

**PHASE 1 ARCHAEOLOGICAL IMPACT
ASSESSMENT REPORT FOR THE PROPOSED
PALING PAN HAUL ROAD CONSTRUCTION AT
REMAINDER AND PORTION 1 OF THE FARM
PLAAS 445 HAY RD & REMAINDER AND
PORTION 1 OF THE FARM PALING 434 HAY RD,
NEAR POSTMASBURG, TSANTSABANE LOCAL
MUNICIPALITY, NORTHERN CAPE**

David Morris
February 2023

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PROPOSED PALING PAN HAUL ROAD CONSTRUCTION AT REMAINDER AND
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1. Introduction

The author, Honorary Research Associate of the McGregor Museum (archaeology department) was contacted by Elaine Minnaar of Lokisa Environmental Consulting CC (Tel 012 346 7655, Fax 012 346 6074, cell 082 493 9616 : elaine@lokisa.co.za, www.lokisa.co.za) to conduct an Archaeological Impact Assessment ahead of proposed construction of a 5 km gravel hauling road for the PMG mine at Paling Pan north of Postmasburg. This report provides the Archaeological Impact Assessment.

The proposed gravel road construction route joins, from the west, the R325 regional road (Postmasburg to Kathu) 15 km north of Postmasburg, and is proposed to be 5 km long, 10 m width, along an existing boundary fence.

1.1 Focus and Content of Specialist Report: Archaeology

The archaeological specialist study is focused on the route of the proposed haul road as indicated in a Google Earth kmz file provided by the project. The route was walked by the specialist on 20 January 2023.

Study outline:

- Introduction to the specialist in terms of qualifications, accreditation and experience to undertake the study (1.2, below)
- 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 and 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)
- Impact Assessment (5)
- Conclusions & Recommendations (6)
- References (7)
- Appendix 1.

1.2 Author of this Report

The author is independent of the organization commissioning this specialist input, and provides this heritage assessment (archaeology and cultural heritage of the specific locale; but not palaeontology) within the framework of the National Heritage Resources Act (No 25 of 1999).

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 and western Free State since 1985, including surveys and fieldwork on sites in the Kathu area (Beaumont & Morris 1990; Morris & Beaumont 2004). In addition he has UCT-accredited training on Architectural and Urban Conservation: researching and assessing local (built) environments (S. Townsend, UCT). As Chairman of the Historical Society Kimberley and the Northern Cape (registered as a conservation organisation on SAHRIS and with the Northern Cape Provincial Heritage Authority) he also has broad experience pertaining to the heritage and history in the Northern Cape.

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).

2. Description of the affected environment and potential impacts

The proposed haul road is to be situated west of the R325 road, turning off about 15 km north of Postmasburg (Tsantsabane Local Municipality), Northern Cape Province, on the farms Remainder and Portion 1 of the farm Plaas 445 HAY RD & Remainder and Portion 1 of the farm Paling 434 HAY RD to the vicinity of the railway south of Paling Pan station (Fig. 1). Alternative routes for the western-most approximately 850 m of the haul road are under consideration.

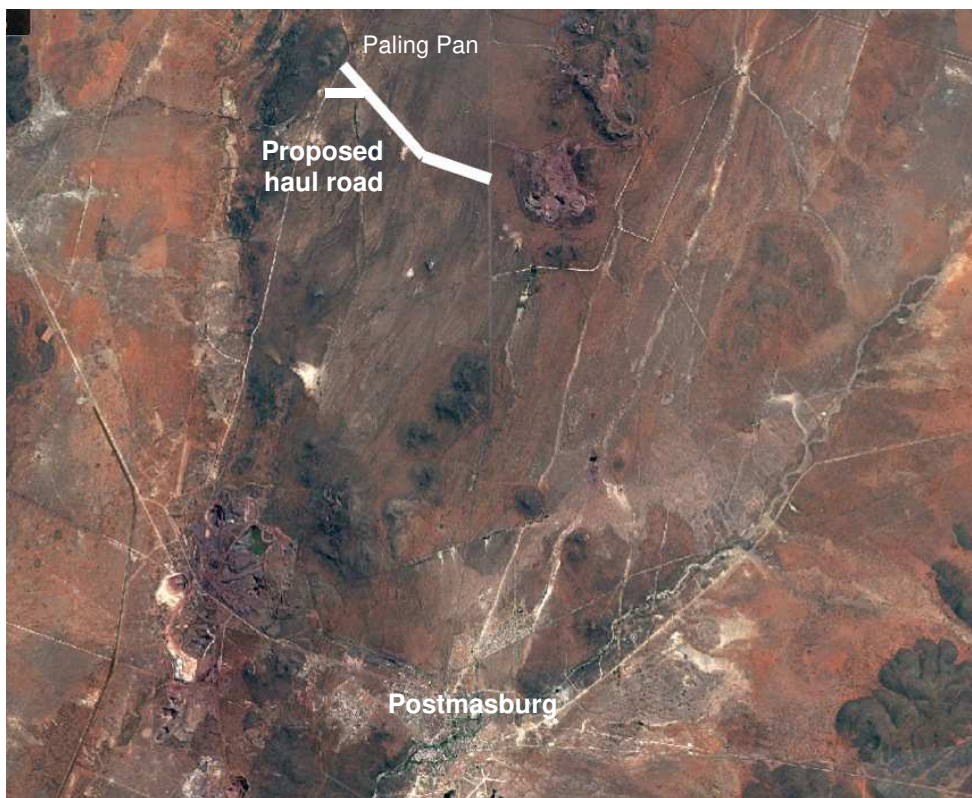


Figure 1a. Location of the proposed haul road north of Postmasburg

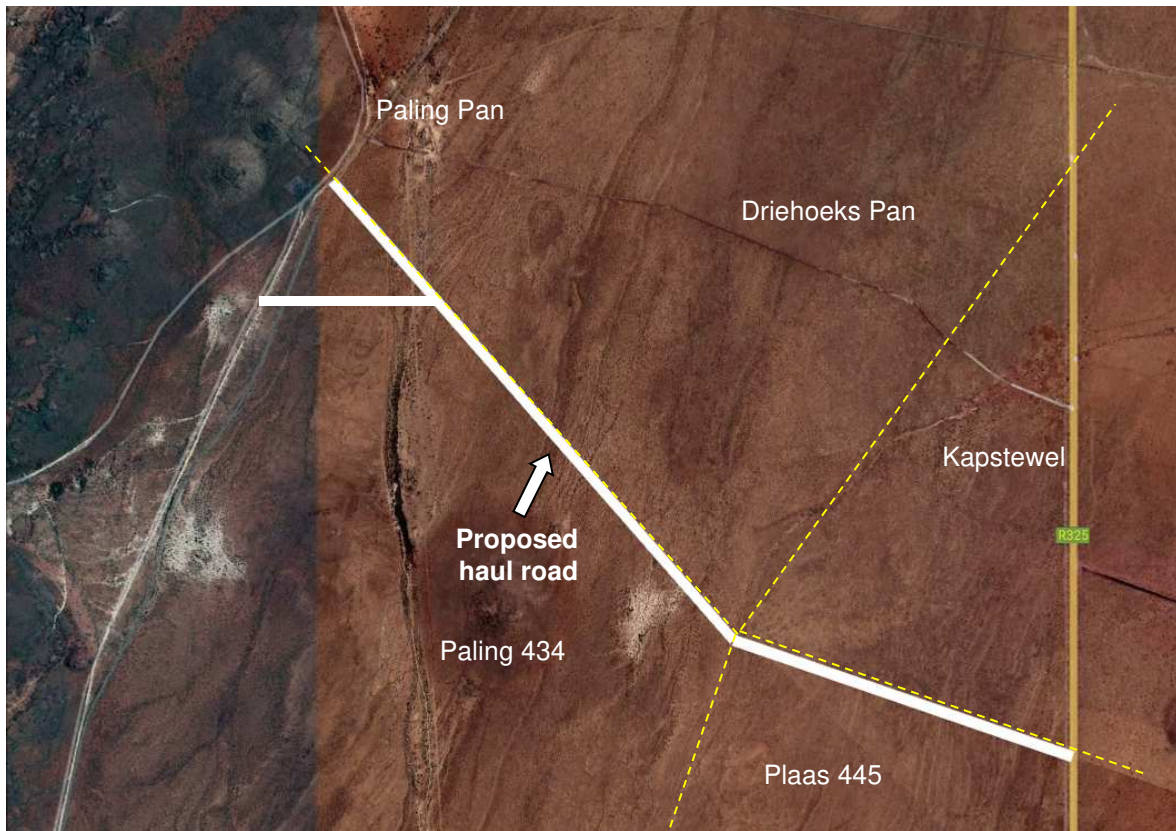


Figure 1b: Locality map for the proposed haul road along the fence line at the northern boundary of Remainder and Portion 1 of the farm Plaas 445 HAY RD and Remainder and Portion 1 of the farm Paling 434 HAY RD, from kmz provided by Lokisa Environmental Consulting CC.

In terms of bioregional context, the proposed haul road traverses Savanna Biome with bushveld and thornveld vegetation types (Figures 2a-i) and is situated within a broad valley between PreCambrian ridges of dolomite, manganese and iron ore which trend north-south between Postmasburg in the south and Lohatla to the north. Almost the entire route is across surface exposures/outcrops of dolomite, with extremely shallow soils (Figures 2b,d,f,g). Landscape surface visibility in terms of surface archaeological observations is good, and the likelihood of subsurface archaeological materials being present is relatively low on account of the rocky nature of almost the entire haul road route.



Figure 2a



Figure 2b



Figure 2c



Figure 2d



Figure 2e



Figure 2f



Figure 2g



Figure 2h



Figure 2i

Figures 5 a-i. Views at various points along the route of the proposed Paling Pan Haul Road, including the nature of surface dolomite and other stony surfaces/exposures.

2.1. Project background

The Phase 1 Archaeological Impact Assessment requested by Lokisa Environmental Consulting CC (via Elaine Minnaar) is for the route of a proposed 5 km haul road approximately 10 m wide which follows alongside the northern part of Remainder and Portion 1 of the farm Plaas 445 HAY RD and Remainder and Portion 1 of the farm Paling 434 HAY RD of between the railway south Paling Pan and the R325 road (Postmasburg to Kathu). Alternative options for the western-most circa 850 m of the haul road to a railway crossing are under consideration.

2.2 Background to heritage features of the area

The Northern Cape has a wealth of archaeological sites and landscapes reflecting Stone Age to Colonial histories. Limited Stone Age traces have been recorded on the west side of the R325 in this vicinity and on Driehoeks Pan, the adjacent property to the north (e.g. Webley & Halkett 2010; PGS Heritage 2015). In the wider region sites and site complexes in the surrounding region have been investigated in some detail in the last quarter century and are subject to on-going research. This is especially true of the landscape in the vicinity of Kathu to the north, researched by Beaumont in 1979-1982 and with renewed investigations by an international team in partnership with the McGregor Museum from 2004 (Beaumont & Morris 1990; Beaumont 2004; Morris & Beaumont 2004; Porat *et al.* 2010; Walker *et al.* 2014). Numerous Stone Age sites have been documented and excavated in what is now referred to as the Kathu Archaeological Complex, including sites Kathu Pan, Kathu Townlands and Bestwood (Beaumont and Morris 1990; Beaumont and Vogel 2006; Kaplan 2008; Beaumont 2013). Kathu Pan 1 preserves the longest lithostratigraphic and archaeological sequence of the sites, documenting a history of human occupation at the pan through the Earlier, Middle and Later Stone Ages, spanning at least 1 million years.

Wonderwerk Cave, over the Kuruman Hills to the north east of the study site, is a unique large 140 m-deep cave, also subject to a number of archaeological investigations since the first published description by Malan and Wells in 1943 (Thackeray *et al.* 1981) – by Beaumont with A. & J. Thackeray, 1978-1993, and by a project led by Chazan, Horwitz and Berna, 2004-present (reviewed by Horwitz & Chazan 2015).

At Postmasburg and other sites in the area north of the town are significant specularite workings dating from the Later Stone Age, e.g. at Tsantsabane (Blinkklipkop) and Doornfontein (summarised in Beaumont and Morris 1990).

This existing work suggests that further sites of significance may yet come to light in the region. Broadly speaking, the archaeological record of this region reflects the long span of human history from Earlier Stone Age times (about two million to about 270 000 years ago), through the Middle Stone Age (about 270 000 – 40 000 years

ago), to the Later Stone Age (up to the protocolonial era). The last 2000 years was a period of increasing social complexity with the appearance of farming (herding and agriculture) alongside foraging, and of ceramic and metallurgical (Iron Age) technologies alongside an older trajectory of stone tool making. Of importance in this area is evidence of early mining of specularite, a sparkling mineral that was used in cosmetic and ritual contexts in Stone Age and later contexts (Beaumont 1973). Rock art is known in the form of rock engravings (Fock & Fock 1984; Morris 1992; Beaumont 1998).

At a regional level the sites of Wonderwerk Cave (east side of the Kuruman Hills) and the Kathu complex of sites (Porat *et al.* 2010) provide important sequences against which to assess the age and significance of finds that may be anticipated along the route of proposed haul road construction.

2.3 Environmental issues and potential impacts

Heritage resources including archaeological sites are in each instance unique and non-renewable resources. Any area or linear, primary and secondary disturbance of surfaces in the development locales 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 South Africa Heritage Resources Agency and, in the case of any built environment features, by Northern Cape Heritage authority (previously called Ngwao Boswa jwa Kapa Bokone). Although unlikely, there may be some that could require preservation in situ and hence modification of intended placement of development features.

In this instance, linear impacts/disturbances in the construction of the haul road may be expected where any traces occur.

Disturbance of surfaces includes any construction: of a road, a pipeline, erection of a pylon, or any other clearance of, or excavation into, 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). Without context, archaeological traces are of much reduced significance. It is the contexts as much as the individual items that are protected by the legislation.

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

3. METHODOLOGY

This study defines the heritage (archaeology) component of the EIA process for the proposed haul road construction. The route of the proposed 5 km gravel road was walked on 20 January 2023. Heritage traces, of which few were noted, were evaluated in terms of their archaeological significance.

In preparation for this:

- A desktop assessment was done of the haul road footprint relative to the known wider archaeological landscape.
- A search was done on SAHRIS database to determine what previous Archaeological and Heritage Impact studies existed for the area.

M2 Precious and Base Metals Prospecting Right Application for Limestone at Driehoek'span 435 by Divhani Mulaudzi contains no heritage assessment.

Two further studies, by Webley and Halkett (2010) and PGS Heritage (2015) indicate a combined total of 12 findspots on Driehoeks Pan (adjacent property), mostly surface Stone Age finds/scatters of low significance.

- 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 shallow soil profiles, that a reasonable sense of the archaeological traces to be found in the area would be readily apparent from surface observations. It turned out that virtually the entire route for the proposed haul road runs across exposed dolomite bedrock with

interspersed shallow soil patches, where any archaeological traces that occur likely to be at the surface.

A proviso is routinely given, nevertheless, that should sites or features of significance be encountered during construction (these could include an unmarked burial, an ostrich eggshell water flask cache, or a high density of stone tools, for instance), specified steps are necessary (cease work, report to heritage authority).

This study does not address palaeontology.

3.2 Predictions/expectations

Against the archaeological background reviewed (2.2 above), it was expected that archaeological traces might occur in the following sets of circumstances:

- Landscape settings in which dolines occur might yield archaeological sites similar to those documented in the case of Kathu Pan.
- Rich raw material sources outcropping locally might be foci for 'workshop' knapping sites such as Kathu Townlands.
- Settings close to streams or pans might support higher density site/artefact occurrences because of the affordances of proximity to water and associated ecologies.
- Exposure of bedrock in the form of boulders or smooth sheets of rock may support rock art in the form of engravings.
- Topographic features such as hills or rocky ridges (but not in fact occurring along the haul road route) may provide shelters with traces of precolonial Stone Age occupation/activity.
- Iron Age traces including pottery are known from ridges in the wider landscape as well as from sandy plains.

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). These are included in Appendix 1 of this report.

4. OBSERVATIONS AND ASSESSMENT OF IMPACTS

The manner in which archaeological and other heritage traces or values might be affected by the proposed prospecting 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 most obvious impact in this case would be land surface disturbance associated with infrastructure construction.

4.1 Specific field observations

Relative to desktop predictions (3.2 above), it is noted that the route of the proposed haul road lacks many of the aspects or features that might point to potentially significant archaeological sites being present. The weathered form in which the dolomite exposures occur (different from the smooth blue platforms occurring at various sites near Danielskuil) makes them unlikely supports for rock engravings. No topographic features with rock shelters occur. It was found that the route of the proposed haul has extremely low surface density of Stone Age artefacts, those found being completely isolated and of low archaeological integrity (lithics only, lacking context or potential for dating), and hence of low significance. This conclusion conforms to findings made in previous studies at the adjacent property of Driehoekspan cited above.

In relation to the predictions made in 3.2, above, it can be summed up as follows:

No dolines were observed and no hint of sites similar to those at Kathu Pan was found.

There were no rich preferred raw material sources (e.g. jaspers) outcropping locally (only weathered dolomite and rubble) and no sense of concentrated knapping was evident.

The proposed haul road route is across a homogeneous flat rocky plain without marked water source zones such as would be found alongside watercourses or pans.

There are no rocky ridges/hills/features with potential for rock shelters nor suitable for rock engravings.

No ceramics were found or any stone-walled feature suggestive of Iron Age occupation.

Table 1: Archaeological observations

| Observation Number (See Figs 2-4; and GPS waypoints, Fig 6) | Latitude | Longitude | Comment | Significance |
|---|-----------------|------------------|--|---------------------|
| 1 | 28°10'06.6" | 23°02'59.2" | Isolated flake (Pleistocene?) on sandy patch on rocky plain. Surface find lacking context. | LOW |
| 2 | 28°09'54.4" | 23°02'46.5" | Isolated core (Pleistocene?) on sandy patch on rocky plain. Surface find lacking context. | LOW |
| 3 | 28°11'10.4" | 23°04'42.7" | Isolated core (Pleistocene?) on sandy patch on rocky plain. Surface find lacking context. | LOW |



Figure 3. Findsite 1 A single Isolated flake.



Figure 4. Findsite 2 A single isolated core.



Figure 5. Findsite 3 A single isolated core.

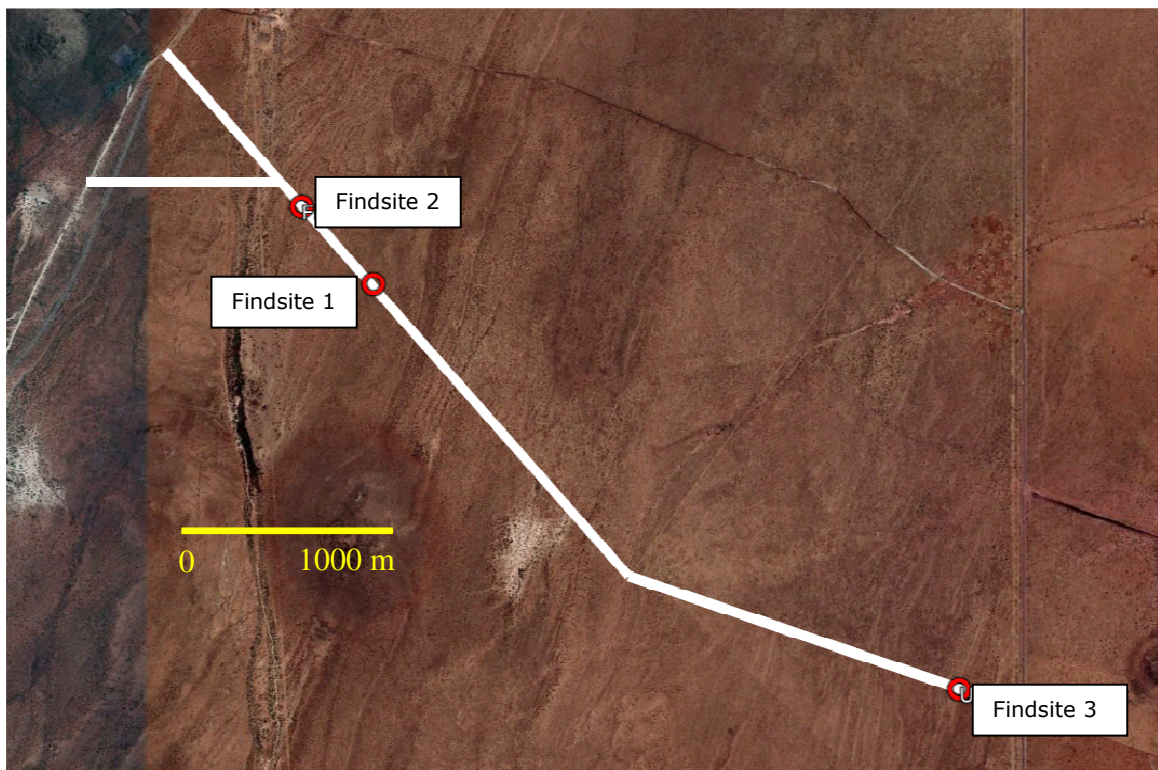


Figure 6. Observations (Findsites) 1 - 3 plotted on Google Earth.

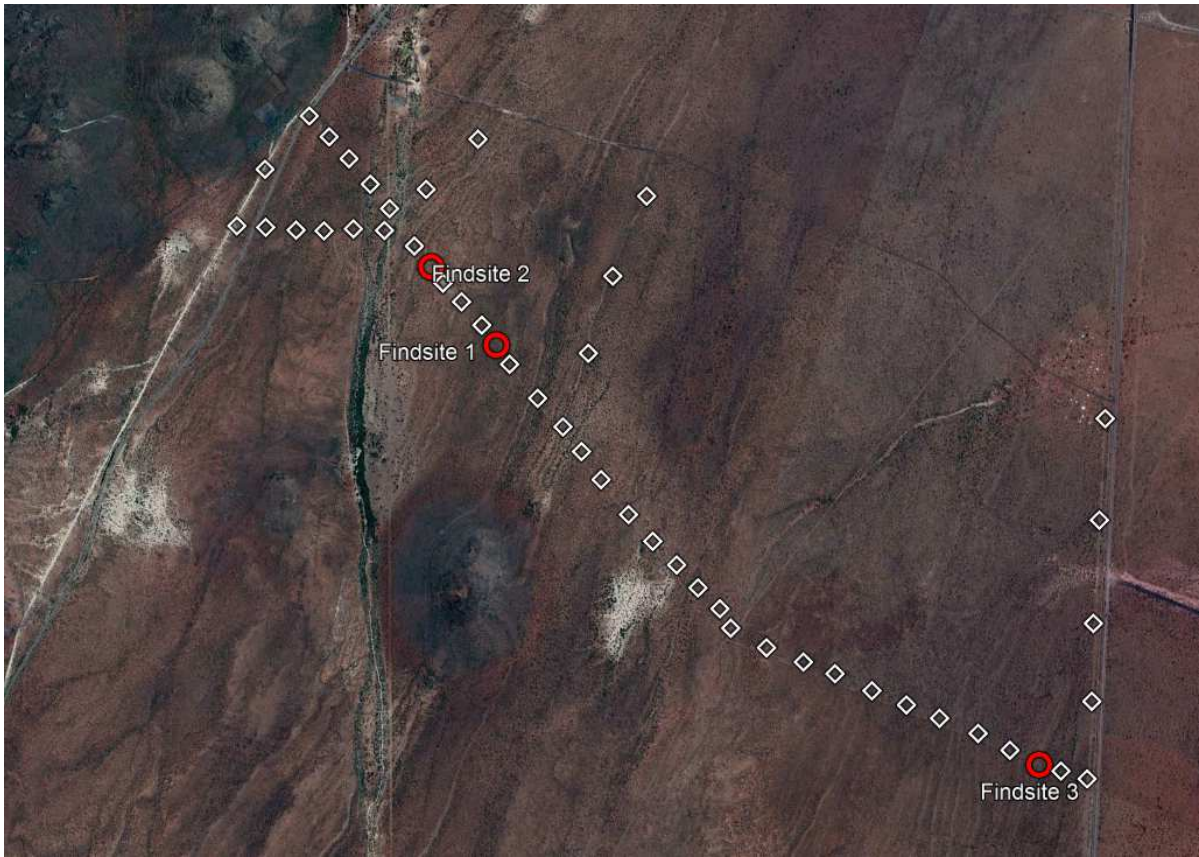


Figure 7. Track log – foot survey route along the proposed haul road.

4.2 Characterizing archaeological significance

In terms of the significance matrices in Tables 1 and 2 in Appendix 1 (see 3.3 above), most of the archaeological observations fall under Landforms L1 and L3 Type 1 or 2. In terms of archaeological traces they all fall under Class A1 Type 1. All of these ascriptions (Table 1 in Appendix 1) reflect poor contexts and likely low archaeological significance for these criteria.

For site attribute and value assessment (Table 2 in Appendix 1), all of the observations noted fall under Type 1 for Classes 1-7, again reflecting low significance, low potential and absence of contextual and key types of evidence.

Overall, then, archaeological significance – by these criteria – is reckoned to be low. In the next section significance is arrived at using criteria and methodology generated in terms of nature, extent, duration, magnitude and probability of impact.

5. IMPACT ASSESSMENT

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 proposed Paling Pan haul road construction

| | | |
|---|---|---|
| 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). | | |
| | <i>Without mitigation</i> | <i>With mitigation</i> |
| <i>Extent</i> | Local (1) | Local (1) |
| <i>Duration</i> | Permanent (5) where archaeological material is impacted – but this has been rated as insignificant and not requiring mitigation | Permanent – but no mitigation regarded as necessary (5) |
| <i>Magnitude</i> | Minor (2) | Minor (2) |
| <i>Probability</i> | Improbable (2) | Improbable (2) |
| <i>Significance</i> | Low (16) | Low (16) |
| <i>Status (positive or negative)</i> | Negative | Negative |
| <i>Reversibility</i> | No | No |
| <i>Irreplaceable loss of resources?</i> | Extremely low density of artefacts along the route of the proposed haul road. | |
| <i>Can impacts be mitigated?</i> | Minimal traces noted on the ground: Not regarded as necessary other than by way of on-going management as per EMP in case unexpected (unlikely) archaeological material is encountered sub-surface. | On-going management as per EMP |
| Mitigation: Specific mitigation measures 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 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 haul road construction 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 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 haul road route and of other access road/s 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 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. | Environmental management provider with on-going monitoring. | Environmental management plan to be in place before commencement of development. |
| Localize road construction activity and impacts | | |

| | |
|------------------------------|--|
| 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 construction operations. |
| Monitoring | Officials from relevant heritage authorities (National and Provincial) to be permitted to inspect the operation at any time in relation to any heritage component of the management plan. |

6. CONCLUSIONS AND RECOMMENDATIONS

The manner in which archaeological and other heritage traces would be affected by the proposed haul road construction has been indicated above. In summary, it would be any act or activity that would result, immediately or in future, in the destruction,

damage, excavation, alteration, removal or collection from its original position, of any heritage material, object or value (as indicated in the National Heritage Resources Act (No 25 of 1999)).

There is a remote chance, as noted above, that some material of significance may still occur subsurface which, if encountered during any phase of the proposed construction, should be brought to the immediate attention of the heritage authorities. Work should be halted and SAHRA be contacted to allow for further assessment and mitigation recommendations.

Extremely low density heritage traces were found at isolated locales along the proposed haul road route, and this conformed to observations in previous studies on the area. From an archaeological perspective the observed heritage resources are of low significance, with no mitigation measures considered necessary. Criteria used for impact significance assessment rate the impacts of the proposed prospecting as Low.

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Appendix 1: Tables for determining archaeological significance

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 | Little deposit | More than half | High profile site |

| Class | Landform | Type 1 | Type 2 | Type 3 |
|-------|---|-------------------|----------------------|--|
| | previously excavated | remaining | deposit remaining | |
| 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 |

Schematic Human Physical and Cultural Evolution in Africa

