

McGregor Museum

Department of Archaeology



Heritage Impact Assessment for proposed drilling site at Plaas 277, near Delpportshope, Northern Cape

David Morris
August 2020

Heritage Impact Assessment for proposed drilling site at Plaas 277, near Delpportshope, Northern Cape.

David Morris, McGregor Museum, Kimberley
P.O. Box 316 Kimberley 8300
Tel 082 2224777 email dmorriskby@gmail.com
August 2020

Executive Summary

A Phase 1 Heritage Impact Assessment is presented.

Precise co-ordinates for one proposed drilling site was presented and De Beers Exploration personnel took the author directly to the specific site in question. This report describes the archaeological/heritage traces that were observed at the surface.

It is possible, though not likely, that archaeological material of significance may occur subsurface. If encountered this should be brought to the attention of heritage authorities for further assessment, and mitigation if necessary.

In terms of this report, no significant heritage traces were found at the particular locale of proposed drilling, nor in the immediate vicinity, that are considered to require further mitigation.

The loss of heritage resources is assessed to be of **low** significance with and without the implementation of mitigation.

Background

The McGregor Museum Archaeology Department was appointed by The De Beers Group of Companies: Exploration Office – DBGS in order to conduct a Phase 1 Heritage Impact Assessment at a proposed drilling site at Plaas 277, near Delpportshope, Northern Cape. This report addresses the possible impacts on heritage resources (archaeological and cultural) of this operation. It excludes palaeontological assessment.

The site was inspected on 21 July 2020 and relevant observations are indicated in this report.

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

Specialist

The 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 since 1985.

The author is independent of the organization commissioning this specialist input, and provides this heritage assessment (archaeology and colonial history but not palaeontology) 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/places, objects and/or structures may not do so without a permit from the relevant heritage resources authority.

Heritage is assessed in terms of a NEMA application, and must comply with section 38(3) of the NHRA. SAHRA would then comment and make recommendations on the potential impacts.

(Where archaeological sites and palaeontological 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).

Description of environment and potential impacts

The environment in question is a slightly undulating landscape (referred to in the late nineteenth century as the Kaap Steppe) running between, and parallel with, the Ghaap Escarpment and the Vaal River, the proposed drilling site situated on a portion of higher ground facing the escarpment, and about a third of the way between the escarpment and the river. It is about 7 km west of the Vaal River; about 16 km as the crow flies WSW from Delpoortshope. An anomaly subsurface here, a possible kimberlite, is overlain by calcrete, supporting thornveld with thickets of *Senegalia mellifera* (swarthaak) interspersed with *Vachellia tortilis* (umbrella thorn), and occasional *Boscia albitrunca* (witgat)—with grass. The soil profile is shallow or nearly

zero on calcrete, so that surface archaeological visibility is good, and there is not expected to be much subsurface archaeology at this particular locale.



Figure 1a-c. Landscape and vegetation on Plaas 277, including a view across to Ghaap Escarpment and local vegetation, from a point in close proximity to the proposed drill site.



The proposed drilling locale is indicated in the following maps.

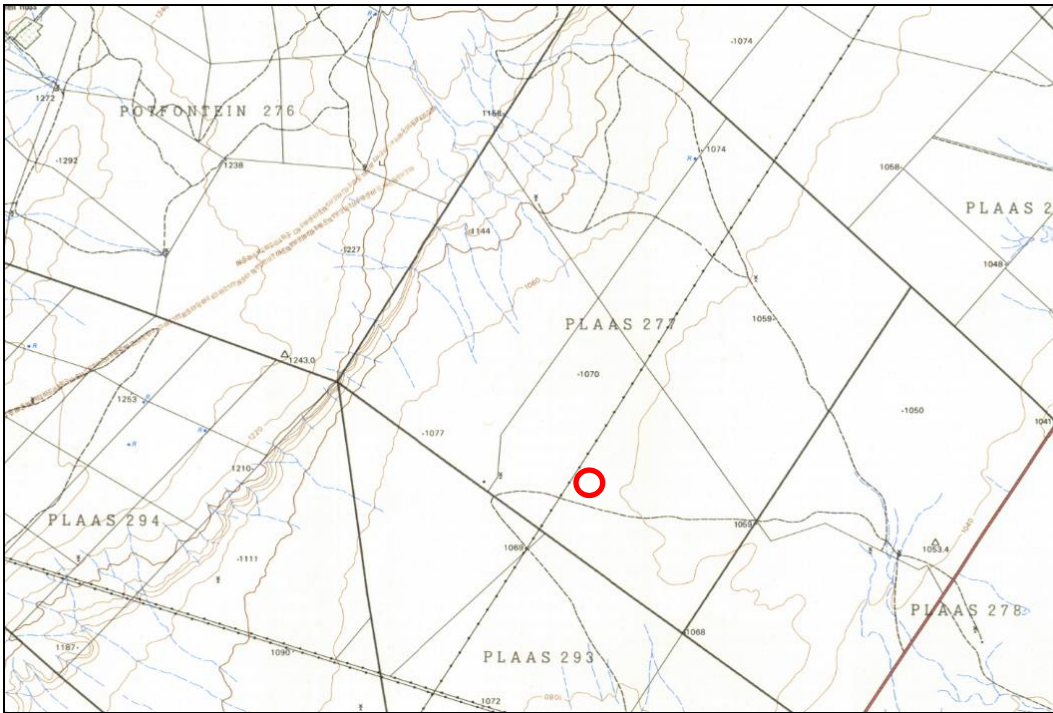


Figure 2. Locality map 1:50 000 2824AC: Drill site on Plaas 277.



Figure 3. Locality map: Plaas 277 relative to Delportshope.



Figure 4. Locality map: Drill site on Plaas 277 (detail from Figure 3).

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

Previous studies

SAHRIS provides no pertinent records for the immediate vicinity. Case ID 6670 refers to the proposed Plaas 277 prospecting by De Beers as envisaged in the present report, and no heritage studies had yet been undertaken for this case. In the wider environment, sites along the Ghaap Escarpment are significant (e.g. Humphreys & Thackeray 1983 for locales to the south west [Dikbosch, Limerock], and north east [Powerhouse]; Curnoe et al. 2006 for locales near Ulco), as are sites along the Vaal River (e.g. van Ryneveld 2005 for the nearby Rooipoort, various CRM studies in the Delpportshope-Longlands-Gong Gong stretch, and with much research focus further upstream at sites such as Canteen Kopje and Pniel). The landscape setting on Plaas 277 is distinctive from the Vaal River sites and is equally unlike the escarpment setting (which includes rock shelters).

Recent history

Diagrams at the Chief Surveyor General's office (including that illustrated in Fig. 5) disclose some of the history of survey and transfer of property into colonial farming hands (cf. Shillington 2011). It is likely that the land belonged to the BaTlhaping of Kgosi Jantje Mothibi (Shillington 2011). The diagrams surveyed by John H. Ford, interestingly refer to the area as the "Kaap Steppe" (a reference to the Ghaap) in the Division of Barkly, in the Crown Colony of Griqualand West.

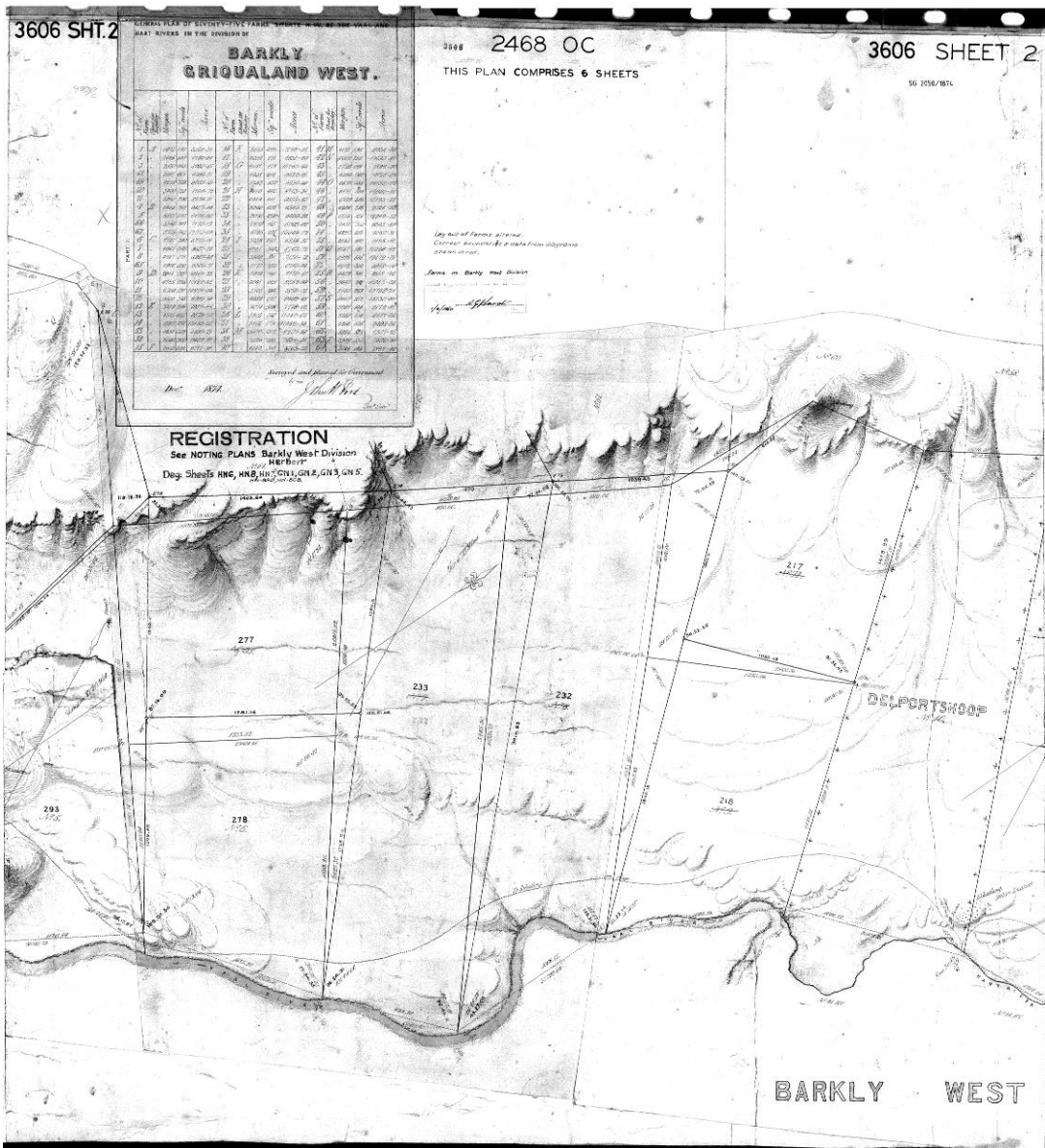


Figure 5. A section of John H. Ford’s survey of properties between the Vaal and Ghaap Escarpment, 1874. A subsequent annotation indicates that Plaas 277 had originally been No 65

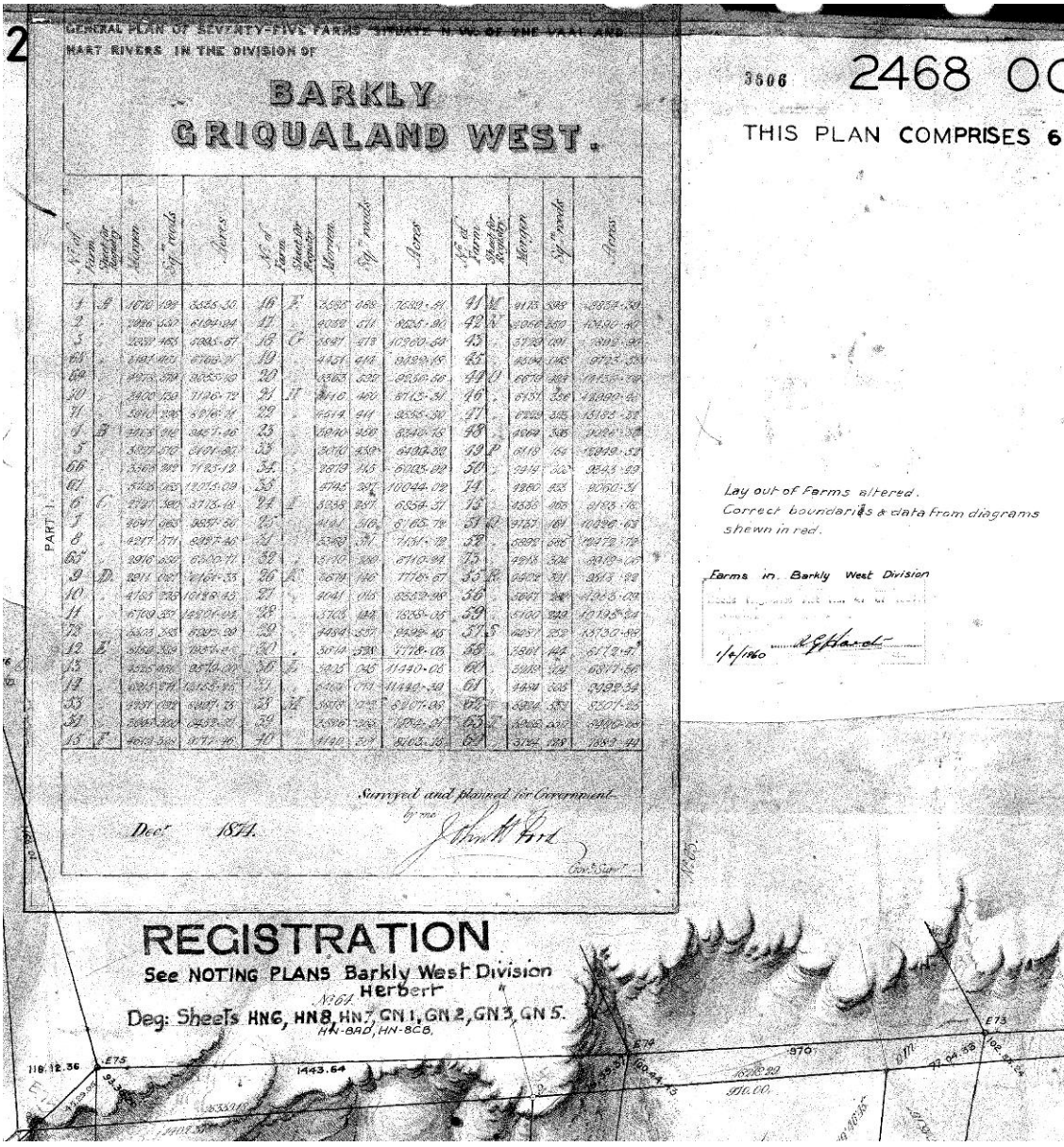


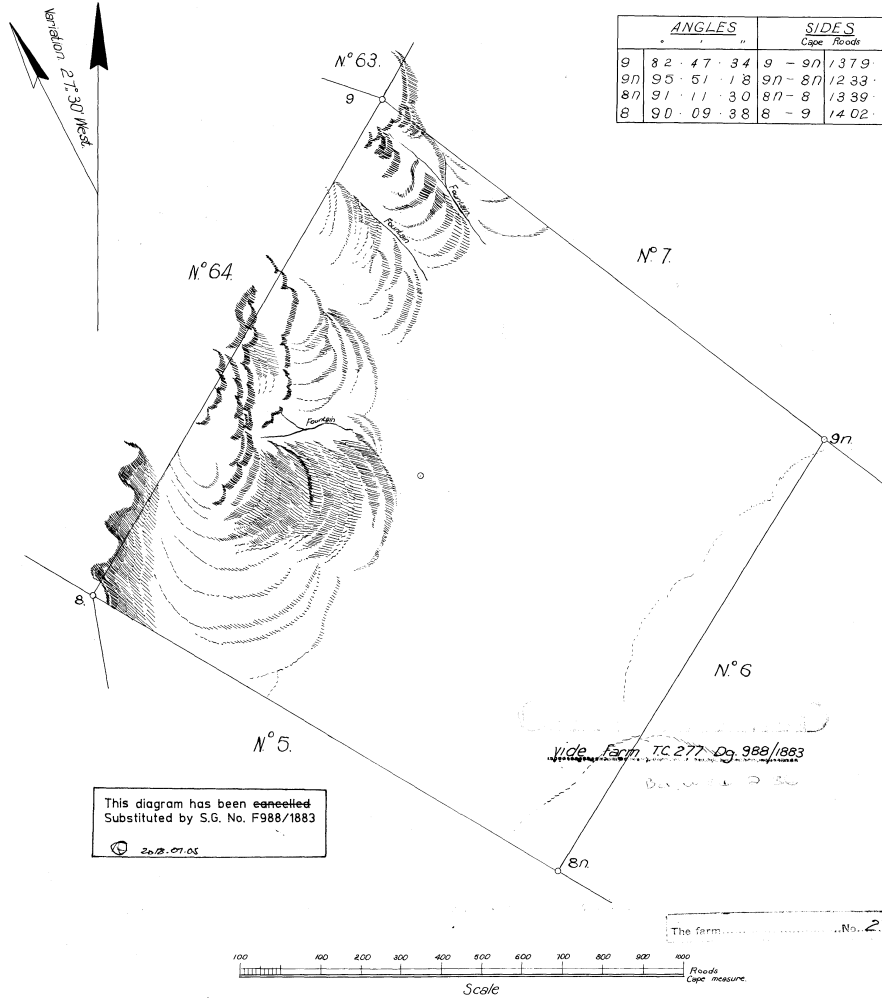
Figure 6. Detail from the above (Fig. XX) – John H. Ford Dec 1874.

F

Dg N°B103/1875

The numerical data are sufficiently consistent
 (Sgd) Alex. C. Barle
 for the Examiner

ANGLES		SIDES	
		Cape Roads	
9	82.47.34	9-9n	1379.99
9n	95.51.18	9n-8n	1233.32
8n	91.11.30	8n-8	1339.99
8	90.09.38	8-9	1402.37



*New Division of Barkly West.
 The above diagram 9, 9n, 8n, 8, represents 2976 morgen 550 square
 rods of land being the farm N°65, NW of the Vaal River in the
 Division of *Barkly, Griqualand West.
 Bounded as indicated above.

Surveyed by me,
 (Sgd) John H. Ford
 Govt. Surv.
 1874.

Land Grant
 No. 1-1879
 George Paton
 No. S.M.L.G. 19-2
 M.G. Hardwick
 25 SEP 1879
 No. 212/1879

TC 277

TC 277

Figure 7. Indicates that Farm No 65 (now Plaas 277) was surveyed by Ford in 1874 and registered as a Land Grant in the name of George Paton on 10 January 1879.

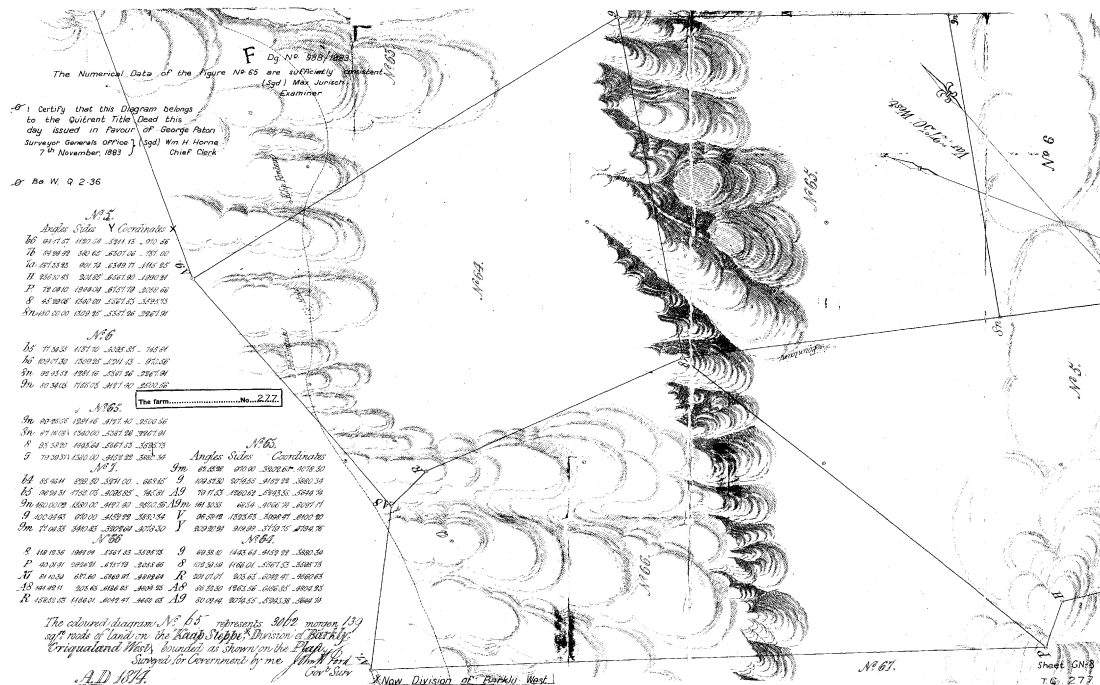


Figure 8. Diagram attached to Quitrent Title Deed for Farm 65 (Plaas 277) in favour of George Paton, 7 November 1883. Note reference to the “Kaap Steppe”.

Stone Age

Stone Age material found in the broader region spans the Earlier, Middle and Later Stone Ages through Pleistocene and Holocene times (Beaumont & Morris 1990). As intimated above, studies along the Ghaap Escarpment and Vaal River have been undertaken, documenting such occurrences. Many sites along the Vaal River are already impacted by mining. Focused research has occurred at Canteen Kopje and Pniel and at certain places along the Ghaap Escarpment (references above). Rock art in the form of engravings is known on andesite outcropping on the east side of the Vaal River at Rooipoort and Sidney-on-Vaal, while finger paintings occur in rock shelters along the Ghaap Escarpment including sites in near Ulco (Fock & Fock 1989; Curnoe et al 2006). Andesite does not exist in the vicinity of the drilling site on Plaas 277, and rock shelters where paintings tend to occur are confined to the actual escarpment west of the study site.

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 in cases where they are impacted. The objective of this study is to assess the significance of such resources, where present,

and to recommend no-go or mitigation measures (where necessary) to facilitate or constrain the development.

Area impacts that would be spatially constrained within a few metres would occur in the area of the drilling site under consideration. An existing farm road leads close to the vicinity of the drill site and no major scraping or surface disturbance is expected to manoeuvre drilling equipment. The walk-in to the site was along the route in question.

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

The destructive impacts that are possible in terms of heritage resources would be direct once-off events occurring during drilling.

Indirect and cumulative impacts could result from on-going use of the site should further developments ensue.

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 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

Methodology for HIA assessment

A field visit to inspect the drilling site was undertaken on 21 July 2020 in the company of De Beers Exploration geologist Cobu van den Heever. An assessment was made of heritage traces at the proposed drilling locale.

Vegetation cover is relatively sparse at the site, with high archaeological density on exposed calcrete or shallow topsoil.

Observations

Proposed Drillhole ID 173_033_0153_H002 situated at X(E) 24° 08' 56.8" Y(S) 28° 28' 02.9" (Fig. 9): The surface here consists of minimal to zero topsoil overlying calcrete. A very low density (less than 1 per 10x10 m) of artefacts was noted during a walk around the drill site (Figs. 10a & b).



Figure 9. Vicinity of drillhole ID: 173_033_0153_H002 situated at X(E) 24° 08' 56.8" Y(S) 28° 28' 02.9".

No other archaeological or cultural materials of any age were noted at the drill site.



Figure 10a & b. Very low density of artefacts – two found inside an area of about 20x20 m around the proposed drill site.

Characterising the significance of heritage traces and contexts

In terms of Tables 1 and 2 (above), the classification of landforms and visible archaeological traces for estimating the potential for archaeological material at the proposed drilling site (Table 1) suggests landscape L3 Type 1 (generally poor potential) and archaeological trace Class A3 Type 1 (likely to be insignificant). Table 2 site attribute and value assessment criteria suggest Type 1 for all of the Classes 1-7 (low significance).

Archaeological significance in terms of these criteria for the drilling site is thus consistently LOW.

Characterising the significance of impacts

The following criteria are used in this study to characterise the significance of direct, indirect and cumulative impacts:

- The **nature**, which shall include a description of what causes the effect, what will be affected, and how it will be affected.

- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional:
 - 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;
 - will have an impact on the region – assigned a score of 3;
 - will have an impact on a national scale – assigned a score of 4; or
 - will have an impact across international borders – assigned a score of 5.
- The **duration**, wherein it will be indicated whether:
 - the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
 - the lifetime of the impact will be of a 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, where a score is assigned:
 - 0 is small and will have no effect on the environment;
 - 2 is minor and will not result in an impact on processes;
 - 4 is low and will cause a slight impact on processes;
 - 6 is moderate and will result in processes continuing but in a modified way;
 - 8 is high (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 processes.
- The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale, and a score assigned:
 - Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
 - Assigned a score of 2 is improbable (some possibility, but low likelihood);
 - Assigned a score of 3 is probable (distinct possibility);
 - Assigned a score of 4 is highly probable (most likely); and
 - Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).

- the **significance**, which shall be determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- the **status**, which will be described as either positive, negative or neutral.
 - 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** is determined by combining the criteria in the following formula:

S = (E+D+M) P; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

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).

Impact table summarising the significance of impacts the Plaas 277 proposed drilling site

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 material or object (what affected).		
	Without mitigation	With mitigation
Extent	Local (1)	Local (1)
Duration	Permanent (5) where archaeological material is impacted – but this has	Permanent – but no mitigation regarded as necessary (5)

	been rated as insignificant and not requiring mitigation	
Magnitude	Minor (2)	Minor (2)
Probability	Improbable (2)	Improbable (2)
Significance	Low (16)	Low (16)
Status (positive or negative)	Negative	Negative
Reversibility	No	No
Irreplaceable loss of resources?	Very low density of artefacts in the vicinity of the proposed drilling site. No irreplaceable loss expected.	
Can impacts be mitigated?	Minimal traces noted on the ground: Not regarded as necessary other than by way of on-going management as per EMP in case unexpected archaeological material is encountered sub-surface.	On-going management as per EMP
Mitigation: Specific mitigation measures at the drilling site not regarded as necessary. Possible (unlikely) subsurface Stone Age archaeological traces including possible artefact occurrences. Report immediately to SAHRA if any major feature is found.		
Cumulative Impacts: Where any archaeological contexts occur the impacts are once-off permanent destructive events. Future infrastructure development may lead to spatially extended impacts in the vicinity. EMP should provide for on-going monitoring.		
Residual Impacts: Depleted archaeological record if/where present.		

MEASURES FOR INCLUSION IN THE DRAFT ENVIRONMENTAL MANAGEMENT PLAN

OBJECTIVE: Archaeological or other heritage materials occurring in the path of any surface or sub-surface disturbances associated with any aspect of the development are highly likely to be subject to destruction, damage, excavation, alteration, or removal. The objective should be to limit such impacts to the primary activities associated with drilling and hence to limit secondary impacts during the medium and longer term if further development occurs.

Project component/s	Any road construction over and above what is necessary and any extension of other components.
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 from their

	current context in the area.
Activity/risk source	Activities which could impact on achieving this objective include deviation from the planned drilling site and of access road/s without taking heritage impacts into consideration.
Mitigation: Target/Objective	A drilling environmental management plan that takes cognizance of heritage resources in the event of any future expansion, access roads or other infrastructure.

Mitigation: Action/control	Responsibility	Timeframe
Provision for on-going heritage monitoring in a facility 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 development or operation. Localize drilling activity and impacts in the immediate vicinity of the proposed drilling site.	Environmental management provider with on-going monitoring.	Environmental management plan to be in place before commencement of development.

Performance Indicator	Inclusion of further heritage impact consideration in any future expansion or infrastructural elements. Immediate reporting to relevant heritage authorities of any heritage feature discovered during drilling operations.
Monitoring	Officials from relevant heritage authorities (National and Provincial) to be permitted to inspect the operation at any time in relation to the heritage component of the management plan.

CONCLUSIONS

A low density (less than 1 per 10x10 m) 'background scatter' of stone artefacts was noted near the proposed drilling site. No colonial era or other cultural resources were in evidence. Archaeological significance was determined to be consistently low in terms of all criteria by which they were measured. Potential for subsurface material occurring is pointed but this is unlikely; steps for reporting any such archaeological material if found are indicated.

At the specific drilling site reported on, it is not regarded as necessary to carry out mitigation.

Acknowledgements

I thank Lorraine Masoko Mothobekhi of De Beers for setting up the site visit and geologist Cobus van den Heever who took me to inspect the site.

References

- Beaumont, P.B. & Morris, D. 1990. *Guide to archaeological sites in the Northern Cape*. Kimberley: McGregor Museum.
- Curnoe, D., Herries, A., Brink, J., Hopley, P., van Ryneveld, K., Henderson, Z. & Morris, D. 2006. Discovery of Middle Pleistocene fossil and stone tool-bearing deposits at Groot Kloof, Ghaap Escarpment, Northern Cape Province. *South African Journal of Science* 102:180-184.
- Deacon, J. nd. Archaeological Impact Assessment - specialist input to planning and design. Unpublished notes compiled for the National Monuments Council.
- Fock, G.J. & Fock, D.M.L. 1989. *Felsbilder in Südafrika Teil III: Die Felsbilder im Vaal-Oranje-Becken*. Köln: Böhlau Verlag.
- Humphreys, A.J.B. & Thackeray, A.I. 1983. *Ghaap and Gariep: Later Stone Age studies in the Northern Cape*. Cape Town: South African Archaeological Society. Monograph Series 2.
- 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. 2000a. Gamsberg Zinc Project environmental impact assessment specialist report: archaeology. Unpublished report, McGregor Museum.
- Morris, D. & Beaumont, P. 2004. *Archaeology in the Northern Cape: some key sites*. Kimberley: McGregor Museum.
- Shillington, K. 2011. *Luka Jantjie: Resistance Hero of the South African Frontier*. London: Palgrave Macmillan.
- Van Ryneveld, K. 2005. Cultural Resources Management Impact Assessment. Rooipoort. McGregor Museum, Kimberley.