

McGregor Museum
Department of Archaeology



**Heritage Impact Assessment of a
proposed mining site on Farm 350,
Longlands, near Barkly West,
Northern Cape.**

David Morris & Jani Louw
McGregor Museum, Kimberley
January 2018

Heritage Impact Assessment of of a proposed mining site on Farm 350, Longlands, near Barkly West, Northern Cape.

David Morris & Jani Louw, McGregor Museum, Kimberley
P.O. Box 316 Kimberley 8300
Tel 082 2224777 email dmorriskby@gmail.com
January 2018

1. INTRODUCTION

Mr Kwindla Nobaza of Thaya Trading (tel 078 956 6507), co-ordinating environmental issues on behalf of mining right applicant Khayaletu Mlobeli, approached the McGregor Museum archaeology department to conduct a heritage impact assessment on a proposed mining site on Farm 350 adjacent to the town of Longlands near Barkly West, Northern Cape.

The site was visited and inspected on 17 January 2018. This report accounts for findings made.

1.1. Focus and Content of Specialist Report: Heritage

This archaeology and heritage specialist study is focused on a 5 ha area of land east of the new Longlands township (immediately north of the old Longlands village), for which Khayaletu Mlobeli seeks a mining right to retrieve potential alluvial diamonds.

This study outlines:

- Introduction, explaining the focus of the report (1.1) and introducing the author in terms of qualifications, accreditation and experience to undertake the study (1.2)
- Description of the affected environment (2) providing background to the development and its infrastructural components (2.1); background to the heritage features of the area (2.2); and defining environmental issues and potential impacts (2.3)
- Methodology (3) including an assessment of limitations (3.1); statement of expectations or predictions (3.2) and outline of EIA procedures including criteria for assessing archaeological significance (3.3).
- Observations and assessment of impacts (4), including field observations (4.1); characterizing archaeological significance (4.2); and characterizing the overall significance of impacts (4.3).
- Summary of Significance of Impacts is stated in tabular form (4.3.1).
- Measures for inclusion in a draft Environmental Management Plan for the development are set out in tabular form (5).

- Conclusions (6).

1.2 The author of this report

The principal author of this report is a qualified archaeologist (PhD, University of the Western Cape) accredited as a Principal Investigator by the Association of Southern African Professional Archaeologists. The author has worked as a museum archaeologist in the Northern Cape since 1985 and in that time has carried out heritage impact studies in the region. In addition, the author has a comprehensive knowledge of Northern Cape history and built environment, and received recent UCT-accredited training at a workshop on Architectural and Urban Conservation: researching and assessing local (built) environments (S. Townsend, UCT). He is also Chairman of the Historical Society of Kimberley and the Northern Cape.

The author is independent of the organization commissioning this specialist input, and provides this Specialist Report 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.

2. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The environment in question is in a region renowned for its wealth of archaeological sites (Beaumont & Morris 1990), with locales along and adjacent to the major river systems being of particular note (see below).

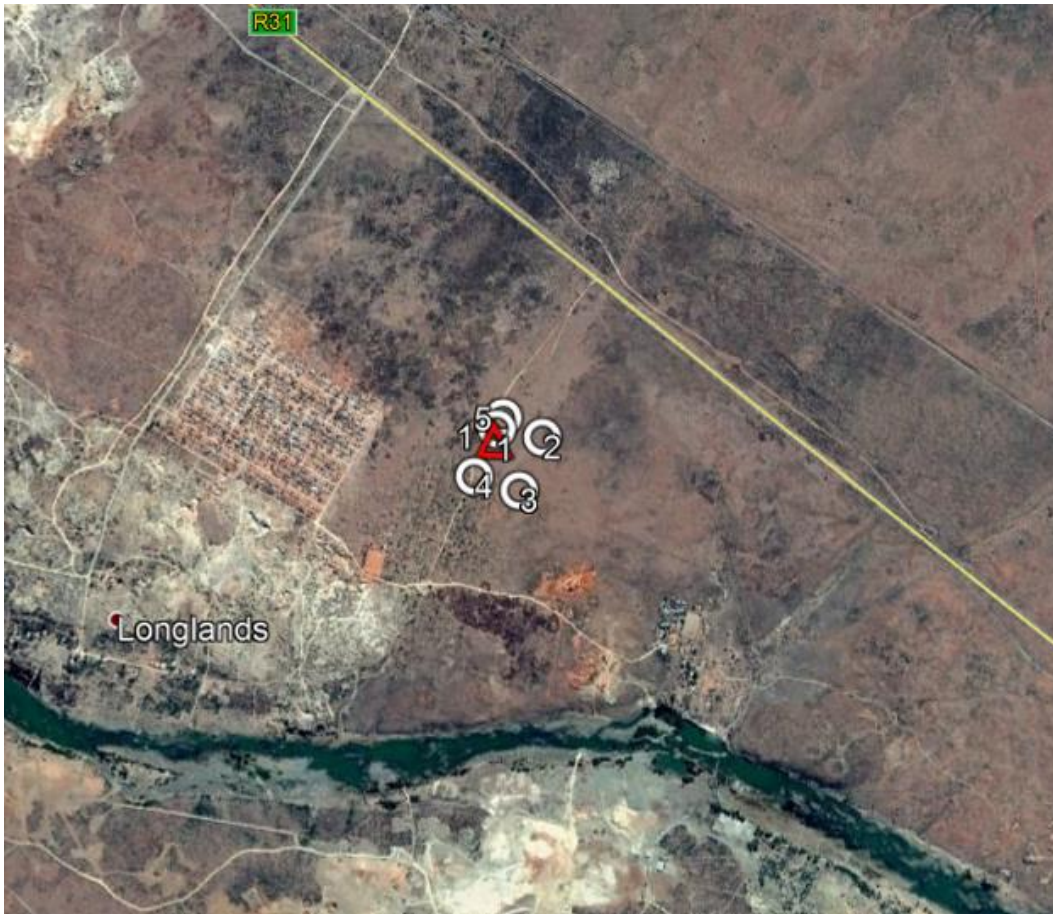


Figure 1. The location of the proposed mining site (corners defined by white circles) on Farm 350 Longlands, east of the new Longlands town.

2.1 Background to the proposed mining

As indicated, Khayaletu Mlobeli is applying for a mining right to extract potential alluvial diamonds from sub-surface Vaal River gravels in the 5 ha area shown in Fig. 1.

2.2. Heritage features of the region

No previous archaeological survey work had been carried out on this particular locality. Alluvial diamond mining has occurred over much of the surrounding terrain over the previous century, with several recent instances having been preceded by archaeological impact assessments. No major sites have been recorded previously in this particular zone at Longlands.

Stone Age material found in this area spans the Earlier, Middle and Later Stone Ages through Pleistocene and Holocene times. Of particular note are Pleistocene sites along the Vaal River in the vicinity of Barkly West (e.g. McNabb &

Beaumont 2011; Leader 2013). Late Holocene material with pottery is known to occur on the river banks (Beaumont & Morris 1990). Rock engravings occur near Sydney-on-Vaal and at Gong Gong (Wilman 1933; Morris 1988; Fock & Fock 1989).

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

2.3 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 can have a permanent destructive impact on these resources. The objective of an HIA would be to assess the sensitivity of such resources where present, to evaluate the significance of potential impacts on these resources and, if and where appropriate, to recommend no-go areas and/or measures to mitigate or manage said impacts.

In relation to the proposed mining on Farm 350 Longlands, an area impact would be anticipated.

2.3.1 Direct, indirect and cumulative impacts (in terms of nature, magnitude and extent)

The destructive impacts that are possible in terms of heritage resources would tend to be direct, once-off events occurring during the mining phase. In the long term, the proximity of such mining operations in a given area could result in secondary indirect impacts resulting from the movement of people or vehicles in the immediate or surrounding vicinity.

3. METHODOLOGY

A site visit was carried out on 17 January 2018 to inspect the proposed mining area defined by co-ordinates supplied. The area was traversed by two archaeologists, on foot. Any heritage traces would be evaluated in terms of their archaeological and heritage significance (see tables below). A set of predictions was made which the study would test with observations made in the field.

3.1 Assumptions and limitations

It was assumed that, by and large in this particular landscape segment, with its relatively sparse vegetation, surface archaeological traces would be relatively visible. It is likely that where artefacts are present, they may tend to occur sub-surface: hence, all disturbances (especially where previous diggings may have

taken place) were examined for indications of sub-surface archaeological material.

Because of this possibility, a proviso is routinely given, that should sites or features of significance be encountered during mining on the site (this could include an unmarked burial, an ostrich eggshell water flask cache, or a high density of stone tools, for instance), specified steps are necessary (beginning with immediate suspension of work, and reporting to the heritage authority).

This study does not comment on palaeontology.

3.2 Predictions

It may be predicted that:

- Based on previous experience, the soil surface across the site may have minimal archaeological traces.
- Exposures may yield evidence of sub-surface archaeological material, most likely Pleistocene in age where present.
- Rock outcrops, if present, may have rock engravings.
- Historical remains of structures (dwellings, kraals, etc) may occur at the outskirts of the old Longlands village (or earlier diamond-diggings-related settlement).

3.2.1 Potentially significant impacts to be assessed in the HIA process

Any area or linear, primary and secondary, disturbance of surfaces in the proposed mining locale could have a destructive impact on heritage resources, where present. In the event that such resources are found, they are likely to be of a nature that potential impacts 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, by the Northern Cape Heritage Resources Authority. Although unlikely, there may be some that could require preservation in situ and hence modification of intended mining.

Disturbance of surfaces includes any mining, construction or agricultural farming (quarries, pits, roads, pipelines, pylons, sub-stations or plants, buildings), or any other clearance of, or excavation into, a land surface. In the event of archaeological materials being present such activity would alter or destroy their context (even if the artefacts themselves are not destroyed, which is also obviously possible). Without context, archaeological traces are of much reduced

significance. It is the contexts as much as the individual items that are protected by the heritage legislation.

3.3 Determining archaeological significance

In addition to guidelines provided by the National Heritage Resources Act (Act No. 25 of 1999), a set of criteria based on Deacon (nd) and Whitelaw (1997) for assessing archaeological significance has been developed for Northern Cape settings (Morris 2000a). These criteria include estimation of landform potential (in terms of its capacity to contain archaeological traces) and assessing the value to any archaeological traces (in terms of their attributes or their capacity to be construed as evidence, given that evidence is not given but constructed by the investigator).

Estimating site potential

Table 1 (below) is a classification of landforms and visible archaeological traces used for estimating the potential of archaeological sites (after J. Deacon nd, National Monuments Council). Type 3 sites tend to be those with higher archaeological potential, but there are notable exceptions to this rule, for example the renowned rock engravings site Driekopseiland near Kimberley which is on landform L1 Type 1 – normally a setting of lowest expected potential. It should also be noted that, generally, the older a site the poorer the preservation, so that sometimes any trace, even of only Type 1 quality, can be of exceptional significance. In light of this, estimation of potential will always be a matter for archaeological observation and interpretation.

Assessing site value by attribute

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 (given in the second column of the table). 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

Class	Landform	Type 1	Type 2	Type 3
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	Archaeological 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

4. OBSERVATIONS AND ASSESSMENT OF IMPACTS

The manner in which archaeological and other heritage traces or values might be affected by proposed mining at Farm 350 Longlands may be summed up in the following terms: it would be any act or activity that would result immediately or in the future in the destruction, damage, excavation, alteration, removal or collection from its original position, any archaeological material or object (as indicated in the National Heritage Resources Act (No 25 of 1999)). The obvious

impact in this case would be land surface disturbance associated with any proposed mining.

4.1 Fieldwork observations

The site was visited by the authors on 17 January 2018. The entire extent of the 5 ha proposed mining area was examined on foot.

Summary findings in relation to predictions made in section 3.2 above can be reported as follows:

4.1.1 Archaeological traces on the surface across the mining site:

Consistent with previous experience, the soil surface across the site yielded no archaeological traces.

4.1.2 Archaeological traces revealed in exposures:

At the southern end of the 5 ha area there was evidence of previous diggings, resulting in small heaps of gravel from below the surface. These were examined and contained now clear evidence of Stone Age material. A sand pit on the western side of the proposed mining area did however yield a few flakes in quartzite in the vicinity of observation point 1 (red triangle in Fig. 2). As predicted, the artefact pictured (Fig.3) would appear to be probably Pleistocene in age.

Table 3. Plotted artefact scatters and observations made.

	Latitude (S)	Longitude (E)	Comment	Significance
1	28°27'15.4"S	24°22'38.2"	Isolated quartzite flake exposed in sand pit at west side of proposed mining area. (Fig 5)	LOW



Figure 2. White circles numbered 1-5 indicate the corner beacons supplied on the mining application map, defining a 5 ha polygon immediately north east of the historic (now largely raised) village of Longlands, and east of the new Longlands town. The red triangle indicates the only Stone Age archaeological observation made. Remains of old Longlands dwellings and associated structures lie to the south of the proposed mining area.



Figure 3. Quartzite flake found at observation point 1 in Figure 2.



Figure 4. Hutton Sands (from which, it appears, the artefact in Figure 3 was derived), at the bottom of a sand pit, underlain by a calcified horizon.



Figure 5. Surface of 5 ha proposed mining area from west side towards the south. Note sand pit at left.



Figure 6. View eastwards across the 5 ha proposed mining area. Sand pits in middle distance.



Figure 7. View southwards from the northern end of the 5 ha proposed mining area.

4.1.3 Rock outcrops may be supports for rock engravings:

No rock outcrops occur in the study area.

4.1.4 Colonial era/historical structures and artefacts:

Historical remains of structures do indeed occur at the northern outskirts of the old Longlands village, but these are almost entirely beyond the southern end of the proposed mining area. Associated with them are later 20th-21st century material culture such as rusted tins, aerosol canisters, glass, single abandoned shoes, and the like (the village was moved to the present adjacent town in 2007).



Figure 8. Rusted aerosol canister – material culture associated with northern edge of the old Longlands village.



Figure 9. At the south end of the proposed 5 ha mining area: mud-walled houses on the northern outskirts of the old Longlands village dissolve into the landscape through weathering of unprotected walls.



Figure 10. Remains of a dwelling south of the mining area.



Figure 11. Remains of a dwelling near the south western corner of the proposed mining area.



Figure 12. Base of walls of dwelling near south west corner of 5 ha proposed mining area.

4.2 Characterising the archaeological significance (Refer to 3.4 above)

In terms of the significance matrices in Tables 1 and 2 under 3.4 above, the archaeological observations fall under Landform L3, Type 3, i.e. of potentially high significance; but in terms of actual archaeological observations, they fall under Class A3 Type 1, i.e. low significance. For site attribute and value assessment (Table 2), the observations may be characterised as Type 1 for each of the Classes 1-7, again reflecting low significance.

On archaeological grounds, the Stone Age occurrences, extremely sparse, can be said to be of generally low significance.

For colonial era context, the site has no particular significance in terms of physical heritage traces. Traces of the old Longlands village, abandoned about 2007, lie immediately south of the proposed mining area.

4.3 Characterising the significance of impacts

The criteria on which significance of impacts is based include **nature**, **extent**, **duration**, **magnitude** and **probability of occurrence**, with quantification of significance being grounded and calculated as follows:

- The **nature**, namely a description of what causes the effect, what will be affected, and how it will be affected.
- The **extent**, indicating the geographic distribution of the impact:

- local extending only as far as the development site area – assigned a score of 1;
 - limited to the site and its immediate surroundings (up to 10 km) – assigned a score of 2;
 - impact is regional – assigned a score of 3;
 - impact is national – assigned a score of 4; or
 - impact across international borders – assigned a score of 5.
- The **duration**, measuring the lifetime of the impact:
 - very short duration (0–1 years) – assigned a score of 1;
 - short duration (2-5 years) - assigned a score of 2;
 - medium-term (5–15 years) – assigned a score of 3;
 - long term (> 15 years) - assigned a score of 4;
 - or permanent - assigned a score of 5.
- The **magnitude**, quantified on a scale from 0-10:
 - 0 is small and will have no affect on the environment;
 - 2 is minor and will not result in an impact on environmental processes;
 - 4 is low and will cause a slight impact on environmental processes;
 - 6 is moderate and will result in environmental processes continuing but in a modified way;
 - 8 is high (environmental processes are altered to the extent that they temporarily cease); and
 - 10 is very high and results in complete destruction of patterns and permanent cessation of environmental processes.
- The **probability of occurrence**, indicating the likelihood of the impact actually occurring (scale of 1-5)
 - 1 is highly improbable (probably will not happen);
 - 2 is improbable (some possibility, but low likelihood);
 - 3 is probable (distinct possibility);
 - 4 is highly probable (most likely); and
 - 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, determined by a synthesis of the characteristics described above and expressed as low, medium or high. Significance is determined by the following formula:
 $S = (E+D+M) P$; where S = Significance weighting; E = Extent; D = Duration; M = Magnitude; P = Probability.
- The **status**, either positive, negative or neutral, reflecting:
 - the degree to which the impact can be reversed.
 - the degree to which the impact may cause irreplaceable loss of resources.

- the degree to which the impact can be mitigated.
- **The significance weightings for each potential impact are as follows:**
 - < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
 - 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
 - > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

4.3.1 SUMMARY OF THE SIGNIFICANCE OF IMPACTS

Table 4. Significance of Impacts, with and without mitigation – based on the worst case scenario – for all area investigated.

Nature: Acts or activities resulting in disturbance of surfaces and/or sub-surfaces containing artefacts (causes) resulting in the destruction, damage, excavation, alteration, removal or collection from its original position (consequences), of any archaeological or other heritage material or object (what affected). The following assessment refers to impact on physical archaeological/heritage traces.		
	Without mitigation	With mitigation
Extent	1	Not needed
Duration	5	Not needed
Magnitude	2	Not needed
Probability	3	Not needed
Significance	24	
Status (positive or negative)	WEAKLY NEGATIVE	
Reversibility	No	
Irreplaceable loss of resources?	Low density and significance and outside area of proposed sand mining.	Loss of context but possible to mitigate.
Can impacts be mitigated?	Not needed	Not needed
Mitigation: Not needed.		

Cumulative impacts: Cumulative Impacts: where any archaeological contexts occur, direct impacts are once-off permanent destructive events. Secondary cumulative impacts may occur with the increase in development and operational activity associated with the life of the proposed sand mining.

Residual Impacts: -

5. MEASURES FOR INCLUSION IN THE DRAFT ENVIRONMENTAL MANAGEMENT PLAN

The objective

Archaeological or other heritage materials that may occur in the path of any surface or sub-surface disturbances associated with any aspect of the sand mining are likely to be subject to destruction, damage, excavation, alteration, or removal. The objective is to limit such impacts to the primary activities associated with the mining and hence to limit secondary impacts during the medium and longer term operational life of the operation.

Project component/s	Any road or other infrastructure construction over and above what is outlined in respect of the proposed site development.
Potential Impact	The potential impact if this objective is not met is that wider areas or extended linear developments may result in further destruction, damage, excavation, alteration, removal or collection of heritage objects (minimal as they are) from their current context along the route.
Activity/risk source	Activities which could impact on achieving this objective include deviation from any planned development without taking heritage impacts into consideration.
Mitigation: Target/Objective	An environmental management plan that takes cognizance of heritage resources in the event of any future extensions of infrastructure. Mitigation (based on present observations and mining proposal as communicated) is not considered to be necessary.

Mitigation: Action/control	Responsibility	Timeframe
Provision for on-going heritage monitoring in an environmental management plan which also provides guidelines on what to do in the event of any major heritage	Environmental management provider with on-going monitoring role set up by the mining	Environmental management plan to be in place before commencement of mining.

<p>feature being encountered during any phase of mining.</p> <p>Should unexpected finds be made (e.g. precolonial burials; ostrich eggshell container cache; or localised Stone Age sites with stone tools, pottery; military remains), the relevant Heritage Authority should be contacted.</p>	<p>company for the mining phase and for any instance of periodic or on-going land surface modification thereafter.</p> <p>Environmental Control Officer should become acquainted at a basic level with the kinds of heritage resources potentially occurring in the area and should report to the Heritage Authority as needed (see next column).</p>	<p>In the event of finding any of the features mentioned in column 1, reporting by the developer to relevant heritage authority should be immediate. Contact: SAHRA Ms N. Higgins 021-4624502 or NC Heritage Resources Authority Mr Andrew Timothy 053-8312537/8074700.</p>
--	---	---

Performance Indicator	Inclusion of further heritage impact consideration in any future extension of mining or any infrastructural elements.
Monitoring	Officials from relevant heritage authorities (National, Provincial or Local) to be permitted to inspect the site at any time in relation to the heritage component of the management plan.

6. CONCLUSIONS

Visible archaeological material noted at the 5 ha proposed mining site on Longlands Farm 350 near Barkly West which was inspected in this study was found to be of low significance. Immediately to the south are the material traces of the abandoned Longlands village, vacated about 2007. It is possible that archaeological features may occur sub-surface, but no indications of this were found in disturbed/exposed sections during the study. However in the event of such features being found (e.g. burial/s, ostrich eggshell caches, rich stone artefact horizons), work should cease immediately and SAHRA be contacted.

REFERENCES

- Beaumont, P.B. & Morris, D. 1990. *Guide to archaeological sites in the Northern Cape*. Kimberley: McGregor Museum.
- Deacon, J. nd. Archaeological Impact Assessment - specialist input to planning and design. Unpublished notes compiled for the National Monuments Council.
- Helgren, D.M. 1979. *Rivers of diamonds: an alluvial history of the lower Vaal Basin, South Africa*. Chicago: University of Chicago Department of Geography. Research Paper 185.
- Leader, G.M. 2013. New excavations at Canteen Kopje, Northern Cape Province, South Africa: a techno-typological comparison of three earlier Acheulean assemblages with new interpretations on the Victoria West phenomenon. PhD dissertation, University of the Witwatersrand.
- McNabb, J. & Beaumont, P.B. 2011. *A report on the archaeological assemblages from excavations by Peter Beaumont at Canteen Koppie, Northern Cape, South Africa*. University of Southamton Series in Archaeology 4. Oxford: Archaeopress.
- Morris, D. 1988. Engraved in place and time: a review of variability in the rock art of the Northern Cape and Karoo. *South African Archaeological Bulletin* 43:109-121.
- Morris, D. & Beaumont, P. 2004. *Archaeology in the Northern Cape: some key sites*. Kimberley: McGregor Museum.
- Wilman, M. 1933. *Rock engravings of Griqualand West and British Bechuanaland, South Africa*. Cambridge: Deighton Bell.
- Whitelaw, G. 1997. Archaeological monuments in KwaZulu-Natal: a procedure for the identification of value. *Natal Museum Journal of Humanities*. 9:99-109.