

**AN ARCHAEOLOGICAL IMPACT ASSESSMENT (REPORT 4):
PROPOSED CONSTRUCTION OF A SUBSTATION BETWEEN
ARIES-GARONA AND ASSOCIATED LOOP IN AND LOOP OUT
LINES, NORTH-WEST OF KENHARDT 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 Sishen-Saldanha railway line is currently being strengthened to carry more iron ore to the port.

This report is concerned with the construction of a substation between the existing Aries and Garona substations. Three alternative sites have been proposed with 4a the preferred site. They are situated along the railway line between Kenhardt and Groblershoop in the Bushmanland area of Upper Karoo, Northern Cape. Very little archaeological research has been conducted in this part of the country.

However, excavations at Bundu Pan to the south-east of Kenhardt, have highlighted the likelihood of recovering Early and Middle Stone Age implements on the edges of shallow pans. Further, this part of the Northern Cape is known as being the home of Bleek and Lloyd's /Xam informants whose oral testimonies were recorded in the 19th century. Later Stone Age sites, rock art and herder sites have been recorded in the area.

Fieldwork was conducted by Webley and Halkett in March 2010. The survey revealed that the proposed locations are situated on the gravel service road which runs parallel to the railway line. While GPS co-ordinates were provided, they are clearly only approximations of the final locations. No shape files were provided for the loop in and loop out lines.

A few flakes quartz artefacts were identified. They are probably of Later Stone Age origins. This report concludes that they are of low significance and no mitigation is required. No preference is expressed with regard the placement of the substation and sites 4a, 4b or 4c may be utilised. All three sites are located in close proximity to existing transmission lines and the loop in and loop out lines will not impact on any archaeological remains.

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.

TERMINOLOGY

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.

Fauresmith: This refers to a period at the end of the Early Stone Age, around 200 000 years ago, characterized by small handaxes.

Geometric: designs are found in both paintings and engravings and can include sun-like designs and ladders.

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.

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 proposed sub-station between Aries and Garona. It will be situated on the railway line between Kenhardt and Groblershoop in the Bushmanland area of the Upper Karoo, Northern Cape (Figure 1).

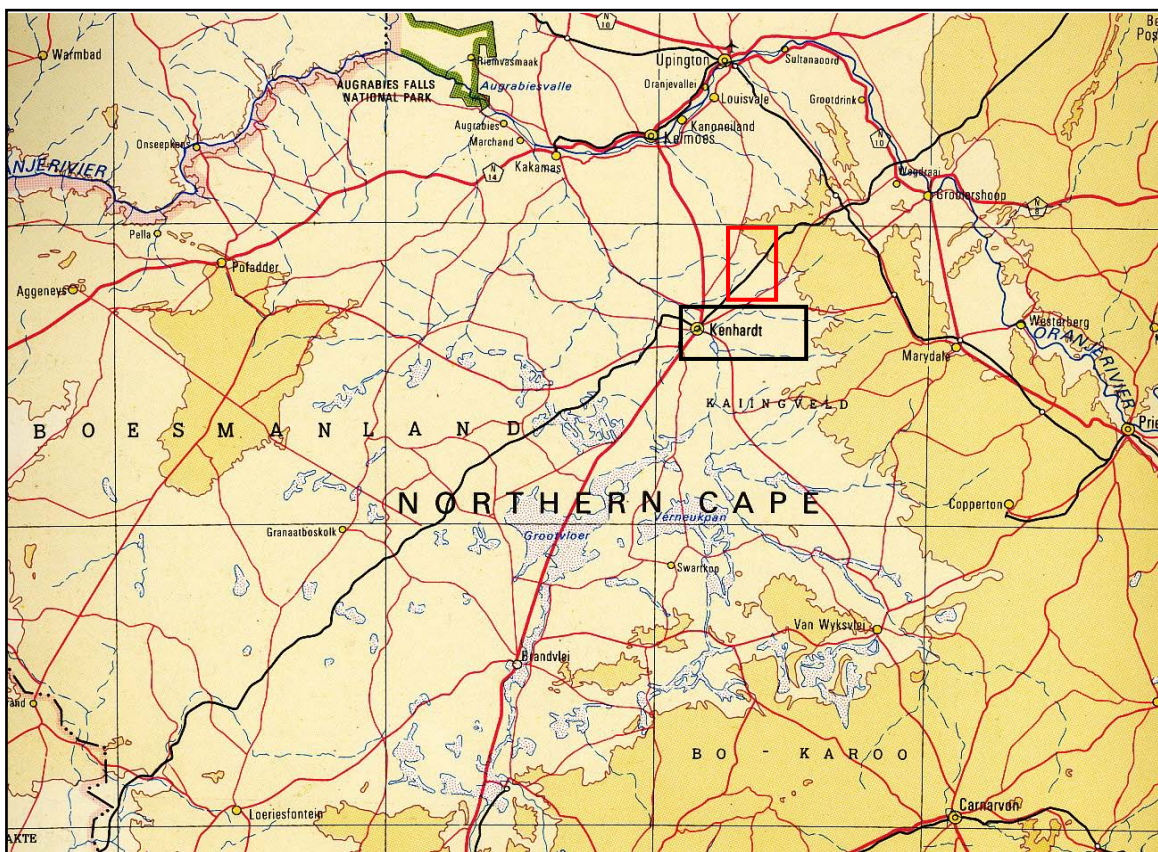


Figure 1: General map of the area, with Upington in the north, on the Orange River. The town of Kenhardt is outlined in black. The red rectangle indicates the approximate alternative locations of the substation.

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-stations so that Spoornet will be able to use more locomotives per train and ensuring that trains can be made longer.

Three alternative locations have been proposed for a new-substation 4 between the current Aries and Garona substations. The preferred site is 4a. 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 Garona will be a 400/50Kv substation with the following specifications:

- -2x40MVA 275/50Kv single-phase TRFR's;
- -275Kv double busbar;
- - 275Kv turn-in lines of about 20km in total;

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)).

5. RECEIVING ENVIRONMENT

This part of the Northern Cape is known as Bushmanland and the vegetation is described as Nama-Karoo. This comprises dwarf bushes, grasses and seasonal flowering annuals on gravel soils. It is semiarid to arid with frequent prolonged droughts. Small stock farming is commonly practiced in the region. There are also numbers of farm managed springbok and gemsbok.

There are large boulders and calcrete in some areas alongside the railway line (Plate 1). They appear to have been uncovered during the construction of the line, which in certain areas cuts into the substrate. The calcrete seems to be lying just beneath the soil surface. In his discussion of the archaeology of Bundu Pan (to the south of the proposed substation), Kiberd notes with respect to the calcretes at the pan, that they indicate “fluctuating, short-lived wet and dry environments”.



Plate 1: View of the railway line, the gravel service road and the large boulders which were uncovered during the construction of the line.

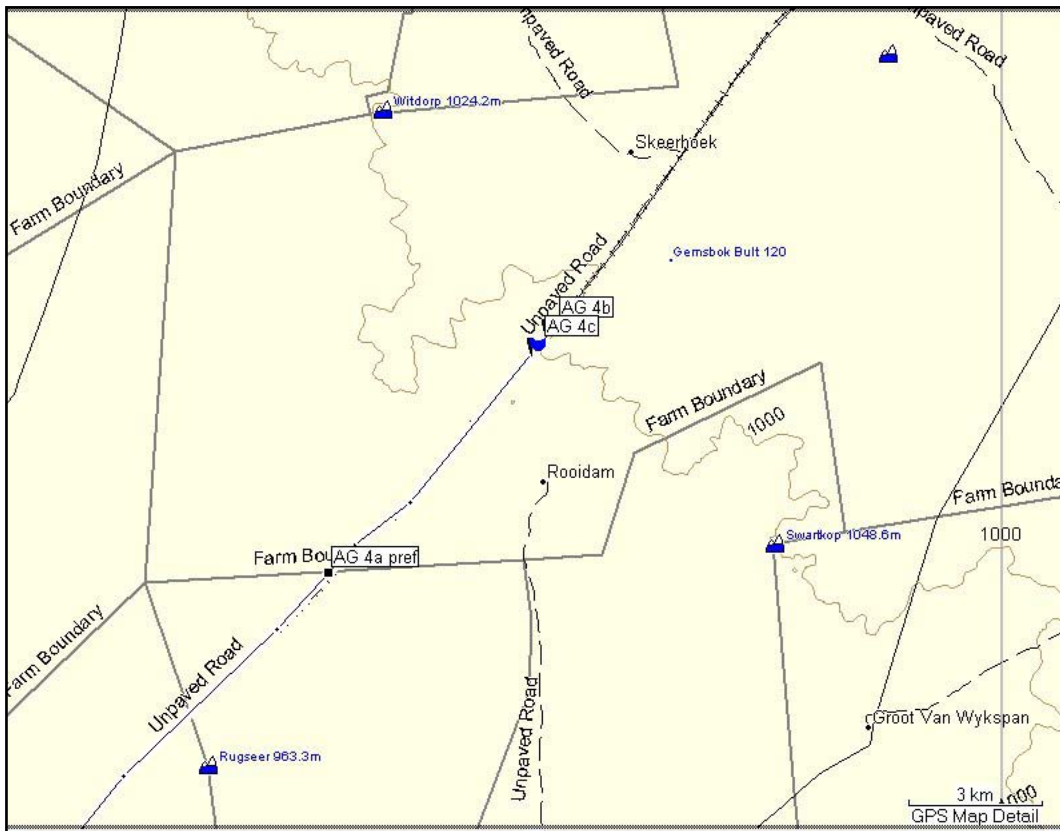


Figure 2: Map of the farm Gemsbok Bult showing the alternative locations for the substation.

6. ARCHAEOLOGY OF THE AREA

The authors of this report did not conduct the desktop review for this particular sub-station and a review of the literature is therefore briefly presented to set the background. Very little is known about the archaeology of this area. Excavations by Kiberd (2006) at Bundu Pan in eastern Bushmanland have resulted in the establishment of a chronological sequence for the area, spanning the Early, Middle and Later Stone Age period. In addition to stone tools made on quartzites, he has also recovered faunal remains including a number of extinct species such as the extinct Cape horse and the giant hartebeest.

In a desktop review of the literature for the proposed Aries-Helios sub-station to the west of Brandvlei (report 3) Webley (2009) described how at the time of contact, this part of the Northern Cape was occupied by the /Xam Bushman. The /Xam were the last Bushmen group who were still able to survive as a hunter-gatherer community in the face of Trekboer encroachment on their traditional hunting grounds. It is these Bushmen groups who were interviewed by Wilhelm Bleek and Lucy Lloyd in the late 19th century and it is *their oral testimony which informs the interpretation of Southern African rock art today*.

Research by archaeologists such as Deacon (1996) suggests that the Grass Bushmen may have lived between Kenhardt and Brandvlei, while the Flat Bushmen lived between Vanwyksvlei and Kenhardt. Archaeological excavations of open sites in this area such as those by Deacon (1996) and Morris (1990) may assist us in identifying possible /Xam camps and may allow archaeologists to trace material cultural differences between the Grass and Flat Bushmen.

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 were recorded with GPS and finds were photographed and described.

7.1 Limitations

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

Site		
4a (preferred)	S29 09 10.0	E21 20 38.6
4b	S29 06 12.6	E21 23 44.8
4c	S29 06 25.6	E21 23 32.3

These GPS locations place the substations on the edge of the gravel service road which runs parallel to the railway line. The co-ordinates are therefore considered as “approximations”. It is not clear whether the substation will be located between the railway line and the road, or across the fence in the farmer’s lands. The general area was surveyed. No shape files were provided for the loop in and loop out lines.

8. RESULTS OF THE SURVEY

The preferred site, Site 4a, appears to be located between the gravel service road and the railway line (Plate 2), while Sites 4b and 4c are situated in farmlands next to the service road. A 1:50 000 map of the location of Site 4b was provided to ACO, but the position of the sub-station was incorrectly indicated on this map. The true position (according to the GPS co-ordinates) is next to the service road.



Plate 2: View of Site 4a. Plate 3: View of the areas in which Site 4b and 4c are located.

A few quartz chunks were discovered in Sites 4a and 4c. These are all isolated occurrences and the artefacts may be in secondary context.

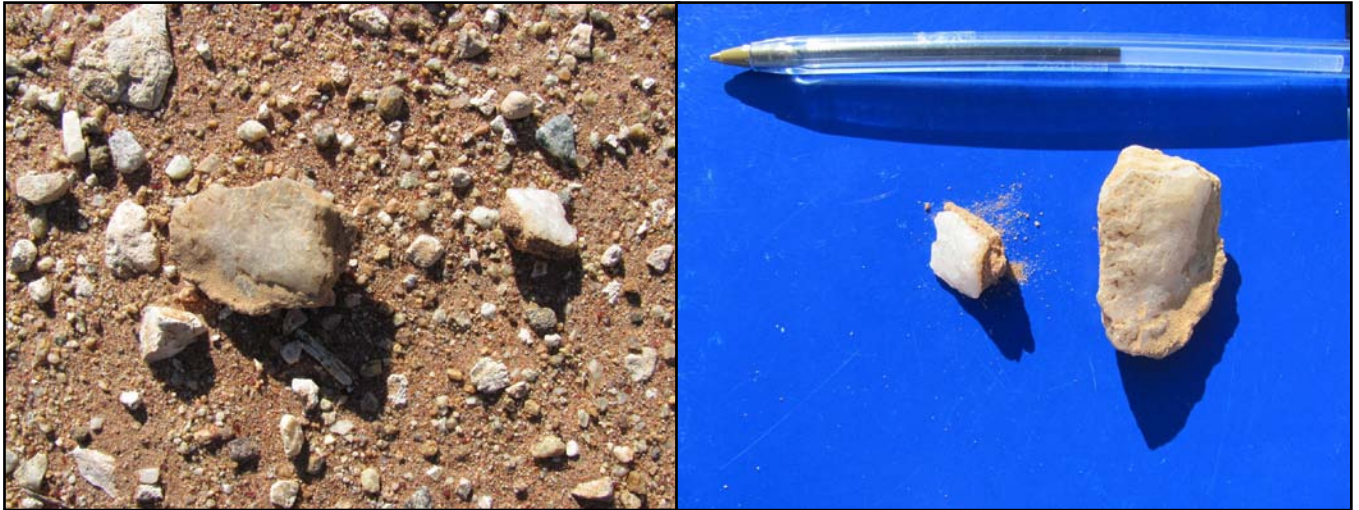


Plate 4 & 5: View of quartz implements discovered on Site 4a and 4c.

9. SIGNIFICANCE OF SITES AND IMPACT OF DEVELOPMENT

While the desktop study suggested that the area had potential to provide significant information relating to the pre-colonial occupation of this part of the Northern Cape, the survey did not identify any significant archaeological sites. The substation will be constructed on the open plains of the farm Gemsbok Bult 120 adjoining the Sishen-Saldanha railway line and service road. *This area has already been disturbed. There are some indeterminate quartz flakes and chunks in the area, but no sign of in situ settlement areas. The archaeological material is not highly significant and impact will be minimal.* The alternative locations are far from the closest farmhouse at Rooidam and it is not anticipated that any structures or graves will be impacted.

10. RECOMMENDATIONS

The Archaeological Impact Assessment identified a few flaked quartz implements. They are probably of Later Stone Age origins. This report concludes that they are of low significance and no mitigation is required. No preference is expressed with regard the placement of the substation and sites 4a, 4b or 4c may be utilised. All three sites are located in close proximity to existing transmission lines and the loop in and loop out lines will not impact on any archaeological remains.

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11. REFERENCES

Deacon, J. 1996. Archaeology of the Flat and Grass Bushmen. In Deacon, J. & Dowson, T. (eds) *Voices from the Past: /Xam Bushmen and the Bleek and Lloyd Collection*. Pp. 245-270. Witwatersrand University Press: Johannesburg.

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Webb, M. 2010. Rail and Port Expansion to boost iron-ore exports. *Creamer Media's Engineering News*.

Webley, L. 2009. An Archaeological Desktop Study (Report 3): Proposed construction of a substation between Aries-Helios and associated loop in and loop out lines, Northern Cape.

Figure 3: Schematic diagram of the substations and associated infrastructure (diagram supplied by client).

