AN ARCHAEOLOGICAL IMPACT ASSESSMENT (REPORT 3): PROPOSED CONSTRUCTION OF A SUBSTATION BETWEEN ARIES-HELIOS AND ASSOCIATED LOOP IN AND LOOP OUT LINES, WEST OF BRANDVLEI IN THE NORTHERN CAPE

(Assessment conducted under Section 38 (8) of the
National Heritage Resources Act No 25 of 1999)

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EXECUTIVE SUMMARY

The Archaeology Contracts Office at the University of Cape Town was appointed by Nzumbululo Heritage Solutions to undertake the archaeological impact assessment for the proposed construction of five substations between Sishen and Saldanha. The railway line is currently being strengthened to carry more iron ore from Sishen to the port of Saldanha.

This report is concerned with the construction of a substation between the existing Aries and Helios substations. They are situated to the west of the R27 and of Brandvlei, in Bushmanland. Four alternative sites have been proposed. Site 3d is the preferred location and it is situated on the gravel road between Brandvlei and Katkop. Sites 3a-c is located on the farm Moutonsvlei 16.

As a result of the desktop review conducted by Webley (2009), the Archaeology and Palaeontology Unit of SAHRA issued a review comment recommending a field assessment. Fieldwork was conducted by Webley and Halkett in March 2010. The survey revealed that the preferred location (3d) is located on a slight rise next to a gravel road but at a considerable distance from the transmission lines, while the other three locations are situated in the veld, near the transmission lines but some distance from a road.

There are a few weathered Middle Stone Age implements made on indurated shale in the vicinity of Site 3d. Similarly, there are weathered MSA implements scattered over a wide area around sites 3a-c. None of these appear to be *in situ.* There are no Later Stone Age artefactual scatters in the area. *The artefact scatters are not significant and no mitigation is needed.*

No preference is expressed with regard the placement of the substation. Site 3d would appear to be most suitable in terms of access. It is recommended that the construction of the substation should be allowed to proceed. Sites 3a-c are located in close proximity to the existing transmission lines and the construction of the loop in and loop out lines will have no archaeological impact. However, Site 3d is a considerable distance from the closest transmission line. No information was provided on the angle of the loop in and loop out lines to this transmission lines, but it is not expected that any significant impact will occur.

If any archaeological material and/or human remains are uncovered during construction, work should cease in that area and SAHRA should be notified.

TERMINOLOGY

Backed Microliths: are short blades or flakes of stone with a sharp cutting edge on one side and a blunted edge on the other. The blunt edge is the result of steep retouch or backing (Deacon 1984). It is thought that these tools were hafted onto the edge of arrows or spears using a resin as glue.

Engravings: involves the etching of drawings into the rock surface of andesite and dolerite boulders at selected spots in the landscape using several techniques such as 'fine line engravings', pecking and shallow scratches or scrapings.

Early Stone Age (ESA): The archaeology of the Stone Age between 700 000 and 2500 000 years ago.

Holocene: The most recent geological time period which commenced 10 000 years ago.

Later Stone Age (LSA): The archaeology of the last 20 000 years associated with fully modern people.

Middle Stone Age (MSA): The archaeology of the Stone Age between 20-300 000 years ago associated with early modern humans.

Scrapers: are stone tools characterised by having a flat ventral surface and convex working edge shaped by secondary retouch (Deacon 1984). They may be of varying sizes, but are circular in shape and are thought to have been used for leather work.

Utilized pieces: are stone flakes or flake fragments with damage in the form of small flake scars along the cutting edge (Deacon 1984).

Wilton: the term used for a stone tool industry (combination of stone tool types) which was first identified at the Wilton type site in the Eastern cape, and which has now been found elsewhere in South Africa. It dates from the mid to late Holocene.

1. INTRODUCTION

The Archaeology Contracts Office at the University of Cape Town was appointed by Nzumbululo Heritage Solutions to undertake archaeological impact assessment for the proposed construction of five substations along the Sishen-Saldanha railway line and is situated between Sishen in the Northern Cape and Saldanha in the Western Cape. This report is concerned with the sub-station between Aries and Helios. It is situated to the west of the R27 and of Brandvlei, in the area known as Bushmanland, Northern Cape (Figure 1).

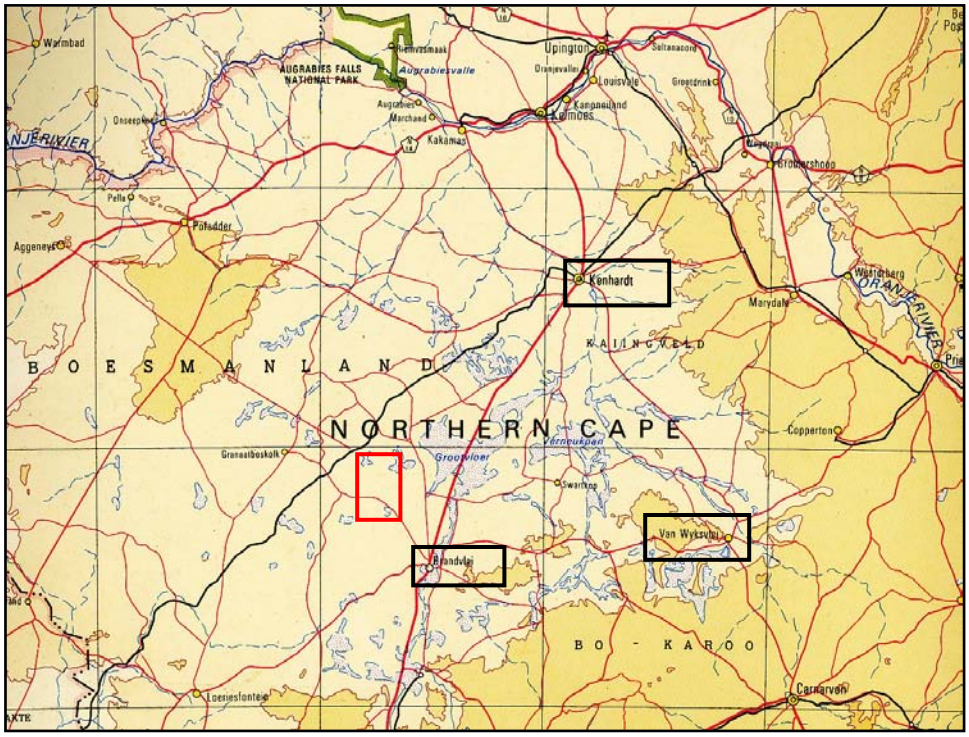

Figure 1: General map of the area, with Upington in the north, on the Orange River. The towns of Kenhardt, Brandvlei and Van Wyksvlei are outlined in black. The red rectangle indicates the approximate location of

2. PROJECT DESCRIPTION

The expansion and refurbishment of the 861 km long rail-line from Sishen to Saldanha is currently under way to cater for increased iron ore exports (Webb 2010). Spoornet's plans for the line include expanding the shunting yards, increasing the length of crossing facilities, introducing new technology and rolling stock, and replacing the diesel locomotives with electric

locomotives. Eskom has agreed to shorten the interval between sub-substations so that Spoornet will be able to use more locomotives per train and ensuring that trains can be made longer.

Four alternative locations have been proposed for substation 3 (Aries-Helios) with 3d being the preferred site. The approximate size of each sub-station will be 500m by 500m. The schematic diagram of the development, provided as Figure 3, does not clearly indicate the routes which will be taken by the loop-in and loop-out lines at each sub-station.

The substation between Aries and Helios will be a 400/50Kv substation with the following specifications:

- -2x40MVA 400/50Kv single-phase TRFR's;
- -400Kv double busbar;
- -2x150MVAr series caps (one on the incomer and the second in the outgoing feeder);
- -400Kv turn-in lines of about 20km in total per substation.

3. TERMS OF REFERENCE

The Archaeology Contracts Office was asked to undertake an archaeological impact assessment to determine the:

- Archaeological potential of each of the alternative sites, including any known data on sites in the affected areas or immediate vicinity;
- Conduct a survey of the proposed localities to determine if archaeological resources will be impacted;
- Determine the significance of the sites and the nature of the impact;
- Recommend measures to mitigate the extent of the impact.

4. LEGISLATION

Section 38 (1) of the National Heritage Resources Act (No 25 of 1999) requires that when constructing a road or similar linear developments exceeding 300m in length or developing an area exceeding 5000 m² in extent, the developer must notify the responsible heritage authority of the proposed development and they in turn must indicate within 14 days whether an impact assessment is required.

These particulars do not apply if an evaluation (Section 38(8)) of the impact of development on heritage resources is required in terms of the Environmental Conservation Act, 1989 (No 73 of 1989) as is the case with

this development. However, the Act notes that "any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent", the heritage authority here being SAHRA National and SAHRA Northern Cape.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological Sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) (Section 2 (d) (xxi)).

As a result of the desktop review conducted by Webley (2009), the Archaeology and Palaeontology Unit of SAHRA issued a review comment recommending a field assessment.

5. RECEIVING ENVIRONMENT

The Bushmanland topography is generally flat, the gently sloping gradient from the escarpment in the south to the Orange River in the north, resulting in numerous brak, silty flats or pans. The Quaternary sands and Karoo sequence shales give rise to weak clay and sandy soils. The low, unpredictable rainfall is highly patchy, occurring under the paths of the rare summer thunderstorms. The vegetation comprises low shrubs and grasses, with occasional quiver trees (*Aloe dichotoma*) on the low kopjes and ridges. The farms in this area are large, and are predominantly used for small-stock farming although game farms are also popular.

6. ARCHAEOLOGY OF THE AREA

In a desktop review of the archaeological literature, Webley (2009) summarised the re-discovery of the Bleek and Lloyd records relating to the /Xam Bushman. The /Xam were traditionally hunter-gatherers who roamed across the plains of Bushmanland but by the mid-nineteenth century they were subsisting on Trekboer farms around Kenhardt, Van Wyksvlei and Brandvlei. The stories and folklore of the /Xam have been instrumental in

assisting with the interpretation of the rock art of southern Africa. Using a map provided by /Xam informants, archaeologists have been able to trace their territories and their last camp sites. The Grass Bushmen are reported to have lived around the Katkop Hills, very close to the location of substation 3d. While a camp site of the Flat Bushmen has been excavated by archaeologists on the farm Bitterpits, it has proved more difficult to find appropriate sites to excavate around the Katkop Hills. Since the area around the Katkop Hills has not been subjected to an intensive survey by archaeologists, Webley (2009) recommended that a survey be undertaken prior to the development of the new substation, to ensure that it would not impact negatively on the archaeological heritage of the area.

7. METHOD OF STUDY

The locations of the proposed substations were loaded onto handheld GPS receivers (set to the WGS84 datum) to facilitate the identification of the search area during field work. Fieldwork was undertaken by Lita Webley and David Halkett during the week 29 March to 1 April 2010. Walk paths and site locations (Figure 2) were recorded with GPS and finds were photographed and described.

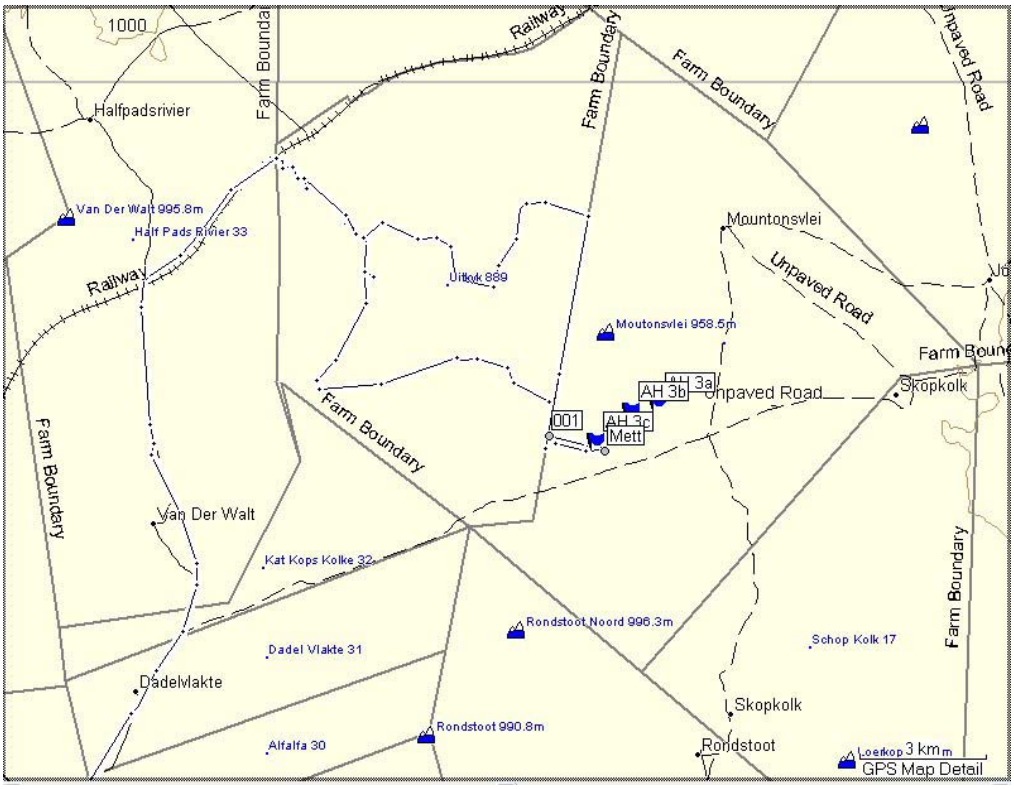

Figure 2: The location of the proposed substation to the north-west of Brandvlei.

7.1 ***Limitations***

We were provided with the following GPS co-ordinates for the location of the substation:

Site		
3a	S30 04 06.1	E20 13 16.7
3b	S30 04 12.7	E20 12 53.2
3c	S30 04 36.4	E20 12 21.9
3d (preferred)	S30 11 35.5	E20 10 16.7

Only 3d is next to the gravel road, the other 3 locations are situated on a farm in a fairly inaccessible area. However, there were no impediments to the survey. Sites 3a-c are very close to transmission lines, but with 3d (preferred site) the transmission lines is a considerable distance away. No shape files were provided for the angle of the loop in and loop out lines, which could not be surveyed.

8. RESULTS OF THE SURVEY

Site 3d is located on a slight rise next to the gravel road between Brandvlei and Katkop (Figure 2). Katkop is a small farming settlement consisting of a few farm buildings, sheds and kraals. It is at the juncture of roads which radiate out to Loeriesfontein and Granaatboskolk. A few weathered Middle Stone Age implements, made on indurated shale, were discovered. They were scattered across the area identified for Site 3d.

Plate 1: Site 3d. Plate 2: A weathered stone artefact, approximately 2.5cm in length.

Plate 3: Sites 3a-c are located on this plain, which is covered in ferrous nodules. Note the transmission lines running across the plains. Plate 4: Weathered MSA implements recovered on the plain.

Sites 3a-c are situated on a large plain on the farm Moutonsvlei (Figure 2). The plain is covered in small “ferrous” nodules. There are sparse bushes, of ankle height making visibility very good. Scattered across the plain are very weathered indurated shale implements, which appear to be of Middle Stone Age origin. The implements are not in primary context and do not appear to represent a living site. The proposed locations are in close proximity to the transmission lines running across the plains.

There is a ridge of low hills surrounding the plains. One hill, in proximity to site 3c, was examined but it did not have any of the dolerite boulders which were engraved by the LSA San groups.

9. SIGNIFICANCE OF SITES AND IMPACT OF DEVELOPMENT

While the desktop study suggested that the area had potential to provide significant information, the survey did not recover any sites of significance. A number of ephemeral scatters of stone artefacts were identified. They are very weathered, but the presence of some facetted platforms suggest that they are likely to be of Middle Stone Age origin. They are made of indurated shale which was probably obtained locally. The substation will be constructed on these open plains. It is a considerable distance from the closest farmhouse and dwellings and it is not anticipated that any structures or graves will be impacted.

Sites 3a-c are located in close proximity to existing transmission lines and the loop in and loop out lines will not impact significantly on the archaeology of the area. Site 3d is a considerable distance from the transmission lines

and the loop in and loop out lines will need to cover many kilometers. However, it is not anticipated that the construction of pylons will impact on any significant archaeological remains.

10. RECOMMENDATIONS

The Archaeological Impact Assessment recovered an ephemeral scatter of weathered stone artefacts (possibly dating to the Middle Stone Age) in all four alternative areas proposed for the substation. None of the artefact scatters represent in situ archaeological sites. No preference is expressed for any of the alternative sites. The loop in and loop out lines for Sites 3a-c will be very short and situated in the same area as the substation. The archaeological impact will be minimal. Site 3d (the preferred site) is a considerable distance from the closest transmission line and the loop in and loop out lines will be much longer. However, in view of the sparse archaeological resources identified in this survey, it is not anticipated that the impact will be significant.

It is recommended that construction should proceed. The contractors should be alert to the possibility of recovering below ground archaeological remains, and work should cease if any of the following are recovered:

- Graves or human remains;
- Concentrations of stone tools, bones, pottery or metal items.

If any of the above are discovered, SAHRA should be alerted to investigate further.

11. ACKNOWLEDGEMENTS

The following individuals have kindly provided information on unpublished data and discussed their views on the archaeological significance of the area with me: Mr David Morris (McGregor Museum, Kimberley).

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Figure 3: Schematic diagram of the substations and associated infrastructure.