

**SCOPING ARCHAEOLOGICAL IMPACT ASSESSMENT:
PROPOSED PROSPECTING ON TAAIBOSCHFONTEIN 137
(SITE 49), VICTORIA WEST, NORTHERN CAPE.**

(Assessment conducted under Section 38 (8) of the
National Heritage Resources Act No 25 of 1999)

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EXECUTIVE SUMMARY

The Archaeology Contracts Office (ACO) at the University of Cape Town was appointed by Tasman Pacific Minerals Limited prior to the approval of an amended EMP for rights to drill for uranium and molybdenum on the farm Taaiboschfontein 137 located on the R 63 between Loxton and Victoria West, Northern Cape Province.

A literature survey indicated that very little was known of the archaeology of the area. A survey was conducted by Lita Webley and Tim Hart on 25 May 2010 and no significant heritage resources were discovered. The size of the drill area meant that we were unable to conduct a detailed foot survey and we had to target specific areas which we considered more likely to contain archaeological sites. This included ridges, pans and river valleys. We are confident that we covered the most sensitive areas and that a detailed AIA is unlikely to produce significantly more sites.

Prospecting on the farm will involve drilling holes some 14cm in diameter every 10 000m² to 250m² in designated drill areas. The proposed drilling programme is designed to identify the aerial extent of any subsurface mineralization as quickly as possible and once the margins have been identified further lateral drilling away from the target will be terminated. In all cases, the drill areas are a considerable distance from the farm house and associated farm buildings and graveyards and they are not threatened in any way.

On Taaiboschfontein we identified two weathered Middle Stone Age flakes made on hornfels. No significant archaeological sites were found and prospecting should be allowed to continue.

There are no significant issues which would prevent prospecting on this farm. We advise that prospecting work should cease if any of the following are uncovered:

- Human remains/graves
- Concentrations of stone tools or faunal remains
- Stone walling or any sub-surface structures
- Fossils

If any of the above is uncovered, SAHRA should be notified so that an archaeologist/palaeontologist can investigate further.

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GLOSSARY

- ESA:** Early Stone Age – The archaeology of the Stone Age between 700 000 and 2500 000 years ago.
- Khoekhoen:** Pastoralist groups, with cattle, sheep and pottery who settled in southern Africa around 2000 years ago.
- Khoisan:** Collective term relating to both the Khoekhoen and the San.
- LSA:** Later Stone Age – The archaeology of the last 20 000 years associated with fully modern people.
- MSA:** Middle Stone Age - The archaeology of the Stone Age between 300 000 – 20 000 years ago associated with early modern humans.
- NHRA:** National Heritage Resources Act, No 25 of 1999.
- SAHRA:** South African Heritage Resources Agency
- San:** Indigenous hunter-gatherer groups who lived in small bands spread across a wide area of southern Africa.

1. INTRODUCTION

The Archaeology Contracts Office at the University of Cape Town (ACO) was approached by Tasman Pacific Minerals Limited to undertake an Archaeological Impact Assessment prior to the approval of an amended EMP for rights to drill on the farm Taaiboschfontein 137 situated to the east of Loxton in the Northern Cape Province (Figure 1). The Department of Minerals and Energy in Kimberley advised that in terms of the legislation both a Archaeological and a Palaeontological Impact Assessment would be required.

The farm Taaiboschfontein 137 is located immediately to the east of Loxton on the R63 between Loxton and Victoria West in the Northern Cape Province.

2. BACKGROUND TO PROSPECTING

The client, Tasman Pacific Minerals Limited, intends to conduct a series of drilling programmes to prospect for uranium and molybdenum ores.

The client has applied to amend their existing, approved Environmental Management Plans and Prospecting Work Programmes to allow drilling activities to occur within 12 designated drilling project areas scattered throughout the Karoo region of South Africa.

Drilling will be conducted from truck mounted drilling rigs and will occur in two phases. The first phase will see holes drilled on pre-determined 100 m x 100 m grid arrays. This initial drilling array will be used to delineate the location and aerial extent of any subsurface mineralisation. Should such subsurface mineralisation be identified then a closer spaced 50 m x 50 m grid will be drilled in the immediate area of that mineralisation on so as to be able to more accurately quantify the thickness and uranium/molybdenum grade distribution within the deposit.

The nature of the planned drilling means that the largest hole diameter on surface will be 5½ inches (approximately 14 cm diameter hole every 250 m²). Thus, there will not be extensive disruption of the land surface (i.e. no trenching, pitting or test mining is allowed under these amended EMPs or PWPs).

On all sites there are existing farm roads providing access directly to, or near by the drilling project areas. No new graded roads are proposed to be manufactured. Drill rigs will be wheel mounted and, thus, any vehicular traffic will produce "twin spoor": tracks. Vehicular traffic will only be allowed along (and not between) pre-designated pathways. Accordingly, most of the

veld will never be subjected to vehicular traffic (i.e., two parallel wheel tracks every 50m at worst).

At all times during the drilling programme there will be (as stipulated in the amended EMP for each area) a designated Environmental Control Officer whose role it will be to ensure compliance with the criteria within the EMP. This officer will be the site geologist and, as such will have a background that will enable them to identify any fossils that might be located at the proposed borehole positions or along the tracks utilised by vehicles. Should any be located then the borehole would be relocated to avoid damage or the fossil assessed by a suitably qualified professional and if appropriate excavated and lodged with an appropriately accredited organization.

The drill areas provided to the ACO are the same as those included within the amended Prospecting Work Programme (PWP) and Environmental Management Plan (EMP) documents submitted to the Department of Minerals and Energy. These are the only areas within the total extent of the Prospecting Rights held by Tasman Pacific in which any disturbance of the Earth's surface will be allowed. Thus, these are the only locations within the Prospecting Right areas in which there is a risk of impact upon the archaeological heritage.

With regard to the exact locations of the proposed boreholes; the client indicated that it would not be a useful exercise for the ACO to inspect the site of every proposed borehole as indicated in the amended EMP and PWP documents for the following reasons:

- a. For various reasons those documents indicate the location of a great many more proposed boreholes than will ever be drilled (e.g., the Quaggasfontein Project alone contains approximately 800 proposed boreholes). However, the reality is that only a small percentage of these will ever be drilled. The proposed drilling programme is designed to identify the aerial extent of any subsurface mineralisation as quickly as possible and once the margins of the mineralisation is identified further lateral drilling away from the target will be terminated. This procedure is necessitated by the tremendous uncertainty of the location, extent and orientation of any subsurface mineralization;
- b. Further to point a, is entirely possible that the early stages of drilling may suggest that the programme is not viable and, in this case almost all of the holes will not be drilled;
- c. The boreholes have been located, sight unseen, on a predefined grid. The reality is that when it comes time to site the holes in the field many of the holes will need to be re-sited slightly due to inappropriate local topography etc. Accordingly, the site inspection would be a waste of time in these cases;

- d. An effective and comprehensive survey of the various project areas, rather than one centred on pin point locations (i.e. borehole locations), would provide a better methodology as it could identify broad areas where drilling would be undesirable or inappropriate. A pin-point approach would need months of field work, at prohibitive expense and for the most part be wasted effort;
- e. Should mining be the eventual outcome of the exploration efforts a much more comprehensive examination and report would be required for inclusion in the Environmental Management Programme in any case.

3. TERMS OF REFERENCE

The ACO undertook to undertake a baseline investigation including the following:

- Identification of archaeological sites through a desk top survey and site visit
- Rating of significance of archaeological sites on the properties
- Assessment of the impact of prospecting on the archaeology of the properties
- Recommendations for mitigation.

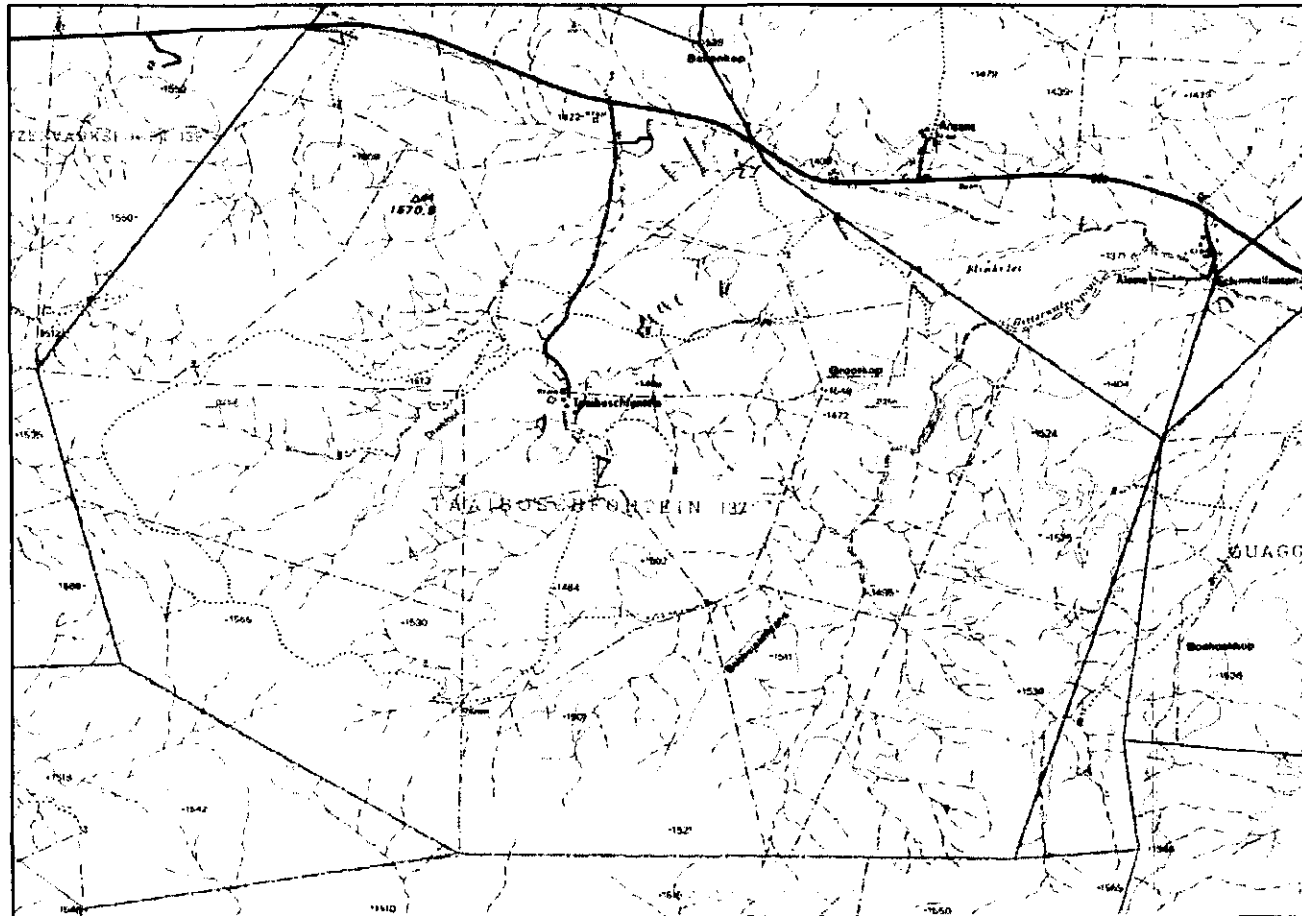


Figure 1: The farm Taai Boschfontein 137 and its location on the R63 between Loxton and Victoria West, Northern Cape Province. The drill area is located in the south-west portion of the farm, see Figure 2.

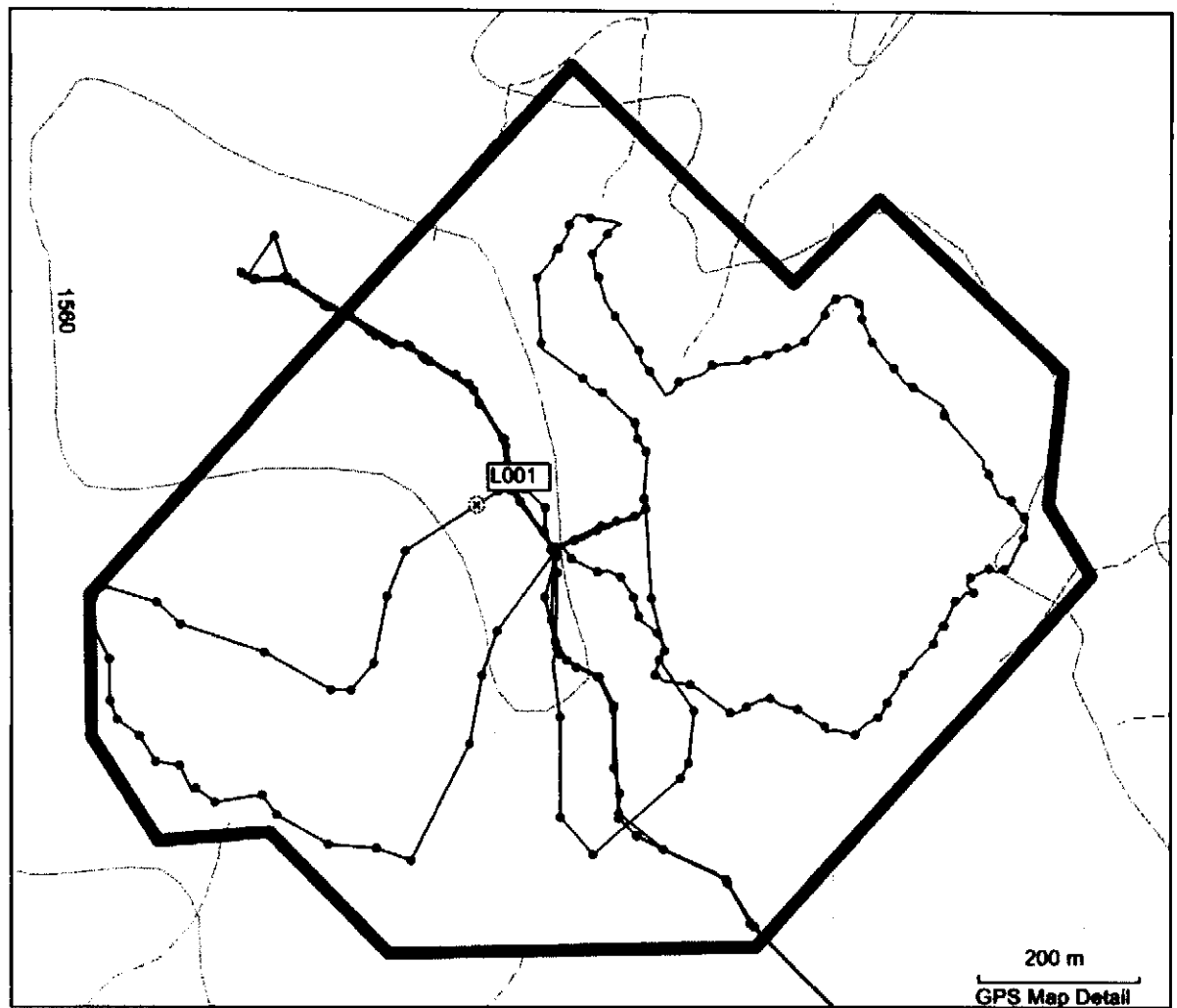


Figure 2: The drill area is located in the southern section of the farm Taaiboschfontein. The trackways followed during the survey are shown on the map.

4. LEGISLATION

The basis for all heritage impact assessment is the National Heritage Resources Act 25 (NHRA) of 1999, which in turn prescribes the manner in which heritage is assessed and managed. The National Heritage Resources Act 25 of 1999 has defined certain kinds of heritage as being worthy of protection, by either specific or general protection mechanisms. In South Africa the law is directed towards the protection of human made heritage, although places and objects of scientific importance are covered. The National Heritage Resources Act also protects intangible heritage such as traditional activities, oral histories and places where significant events happened. Generally protected heritage which must be considered in any heritage assessment includes:

- Cultural landscapes
- Buildings and structures (greater than 60 years of age)
- Archaeological sites (greater than 100 years of age)
- Palaeontological sites and specimens
- Shipwrecks and aircraft wrecks
- Graves and grave yards.

Section 38 of the NHRA requires that Heritage Impact Assessments (HIA's) are required for certain kinds of development such as rezoning of land greater than 10 000 sq m in extent or exceeding 3 or more sub-divisions, or for any activity that will alter the character or landscape of a site greater than 5 000 sq m.

5. RECEIVING ENVIRONMENT

The mountains and kopjes on the inland plateau east of Loxton are comprised of horizontally bedded, fossiliferous shales and mudstones of the Beaufort Group in the Karoo Supergroup. They are intersected at numerous locations by dolerite dykes and sills that are more resistant to erosion than the surrounding sedimentary rocks. While small overhangs do occur under the lintels of these siltstone caps, they are very rare. These sedimentary rocks tend to weather into angular slab like rocks which are widely distributed in the study area.

Dykes and sills have baked the surrounding shales resulting in patches of high quality hornfels. Hornfels are an attractive rock for stone tool makers because it flakes predictably and produces sharp edges (Parkington et al 2008). The majority of artefacts found in the study area are of hornfels (also known as indurated shales). The igneous rocks erode into rounded spherical boulders which are used for rock engravings.

Ridges and lines of rocky hills strewn with these boulders are a characteristic feature of the Karoo. In addition, the dykes have the effect of damming up small

streams resulting in small springs which often generate pans (or leegtes) of seasonal water – another feature of the landscape (Parkington et al 2008). Vegetation cover is typical Karoo veld of low, semi-desert scrub, with varying amounts of seasonal grasses that disappear in the dry winter months. Taller shrubs and trees may occur near springs and dry river beds. Stock farming, predominantly sheep farming, is widespread. Some farms also keep small numbers of springbuck. The annual average rainfall is around 350mm per annum and falls mainly in the summer. Snow is not uncommon on the high lying grounds. Subzero temperatures occur between April and October and may drop down to -6°C. High winds during the daytime are a characteristic of the Karoo.

The farm Taaiboschfontein is very hilly with the drill area situated on a high plateau to the south-west (Figure 1). Prospecting is planned for a flat, slightly sloping area covered in very low Karoo bushes (Plate 1). There are no rocky ridges, valleys or river beds. The substrate is comprised of reddish clay soils and it is littered with angular shale rocks.

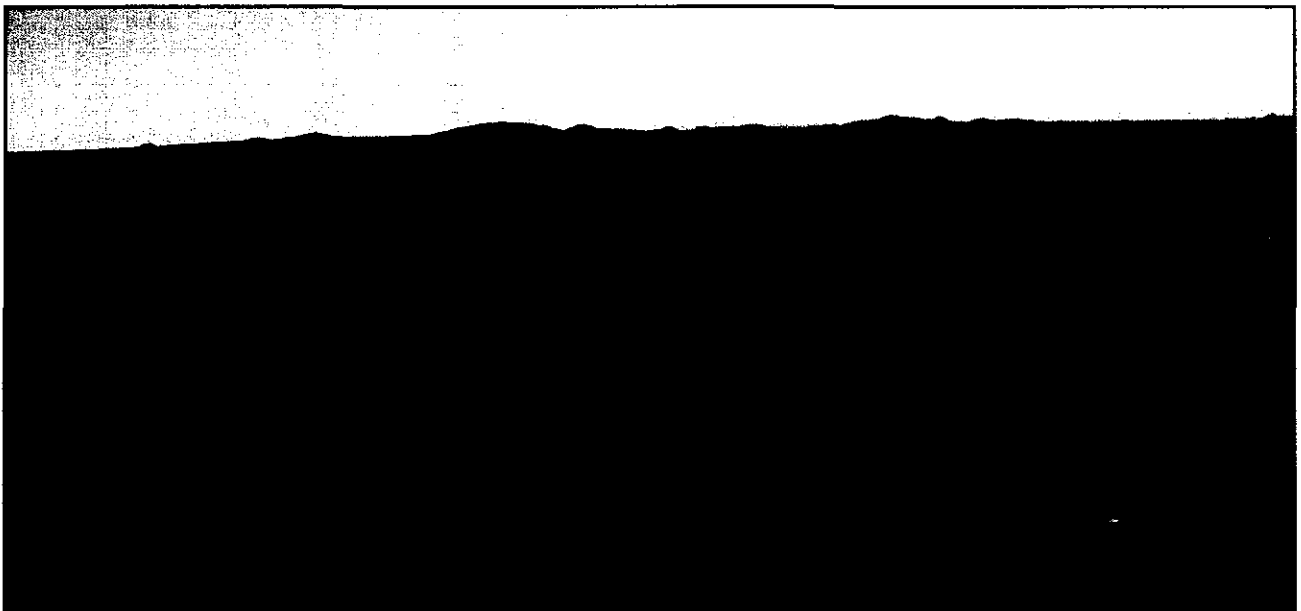


Plate 1: View of the drill area on Taaiboschfontein showing the terrain and vegetation.

5.1 Archaeological Background

There has been no systematic archaeological work undertaken in this immediate vicinity and this discussion is based on projects from other areas, some more than 200km away. Because of the scarcity of caves and shelters, more than 90% of Karoo archaeological sites are open sites of stone artefacts, ostrich eggshell fragments and occasionally, pottery. Bone remains are rarely preserved. Artefacts of both the Early and Middle Stone Age are widespread. More intensive occupation of the Karoo started around 13 000 years ago during the Later Stone Age. Distinctive stone tool assemblages, referred to as the Lockshoek have been

identified. Characteristic of this period is large knife like tools with natural backing. Large scrapers are also common. This industry disappears abruptly around 9 000 years ago. The Karoo seems to have been largely unoccupied until 4 500 BP, presumably as a result of drier conditions.

The most detailed and comprehensive investigation of the Karoo was undertaken in the Upper Seacow River by Sampson (1988). He recorded some six thousand archaeological sites which he ascribed to Bushmen hunter-gatherers and Khoekhoen pastoralists. The archaeological remains relating to the Bushmen have been historically described as the "Smithfield Industry", and are found from the western Free State to the northern part of the Northern Cape. The Smithfield typically contains flaked lithics (on un-patinated blue-black hornfels), grinding equipment, bored stones, and potsherds (typically relating to bowl-shaped pots with stamp impressed decoration). Formal stone tools include endscrapers. Sampson also recognized a Khoekhoen ceramic tradition and he speculates on the chronological ordering of the settlement in the valley (1988). He notes that many of the Smithfield sites occur in dense clusters, and that they are concentrated on the flat sandy patches on the foot slopes and crests of dolerite hills and ridges, usually within a half-hour walk (1km radius) of a fountain. Many of these sites are protected from the winds by low ridges and boulders, in other words shelter especially in the winter months is of paramount importance. Rock engravings do occur to the south and east of Beaufort West on dolerite boulders and these were examined closely during this survey.

Dreyer (2007a & b) has undertaken a number of surveys of borrow pits along regional roads in the Williston and Carnarvon areas further to the north. In addition to historic structures and graves, he recorded a background "noise" of MSA and LSA stone tool scatters. He regarded these to be of low significance.

5.2 Historical Background

The farm Taaiboschfontein was surveyed and beacons in October 1908. The diagram shows no signs of a farmhouse. The present farmhouse is located some distance to the north of the drill area.

6. METHODS

The boundaries of the site were loaded onto handheld GPS receivers (set to the WGS84 datum) to facilitate the identification of the search area during field work. Fieldwork was undertaken by Lita Webley and Tim Hart on the 25 May 2010. Walk paths and site locations were recorded with GPS (Figure 3) and finds were photographed and described.

We were able to speak to a farm worker and he confirmed that there were no structures or graves on the affected area.

6.1 Limitations

The size of the drill area meant that we were unable to conduct a detailed foot survey and we had to target specific areas which we considered more likely to contain archaeological sites. This included ridges, pans and river valleys. We are confident that we covered the most sensitive areas and that a detailed AIA is unlikely to produce significantly more sites. There were no limitations to the survey. The terrain is level and the vegetation is low. Visibility was good.

7. RESULTS OF FIELD SURVEY

No archaeological sites were discovered during the foot survey of the area (see Figure 2). A total of two sandstone flakes, possibly of MSA origins were discovered (Plate 2). This is a very low pre-colonial signature.



Plate 2: Two stone artifacts which may be of MSA origins.

8. SITE SIGNIFICANCE, IMPACT OF DEVELOPMENT AND MITIGATION

8.1 Loss of Pre-colonial Sites

The aridity of the area suggests that pre-colonial occupation would have been limited to periods of good rainfall when water flowed in the rivers. This particular area of Taaiboschfontein contains no rivers or pans. There is also no shelter from the cold winds on the plateau area and therefore no focus for prehistoric settlement.

Significance: Section 35 of the NHRA prohibits any person, without a permit, from destroying, damaging, excavating, altering, defacing or

disturbing any archaeological sites and material, palaeontological sites and meteorites. The two flakes are of low significance.

Mitigation: No mitigation is required.

8.2 Loss of Colonial Sites

There are no buildings or structures such as kraals or stone walls in the drill area.

Significance: Section 34 of the NHRA stipulates that no person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

Mitigation: No mitigation is required.

8.3 Loss of Graves

There are no graves or stone cairns in the area.

Significance: Section 36 (3) (b) of the NHRA clearly stipulates that no person may, without a permit issued by the relevant heritage authority or SAHRA destroy, damage or exhume any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority.

Mitigation: No mitigation is required.

9. CONCLUSIONS AND RECOMMENDATIONS

Prospecting on the farms will involve drilling holes some 14cm in diameter every 10 000m² to 250m² in designated drill areas. The proposed drilling programme is designed to identify the aerial extent of any subsurface mineralisation as quickly as possible and once the margins of the mineralisation is identified further lateral drilling away from the target will be terminated. In all cases, the drill areas are a considerable distance from the farm house and associated farm buildings and these are not threatened in any way. A baseline archaeological survey of the farm Taaiboschfontein (within Site 49) failed to identify any significant heritage resources which will be impacted during the drilling process.

On Taaiboschfontein we identified two stone artefacts. They appear to be of MSA origin and isolated. They were not associated with any ostrich eggshell, bone or pottery remains and they were not concentrated in any specific localities. They provide minimal information and are no considered significant. No mitigation is required.

There are no significant issues which would prevent prospecting on these two properties. Finally, we advise that prospecting work should cease if any of the following are uncovered:

- Human remains/graves
- Concentrations of stone tools or faunal remains
- Stone walling or any sub-surface structures
- Fossils

If any of the above is uncovered, SAHRA should be notified so that an archaeologist/palaeontologist can investigate further.

10. REFERENCES

Dreyer, J. 2007a. First Phase Archaeological and Cultural Heritage Assessment of the proposed borrow pit sites along the R63 road between Carnarvon and Williston, Northern Cape.

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11. ACKNOWLEDGEMENTS

I should like to thank the following individuals for their assistance in the field or with the arrangement of logistics: Dr B Millstead (independent consultant) for negotiating access to the farms; Mr N Sinclair of Taaiboschfontein for giving us permission to survey his farm, and to Mr John Bekker-Smith of Boshhoek for assisting us with the keys to the farm.

Site Number	Lat/Lon°	Type	Description
01	S31 28 24.1 E22 31 31.2	MSA?	Two stone flakes, possibly MSA.