McGregor Museum

Department of Archaeology

AGGENEIS - ORANJEMOND 400 kV TRANSMISSION LINE

Specialist Input for the Scoping Phase for the proposed transmission line.

ARCHAEOLOGY

David Morris

December 2010

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1. Introduction

This report gives a scoping phase evaluation for three alternative routes for a 400 kV transmission line between the Aggeneis and Oranjemond substation as well as the upgrade of the associated substations. The archaeology specialist input was commissioned by Savannah Environmental (Pty) Ltd), P.O. Box 148, Sunninghill 2151, Gauteng, email info@savannahsa.com, tel 011-2346621 fax 086 6840547.

2. Archaeology Specialist

The author of this report is an archaeologist accredited as a Principal Investigator by the Association of Southern African Professional Archaeologists. I have previously carried out surveys in the vicinity of the proposed activity (e.g. Morris 1999a-b, 2000a-c, 2001, 2010).

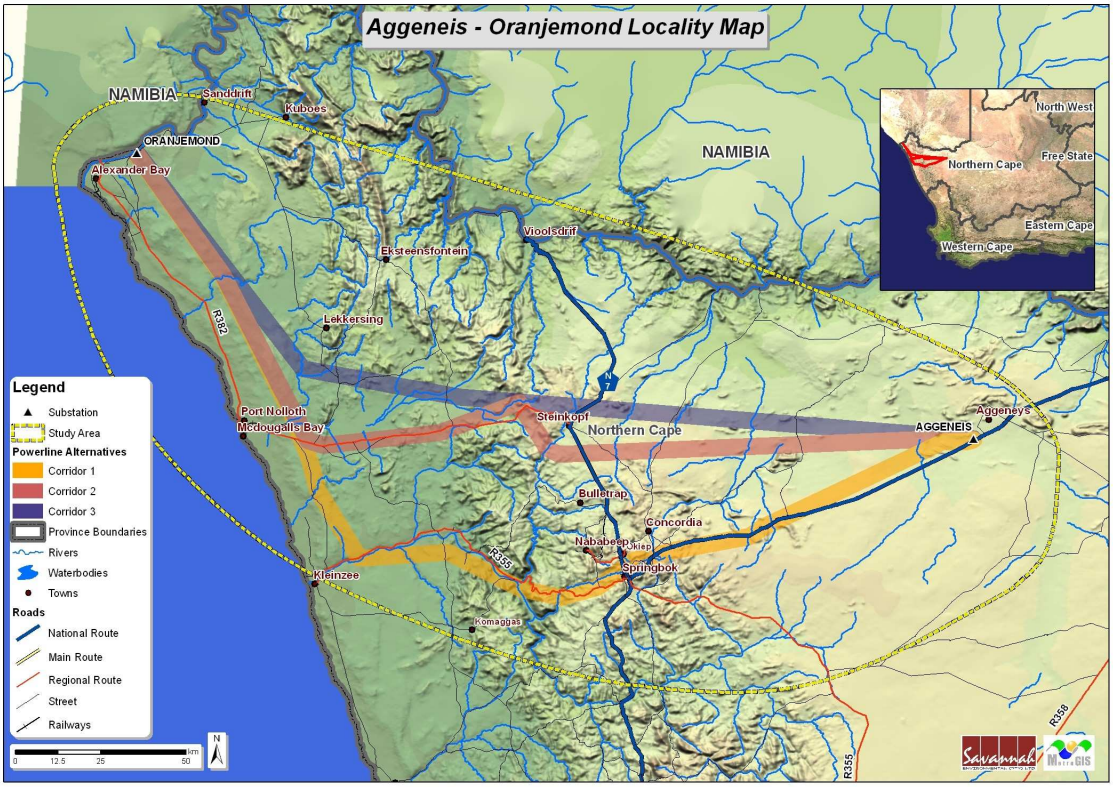
I work independently of the organization commissioning this specialist input, and I provide these preliminary scoping observations within the framework of the National Heritage Resources Act (No 25 of 1999).

The National Heritage Resources Act no. 25 of 1999 (NHRA) protects heritage resources which include archaeological and palaeontological objects/sites older than 100 years, graves older than 60 years, structures older than 60 years, as well as intangible values attached to places. The Act requires that anyone intending to disturb, destroy or damage such sites, objects and/or structures may not do so without a permit from the relevant heritage resources authority. This means that a Heritage Impact Assessment should be performed, resulting in a specialist report as required by the relevant heritage resources authority/ies to assess whether

authorisation may be granted for the disturbance or alteration, or destruction of heritage resources.

3. Description of the affected environment

The environment in question is generally arid, comprising both mountainous areas defining the western escarpment and relatively flat drainage plains to the east and the coastal plain to the west. The landscape is sparsely vegetated, therefore making any surface archaeological traces highly visible.



In terms of heritage features of the region, the following preliminary comments can be made:

<u>Colonial frontier</u>

From the colonial frontier era of the eighteenth and nineteenth centuries, written records for this region east of the escarpment include the travelogues of George Thompson (1827) and E.J. Dunn (1931, Robinson 1978) who visited the area in 1824 and 1872 respectively. Their observations (and see Penn 2005) shed some light on the local history of the nineteenth century. Place names were coming to be fixed in

the colonial frontier period and these capture vestiges of indigenous sensibilities. A much more prominent appreciation now exists concerning the history of genocide against the Bushmen in this area (Anthing 1863), with certain mountainous areas (like Gamsberg near Aggeneis) being likely massacre sites, referred to by Dunn in 1872 (Robinson 1978) and, more obliquely, by Anthing (1863; Jose Manuel de Prada-Samper pers. comm. 2009).

The Springbok-Steinkopf area sprang to particular significance in the mid nineteenth century owing to the commencement of large-scale copper mining (Smalberger 1975). The industrial heritage landscape that remains from this period is currently on South Africa's Tentative List for World Heritage inscription and makes this area with its associated historical fabric – including remains of the Okiep-Port Nolloth railway, and the convict station in the Messelaars Pass south west of Springbok – particularly sensitive in terms of colonial heritage traces. In terms of colonial heritage traces there may be remains of stone-walled and mud brick structures as well as graves and other features on farmlands on the coastal plain and sandveld as well as throughout the escarpment area and east thereof (cf. Morris & Webley 2004).

Later Stone Age

Late Holocene Later Stone Age (LSA) sites are the predominant precolonial archaeological trace noted in surveys above the escarpment (Morris 1999a-b, 2000a-c, 2001, 2010) and below (Webley 2007). Beaumont *et al*. (1995) have shown, with reference to the LSA, that "virtually all the Bushmanland sites so far located appear to be ephemeral occupations by small groups in the hinterland on both sides of the [Orange] river" (1995:263). This was in sharp contrast to the substantial herder encampments along the Orange River floodplain itself (Morris & Beaumont 1990), which reflected the "much higher productivity and carrying capacity of these bottom lands." "Given choice, the optimal exploitation zone for foragers would have been the Orange River." The advent of herders in the Orange River Basin, Beaumont *et al*. argue, led to competition over resources and ultimately to marginalisation of hunter-gatherers, some of whom then occupied Bushmanland, probably mainly in the last millennium, and focused their foraging activities on the limited number of water sources in the region. "Surveys of large areas away from [such water sources] have failed to yield any signs of human occupation, except around the granite inselsberg extruding above the peneplain, ... the red dunes which produced clean sand for sleeping, or around the seasonal pans" (Beaumont el al. 1995:264).

It would appear that a similar pattern pertained to the west of the escarpment, with the optimal exploitation area being the coastal zone and along riverbeds and with

archaeological visibility dropping off sharply, generally some 5-6 km from the shoreline, across the arid circa 90 km broad sandveld plains moving inland.

The escarpment area provides conditions where rock shelters and caves may occur. Rock paintings have been documented south west of Springbok (Morris & Webley 2004), while important cave sites have been recorded (Miller & Yates 1994) and in one instance a major excavation in a long-sequence context commenced at a site north of Lekkersing, east of the proposed transmission line route (Dewar & Orton in press; Dewar & Stewart in prep.). Later Stone Age sites in the escarpment area would be significant for testing a model of seasonal exploitation of mountain and sandveld resources (Webley 2007) or the possibility of pastoralist migration in a zone where water may have been more dependable (Dewar & Orton in press).

Pleistocene: Middle and Earlier Stone Age

Beaumont *et al*. (1995:240-1) note a widespread low density stone artefact scatter of Pleistocene age across areas of Bushmanland, east of the escarpment, where raw materials mainly quartzite cobbles, were derived from the Dwyka till. Systematic collections of this material made at Olyvenkolk, south west of Kenhardt and Maans Pannen, east of Gamoep, could be separated out by abrasion state into a fresh component of Middle Stone Age (MSA) with prepared cores, blades and points, and a large aggregate of moderately to heavily weathered Earlier Stone Age (ESA).

Beaumont *et al*. have shown that "substantial MSA sites are uncommon in Bushmanland" (1995:241): and those that have been documented thus far have generally yielded only small samples (Morris & Beaumont 1991; Smith 1995).

The ESA included Victoria West cores on dolerite, long blades, and a very low incidence of handaxes and cleavers. The Middle (and perhaps in some instances Lower) Pleistocene occupation of the region that these artefacts reflect must have occurred at times when the environment was more hospitable than today. This is suggested by the known greater reliance of people in Acheulean times on quite restricted ecological ranges, with proximity to water being a recurrent factor in the distribution of sites.

No substantial sites have been found previously on the plains westward from Aggeneis. Only very sparse localized scatters of stone tools have been seen in places, with limited traces in the hills or at the bases of hills.

Isolated Earlier Stone Age artefacts occur along the Namaqualand coast and its hinterland, with rich silcrete quarry sites on terraces in the north. Middle Stone Age

sites are found along the shoreline and on terraces. One of the most important site clusters however is in the mountains north of Lekkersing where one cave is now known to have a long sequence reaching back at least to Middle Stone Age times (Dewar & Stewart in prep).

4. Description and evaluation of environmental issues and potential impacts

Heritage resources including archaeological sites are in each instance unique and non-renewable resources. Area and linear developments such as are envisaged can have a permanent destructive impact on these resources in cases where they are impacted. The objective of an EIA would be to assess the significance of such resources, where present, and to recommend no-go or mitigation measures to facilitate or constrain the development.

Potential area impacts are possible in the case of substation expansion, while the transmission line and access roads would represent linear impacts.

5. Direct, indirect and cumulative impacts (in terms of nature and extent)

The destructive impacts that are possible in terms of heritage resources would tend to be direct once-off events occurring during the initial period of infrastructure construction. In the longer term the proximity of operations in a given area could result in secondary impacts resulting from the movement of people or vehicles in the immediate or surrounding vicinity, for example at substations.

It has been noted, however, that power line erection has a relatively small impact on open-air Stone Age sites (Sampson 1985), whereas roadways would tend to be far more destructive, albeit relatively limited in spatial extent. (This is because open-air Stone Age sites tend to consist of surface scatters and below-surface occurrences of small items, mainly highly durable stone tools. Archaeological sites consisting of more 'fabric-heavy' elements such as stone walling or other substantial above-ground features – as in many Iron Age sites or sites of the colonial era – are obviously more susceptible to damage or destruction).

6. Determining archaeological significance

In addition to guidelines provided by the National Heritage Resources Act, a set of criteria based on Deacon nd and Whitelaw 1997 for assessing archaeological significance has been developed for Northern Cape settings (Morris 2000a).

Estimating site potential

Table 1 is a classification of landforms and visible archaeological traces for estimating the potential for archaeological sites (after J. Deacon nd, National Monuments Council). Type 3 sites tend to be those with higher archaeological potential. There are notable exceptions, such as the renowned rock art site Driekopseiland, near Kimberley, which is on landform L1 Type 1. Generally, the older a site, the poorer the preservation. Estimation of potential, in the light of such variables, thus requires some interpretation.

Assessing site value by attribute

The second matrix (Table 2) is adapted from Whitelaw (1997), who developed an approach for selecting sites meriting heritage recognition status in KwaZulu-Natal. It is a means of judging a site's archaeological value by ranking the relative strengths of a range of attributes. While aspects of this matrix remain qualitative, attribute assessment is a good indicator of the general archaeological significance of a site, with Type 3 attributes being those of highest significance.

Table 1. Classification of landforms and visible archaeological traces for estimating the potential for archaeological sites (after J. Deacon, National Monuments Council).

Class	**Landform**	**Type 1**	**Type 2**	**Type 3**
L1	Rocky surface	Bedrock exposed	Some soil patches	Sandy/grassy patches
L2	Ploughed land	Far from water	In floodplain	On old river terrace
L3	Sandy ground, inland	Far from water	In floodplain or near feature such as hill	On old river terrace
L4	Sandy ground, Coastal	>1 km from sea	Inland of dune cordon	Near rocky shore
L5	Water-logged deposit	Heavily vegetated	Running water	Sedimentary basin
L6	Developed urban	Heavily built-up with no known record of early settlement	Known early settlement, but buildings have basements	Buildings without extensive basements over known historical sites
L7	Lime/dolomite	>5 myrs	<5000 yrs	Between 5000 yrs and 5 myrs
L8	Rock shelter	Rocky floor	Sloping floor or small area	Flat floor, high ceiling
Class	**Archaeo-logical**	**Type 1**	**Type 2**	**Type 3**

Class	Landform traces	Type 1	Type 2	Type 3
A1	Area previously excavated	Little deposit remaining	More than half deposit remaining	High profile site
A2	Shell or bones visible	Dispersed scatter	Deposit <0.5 m thick	Deposit >0.5 m thick; shell and bone dense
A3	Stone artefacts or stone walling or other feature visible	Dispersed scatter	Deposit <0.5 m thick	Deposit >0.5 m thick

Table 2. Site attributes and value assessment (adapted from Whitelaw 1997)

Class	Attribute	Type 1	Type 2	Type 3
1	Length of sequence/context	No sequence Poor context Dispersed distribution	Limited sequence	Long sequence Favourable context High density of arte/ecofacts
2	Presence of exceptional items (incl regional rarity)	Absent	Present	Major element
3	Organic preservation	Absent	Present	Major element
4	Potential for future archaeological investigation	Low	Medium	High
5	Potential for public display	Low	Medium	High
6	Aesthetic appeal	Low	Medium	High
7	Potential for implementation of a long-term management plan	Low	Medium	High

7. Characterising the significance of impacts

The following criteria will be used for the Environmental Impact Assessment to characterise the significance of direct, indirect and cumulative impacts:

The *nature* (what causes the effect, what would be affected, and how it would be affected); the *extent* (whether the impact would be local or more widespread); the *duration* (whether short-, medium-, long-term or permanent); the *magnitude* (grading through minor, moderate to very high); the *probability of occurrence* (whether improbable, likely or definite); with *significance* (low, medium or high) being determined through a synthesis of these characteristics according to the

formula S = (E+D+M) P (where S = Significance weighting; E = Extent ; D = Duration; M = Magnitude; P = Probability

Status would be defined as positive, negative or neutral relative to the degree to which the impact can be reversed; the degree to which it may cause irreplaceable loss of resources; and the degree to which the impact can be mitigated.

Low significance would indicate a situation where the impact would not have a direct influence on the decision to develop in the area; Medium where the impact could influence the decision to develop in the area unless it is effectively mitigated; and High where the impact must have an influence on the decision process to develop in the area.

8. Potential areas of sensitivity

Based on previous experience in the area, it is estimated that the terrain close to hills or rocky features, particularly sandy spots near sheltering rocks, may tend to have traces of precolonial Stone Age occupation/activity. Shelters may occur in the escarpment areas to be traversed by transmission line alternatives.

While places in the open plains have been found to have sparsely scattered artefacts, these areas are expected to be less significant.

An exception to the last is where rocky outcrops at the surface on the plains provide places where water pools exist after rains. Such places often attracted people in the past with traces of this including artificial grinding grooves in the bedrock and ample evidence of stone artefacts and pottery. Good examples of this have been documented both east and west of the escarpment (Morris 1999a; Morris & Webley 2004).

Colonial era sites or features within the study area include the industrial landscape associated with copper mining in the Springbok-Steinkopf area, as well as infrastructure associated with the spread of the colonial frontier, including early missionary activity, and farming endeavours.

9. Potentially significant impacts to be assessed within the EIA process

In view of the above, anticipated routes for the transmission line and associated substation expansion should be examined closely on foot. Any disturbance of surfaces in the development area could have a destructive impact on heritage

resources. In the event that such resources are found they are likely to be of a nature that could be mitigated by documentation and/or salvage following approval and permitting by the South African Heritage Resources Agency and, in the case of any built environment features, Ngwao Boŝwa ya Kapa Bokone (the Northern Cape Heritage Authority). There may be some heritage features that would require preservation *in situ* and hence modification of the intended transmission line alignment or tower footprint.

On the basis of scoping phase assessment it is possible that of the three alternative routes, the Northern Option may have the least potential impact on sensitive heritage landscapes and the Central and Southern Options the greater potential impact since both intersect the Namaqualand copper industrial heritage area and the Okiep-Port Nolloth railway route. Visual impacts are a consideration here as well in a region which might attract increased future heritage tourism.

Methodology for EIA assessments

A site visit would be necessary to inspect the transmission line routes on the ground. Some indications are indicated above of the kinds of terrain that might be (or known to be) more sensitive in terms of presence of precolonial archaeological sites and colonial era traces and infrastructure, and greater emphasis would be given to inspecting such zones.

Once sites are plotted they would be assessed in terms of the tables given above and relative to the known heritage of the region, providing a quantifiable measure for defining significance as a basis for recommendations to be made.

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