

**SCOPING ARCHAEOLOGICAL IMPACT ASSESSMENT:  
PROPOSED PROSPECTING ON BLYDEVOORUITZICHT 299  
(SITE 5), FRASERBURG, NORTHERN CAPE.**

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

Prepared for:  
Tasman Pacific Minerals Limited  
For att: Dr B Millstead  
P O Box 1176  
Randpark Ridge  
2156  
Tel: 011 475 1194  
Email: [info@geoconsult.co.za](mailto:info@geoconsult.co.za)

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Prepared by:

Lita Webley & Tim Hart  
Archaeology Contracts Office  
Department of Archaeology  
University of Cape Town  
Rondebosch  
Phone (021) 650 2357  
Fax (021) 650 2352  
Email: [Lita.Webley@uct.ac.za](mailto:Lita.Webley@uct.ac.za)

## EXECUTIVE SUMMARY

The Archaeology Contracts Office 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 on two localities named as the Blydevooruitzicht North project area and the Blydevooruitzicht South project area on the farm Blydevooruitzicht 299, situated 20km north of Fraserburg on the road to Williston in the Northern Cape Province.

A literature survey indicated that very little was known of the archaeology of the area. A baseline archaeological survey was conducted by Lita Webley and Tim Hart on 12 May 2010 and no significant heritage resources were discovered. *The size of the two drill areas 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 farms will involve drilling holes some 14cm in diameter every 10000m<sup>2</sup> to 250m<sup>2</sup> 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.

On the Blydevooruitzicht North site we identified two stone artefact scatters outside the drill area as well as a small stone shepherd's house also outside the drill area. The dense quartz artifact cluster (Site 11) is unusual in the landscape and we advise the prospectors to avoid constructing their access roads over the site. The small stone shepherd's cottage is also not threatened by the prospecting but should similarly be avoided during access to the site. No significant archaeological sites are threatened inside the drill area and prospecting should be allowed to continue.

On the Blydevooruitzicht South site we identified two interesting sites, both outside the drill area. There is a dense cluster of stone artefacts and some ostrich eggshell fragments (Site 12) as well as a group of three potsherds (Site 13). We advise the prospectors to avoid constructing their access roads over the sites. No archaeological sites are threatened inside the drill area and prospecting should be allowed to continue.

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.

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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 was approached by Tasman Pacific Minerals Limited to undertake an Archaeological Impact Assessment prior to the approval of an amended EMP for prospecting rights for uranium at two localities named as and Blydevooruitzicht North and Blydevooruitzicht South on the farm Blydevooruitzicht 299, Fraserburg, Northern Cape (Figure 1). The Department of Minerals and Energy in Kimberley advised that in terms of the legislation an Archaeological and Palaeontological Impact Assessment would be required.

The farm Blydevooruitzicht is located 20km north of the town of Fraserberg off the R353 which connects Fraserberg with Williston (Figures 1 & 2). The owner of Blydevooruitzicht lives on the adjoining farm, Witfontein.

## **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 m<sup>2</sup>). 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 Minerals 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

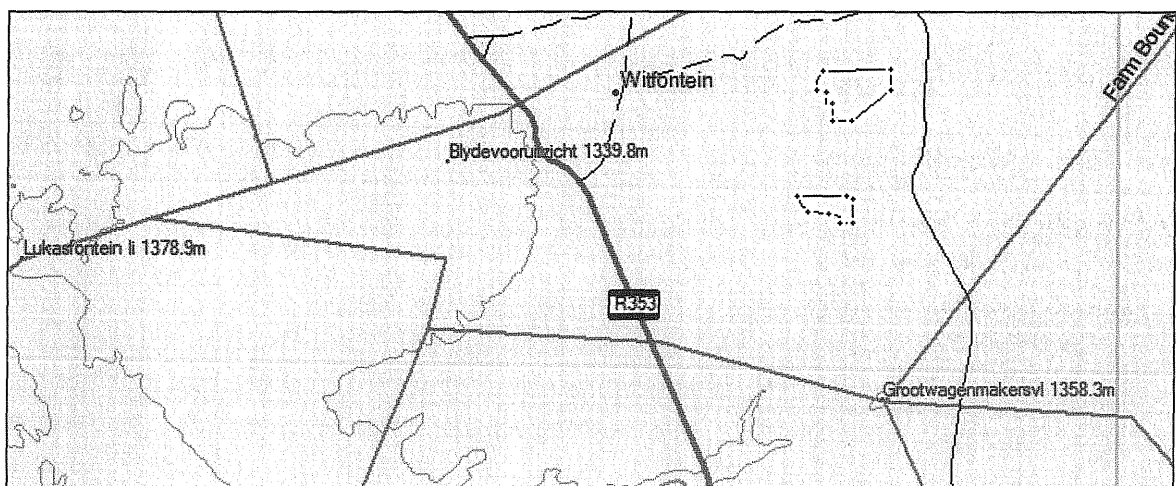
inappropriate local topography etc. Accordingly, the site inspection would be a waste of time in these cases;

- 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:** Location of the two drill areas on Blydevooruitzicht to the north of Fraserberg on the R353 between Fraserberg and Williston.



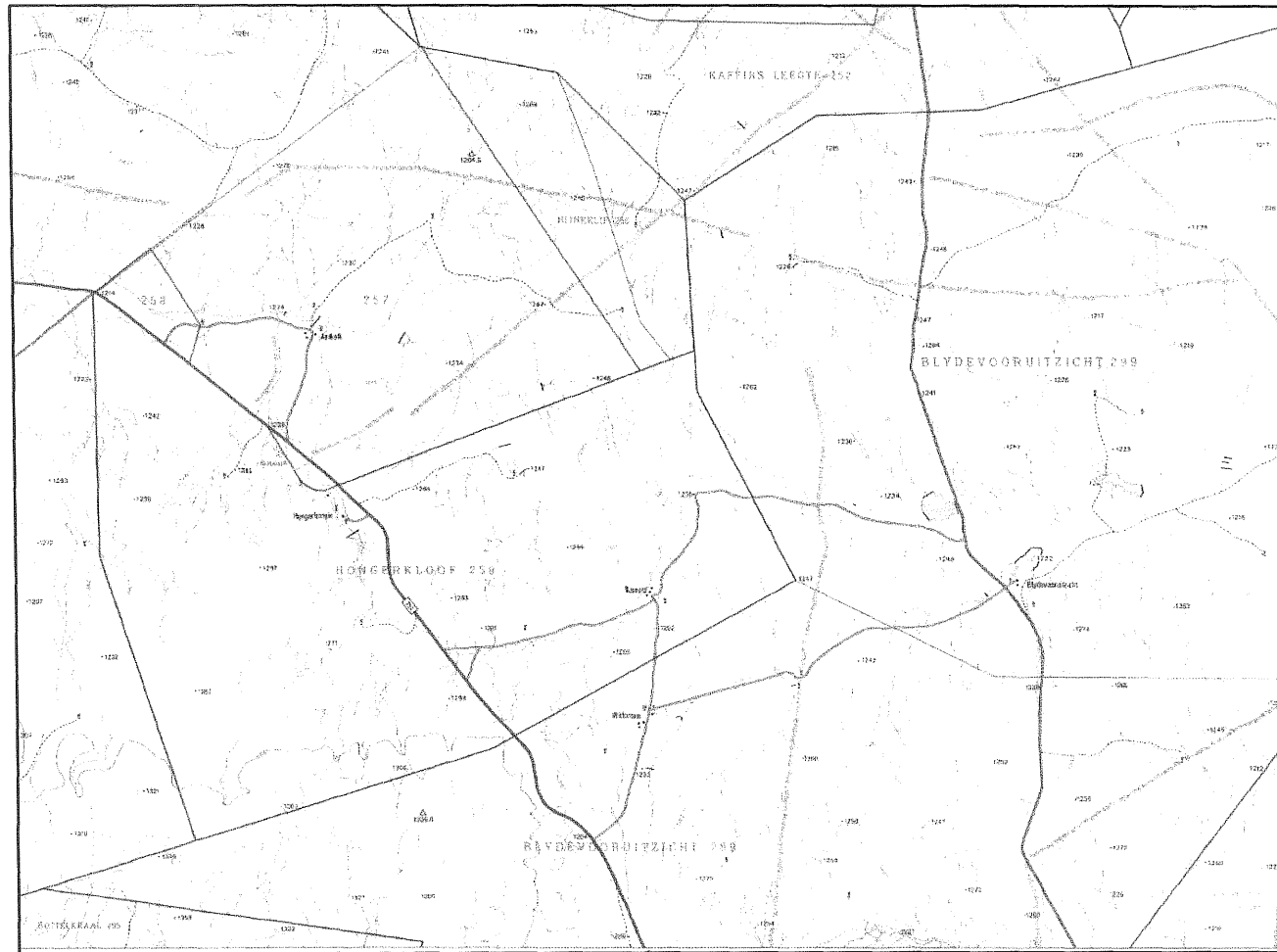


Figure 2: The farm Blydevooruitzicht 299 (Map Sheet 3121CB). (Mapping information supplied by: Chief Directorate: Surveys and Mapping (web: [w3li.wcape.gov.za](http://w3li.wcape.gov.za)). The drilling locations are shown on Figures 1, 3 and 4.

#### **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 5000 sq m.

#### **5. RECEIVING ENVIRONMENT**

The mountains and kopjes between north of Fraserburg 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.

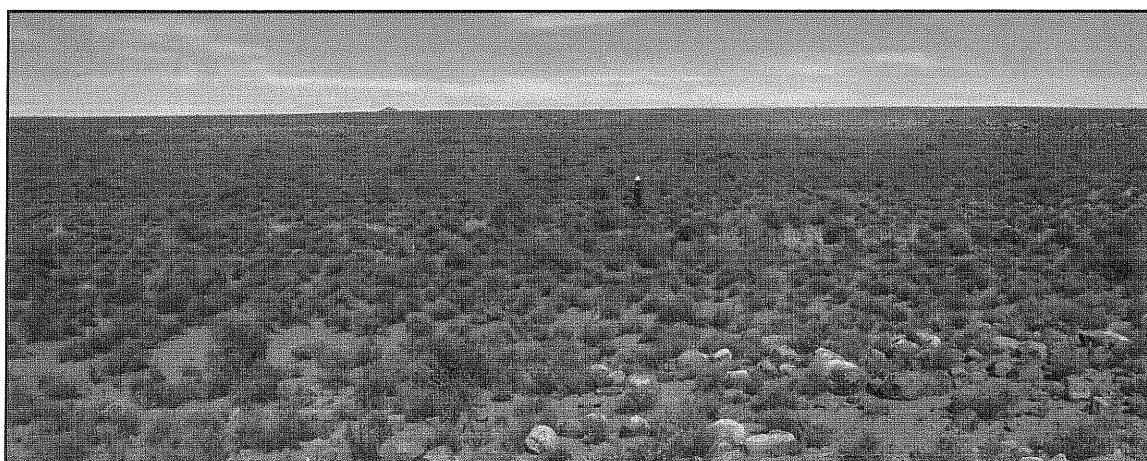
Ridges and lines of rocky hills strewn with these boulders are a characteristic feature of the Karoo. In addition, the dykes have the effect of damming up small streams resulting in small springs which often generate pans (or leegtes) of

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 -6C. High winds during the daytime are a characteristic of the Karoo.

The topography of the proposed drill areas on the farm **Blydevooruitzicht** is relatively flat. The drill areas are located on very slight ridges.



**Plate 1:** The northern site is located on this small ridge.



**Plate 2:** View of the southern site.

## **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 200 km 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 9000 years ago. The Karoo seems to have been largely unoccupied until 4500 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 (1 km 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 appears to have been surveyed in 1914 and the survey diagrams indicate 2 houses on the property. The portion of the property to the west is known as Witfontein.

## 6. METHODS

The boundaries of the sites 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 from the 12 May 2010. Walk paths and site locations were recorded with GPS (Figure 3) and finds were photographed and described.

### 6.1 Limitations

*The size of the two drill areas 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 a number of minor limitations on Blydevooruitzicht. Since the sites were not crossed by farm roads, we had to walk a considerable distance before commencing with the survey.

While the polygons for the drill area had been loaded onto our GPS before we set out into the field, we discovered that they "had gone missing" during our survey of the Blydevooruitzicht south site. This meant that on our initial transect, we were outside the study area (Figure 4), although this provided us with a good understanding of the distribution of archaeological sites across the local topography. It appeared that the archaeological sites were outside the drill area in a small, sheltered bowl created by a line of ridges, while no sites were found in the drill area which was located on top of the ridge.

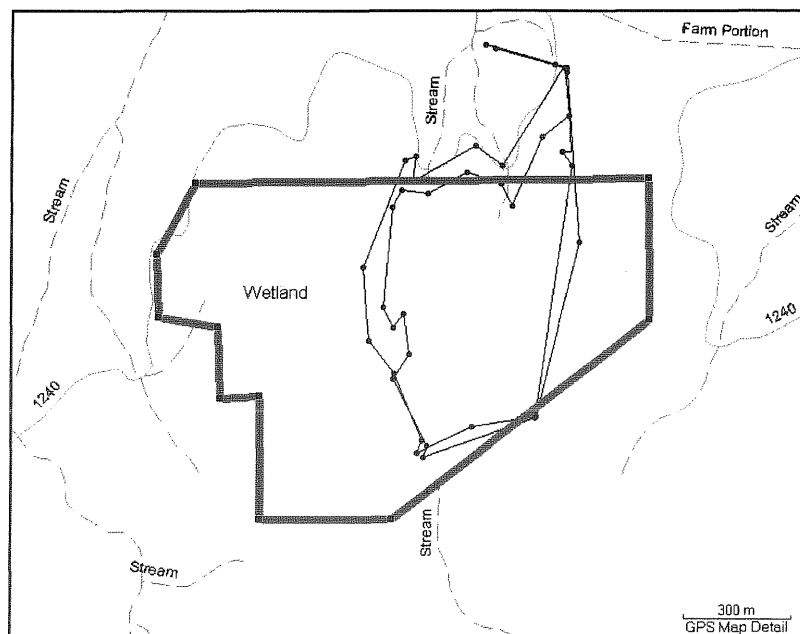


Figure 3: The northern portion of the drill area.

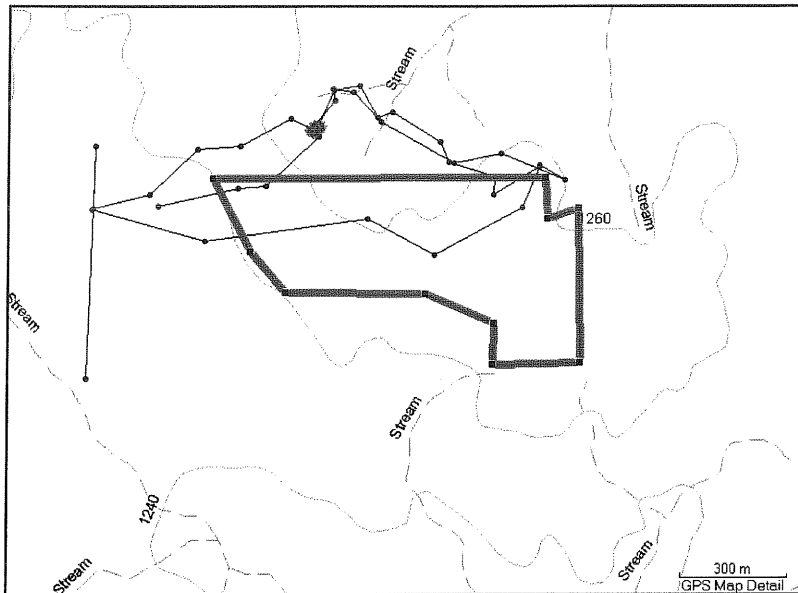
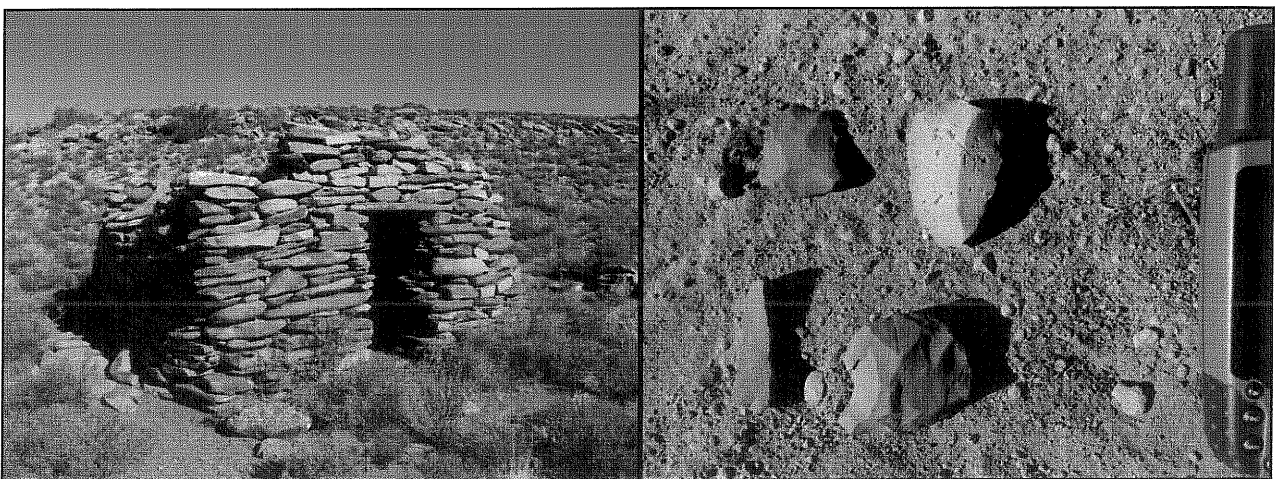


Figure 4: The southern drill area. Note that the red dots indicate the location of Sites 12 and 13 and they are situated near the river system, below the ridge lines. No archaeological sites were recorded on the ridge within the drill area.

## 7. RESULTS OF FIELD SURVEY

### Blydevooruitzicht North

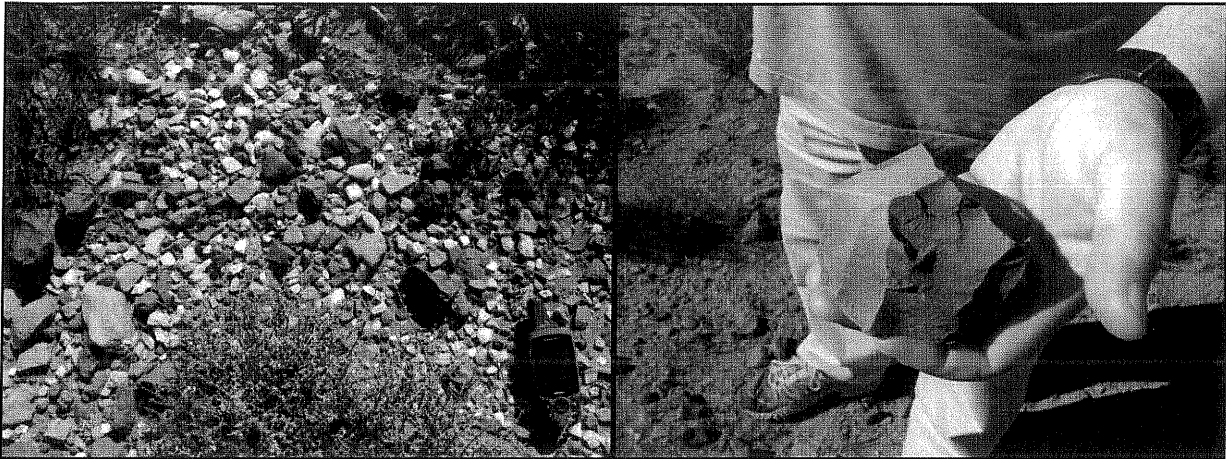
Most of the drill area is located above a small ridge while most of the artefact scatters and the little stone structure was situated in the basin below the ridge. There is a single scatter of MSA artefacts below the ridge as well as a small stone building. It has no roof, a single door and one window. It resembles a shepherd's house and is about 3m x 2m in size.



**Plate 3:** Site 9 is a small stone structure; **Plate 4:** MSA scatter at Site 7.

Both these sites are located just outside the boundary of the drill area.





**Plate 5:** Site 11, the quartz artefact site outside the drill area; **Plate 6:** Core on Site 10.

The only stone artefacts found in the drill area were an occasional core, such as the bladelet core at Site 10 (Plate 6). An unusual quartz artefact scatter was discovered immediately outside the drill area at Site 11. It is unusual because it is the only site with quartz artefacts found anywhere during the fieldwork. The quartz has clearly been introduced from elsewhere. The concentration of flakes and cores was quite dense, but there were no obvious retouched or formal artefacts.

#### Blydevooruitzicht south

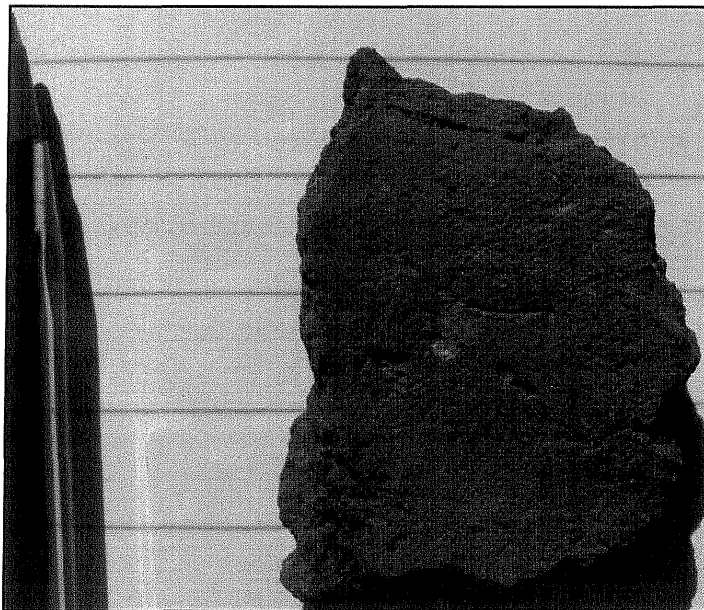
A temporary problem with the loaded maps on the GPS meant we were initially unable to access the borders of the southern site. This meant we walked into the site outside of the borders. We were able to rectify this problem while we were on site.



**Plate 7:** Site 12 contains a dense distribution of stone tools and OES.

From the farm road we crossed a ridge line into a bowl created a long line of ridge. There are two sites here, both outside the drill site. They are however, interesting sites which are briefly described here.

Site 12 is located on a flood plain below a ridge of hills, close to a small perennial river. There is a dense accumulation of Later Stone Age flakes, chunks and cores and fragments of ostrich eggshell (OES). No formal tools and no pottery were observed. The artefact scatter is located in an area of 20m x 20m. Some distance from this site, but still in the bowl, is three potsherds. The potsherds are around 6mm in thickness and are grit tempered although there are some impressions of grasses on the outside temper. They appear typical pastoralist pottery.



**Plate 8:** Site 13 consists of three potsherds.

No artefacts were found on the high lying ridge area within the drill site, and we concluded that this area is too exposed to winds and not suitable for settlement.

## **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 collected briefly in pans or when springs flowed for a short period. The only archaeological sites which were found in these two areas were located below the ridges in more sheltered locations. In general we did not find any sites on top of the ridges.



**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. A number of stone scatters were found on Blydevooruitzicht North. *The only significant sites discovered during the surveys of the two drill areas are outside the drill areas:*

- *The quartz artefact scatters (Site 11). The quartz appears to have been introduced from outside and the site has clearly defined boundaries;*
- *A scatter of stone artefacts and ostrich eggshell concentrated in a 20m x 20m area (Site 12);*
- *A collection of three potsherds (Site 13).*

**Mitigation:** All three the sites are outside the drill areas. It is recommended that care is taken when accessing the prospecting area, so that the sites are not damaged by vehicles.

## 8.2 Loss of Colonial Sites

A single stone structure, possibly a shepherd's house, was found outside the drill area (Site 9).

**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. *It is difficult to determine the age of the house. It could date to the 20<sup>th</sup> century but is probably older than 60 years and should not be destroyed.*

**Mitigation:** It is unlikely that this building will be destroyed during prospecting as it is outside the drill area. Care should be taken when constructing access roads.

## 8.3 Loss of Graves

No stone cairns were recovered during the survey.

**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:** None.

## 9. CONCLUSIONS AND RECOMMENDATIONS

Prospecting on the farms will involve drilling holes some 14cm in diameter every 250m<sup>2</sup> 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 Blydevooruitzicht (Site 5) failed to identify any significant heritage resources which will be impacted during the drilling process.

On the *northern site* we identified two stone artefact scatters outside the drill area as well as a small stone shepherd's house also outside the drill area. The dense quartz artefact cluster (Site 11) is unusual in the landscape and we advise the prospectors to avoid constructing their access roads over the site. The small stone shepherd's cottage is also not threatened by the prospecting but should similarly be avoided during access to the site. No significant archaeological sites are threatened inside the drill area and prospecting should be allowed to continue.

On the *southern site* we identified two interesting sites, both outside the drill area. There is a dense cluster of stone artefacts and some ostrich eggshell fragments (Site 12) as well as a group of three potsherds (Site 13). We advise the prospectors to avoid constructing their access roads over the sites. No archaeological sites are threatened inside the drill area and prospecting should be allowed to continue.

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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Sampson, C.G. 1988. Stylistic Boundaries among Mobile Hunter-Foragers. Washington: Smithsonian Institution Press.

## 11. ACKNOWLEDGEMENTS

I should like to thank the following individuals for their assistance in the field or with the arrangement of logistics: Dr Barry Millsteed (independent consultant) for negotiating access to the farms; Mr du Toit of Witfontein for giving us permission to survey on Blydevooruitzicht and Mrs du Toit for taking us to each of the sites.

Site Number	Lat/Lon°	Type	Description
7	S31 43 00.2 E21 27 03.4	MSA	A small group of MSA artefacts from Blydevooruitzicht North
8	S31 43 02.2 E21 26 52.4	MSA	A single MSA flake from Blydevooruitzicht North
9	S31 43 00.8 E21 26 52.6	Colonial	A small stone shepherd's house from Blydevooruitzicht North
10	S31 43 22.0 E21 26 50.7	MSA/LSA	A single bladelet core from Blydevooruitzicht North
11	S31 43 00.4 E21 27 09.4	LSA	A dense scatter of quartz artefacts from Blydevooruitzicht North
12	S31 44 14.5 E21 26 22.3	LSA	Dense scatter of LSA stone artefacts and ostrich eggshell from Blydevooruitzicht South (outside site)
13	S31 44 12.0 E21 26 27.3	Ceramic LSA	A total of three potsherds from Blydevooruitzicht South (outside site)