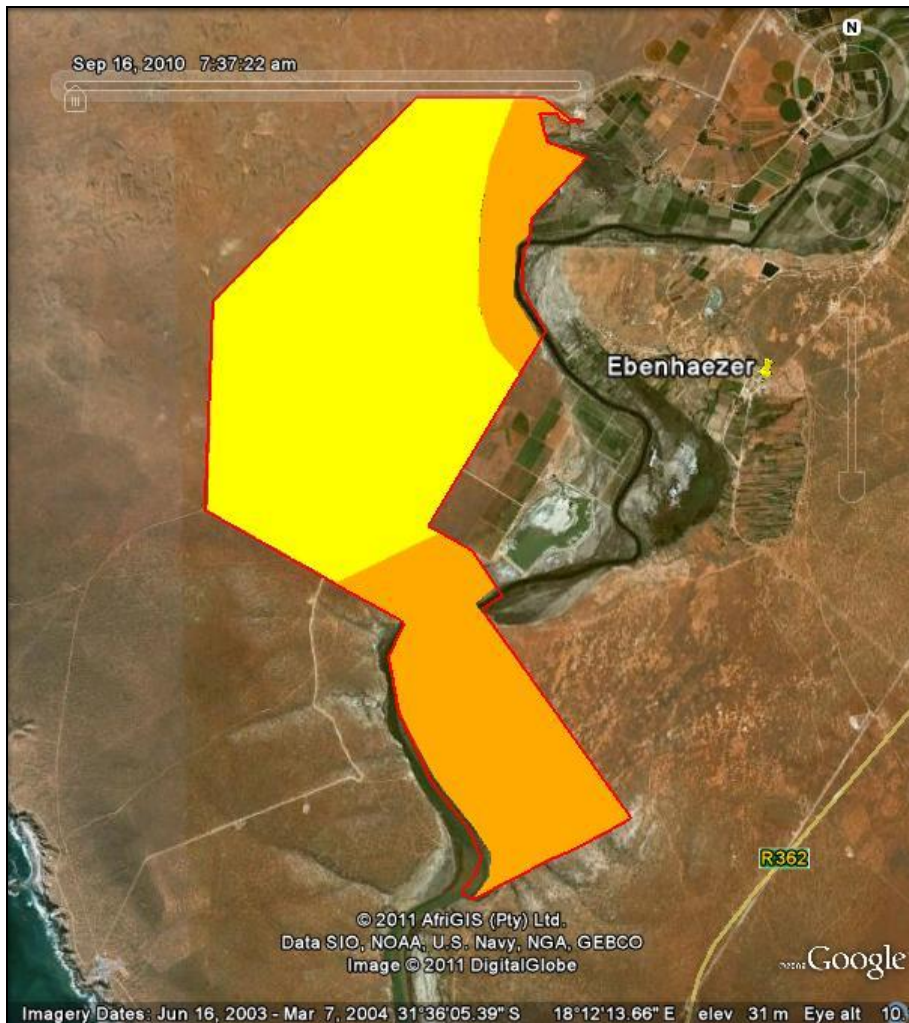


Figure 16: Aerial view of the study area showing the areas of archaeological sensitivity. Orange is medium and yellow is low.

General heritage issues related to the context of the agricultural and settled landscape will be of greater concern and to this end the areas closest to the river are most sensitive, although it should be noted that the actual village of Ebenhaezer does not appear to be very old at all. It is recommended that the proponent consider keeping the development as far to the northwest as possible, probably staying at least 2 km from the river at all times (Figure 17).

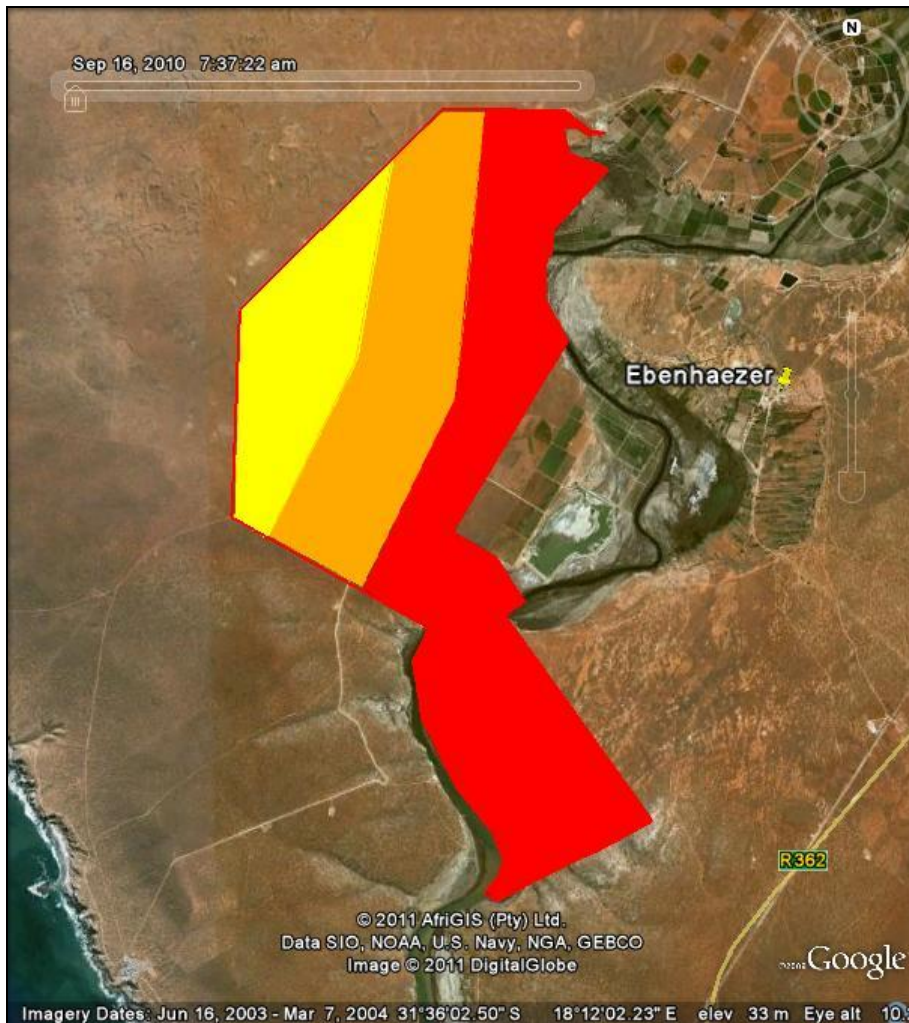


Figure 17: Aerial view of the study area showing the areas of general heritage sensitivity. Red is high, orange is medium and yellow is low.

It is felt that the visual component is the most significant aspect under consideration here. To this end, visual impacts to the agricultural and settled landscape will need to be assessed, as will impacts to the R362 scenic route. Use of the high-lying area to the northwest is likely to reduce impacts related to the former issues, but, in turn, developing this high ground will probably still result in significant impacts to the scenic route and general landscape which has little capacity to absorb structures the size of wind turbines. The only aspect that can reduce the potential significance of visual impacts would be the generally low incidence of visual receptors in an area with a low population density. The entire project area is thus considered to be of high visual significance (Figure 18). While other aspects of heritage do not preclude development, the visual study may ultimately show that development of the site is not feasible.

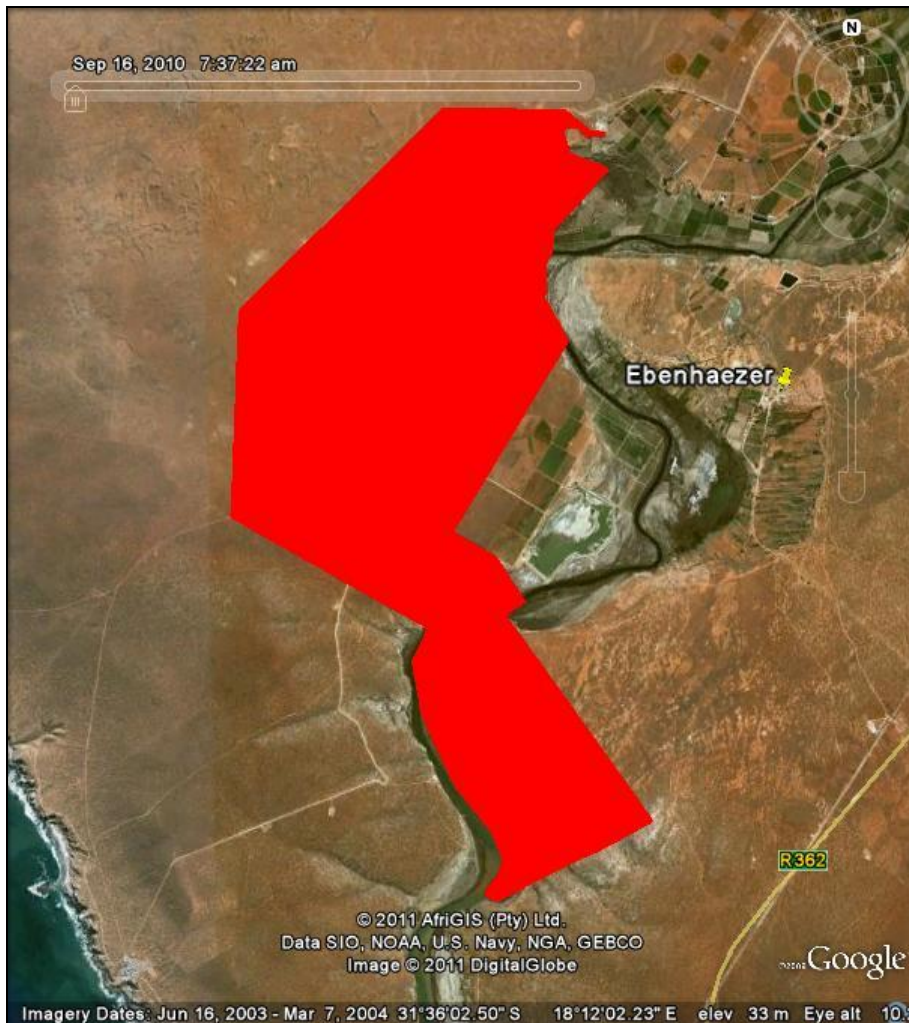


Figure 18: Aerial view of the study area showing the areas of general heritage sensitivity. Red is high.

A full heritage impact assessment will need to be carried out with the following specialist contributions:

- Palaeontology (desktop study);
- Archaeology (field study); and
- Visual assessment.

A built environment specialist is not required since no direct impacts will occur, but during the archaeological survey all significant structures should be recorded and their locations provided to the visual assessor for consideration as visual receptors in their assessment.

8. 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.
- Fransen, H. (2004). The old buildings of the Cape: Jeppestown: Jonathan Ball Publishers (Pty) Ltd.
- Hart, T. (1999). A phase 1 archaeological assessment of the proposed Liebenbergs Bay Mine, Vredendal. Unpublished report prepared for Rency (Pty) Ltd. Archaeology Contracts Office, University of Cape Town.

- Hart, T. (2003). Phase 1 archaeological assessment of proposed diamond mining areas situated at the farms Geelwal Karoo, Klipvley Karoo Kop and Graauduinen, Vredendal District, Western Cape. Unpublished report prepared for SRK Consulting. University of Cape Town, Archaeology Contracts Office.
- Hart, T. (2007). Heritage Impact Assessment (prepared as part of an EIA) of a proposed Wind Energy Facility to be situated at Olifants River Settlement 617, 620 and Grave Water Kop 158/5 situated on the Namaqualand Coast in the Vredendal District, South Western Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. University of Cape Town, Archaeology Contracts Office.
- Halkett, D. (2000b). An initial assessment of heritage resources within the Transhex west coast diamond concessions. Unpublished report prepared for Trans Hex Mining Ltd. Archaeology Contracts Office, University of Cape Town.
- Halkett, D., Hart, T.J.G. & Parkington J.E. (1993). Excavations at six archaeological sites in the near shore diamond mining area, Brand se Baai, Namaqualand. Unpublished report prepared for De Beers Namaqualand Mines Division. University of Cape Town: Archaeology Contracts Office.
- Hart, T. & Halkett, D. (1999). A phase one archaeological assessment of the proposed Liebenbergs Bay Mine, Vredendal. Unpublished report prepared for Rency (Pty) Ltd. University of Cape Town, Archaeology Contracts Office.
- Moore, J.M. & Picker, M.D. (1991). *Heuweltjies* (earth mounds) in the Clanwilliam district, Cape Province, South Africa: 4000-year-old termite nests. *Oecologia* 86:424-432.
- Morris, A.G. (1992). A master catalogue: Holocene human skeletons from South Africa. Johannesburg: Witwatersrand University Press.
- Orton, J. (2010a). Heritage impact assessment for the proposed above ground temporary water supply pipeline near Koekenaap, Vredendal Magisterial District, Western Cape. Unpublished report prepared for Savannah Environmental. Archaeology Contracts Office, University of Cape Town.
- Orton, J. (2010b). Heritage impact assessment for the proposed Exxaro West Coast Wind Energy Facility on the southern Namaqualand coast, Vredendal Magisterial District, Western Cape. Unpublished report prepared for Savannah Environmental. St James: ACO Associates.
- Orton, J. (2010c). Heritage impact assessment for the services upgrade in Alexander Bay, Namakwa Magisterial District, Northern Cape. Unpublished report prepared for Doug Jeffery Environmental Consultants (Pty) Ltd. Archaeology Contracts Office, University of Cape Town.
- Orton, J. (2011a). Heritage assessment of prospecting borehole locations near Klawer, Vanrhynsdorp Magisterial District, Western Cape. Report prepared for Site Plan Consulting. University of Cape Town: Archaeology Contracts Office.
- Orton, J. (2011b). Heritage impact assessment for the proposed Vredendal Inca Solar Energy Facility, Vredendal Magisterial District, Western Cape. Unpublished report prepared for Savannah Environmental. Archaeology Contracts Office, University of Cape Town.
- Parkington, J.E. & Poggenpoel, C. (1991). West coast heavy mineral sands project: archaeological report. Unpublished report. Archaeology Contracts Office, University of Cape Town.