

McGregor Museum
Department of Archaeology



**Heritage Impact Assessment for the
Proposed prospecting at Spektakel,
Namakwa District Municipality,
Northern Cape.**

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June 2018

Heritage Impact Assessment for the proposed Prospecting at Spektakel, Namakwa District Municipality, Northern Cape.

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1. INTRODUCTION

The McGregor Museum archaeology department was appointed by Cuprachim (Pty) Ltd to conduct a Heritage Impact Assessment for the proposed Prospecting right of Spektakel Mine. A scoping phase evaluation of the full site was aimed at providing high-level identification of potential areas of sensitivity together with a recommended methodology for the HIA process.

The site was inspected on foot on the 1 June 2018 and relevant observations are indicated in this report.

Fieldnotes and photographs are lodged with the McGregor Museum, Kimberley.

1.1. Focus and Content of Specialist Report: Heritage

This archaeology and heritage specialist study is focused on the portion of Spektakel Mine identified for prospecting.

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 authors of this report

The authors (staff of the McGregor Museum) are independent of the organization commissioning this specialist input and provide this heritage assessment (archaeology and colonial history but not Palaeontology) within the framework of the National Heritage Resources Act (No 25 of 1999).

The senior author is a professional archaeologist (PhD) accredited as a Principal Investigator by the Association of Southern African Professional Archaeologists. He has worked as a museum archaeologist and has carried out specialist research and surveys in the Northern Cape and western Free State since 1985. In addition, he has a comprehensive knowledge of the Northern Cape history and built environment and received 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 National Heritage Resources Act no. 25 of 1999 (NHRA) protects heritage resources which include archaeological and paleontological 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/places, 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 to assess whether authorisation may be granted for the disturbance or alteration, or destruction of heritage resources.

Where archaeological sites and paleontological remains are concerned, the South African Heritage Resources Agency (SAHRA) at national level acts on an agency basis for the Provincial Heritage Resources Agency (PHRA) in the Northern Cape. The Northern Cape Heritage Resources Authority (formerly called Ngwao Bošwa ya Kapa Bokone) is responsible for the built environment and other colonial era heritage and contemporary cultural values.

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2. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The area of interest is located north-east from Kammagas, and approximately 38 km north-west from Springbok. The site is adjacent to the existing Spektakel Mine, situated in a valley surrounded by rounded hilltops. The site varies from place to place but it is mostly characteristic of the Namaqualand inland with coarse grained reddish sand and sparse scrub like vegetation. Pre-Cambrian paleo exposures are also visible from the surface.



Figure 1a: Google Earth image showing site locality and area of interest



Figure 1b: Google image showing site locality

As seen from the Google Earth image parts of the site have already been disturbed by present mining activities. Animals were noted on the day of our visit so the area is also being used for small stock farming/grazing. Landscape surface visibility apart from some morning mist, was relatively good in terms, of observing surface archaeological traces.



Figure 2: Survey area.

2.1 Background to the development – description of proposed infrastructure

It was indicated the area marked in figure (1a) would be used as the proposed prospecting area to expand operations of the existing Spektakel Mine.

2.2. Heritage features of the region

Prior to the survey, there were no known Heritage resources on or in the immediate vicinity of the proposed area for prospecting.

The Northern Cape is known for its rich and varied archaeological resources specifically relating to the Stone Age (Morris 2006). In Namaqualand extensive archaeological research has been done in and around the coastal areas such as Kleinzee, Dreyer (north-west from Kammagas, and Buffelsriver to name a few (Webley 2012; Orton 2017; Morris & Webley 2004). In which material ranging from ESA to LSA (more common) have been found.

2.2.1 Colonial frontier

Copper was discovered by Dutch colonials in 1685 in the Northern Cape province of South Africa during an expedition led by Simon van der Stel. They discovered deposits of malachite (Miller 1995) in an area located near the present-day towns of Okiep and Springbok. After this discovery, little development took place, mostly because of the

remoteness and harsh conditions of the area and for many years the area was only prospected and explored (Smuts 2015).

The beginning of commercial mining in the area only commenced once The South African Mining Company started mining operations in 1846 (Smalberger 1975). In 1852, a company called Phillips and King purchased the farm upon which the town of Springbok is located today. Phillips and King owned the Spektakel, Nababeep and Okiep mines which were later taken over by the Cape Copper Company. Another company called Namaqua Copper Company had mining operations at Concordia, an area north east of Okiep. In 1919, the Cape Copper Company ceased their operations in the area due to the post First World War economic slump. Most of the mines today are inactive with only remnants of past usage.

2.2.2 Stone Age

Archaeological and historical evidence show that the Middle Orange River and Bushmanland regions have been populated more or less continuously during prehistoric times and that the region was extensively occupied by Khoi herders and San hunter-gatherers during the last 2000 years (Morris & Beaumont 1991; Beaumont et al. 1995; Smith 1995). According to Beaumont (1986) archaeological visibility in the region was high during the Last Glacial Maximum, a viewpoint that is in contrast to that indicated for southern Africa as a whole (Deacon and Thackeray 1984). Beaumont et al. 1995 also noted that MSA artifact occurrences are widespread in the Bushmanland area but are mainly preserved as low-density surface scatters on the landscape. Morris (2010, 2013a, 2013b) noted very sparse localized scatters of MSA stone tools at the top of Gamsberg at Aggeneys, including an MSA knapping site, and ESA material, including a Victoria West core on quartzite within the Gamsberg basin. The importance of Gamsberg as an archaeological/historical focal point is further alluded to in early 19th century records (Penn 2005) as a place of refuge and conflict during the colonial frontier period and by the meaning of its name, which is derived from the Khoikhoi word Gaams, meaning 'grassy spring'. The principal Khoikhoi inhabitants of the Middle Orange River were the Einiqua who belonged to the same language group as the Namaqua and Korana, namely the Orange River Khoikhoi (Penn 2005). The Einiqua occupied the area around and east of the Augrabies Falls while the Korana occupied the Middle-Upper Orange River further to the east. A large number of burial cairns were excavated near the Orange River in the Kakamas area and appear to be related to Korana herders (Morris 1995). It is pointed out that while Bushmanland sites in the surrounding area appear to be ephemeral occupations by small hunter-gatherer groups, substantial herder encampments found along the Orange River itself indicate that the banks and floodplains of the river were more intensely exploited (Morris & Beaumont 1991; Beaumont 1995).

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.

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

This study defines the heritage component of the EIA process being undertaken for the proposed prospecting right. The area was inspected on foot on the 1 June 2018. Heritage traces were evaluated in terms of their archaeological significance.

In preparation for this:

- An assessment was done of the prospecting area relative to the wider known archaeological landscape.
- A search was done on SAHRIS database to determine what previous Archaeological and Heritage Impact studies existed for the area.
- Based on the site's locality preliminary predictions were 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 landscape, with its sparse vegetation and often shallow soil profiles, some sense of the archaeological traces to be found in the area would be readily apparent from surface observations (including assessment of places of erosion or past excavations that expose erstwhile below-surface features).

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

- Based on previous experience areas with paleo exposure yield significant archaeological results

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
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 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 Spektakel 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, which was expected to be essentially limited to the dry

4.1 Fieldwork observations

The site was visited on 1 June 2018. The area indicated is characterized by an open valley, rocky in some areas, consisting of coarse grained reddish sand. The following observations were noted:

4.1.1 Occurrence of Stone Age traces:

Relative to desktop predictions it was found that the area had no potentially significant archaeological exposure. Artefact assemblages consisting of mostly pebble cores and flakes were in sporadic and isolated occurrences, most occurring near or at the paleo exposures. The hilly areas were bereft of any artefacts meaning that the scatters are isolated to the area below the hills. The rock outcrops and exposures yielded no traces of engravings or past inhabitation. On the whole it was found that the prospecting area has a generally low surface density of isolated Stone Age artefacts ranging from Pleistocene but mainly Holocene. The artefact scatters are of low archaeological integrity and therefore have limited significance. The notable observations made are tabulated below.

Table 3. Plotted artefact scatters and observations made.

	Latitude (S)	Longitude (E)	Comment	Significance
1	29°38'56.8"	17°34'14.3"	Quartzite lithics	LOW
2	29°38'59.5"	17°34'15.9"	Weathered horse shoe	LOW
3	29°39'00.3"	17°34'15.1"	Pebble core	LOW
4	29°39'02.2"	17°34'28.4"	Quartzite broken biface	LOW
5	29°39'01.9"	17°34'28.4"	Porcelain	LOW
6	29°38'39.1"	17°34'30.6"	Lithics (quartz and quartzite)	LOW
7	29°38'41.4"	17°34'25.2"	Lithic scatter	LOW
8	29°38'42.4"	17°34'22.9"	Lithic scatter	LOW
9	29°38'51.1"	17°34'14.5"	Lithic scatter	LOW
10	29°38'42.7"	17°33'48.9"	Quartzite core (flaked)	LOW
11	29°39'21.7"	17°34'07.3"	Flake quartzite	LOW
12	29°39'18.1"	17°34'12.6"	Quartzite flake scatter	LOW



Figure 4: Archaeological observations as tabulated in table. Plotting of archaeological observations as tabulated in Table 3. Plotting of archaeological observations as tabulated in Table 3.



Figure 5. Quartzite lithics. Observation 1.



Figure 6. Horse shoe. Observation 2.



Figure 7. Pebble cores at Observation 3.



Figure 8. Quartzite broken biface, from Observation 4.



Figure 9. Porcelain at Observation 5.



Figure 10. Lithics (quartz and quartzite) at Observation 6.



Figure 11. Lithics at Observation 7.

4.1.2 Colonial era traces

The only colonial era objects found was a horse shoe and a fragment of porcelain.

4.2 Characterising the archaeological significance (Refer to 3.4 above)

In terms of the significance matrices in Table 1 under 3.4 above, the archaeological observations fall under Landform L1, generally Type 1 or 2, i.e. of low or very low potential. In terms of archaeological traces, they all fall under Class A3 Type 1. These ascriptions (Table 1) reflect low potential for these criteria. 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.

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	But locally low to very low significance
Reversibility	No	

Irreplaceable loss of resources?	Low density and significance.	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
<p>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 feature being encountered during any phase of mining.</p>	<p>Environmental management provider with on-going monitoring role set up by the mining company for the mining phase and for any instance of periodic or on-going land surface modification thereafter.</p>	<p>Environmental management plan to be in place before commencement 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>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

Precolonial/Stone Age material noted at Spektakel, investigated in this study was found to be of generally low significance, where present at all. Criteria used here for impact significance assessment for archaeological traces rate the impacts as not worthy of further mitigation.

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