

# McGregor Museum Department of Archaeology



## RAMPHELE PV SOLAR THERMAL FACILITY

SPECIALIST INPUT FOR THE SCOPING PHASE OF  
THE ENVIRONMENTAL IMPACT ASSESSMENT FOR  
THE PROPOSED RAMPHELE PV SOLAR THERMAL  
FACILITY, NEAR RITCHE, NORTHERN CAPE  
PROVINCE

## ARCHAEOLOGY

David Morris  
June 2011

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### **SPECIALIST INPUT FOR THE SCOPING PHASE OF THE ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED RAMPHELE PV SOLAR THERMAL FACILITY, NEAR RITCHIE, NORTHERN CAPE PROVINCE**

#### **ARCHAEOLOGY**

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#### **Background**

This scoping phase evaluation is a desk-top study which aims to provide high-level identification of potential areas of sensitivity together with a recommended methodology for the EIA process.

The site is on the property Klipdrift and Kookfontewin 109/10 south of the Riet River near Ritchie in the Northern Cape.

#### **Specialist**

The author of this report is an archaeologist accredited as a Principal Investigator by the Association of Southern African Professional Archaeologists. He has previously carried out surveys in the region of the proposed activity. In addition, the author is familiar with the history of the area and has UCT-accredited training on Architectural and Urban Conservation: researching and assessing local (built) environments (S. Townsend, UCT).

#### **Description of environment and potential impacts**

The environment in question is a semi-arid one consisting of a relatively flat grassy drainage plain with low hills on the southern portion. The landscape is a largely tree-less grassland where archaeological traces may be generally fairly visible, though with Stone Age traces being potentially sub-surface.

The locality is indicated in the following map.

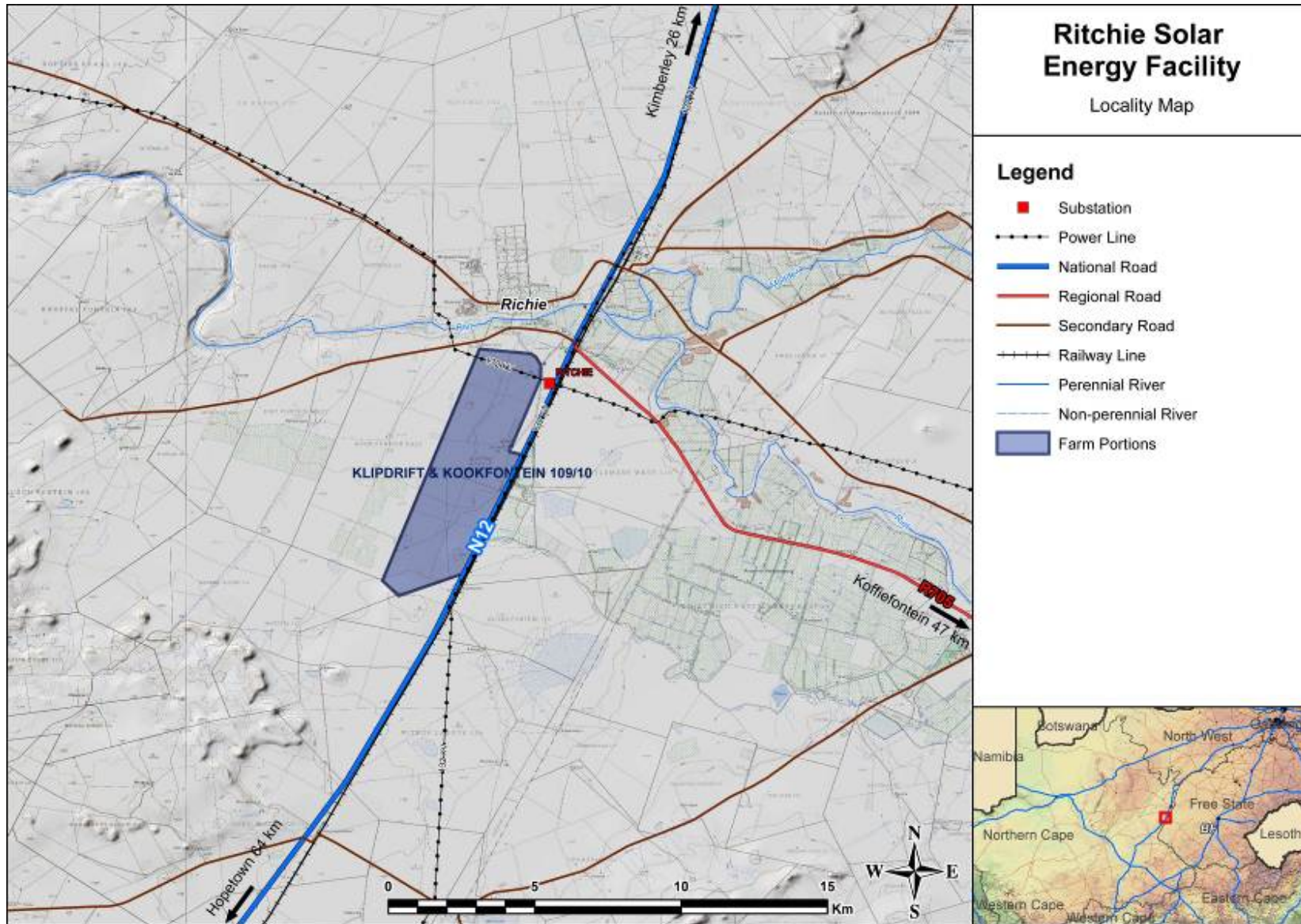


Figure 1: Locality Map

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

### Colonial history

Of greatest significance on the actual terrain under investigation is the history of the South African Anglo-Boer War (1899-1902) and specifically of the Battle of Modder River, 28 November 1899, which was fought in immediate proximity to the site (F.M. Barbour pers. comm.).

Prior to this, the area lay to the north east of the Albania Settlement of the 1860s and it came to greater prominence following the discovery of diamonds around 1870. The northward extension of the railway, to Kimberley, in 1885 saw construction of the main line from Cape Town immediately adjacent to the project area. The railway was subsequently to be of strategic importance for the British forces approaching northwards to Kimberley in November 1899, hence the Battle of Modder River taking place in this vicinity.

### Stone Age

Stone Age material found in this area spans the Earlier, Middle and Later Stone Ages through Pleistocene and Holocene times. Of particular interest are Pleistocene sites along the Vaal River (e.g. Beaumont & Morris 1990; Beaumont & McNabb 2000), and similar material is known to occur along the Riet River. Late Holocene material with pottery is known to occur on the river banks, while rock engravings are richly distributed in the region, the site of Driekops Eiland being of particular renown (Wilman 1933; Morris 1988). Engravings occur at Scotchman's Pool, Ritchie, as well as in the hills south of Ritchie, e.g. within the Mokala Park. Near to the project area lies the distribution of "Type R" stone-walled settlements, but these are mainly along the Riet River upstream from Ritchie and generally at the foot of hills close to the river.

Terraces along the rivers have long been known for their association with archaeological and Plio-Pleistocene fossil material (e.g. Helgren 1979).

### **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 the Solar PV Plant itself and in any associated infrastructure.

### **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 the PV plant and associated 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.

In this instance there may be a secondary and longer-term visual impact on a significant heritage landscape.

It has been noted that powerline erection has a relatively small impact on Stone Age sites (Sampson 1985), whereas a roadways or a pipelines would tend to be far more destructive, albeit relatively limited in spatial extent. A water pipeline, if water is to be sourced at the river, could traverse more sensitive terrain both in terms of possible Stone Age traces and with respect to the battlefield.

### **Statement of 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, moreover, 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 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	Low	Medium	High

	archaeological investigation			
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

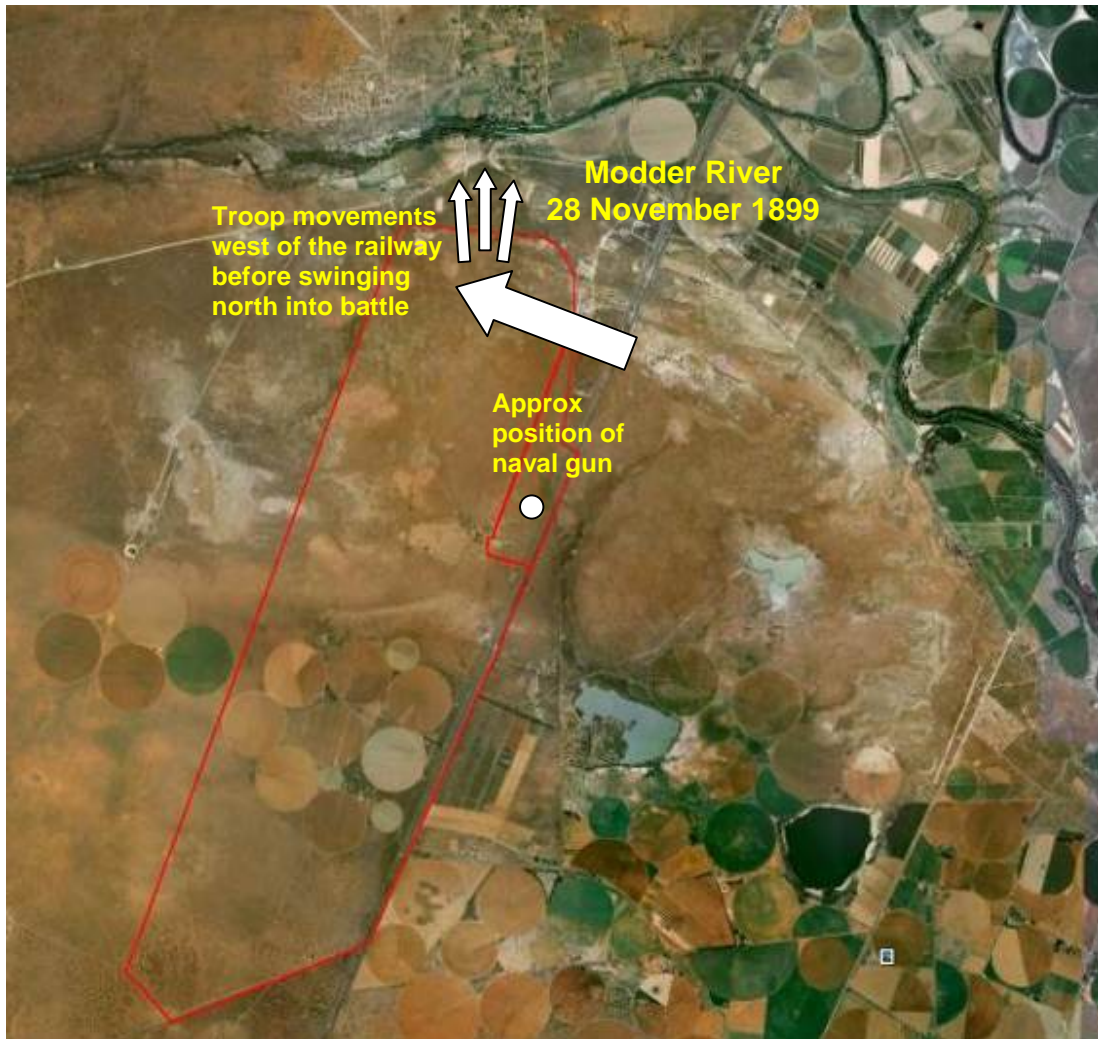
### **Potential areas of sensitivity**

The most sensitive heritage feature of the area of proposed development is the battlefield associated with the Battle of Modder River which took place here on 28 November 1899 (F.M. Barbour pers. comm.).

British forces advanced up the railway from the south. A naval gun was placed 3000 yards (about 3 km) south of the river to the west of the railway line. Encountering enemy fire from the Modder River east of the line, a great deal of movement of troops took place from east to west, across the line, taking advantage of lower ground (at the northern end of the area indicated for PV facility development) for an attack on Boer forces, who were unexpectedly making use of the south bank of the Riet as a 'trench'-like feature. This was a departure from standard strategic procedures in warfare and makes the Battle of Modder River something of a textbook instance still studied by military strategists (the more usual strategy had been for a defending force to place a river between itself and an approaching aggressor – which is not what the Boers did, providing an element of surprise and a prelude to its even more unexpected use of trenches at Magersfontein a few weeks later).

In terms of this, it would be preferable to situate the proposed Ramphole PV facility towards the south of the indicated area rather than in the vicinity of the battlefield.

The placement of the naval gun and troop movements are indicated approximately in the following image:



There is also a possibility of Stone Age traces being present which would need to be assessed in the EIA phase.

At this stage it is suggested that the northern third of the property be considered as highly sensitive, particularly in terms of visual impacts on the battlefield heritage landscape, which continues to have relevance to certain constituencies in the present (regimental visitations still take place and a new memorial was erected in Ritchie in the twenty first century). There was substantial provincial investment in the battlefield route as a tourism attraction at the time of the centenary.

### **Potentially significant impacts to be assessed within the EIA process**

In view of the above, anticipated locations for both area and linear, primary and secondary, developments would need to be examined closely on foot as well as in relation to possible visual impacts on a heritage landscape (battlefield). Visual



impacts may be difficult to mitigate other than by way of sensitive placement of infrastructure away from the areas of greatest heritage significance.

Any disturbance of surfaces in the development area could have a destructive impact on archaeological resources, if and where present. 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 (unlikely) case of any built environment features, Ngwao Bošwa ya Kapa Bokone (the Northern Cape Heritage Authority). There may be some that would require preservation *in situ* and hence modification of intended placement of development features.

### **Methodology for EIA assessments**

A site visit would be necessary to inspect various parts of the terrain on foot, focusing on areas of expected impact (construction of PV plant and secondary infrastructure such as roads, and powerlines). Some indications are given above of the kinds of terrain that might be (or known to be) more sensitive in terms of presence of heritage features, e.g. the battlefield, and greater emphasis would be given to inspecting/assessing such zones.

Once sites are plotted they would be assessed in terms inter alia 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.

Battlefields are specifically recognised as a type of heritage site enjoying protection in terms of the National Heritage Resources Act. The Battle of Modder River was one of the pivotal battles of the Western Campaign during the South African Anglo-Boer War. The British suffered heavy casualties here and were forced to halt their northward advance for ten days to evacuate their injured, to recuperate and receive reinforcements. This provided the Boers with the opportunity to entrench at the nearby Magersfontein, where they inflicted a crippling defeat on the British on 11 December – delaying the lifting of the Siege of Kimberley by another two months. The battlefield site at Modder River would clearly be of at least provincial if not national significance, where members of associated British regiments, military history specialists and army strategists continue to make pilgrimages and study tours to this day.

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