

Archaeological Amendment Report: Hartebeesthoek East Wind Energy Facility, Noupoort, Northern Cape

Report prepared for **Arcus Consultancy Services SA (Pty) Ltd**

On behalf of **EDF Renewables (South Africa) (Pty) Ltd**

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Executive Summary

In 2017 ACO Associates produced a Heritage Impact Assessment for the proposed San Kraal Wind Energy Facility outside Noupoot in the Northern Cape. Environmental Authorisation for the WEF was issued by the Department of Environmental Affairs in June 2018.

EDF Renewables (South Africa) (Pty) Ltd proposes to amend the approved San Kraal WEF by splitting the facility into two – San Kraal and Hartebeesthoek East - and ACO Associates was commissioned to produce an archaeological amendment report for each of these proposed WEFs.

This amendment report is for the proposed Hartebeesthoek East WEF, which comprises a portion of the approved San Kraal WEF.

A site visit was conducted by ACO Associates between 8-11 April 2019 to assess the new WTG layout and cable/ road alignment for heritage impacts. Time constraints meant that only the north-eastern portion of the Hartebeesthoek East WEF could be revisited to assess the WTG layout and cable/road alignment for heritage impacts. The 2017 ACO survey for the original San Kraal WEF covered most of the footprint of the Hartebeesthoek East WEF and provided a good baseline understanding of the archaeological potential of the affected area, which is generally very low. Confidence in the findings set out later in this report is thus high.

The 2017 survey of the San Kraal WEF indicated that there were very few archaeological sites on the Kikvorsberge. This tends to confirm what has proved to be the case across the Karoo: that high ridges, which are dry, windswept and very cold in winter, seldom attracted more than passing prehistoric human occupation. Unless there is a rock shelter, a source of water or of stone raw material, these areas are not likely to be archaeologically sensitive.

The 2017 archaeological field survey identified 11 sites within the proposed footprint of the Hartebeesthoek East WEF, all of which are historical period buildings, kraals and ruins. These sites fall into two main clusters: a large historical kraal complex (**JR008-012, JG013-014**) and a smaller kraal complex (**JR013-015**). **JG015** is a rough stone cairn, possibly a boundary marker. No pre-colonial sites were identified within the Hartebeesthoek East WEF.

None of the sites now within the Hartebeesthoek East WEF and identified by the 2017 San Kraal HIA were assessed as likely to be impacted by the construction of that WEF. Possible impacts of the proposed WEF on archaeological heritage resources were determined to be of 'tolerable and generally of low significance'.

Findings:

No archaeological sites were located in that portion of the Hartebeesthoek East WEF surveyed in 2019, and this amendment report has found that none of the 11 identified heritage sites will be affected by the proposed layout of the WEF. It is not expected that the Hartebeesthoek East WEF will have significant impacts on archaeological sites and materials. There is not likely to be any impact on identified archaeological sites or remains, and the likelihood of sites or material being found during earthworks is extremely low. No specific mitigation is proposed.

The reduction in the number of WTGs from that proposed for this portion of the authorised San Kraal WEF is an advantage of the Hartebeesthoek East layout as it reduces the overall potential for impacts on archaeological sites and material. The revised layout of the WEF also

has the advantage of increasing the distance between the identified heritage sites and WEF infrastructure, thereby ensuring that no impacts will occur.

No disadvantages arising from the revised WEF layout were identified by this report with respect to archaeological resources.

The 2018 Environmental Management Programme Report for the San Kraal WEF must be amended in respect of the assessment of impacts on archaeological sites and materials within the Hartebeesthoek East WEF.

The overall impact of the construction of the Hartebeesthoek East WEF is tolerable and generally of low significance and, from a heritage perspective, the proposed amendments are considered acceptable.

Table of Contents

Executive Summary	3
Findings:.....	3
Glossary.....	7
Abbreviations	7
1 Introduction	8
1.1 Project Components	8
1.2 Terms of Reference	8
1.3 Site Location	9
2 Method.....	9
2.1 Assumptions and Uncertainties.....	13
3 Archaeological Background to the Study Area	13
3.1 Previous Archaeological Assessments in the Area.....	16
4 Findings	16
4.1 Summary of Findings of the 2017 Study	16
4.2 Summary of Findings of the 2019 Survey	18
4.3 Sites Potentially Affected by the Hartebeesthoek East WEF	18
5 Impacts Relating to the Proposed Amendment	18
5.1 Nature of Impacts.....	18
5.2 Extent of impacts	18
5.3 Significance of Impacts	18
5.4 Advantages and Disadvantages of the Changes.....	20
6 Cumulative Effects	20
7 Mitigation	20
8 Changes to Environmental Management Programme Report	21
9 Conclusion	21
10 References	22
Appendix A: List of proposed WTG locations, Hartebeesthoek East WEF.....	24
Appendix B: Grading Categories	25
Appendix C: Details of Recorded Archaeological Sites and Occurrences – Hartebeesthoek East WEF.....	26
Appendix D: Specialist’s CV.....	32
Appendix E: Declaration of Independence	38

Figure 1: The area covered by the proposed Hartebeesthoek East WEF (blue) with the amended 2019 WTG layout, road/cable alignments, infrastructure and overhead line routes. The extents of the adjacent Phezukomoya (orange), Hartebeesthoek West (purple) and San Kraal WEF (green) WEFs are indicated. (Mapping: 3124BB, 3124BD, 3125AA and 3125AC supplied by Chief Directorate, National Geo-Spatial Information (www.ngi.gov.za)	10
Figure 2: Comparison of the 2019 (black) and 2017 (blue and red) Hartebeesthoek East WTG locations and cable/road alignments. The WTGs and alignments north of the blue boundary line fall within the San Kraal WEF (Mapping: 3124BB and 3124BD supplied by Chief Directorate, National Geo-Spatial Information (www.ngi.gov.za))	11
Figure 3: Combined 2019 (blue) and 2017 (yellow) survey track plots for the Hartebeesthoek East WEF. The WTGs shown represent the current layout only.	12
Figure 4: Location of the area surveyed for the Zeekoei Valley Archaeological Project (hatched green) shown in relation to the Hartebeesthoek East WEF (blue) (after Sampson 1985).	14
Figure 5: Previous archaeological assessments in the vicinity of the Hartebeesthoek East WEF (After Booth 2011a, 2011b; Booth & Sanker 2012a, 2012b, 2012c; Anderson, 2014; Orton, 2014; Sampson 1985; Van Schalkwyk, 2012)	17
Figure 7: Location of heritage sites identified in 2017 (yellow dots) compared with nearest proposed Hartebeesthoek WEF elements.....	19
Plate 1: Example of a typical ‘waterbak’ on the Kikvorsberge	9
Plate 2: Sampson’s climate model. Note that the shaded areas to the right of the cold/warm divide are those during which human occupation of the Zeekoei Valley (and environs) is predicted (Source: Sampson 1985).....	15

Glossary

Archaeology:	Remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.
Early Stone Age:	Period of the Stone Age extending approximately between 2 million and 20 000 years ago.
Holocene:	The geological period spanning the last approximately 10-12 000 years.
Hornfels:	Contact metamorphic rock that has been baked and hardened by the heat of intrusive igneous rock.
Later Stone Age:	Period of the Stone Age extending over the last approximately 20 000 years.
Middle Stone Age:	Period of the Stone Age extending approximately between 200 000 and 20 000 years ago.
Pan:	A shallow depression in the landscape that accumulates water from time to time.
Smithfield:	South African Later Stone Age lithic industry found mainly in the interior and characterised by tools made principally on hornfels.

Abbreviations

ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
LSA	Later Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency
WEF	Wind Energy Facility
WTG	Wind Turbine Generator

1 Introduction

ACO Associates cc was appointed by Arcus Consultancy Services SA (Pty) Ltd (Arcus) in 2017 to produce Heritage Impact Assessments (HIA) for the proposed San Kraal and Phezukomoya Wind Energy Facilities (WEF), located outside Noupoort in the Northern Cape (Hart *et al*, 2017a & b).

The Department of Environmental Affairs issued environmental Authorisation for these WEFs in June 2018.

EDF Renewables (South Africa) (Pty) Ltd (EDF Renewables) is proposing to amend the approved San Kraal and Phezukomoya WEFs by splitting each facility into two, smaller WEFs and amending the layout and turbine specifications of each of the new WEFs.

Arcus was commissioned to produce the amendment reports for the four new proposed WEFs: San Kraal, Phezukomoya, Hartebeesthoek West and Hartebeesthoek East.

ACO Associates was appointed by Arcus in April 2019 to produce archaeological amendment reports for each of the proposed WEFs.

This is the amendment report for the proposed Hartebeesthoek East WEF.

1.1 Project Components

The proposed WEF amendments relevant to archaeological resources are:

- A reduction in the number of wind turbine generators (WTG) from the 78 previously planned in this area of the authorised San Kraal WEF to 20 within the new Hartebeesthoek East WEF;
- The adjustment of the turbine, network cable and road layout within the WEF; and
- A grid line routing to a new SKPH collector substation.

The concrete and steel batching plant and temporary construction laydown area remain at the locations previously proposed (see **Figure 1** and **Figure 2**).

1.2 Terms of Reference

As required by the 2014 EIA Regulations, as amended, ACO has been appointed to produce an assessment of a) the impacts associated with the proposed amendments to the WEF layout and turbine specifications, and b) a comparative assessment of the impacts identified during the San Kraal EIA process and the impacts associated with the amended Hartebeesthoek East WEF proposal.

The report must include:

- An assessment of all impacts related to the proposed changes;
- A consideration of the advantages and disadvantages of the changes;
- A comparative assessment of the impacts before the changes and after the changes; and
- Measures to ensure avoidance, management and mitigation of impacts associated with such proposed changes, and any changes to the EMPr.

The assessment must be clear on whether each of the proposed changes to the authorised San Kraal WEF will:

- Increase the significance of impacts originally identified in the San Kraal EIA report or lead to any additional impacts; or
- Have a zero or negligible effect on the significance of impacts identified in the EIA report; or
- Lead to a reduction in any of the identified impacts in the EIA report.

1.3 Site Location

The proposed Hartebeesthoek East WEF is located on the mountains of a sandstone escarpment known locally as the Kikvorsberge, approximately 12 km south-east of Noupoort (**Figure 1**). The WEF is situated on a high plateau of undulating grassland lying more than 1700 m above sea level.

The grassland is broken by sporadic sandstone ledges and intrusive outcrops of dolerite. In places, the sandstone bedrock is exposed in large sheets, many of which contain shallow pools, commonly referred to by archaeologists as ‘waterbakke’, which act as seasonal water traps (**Plate 1**).



Plate 1: Example of a typical ‘waterbak’ on the Kikvorsberge

The area is sparsely populated and rural: sheep and cattle farming being the primary occupation of local farmers. In the winter months, the Kikvorsberge can be exceptionally cold, but are windy and exposed year round.

2 Method

The 2017 ACO survey for the original San Kraal WEF covered most of the footprint of the reduced Hartebeesthoek East WEF and provided a good baseline understanding of the archaeological potential of the affected area, which is generally very low.

Given the sparse and limited occurrence of archaeological sites and material within the areas covered by the San Kraal and Phezukomoya WEFs evidenced by the 2017 survey, and after consultation with the South African Heritage Resources Agency (SAHRA) case officer, the intention of the 2019 field survey for the Hartebeesthoek East WEF was to concentrate on visiting new WTG locations that were more than 150 m from any position covered by the 2017 survey. The study area defined for this assessment is the boundary of the proposed Hartebeesthoek East WEF shown on **Figure 1**, and the WTG locations that were the intended focus of this survey are highlighted in the table in **Appendix A**.

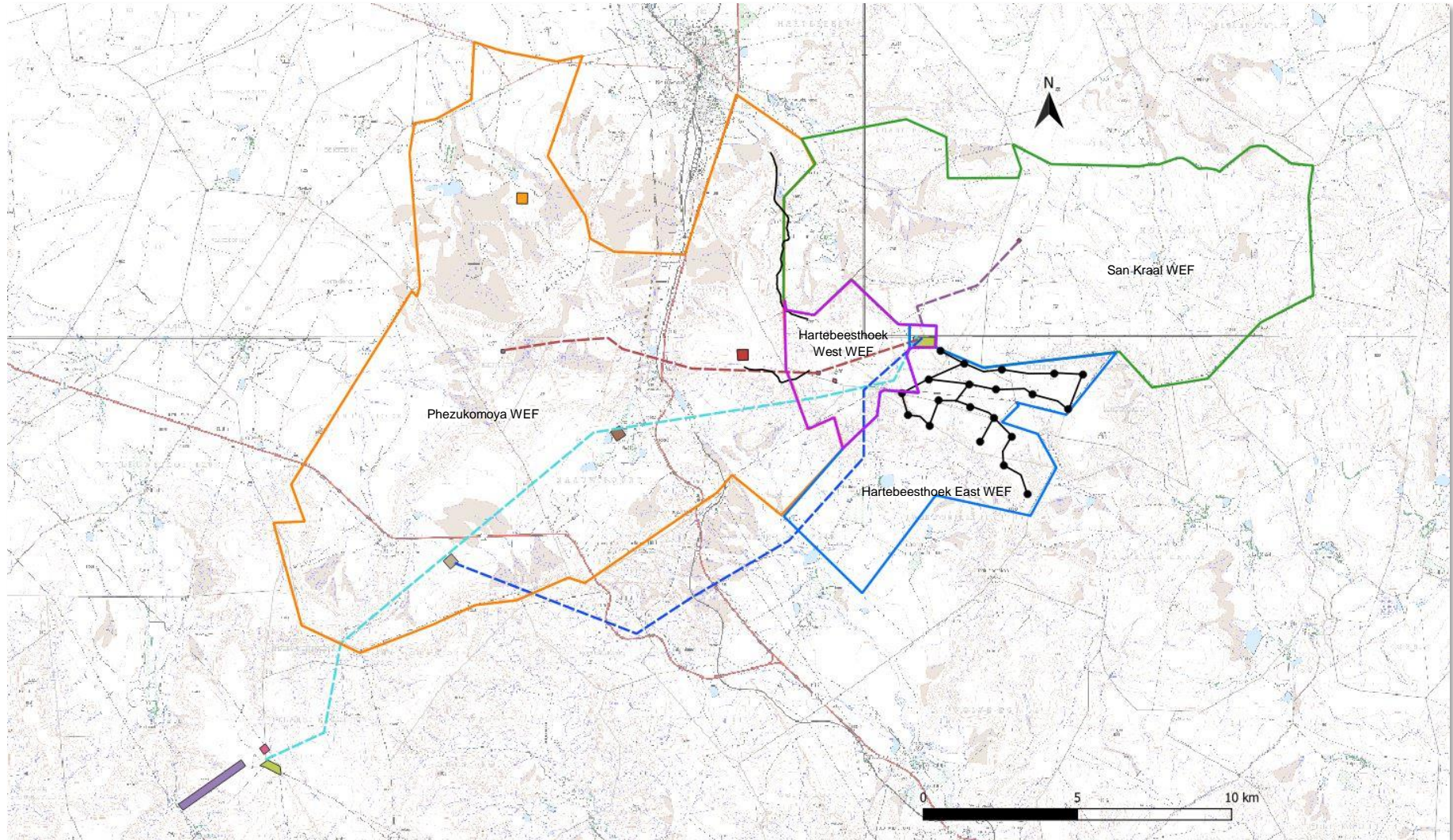


Figure 1: The area covered by the proposed Hartebeesthoek East WEF (blue) with the amended 2019 WTG layout, road/cable alignments, infrastructure and overhead line routes. The extents of the adjacent Phezukomoya (orange), Hartebeesthoek West (purple) and San Kraal WEF (green) WEFs are indicated. (Mapping: 3124BB, 3124BD, 3125AA and 3125AC supplied by Chief Directorate, National Geo-Spatial Information (www.ngi.gov.za))

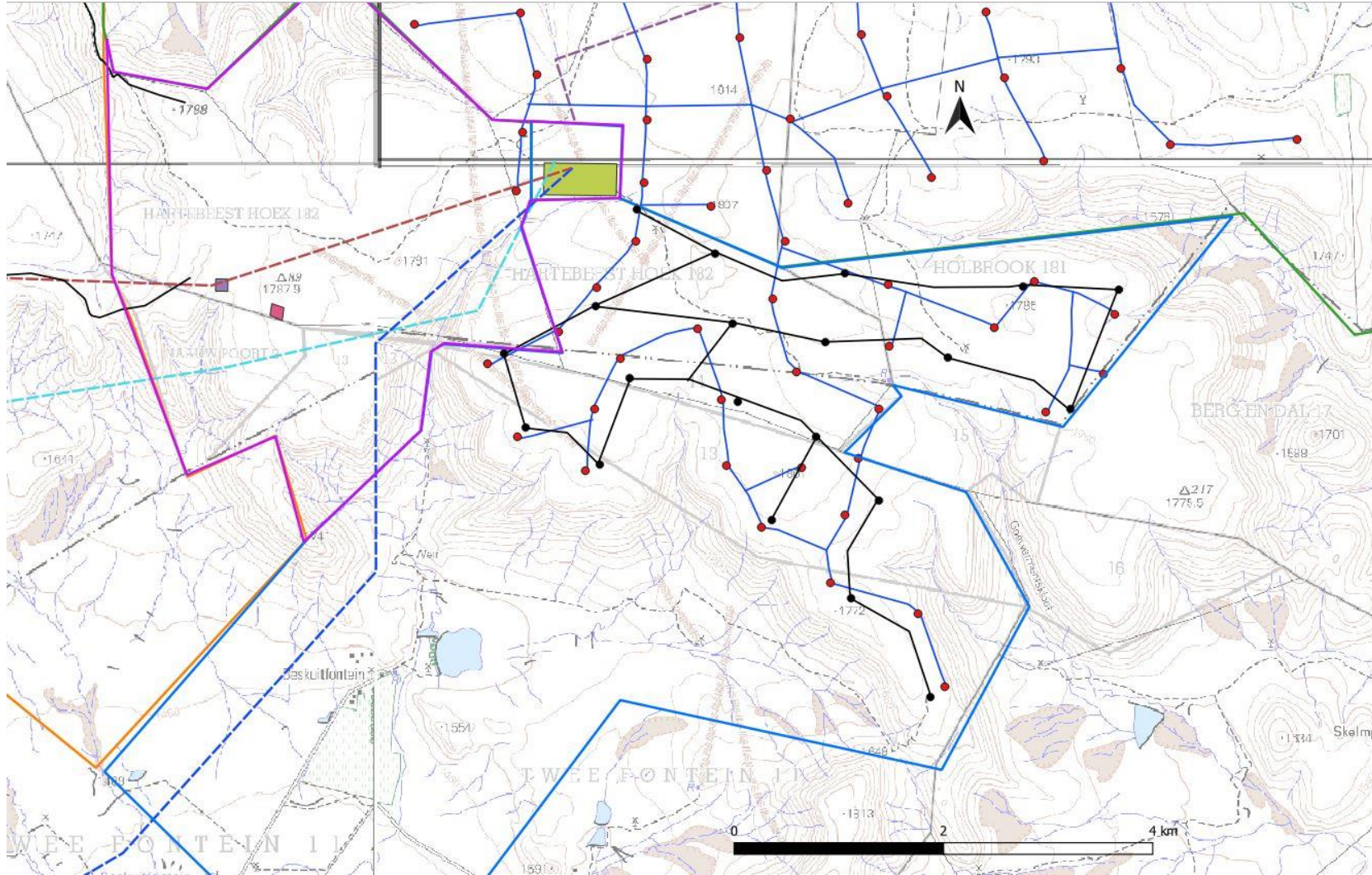


Figure 2: Comparison of the 2019 (black) and 2017 (blue and red) Hartebeesthoek East WTG locations and cable/road alignments. The WTGs and alignments north of the blue boundary line fall within the San Kraal WEF (Mapping: 3124BB and 3124BD supplied by Chief Directorate, National Geo-Spatial Information (www.ngi.gov.za))

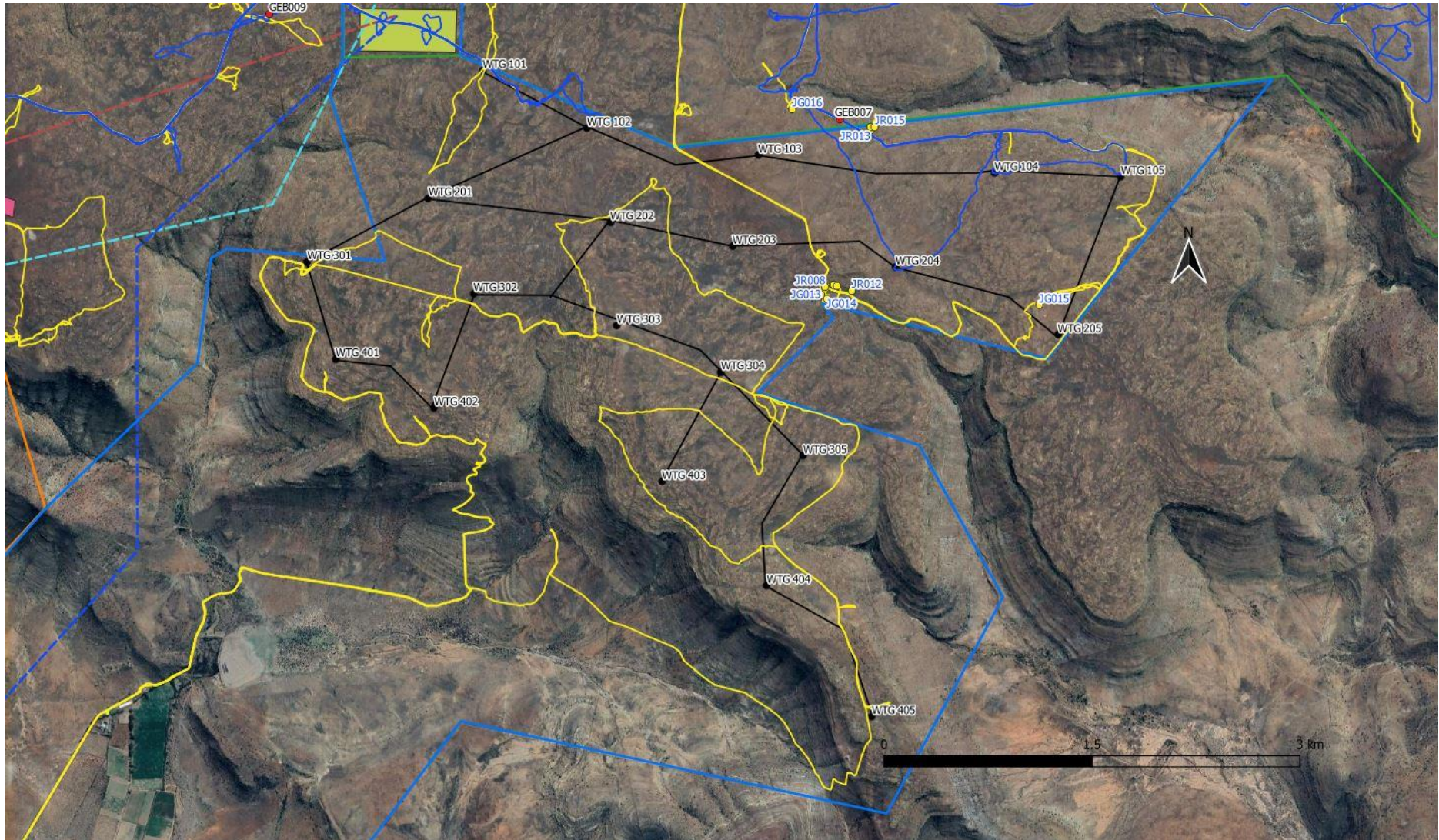


Figure 3: Combined 2019 (blue) and 2017 (yellow) survey track plots for the Hartebeesthoek East WEF. The WTGs shown represent the current layout only.

Time constraints during the survey between 8-11 April 2019 of the amended San Kraal and Phezukomoya WEFs by John Gribble and Gail Euston-Brown of ACO Associates meant, however, that only the north-eastern portion of the new Hartebeesthoek WEF could be revisited to assess the new WTG layout and cable/ road alignment for heritage impacts.

Those WTG locations visited were accessed by vehicle or on foot where practicable cable/ road alignments were also covered.

Each member of the survey team carried a Garmin GPS unit which recorded survey tracks and any archaeological sites or materials located were recorded as waypoints on the GPS. The combined track logs and findspots for the 2017 and 2019 surveys for the Hartebeesthoek East WEF are shown in **Figure 3** above.

In addition to recording the position of any heritage site that was located, sites were photographed, described and graded according to the SAHRA grading system (see **Appendix B**). No trial holes were dug, and no archaeological material was collected during the survey. All observations are based on material visible on the surface.

The assessment of impacts below is based on the combined 2017 and 2019 survey results.

2.1 Assumptions and Uncertainties

Access to and within the WEF site was generally good, as was ground visibility, with vegetation cover not unduly affecting the survey outcome.

While it was possible to survey only some of the project components within the study area, the coverage of the 2017 San Kraal WEF survey was good and provided a strong baseline understanding of the archaeological potential of the affected area. Confidence in the findings set out later in this report is high.

3 Archaeological Background to the Study Area

The central Karoo has been a focus of archaeological research since the 1960s when Garth Sampson began studying the Stone Age archaeology of the region. Of particular relevance to this report is the detailed archaeological survey of the 5 000 square kilometre catchment of the Zeekoei River (from the Sneeuwberg Mountains to the Gariiep River Valley) which lies immediately west of the project area, undertaken by a team led by Sampson in and late 1970s and early 1980s (**Figure 4** below).

The Zeekoei Valley Archaeological Project recorded some 10 000 archaeological sites representing a history of human occupation covering at least 250 000 years. Sampson identified seven industries or phases of human history within his study area, each of which is legible on the landscape today, and each of which represents a pre-colonial layer of the human history of the Karoo (Sampson, 1985).

Sampson (1985:13) developed a model for the last 250 000 years, based on palaeoclimatic data (**Plate 2** below), which predicted that the human occupation of the Zeekoei Valley “was restricted to the warm-wet stages and that [it] was abandoned at the peak of the cold-dry stages”, with variations in climate and the degrees of aridity and temperature dictating the viability of the landscape as a place suitable for people to live.

Each pre-colonial phase of human occupation has left its archaeological signature on the landscape which is identifiable by the kinds of (mainly stone) artefacts that have been left behind. The three main pre-colonial temporal archaeological phases are termed the Early, Middle and Later Stone Ages. Artefacts of both the Early and Middle Stone Age are ubiquitous and widespread in the Karoo and can be described as an ancient litter that occurs at a low frequency across the landscape. Where definable scatters of Early and Middle Stone Age material does occur, however, they are considered to be significant heritage sites.

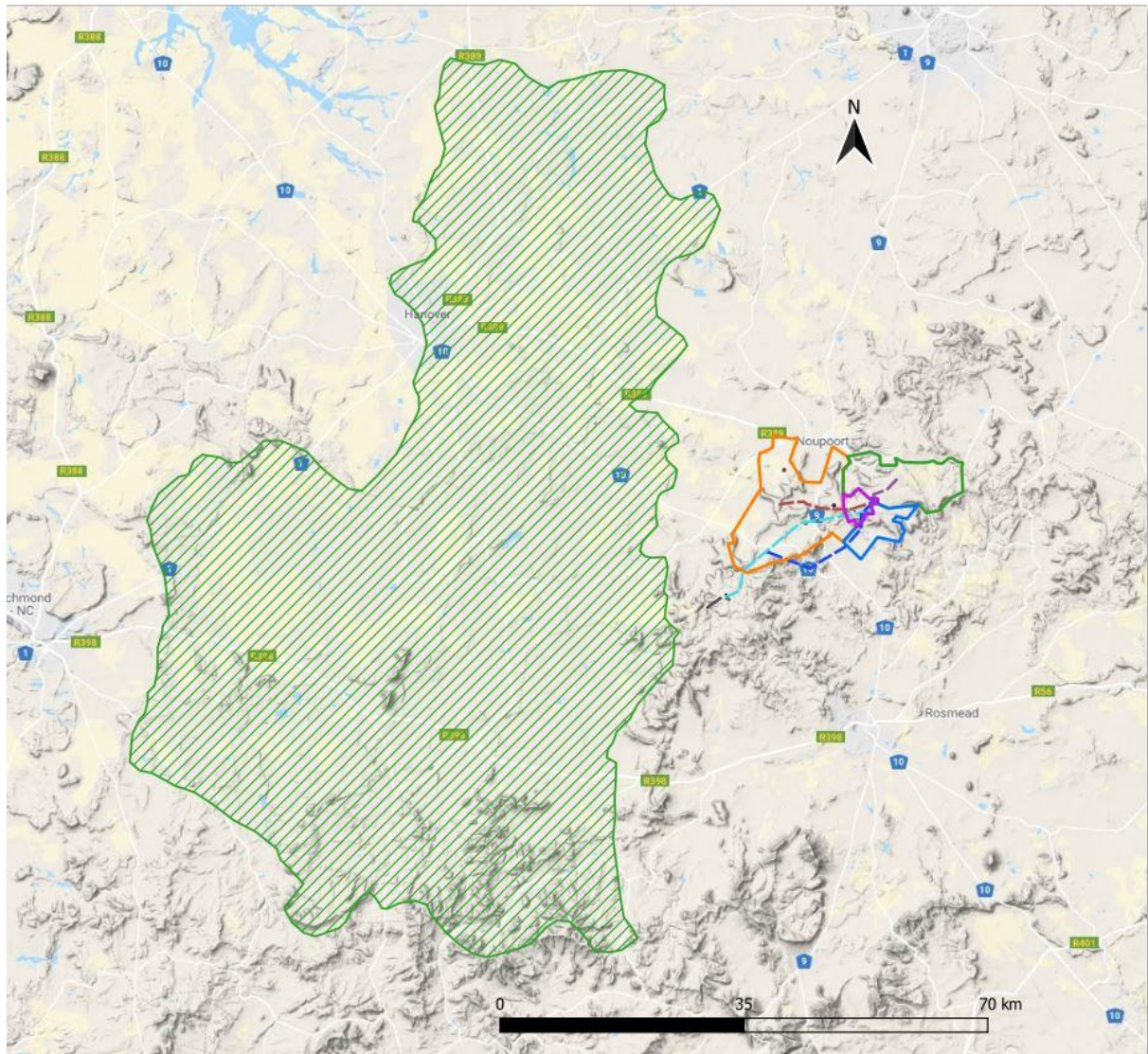


Figure 4: Location of the area surveyed for the Zeekoei Valley Archaeological Project (hatched green) shown in relation to the Hartebeesthoek East WEF (blue) (after Sampson 1985).

The proximity of the proposed Hartebeesthoek East WEF to the Zeekoei Valley suggests that the same pulses of human occupation, and thus types of archaeological sites and materials can be expected in the area.

The latest, and possibly more intensive occupation of the Karoo started around 13 000 years ago with the onset of the current, Holocene climatic warm phase during the Later Stone Age. This important archaeological layer on the landscape represents the heritage of the San (popularly known as Bushman) hunter-gatherers and Khoekhoen (historically known as

“Hottentot” by early writers) herders, whose descendants make up a significant portion of South Africa’s population today.

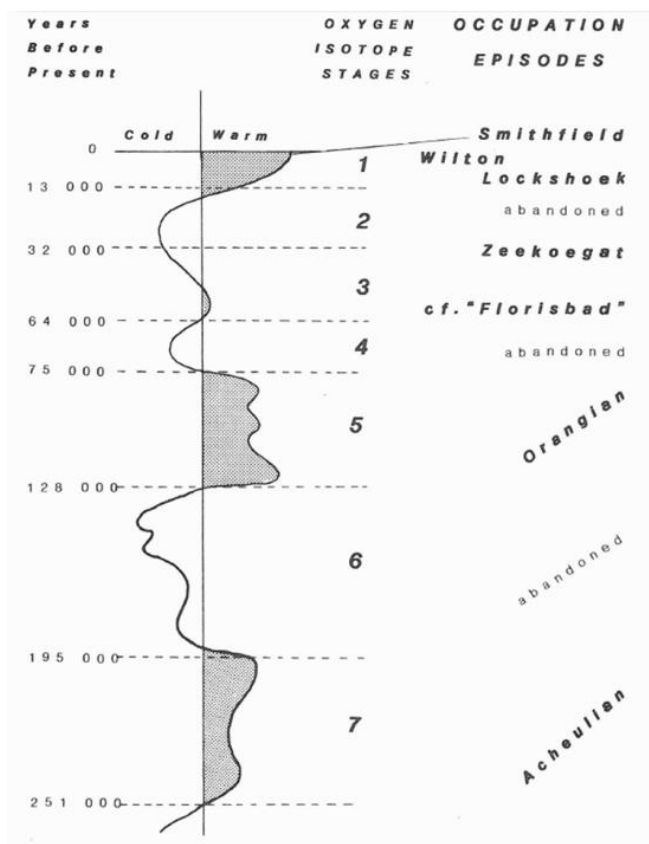


Plate 2: Sampson’s climate model. Note that the shaded areas to the right of the cold/warm divide are those during which human occupation of the Zeekoie Valley (and environs) is predicted (Source: Sampson 1985).

A number of Later Stone Age rock shelters have been excavated in the region (see Sampson, 1985; Hart, 1989) including the Blydefontein Shelter, also located in the Kikvorsberge, approximately 14 km north of the Hartebeesthoek East WEF (see Bousman 1991 and 2005; Bousman *et al*, 2016) (see **Error! Reference source not found.**). The earliest occupation level at Blydefontein is dated to 13 600 years before the present (BP), which reinforces Sampson’s (1985) statement that rock shelters in the area do not appear to contain archaeological deposits older than the start of the Holocene.

The spatial distribution of Late Stone archaeological sites in the Karoo reflects peoples’ need to be close to water, with rivers, pans, springs and other sources of water playing an important role in influencing where they lived. At the same time, the scarcity of natural caves and shelters in the Karoo landscape means that the majority of archaeological sites are open occurrences of stone artefacts, ostrich eggshell fragments and, on more recent sites, pottery. Bone is rarely preserved in open contexts.

The climate of the Karoo also played a key role in where people chose to live in the past. The winters are cold with temperatures dropping well below zero. The summers, by contrast, are hot and rainfall is often unreliable. Sampson (1985) observed that almost all Late Stone Age sites are situated at the bottom of the breaks of dolerite dykes, in sheltered areas on the crests of dolerite dykes, or in dolerite mazes and outcrops. So too, are the stone kraal circles by

Khoekhoen groups after 1000 AD which are almost always built on the edges of low ridges and dykes. LSA sites tend to be rare on exposed hilltops and very high ridges, and according to Orton (2014), pre-colonial archaeological material, in general, is rare in the open grasslands that characterise this area.

The results of this report suggest that the same may be true further back in time, as relatively little archaeology was recorded on the mountain tops where the Hartebeesthoek East WEF is proposed.

The most recent archaeological layer in the Karoo landscape relates to the historical occupation of the area by stock farmers of European descent from the late 18th century. Indications are that the formal granting of title deeds to land only started in the early 19th century, but judging by the kinds of artefacts and structures found on the landscape, many of the farms are likely to have been used before the land was formally granted or loaned (Sampson and Sampson, 1994).

3.1 Previous Archaeological Assessments in the Area

In addition to the archaeological work in the area outlined above, a number of heritage assessments have been carried out for proposed development projects in the vicinity of Noupoot.

The existing Mainstream Noupoot WEF, located 6.5 km north of the study area, was subject to archaeological assessment (see Van Schalkwyk, 2012; Orton, 2014) (**Figure 5**). These assessments identified some pre-colonial sites and a few historical sites, including a number of graves and several rock painting sites, but found that Stone Age artefact scatters were uncommon in the high mountain plateaux context of the area surveyed. Anderson (2014) carried out a heritage impact assessment for the Umsobomvu WEF, which was proposed in an area approximately 21 km south-west of Noupoot and 18 km north-west of Middelburg. Finds included a number of historical farms complexes, stone-walled kraals (historical and potentially pre-colonial), graves and graveyards, several rock art sites, and numerous open scatters of pre-colonial lithics; mainly MSA, but with LSA and some ESA artefacts also present in places (**Figure 5**).

Archaeological assessments have also been carried out for a number of proposed solar energy facilities around Noupoot. These have been located at lower elevations on valley floors, in contrast to the Hartebeesthoek East WEF's mountaintop location, and noted the presence of scatters of MSA and occasional LSA artefacts across the landscape (see Booth 2011a, 2011b; Booth & Sanker 2012a, 2012b, 2012c) (**Figure 5**).

4 Findings

4.1 Summary of Findings of the 2017 Study

The 2017 survey of the Phezukomoya and San Kraal WEFs indicated that there were very few archaeological sites on the Kikvorsberge. This tends to confirm what has proved to be the case across the Karoo: that high ridges, which are dry, windswept and very cold in winter, seldom attracted more than passing prehistoric human occupation. Unless there is a

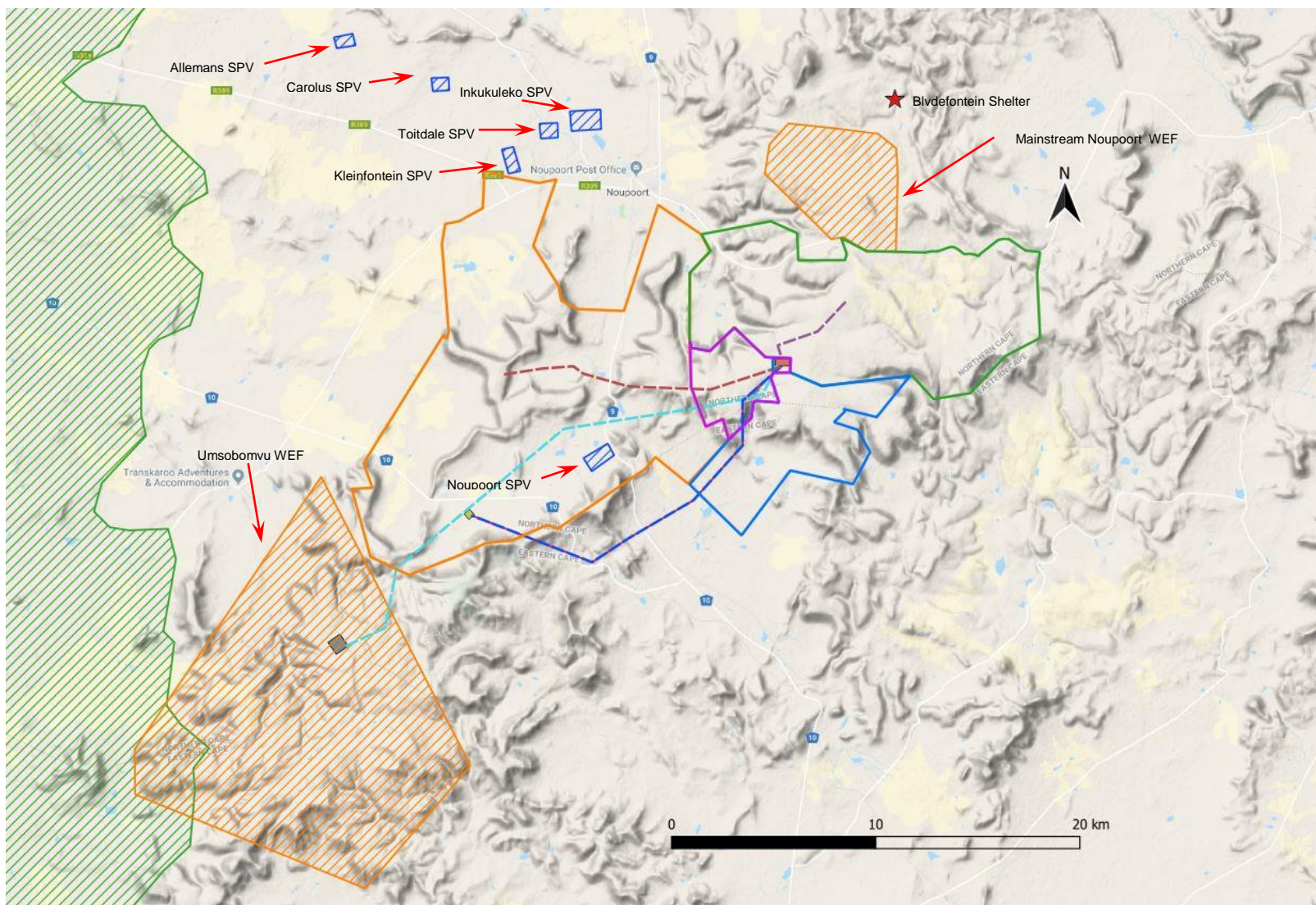


Figure 5: Previous archaeological assessments in the vicinity of the Hartebeesthoek East WEF (After Booth 2011a, 2011b; Booth & Sanker 2012a, 2012b, 2012c; Anderson, 2014; Orton, 2014; Sampson 1985; Van Schalkwyk, 2012)

rock shelter, a source of water or of stone raw material, these areas are not likely to be archaeologically sensitive.

The 2017 archaeological field survey identified 11 sites within the proposed 2019 footprint of the Hartebeesthoek East WEF, all of which are historical period buildings, kraals and ruins. These sites fall into two main clusters: a large historical kraal complex (**JR008-012, JG013-014**) and a smaller kraal complex (**JR013-015**). **JG015** is a rough stone cairn, possibly a boundary marker. **Appendix C** lists these historical sites with their coordinates, an image of each site and/or its artefactual material and a heritage grading. No pre-colonial sites were identified within the Hartebeesthoek East WEF.

The 2017 HIA determined that the possible impacts of the proposed WEF on archaeological heritage resources were of 'tolerable and generally of low significance'.

4.2 Summary of Findings of the 2019 Survey

No archaeological sites were located in that portion of the Hartebeesthoek East WEF surveyed in 2019.

4.3 Sites Potentially Affected by the Hartebeesthoek East WEF

None of the sites now within the Hartebeesthoek East WEF which were identified by the 2017 San Kraal HIA (Appendix A), were assessed by that HIA as likely to be impacted by the construction of the San Kraal WEF. No mitigation was proposed for any of these sites.

This amendment report has found that none of the 11 identified heritage sites will be affected by the proposed layout of the Hartebeesthoek East WEF (**Figure 6**).

5 Impacts Relating to the Proposed Amendment

The proposed new layout of the Hartebeesthoek East WEF sees a reduction in the number of WTGs, the repositioning of all the WTGs and the realignment of all network cables/ roads from what is authorised for the same area for the San Kraal WEF.

5.1 Nature of Impacts

As stated above, however, no impacts on known archaeological sites and materials arising from the 2019 Hartebeesthoek East WEF layout are anticipated.

5.2 Extent of impacts

The 2017 and 2019 archaeological surveys which inform this report indicate that the area that will be affected by the proposed construction of this WEF is archaeologically sterile. In terms of buried archaeological material, it is never possible to be entirely sure of what lies below the ground surface. The fieldwork undertaken for project, however, indicates that substantial buried archaeological sites are unlikely to be present in the area, and that impacts caused by the construction of footings and other ground disturbance to such material are likely to be negligible.

5.3 Significance of Impacts

In terms of the information that has been collected, indications are that impacts arising from the Hartebeesthoek East WEF on archaeological sites and material are negligible and of extremely low significance.

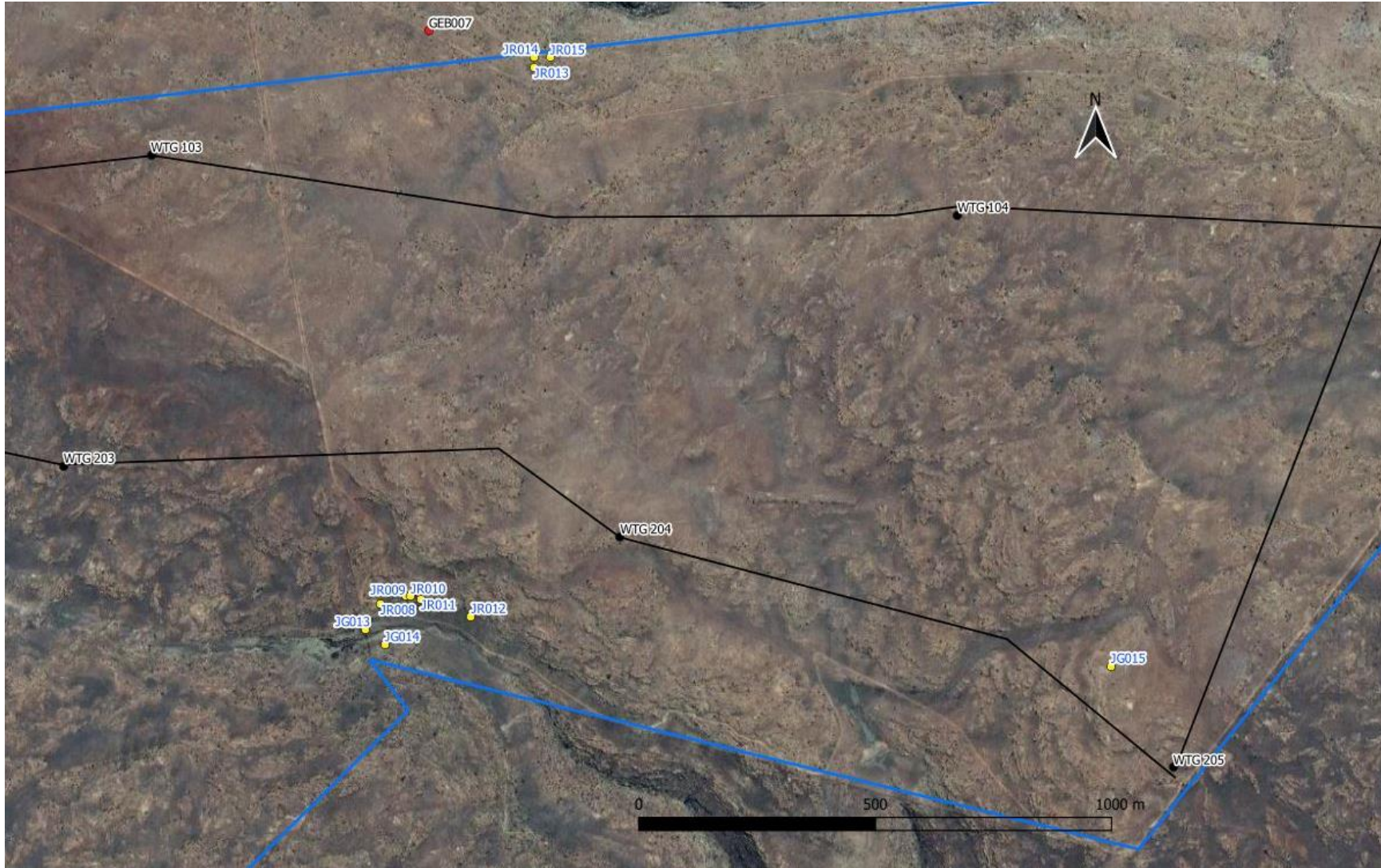


Figure 6: Location of heritage sites identified in 2017 (yellow dots) compared with nearest proposed Hartebeesthoek WEF elements.

5.4 Advantages and Disadvantages of the Changes

The reduction in the number of WTGs from that proposed for this portion of the authorised San Kraal WEF is an advantage of the Hartebeesthoek East layout as it reduces the potential for impacts on archaeological sites and material. The revised layout of the WEF also has the advantage of increasing the distance between the identified heritage sites and WEF infrastructure, thereby ensuring that no impacts will occur.

No disadvantages arising from the revised WEF layout were identified by this report with respect to archaeological resources.

Table 1: Impact Table: Heritage sites

Impact Phase: Construction of WEF							
Possible Impact or Risk: Displacement or destruction of heritage sites or materials.							
	Extent	Duration	Intensity	Status	Significance	Probability	Confidence
Without Mitigation	L	H	L	Negative-neutral	Low	L	H
With Mitigation	L	H	L	Negative neutral	Low	L	H
Can the impact be reversed?		NO - heritage impacts cannot be reversed, but can be mitigated.					
Will impact cause irreplaceable loss of resources?		NO - the very few archaeological occurrences recorded are well represented in other areas and provided the recommended mitigation measures are implemented, there should be no irreplaceable loss of resources.					
Can impact be avoided, managed or mitigated?		YES – impacts can be avoided or mitigated through the implementation of the mitigation measures listed below.					
Mitigation measures to reduce residual risk or enhance opportunities: <ul style="list-style-type: none"> ▪ Do not disturb any old stone kraals or ruins and do not remove stone from walls or artefacts from the earth. ▪ Report any chance discoveries of human remains to an archaeologist or a heritage authority. 							
Residual impact		NO					
Will this impact contribute to any cumulative impacts?		NO – there will be no cumulative impacts					

6 Cumulative Effects

Based on the comparative assessment of impacts above, the cumulative impact assessment made in the 2017 HIA (Hart *et al*, 2017a) remains valid for the revised Hartebeesthoek East WEF: cumulative impacts will be of low consequence for WEFs and tolerable for solar PV facilities with their more intensive impacts on the land within their footprints.

7 Mitigation

As is clear from the assessment above, it is not expected that the Hartebeesthoek East WEF will have significant impacts on archaeological sites and materials. There is not likely to be any impact on identified archaeological sites or remains, and the likelihood of sites or material being found during earthworks is extremely low. No mitigation beyond the general measures in **Table 1** is proposed.

Human remains can occur at any place on the landscape but are particularly likely to be found on or close to archaeological sites. They are regularly exposed during construction activities. Such remains are protected by a number of pieces of legislation including the Human Tissues Act (Act No 65 of 1983), the Exhumation Ordinance of 1980 and the National Heritage Resources Act (Act No 25 of 1999). In the event of human remains being found on during construction activities, work in the vicinity of the remains must cease immediately, SAHRA must be informed of the discovery, and the remains must be removed by an archaeologist under an emergency permit from SAHRA. This process will incur some expense as removal of human remains is at the cost of the developer. Time delays may result while the application is made to SAHRA, and an archaeologist is appointed to do the work.

8 Changes to Environmental Management Programme Report

The Environmental Management Programme Report for the San Kraal WEF prepared by Arcus in 2018 must be amended in respect of the assessment of impacts on archaeological sites and materials within the Hartebeesthoek East WEF.

9 Conclusion

The overall impact of the construction of the Hartebeesthoek East WEF is tolerable and generally of low significance and, from a heritage perspective, the proposed amendments are considered acceptable.

10 References

- Anderson, G. 2014. *Heritage Survey of the Umsobomvu Wind Energy Facility, Eastern and Northern Cape*. Unpublished report prepared for EOH Coastal and Environmental Services. Umlando: Archaeological Surveys and Heritage Management.
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Appendix A: List of proposed WTG locations, Hartebeesthoek East WEF

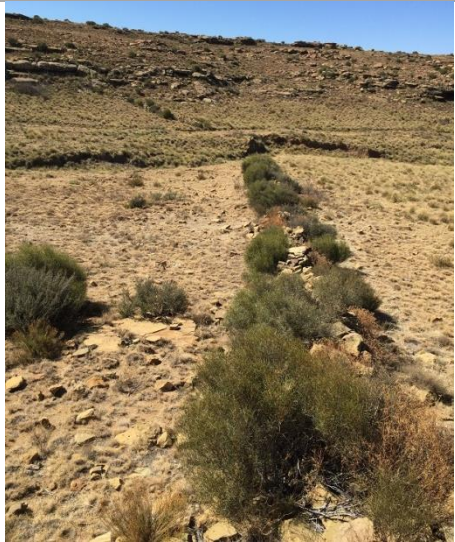
WTG No.	Distance from position previously surveyed	Latitude	Longitude
101	56m	-31.253274°	25.022110°
102	644m	-31.256474°	25.028871°
103	236m	-31.257967°	25.039952°
104	182m	-31.258944°	25.055277°
105	208m	-31.259157°	25.063463°
201	380m	-31.260343°	25.018600°
202	44m	-31.261682°	25.030375°
203	365m	-31.263017°	25.038294°
204	349m	-31.264168°	25.048869°
205	40m	-31.267915°	25.059376°
301	50m	-31.263870°	25.010753°
302	69m	-31.265635°	25.021512°
303	93m	-31.267405°	25.030810°
304	46m	-31.269981°	25.037548°
305	305m	-31.274624°	25.042882°
401	123m	-31.269261°	25.012575°
402	153m	-31.271966°	25.018970°
403	126m	-31.276052°	25.033737°
404	250m	-31.281812°	25.040524°
405	37m	-31.289062°	25.047325°



* The WTGs that were the focus of the 2019 field assessment are highlighted in yellow


Appendix B: Grading Categories



Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance.	May be declared as a National Heritage Site managed by SAHRA.	Highest Significance
II	Heritage resources with special qualities which make them significant in the context of a province or region, but do not fulfil the criteria for Grade I status.	May be declared as a Provincial Heritage Site managed by HWC.	Exceptionally High Significance
III		Such a resource contributes to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register. These resources are currently managed by HWC <i>unless the local authority has been found competent and has been granted delegated authority.</i>	
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. These are heritage resources which are significant in the context of an area .	This grading is applied to buildings and sites that have sufficient intrinsic significance to be regarded as local heritage resources; and are significant enough to warrant that any alteration, both internal and external, is regulated. Such buildings and sites may be representative, being excellent examples of their kind, or may be rare. In either case, they should receive maximum protection at local level.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree. These are heritage resources which are significant in the context of a townscape , neighbourhood, settlement or community.	Like Grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be rare, but less so than Grade IIIA examples. They would receive less stringent protection than Grade IIIA buildings and sites at local level.	Medium Significance
IIIC	Such a resource is of contributing significance to the environs These are heritage resources which are significant in the context of a streetscape or direct neighbourhood .	This grading is applied to buildings and/or sites whose significance is contextual, i.e. in large part due to its contribution to the character or significance of the environs. These buildings and sites should, as a consequence, only be regulated if the significance of the environs is sufficient to warrant protective measures, regardless of whether the site falls within a Conservation or Heritage Area. Internal alterations should not necessarily be regulated.	Low Significance
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant and approved by the authority. Section 34 can even be lifted by HWC for structures in this category if they are older than 60 years.	No research potential or other cultural significance



Appendix C: Details of Recorded Archaeological Sites and Occurrences – Hartebeesthoek East WEF



Archaeological Occurrence	Latitude	Longitude	Associated WEF feature	Description	Grading	Photo
2017						
JR008	-31.265264°	25.044311°	<p>2017 – Approx. 200 m from WTG43</p> <p>2019 – More than 320 m from cable/road alignment between WTGs 203 and 204. Will not be affected by WEF.</p>	Large kraal about 100m ² with track running through it. Crosses into Hartebeesthoek farm. Includes a spring.	IIIC	

Archaeological Occurrence	Latitude	Longitude	Associated WEF feature	Description	Grading	Photo
JR009	-31.265125°	25.044786°	<p>2017 – Approx. 200 m from WTG43</p> <p>2019 – More than 300 m from cable/road alignment between WTGs 203 and 204. Will not be affected by WEF.</p>	Smaller rock kraal adjacent to JR008.	IIC	
JR010	-31.265135°	25.044889°	<p>2017 – Approx. 200 m from WTG43</p> <p>2019 – Approx. 360 m from cable/road alignment between WTGs 203 and 204. Will not be affected by WEF.</p>	Kraal butted up against rock shelter used as natural kraal.	IIC	
JR011	-31.265184°	25.045084°	2017 – Approx. 200	Smaller kraal adjacent to JR008.	IIC	No image available

Archaeological Occurrence	Latitude	Longitude	Associated WEF feature	Description	Grading	Photo
			<p>m from WTG43</p> <p>2019 – More than 350 m from cable/road alignment between WTGs 203 and 204. Will not be affected by WEF.</p>			
JR012	-31.265457°	25.046036°	<p>2017 – Approx. 200 m from WTG43</p> <p>2019 – More than 510 m from cable/road alignment between WTGs 203 and 204. Will not be affected by WEF.</p>	<p>Small rock shelter kraal SE of other kraals. Kraals seem to face erosion gully downstream from spring. Nice sense of place. No stone artefacts observed.</p>	IIC	

Archaeological Occurrence	Latitude	Longitude	Associated WEF feature	Description	Grading	Photo
JG013	-31.265672°	25.044031°	<p>2017 – Approx. 200 m from WTG43</p> <p>2019 – More than 370 m from cable/road alignment between WTGs 203 and 204. Will not be affected by WEF.</p>	Spring at historical kraal complex.	No grading	
JG014	-31.265915°	25.044392°	<p>2017 – Approx. 350 m from WTG40</p> <p>2019 – More than 450 m from cable/road alignment between WTGs 203 and 204. Will not be affected by WEF.</p>	Historical stone kraal.	IIC	

Archaeological Occurrence	Latitude	Longitude	Associated WEF feature	Description	Grading	Photo
JR013	-31.256548°	25.047231°	<p>2017 – Approx. 490 m from WTG44</p> <p>2019 – More than 300 m from cable/road alignment between WTGs 102 and 103. Will not be affected by WEF.</p>	Large kraal stone wall about 50 m ² .	IIC	
JR014	-31.256381°	25.047226°	<p>2017 – Approx. 500 m from WTG44</p> <p>2019 – More than 320 m from cable/road alignment between WTGs 102 and 103. Will not be affected by WEF.</p>	Shepherds cottage adjacent to kraal JR013.	IIC	

Archaeological Occurrence	Latitude	Longitude	Associated WEF feature	Description	Grading	Photo
JR015	-31.256386°	25.047534°	<p>2017 - Approx. 530 m from WTG44</p> <p>2019 – More than 330 m from cable/ road alignment between WTGs 102 and 103. Will not be affected by WEF.</p>	Small rock shelter enclosed as kraal east of JR013/JR014. No stone artefacts observed.	IIC	
JG015	-31.266264°	25.058187°	<p>2017 - Approximately 200m from WTG 56</p> <p>2019 – Approx. 90 m from nearest cable/ road. Unlikely to be affected by WEF.</p>	Stone cairn on rocky platform. Historical.	NCW	

Appendix D: Specialist's CV

Name: John Gribble
Profession: Archaeologist
Date of Birth: 15 November 1965
Parent Firm: ACO Associates cc
Position in Firm: Senior Archaeologist
Years with Firm: <1
Years of experience: 27
Nationality: South African
HDI Status: n/a

Education:

1979-1983 Wynberg Boys' High School (1979-1983)
1986 BA (Archaeology), University of Cape Town
1987 BA (Hons) (Archaeology), University of Cape Town
1990 Master of Arts, (Archaeology) University of Cape Town

Employment:

- ACO Associates, Senior Archaeologist and Consultant, September 2017 – present
- South African Heritage Resources Agency, Manager: Maritime and Underwater Cultural Heritage Unit, 2014 – 2017 / Acting Manager: Archaeology, Palaeontology and Meteorites Unit, 2016-2017
- Sea Change Heritage Consultants Limited, Director, 2012 – present
- TUV SUD PMSS (Romsey, United Kingdom), Principal Consultant: Maritime Archaeology, 2011-2012
- EMU Limited (Southampton, United Kingdom), Principal Consultant: Maritime Archaeology, 2009-2011
- Wessex Archaeology (Salisbury, United Kingdom), Project Manager: Coastal and Marine, 2005-2009
- National Monuments Council / South African Heritage Resources Agency, Maritime Archaeologist, 1996-2005
- National Monuments Council, Professional Officer: Boland and West Coast, Western Cape Office, 1994-1996

Professional Qualifications and Accreditation:

- Member: Association of Southern African Professional Archaeologists (No. 043)
- Principal Investigator: Maritime and Colonial Archaeology, ASAPA CRM Section
- Field Director: Stone Age Archaeology, ASAPA CRM Section
- Member: Chartered Institute for Archaeologists (CIfA), United Kingdom
- Class III Diver (Surface Supply), Department of Labour (South Africa) / UK (HSE III)

Experience:

I have nearly 30 years of combined archaeological and heritage management experience. After completing my postgraduate studies, which were focussed on the vernacular architecture of the West Coast, and a period of freelance archaeological work in South Africa and aboard, I joined the National Monuments Council (NMC) (now the South African Heritage Resources Agency (SAHRA)) in 1994. As the Heritage Officer: the Boland I was involved in day to day historical building control and heritage resources management across the region. In 1996 I became the NMC's first full-time maritime archaeologist in which role was responsible for the management and protection of underwater cultural heritage in South Africa under the National Monuments Act, and subsequently under the National Heritage Resources Act.

In 2005 I moved to the UK to join Wessex Archaeology, one of the UK's biggest archaeological consultancies, as a project manager in its Coastal and Marine Section. In 2009 I joined Fugro EMU Limited, a marine geosurvey company based in Southampton to set up their maritime archaeological section. I then spent a year at TUV SUD PMSS, an international renewable energy consultancy based in Romsey, where I again provided maritime archaeological consultancy services to principally the offshore renewable and marine aggregate industries.

In August 2012 I set up Sea Change Heritage Consultants Limited, a maritime archaeological consultancy. Sea Change provides archaeological services to a range of UK maritime sectors, including marine aggregates and offshore renewable energy. It also actively pursues opportunities to raise public awareness and understanding of underwater cultural heritage through educational and research projects and programmes, including some projects being developed in South Africa.

Projects include specialist archaeological consultancy for more than 15 offshore renewable energy projects and more than a dozen offshore aggregate extraction licence areas.

In addition to managing numerous UK development-driven archaeological projects, I have also been involved in important strategic work which developed guidance and best practice for the offshore industry with respect to the marine historic environment. This has included the principal authorship of two historic environment guidance documents for COWRIE and the UK renewable energy sector, and the development of the archaeological elements of the first Regional Environmental Assessments for the UK marine aggregates industry. In 2013-14 I was lead author and project coordinator on the Impact Review for the United Kingdom of the 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage. In 2016 I was co-author of a Historic England / Crown Estate / British Marine Aggregate Producers Association funded review of marine historic environment best practice guidance for the UK offshore aggregate industry (.

I returned to South African in mid-2014 where I was re-appointed to my earlier post at SAHRA: Manager of the Maritime and Underwater Cultural Heritage Unit. In July 2016 I was also appointed Acting Manager of SAHRA's Archaeology, Palaeontology and Meteorites Unit.

I left SAHRA in September 2017 to join ACO Associates as Senior Archaeologist and Consultant.

I have been a member of the ICOMOS International Committee for Underwater Cultural Heritage since 2000 and have served as a member of its Bureau since 2009. I am currently the secretary of the Committee.

I have been a member of the Association of Southern African Professional Archaeologists for more than twenty years and am accredited by ASAPA's CRM section. I have been a member of the UK's Chartered Institute for Archaeologists (CIfA) since 2005, and served on the committee of its Maritime Affairs Group between 2008 and 2010. Since 2010 I have been a member of the UK's Joint Nautical Archaeology Policy Committee.

I am currently a member of the Advisory Board of the George Washington University / Iziko Museums of South Africa / South African Heritage Resources Agency / Smithsonian Institution 'Southern African Slave Wrecks Project' and serve on the Heritage Western Cape Archaeology, Palaeontology and Meteorites Committee.

Books and Publications:

Gribble, J. and Scott, G., 2017, *We Die Like Brothers: The sinking of the SS Mendi*, Historic England, Swindon

Lloyd Jones, D., Langman, R., Reach, I., Gribble, J., and Griffiths, N., 2016, Using Multibeam and Sidescan Sonar to Monitor Aggregate Dredging, in C.W. Finkl and C. Makowski (eds) *Seafloor Mapping along Continental Shelves: Research and Techniques for Visualizing Benthic Environments*, Coastal Research Library 13, Springer International Publishing, Switzerland, pp 245-259.

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Smith, AB, 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, *The South African Archaeological Bulletin* 46: 71-91.

Appendix E: Declaration of Independence

I, John Gribble, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- There are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24(F) of the Act.



Signature of the specialist

ACO Associates cc

Name of company (if applicable):

3 July 2019

Date



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

San Kraal and Phezukomoya WEFs: Amendment Applications

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.environment.gov.za/documents/forms>.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	ACO Associates		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition
Specialist name:	John Gribble		
Specialist Qualifications:	MA Archaeology		
Professional affiliation/registration:	Association of Southern African Professional Archaeologists Member ASAPA (#043)		
Physical address:	Unit D17, Prime Park, 21 Mocke Road, Diep River		
Postal address:	As above		
Postal code:	7800	Cell:	Not available
Telephone:	021 706 4104	Fax:	078 616 2961
E-mail:	john.gribble@aco-associates.com		

2. DECLARATION BY THE SPECIALIST

I, John Gribble, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



 Signature of the Specialist

ACO Associates cc

 Name of Company:

13 August 2019

 Date



3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, John Gribble, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Gribble
Signature of the Specialist

ACO Associates cc
Name of Company

13 August 2019
Date

Antonie J.J.L. ANTONIE W/OFFICER
0530956-5
Signature of the Commissioner of Oaths



2019-08-14
Date

A B