ARCHAEOLOGICAL IMPACT ASSESSMENT

Proposed quarry on the farm Jakhals Valley 99 Portion 3 near Sutherland, Northern Cape

Assessment conducted under Section 38 (3) of the National Heritage Resource Act (No. 25 of 1999)

Prepared for:

SITE PLAN CONSULTING
Att: Jaques van der Vyver
PO Box 28, Strand, 7139
jaques@siteplan.co.za

Applicant:

POWER CONSTRUCTION (PTY) LTD

By

Agency for Cultural Resource Management
5 Stuart Road, Rondebosch, 7700
Ph/Fax: 021 685 7589
Mobile: 082 321 0172
Email: acrm@wcacces.co.za

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Executive summary

Introduction

ACRM was appointed by Site Plan Consulting to conduct a Heritage Impact Assessment (specialist archaeological study) for a proposed hard rock (dolerite) quarry on Portion 3 of the Farm Jakhals Valley 99, near Sutherland (Karoo Hoogland Municipality) in the Northern Cape.

The proposed quarry site is located 5.8kms south of Sutherland, alongside the R354.

An application for a mining permit is being lodged with the Department of Mineral Resources Northern Cape, in order to mine the deposits on the farm. The proposed quarry will provide suitable quality material for the construction/maintenance of gravel access roads, crane platforms, and most importantly, aggregate for concrete bases to serve the wind energy projects currently underway in the Sutherland area.

The proposed application area is 4.95 ha in extent, of which the quarry excavation itself will be less than 1.5 ha in extent. An abandoned quarry is located within the application area and the intention is to excavate dolerite deposits westwards from the edge of the old quarry.

Objectives

The overall purpose of the HIA is to assess the sensitivity of archaeological resources in the affected area, to determine the potential impacts on such resources, and to avoid and/or minimize such impacts by means of management and/or mitigation measures.

Approach to the study

A field assessment was undertaken by ACRM in November, 2015. Archaeological resources identified during the study were mapped using a hand held Garmin GPS device set on the map datum wgs 84. A track path of the survey was captured.

The landscape is generally flat and featureless with bedrock exposures occurring in places. There are no significant landscape features in the footprint area.

Heritage Resources Identified

Despite a detailed survey of the proposed development site, only a chalcedony flake and chunk was recorded during the study.

No other tangible heritage resources such as typical grave markers, or old buildings/structures were identified.

Grading of the archaeological resources

The very small number means that the archaeological remains have been graded as having low (Grade 3C) significance.

Anticipated Impacts

The proposed hard rock quarry on the Farm Jackals Valley 99/3 will not impact on significant archaeological heritage.

Conclusion

There are no objections to the authorization of a proposed quarry on the Farm Jakhals Valley 99/3 near Sutherland.

Recommendations

1. Should any unmarked human remains be uncovered during mining operations these must be immediately reported to the South African Heritage Resources Agency (Mr Philip Hine 021 462 4502), or Jonathan Kaplan of ACRM (082 321 0172).

2. The above recommendation must be included in the Environmental Management Plan for the proposed project.

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1. INTRODUCTION

ACRM was appointed by Site Plan Consulting, on behalf of the proponent Power Construction (Pty) Ltd, to conduct a Heritage Impact Assessment (specialist archaeological study) for a proposed hard rock (dolerite) quarry on Portion 3 of the Farm Jakhals Valley 99, near Sutherland (Karoo Hoogland Municipality) in the Northern Cape (Figures 1 & 2).

The proposed quarry site is located 5.8kms south of Sutherland, alongside the R354. It has been established that the quarry will provide suitable quality material for the construction/maintenance of gravel access roads, crane platforms, and most importantly, aggregate for concrete bases to serve the large wind energy projects currently underway in the Sutherland area (Site Plan Consulting 2015). The proposed application area is 4.95 ha, of which the excavation itself will be less than 1.5 ha in extent (Figure 3). An abandoned quarry is located within the application area and the intention is to excavate the dolerite deposits westwards from the edge of the old quarry.

An application for a mining permit is in the process of being lodged with the Department of Mineral Resources Northern Cape, in order to mine the deposits on the farm. Mining is to be conducted as a standard open cast operation. Mining under the Mining Permit would allow 2 - maximum 5 years of activity. Proposed activities, for example a site office, containers, screening plant, etc, will be established within the application area.

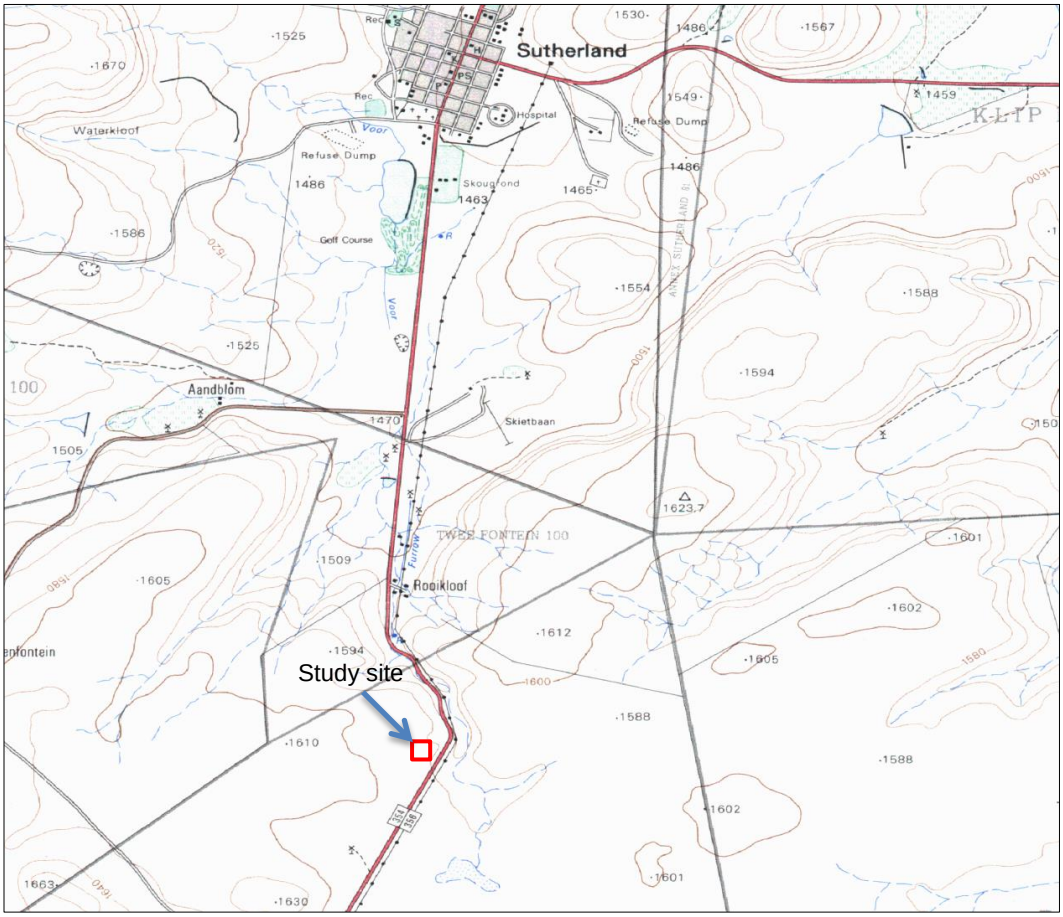

Figure 1. Locality map (3220BC Sutherland) indicating the location of the study site.

Figure 2. Google satellite image of the proposed quarry site in relation to Sutherland

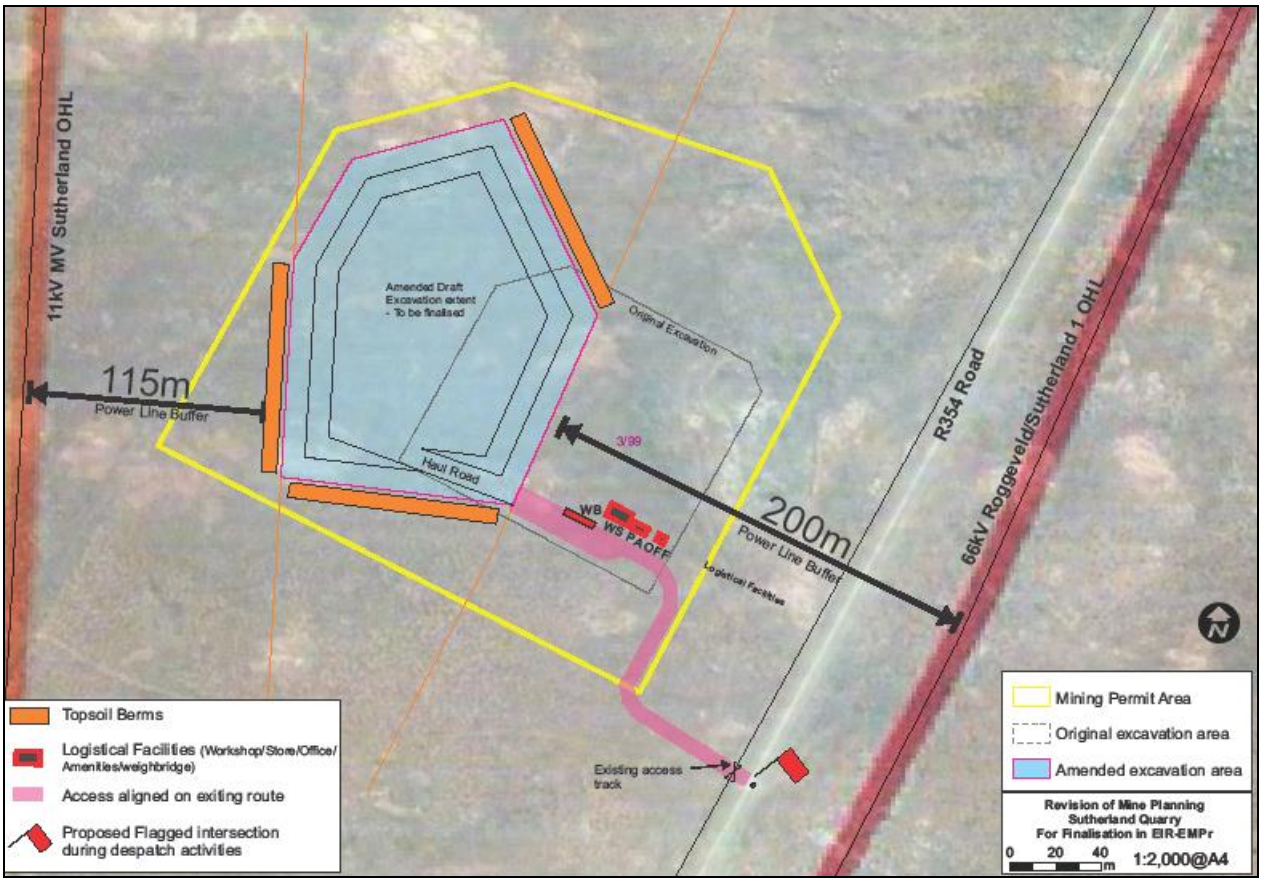

Figure 3. Proposed mine layout of the hard rock quarry on the Farm Jakhals Valley 99/3 Sutherland

2. HERITAGE LEGISLATION

The National Heritage Resources Act (Act No. 25 of 1999) makes provision for a compulsory Heritage Impact Assessment (HIA) when an area exceeding 5000 m² is being developed. This is to determine if the area contains heritage sites and to take the necessary steps to ensure that they are not damaged or destroyed during development.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) (Section 2 (d) (xxi)).

3. TERMS OF REFERENCE

The Terms of Reference for the archaeological study are:

- To determine whether there are likely to be any important archaeological remains that may be impacted by the proposed quarry;
- To indicate any constraints that would need to be taken into account in considering the development proposal;
- To identify potentially sensitive archaeological areas, and
- To recommend any further mitigation or management action.

4. DESCRIPTION OF THE RECEIVING ENVIRONMENT

The proposed quarry site on Farm 99/3 is located 5.8 kms south of Sutherland alongside the R354 (Figure 4). There is an abandoned quarry on the property, which was last mined in 1974/5 when the R354 to Sutherland was tarred (Figure 5). Dolerite outcrops over large areas of the site with only small surface weathered depressions between the various outcrops. The excavation area will be mined from the existing abandoned excavation westwards in the dolerite sill (Figure 6). The receiving environment is flat on a hard rock substrate, with patches of darker orange coloured soils and extensive scrub cover. There are no old buildings or structures in the proposed application area. Surrounding land use is agriculture (marginal grazing).

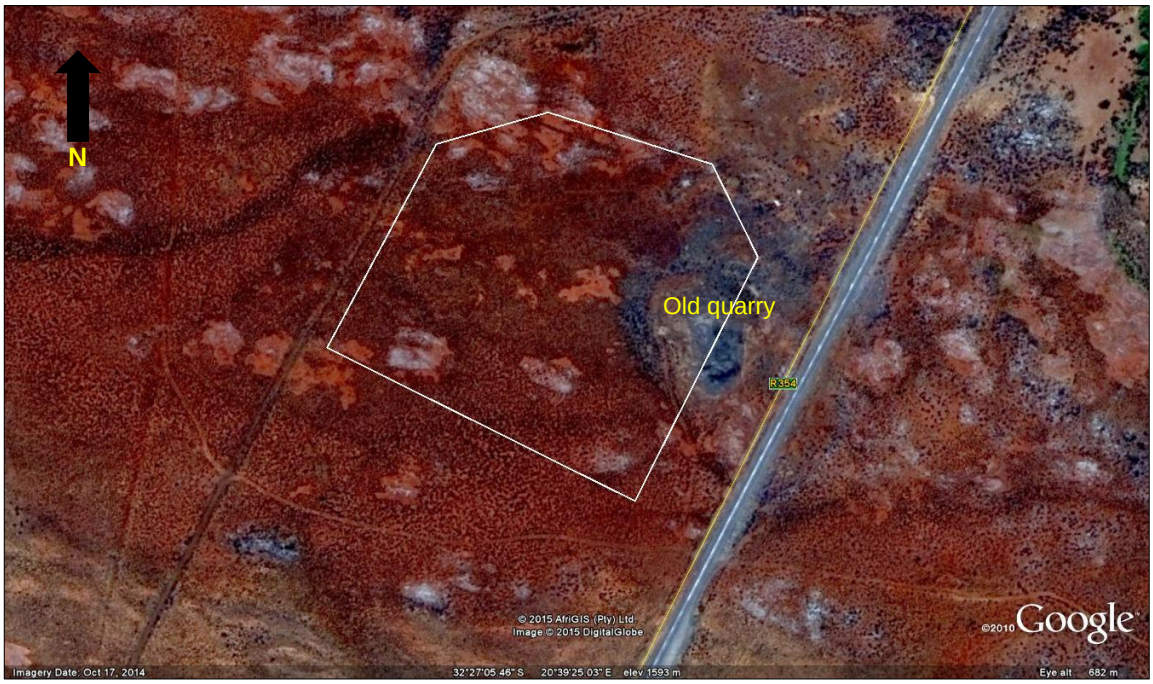

Figure 4. Google satellite map illustrating the proposed application area for the hard rock quarry

Figure 5. View of the abandoned quarry facing north west

Figure 5. View of the receiving environment facing west

5. STUDY APPROACH

5.1 Method of survey

The overall purpose of the archaeological study is to assess the sensitivity of archaeological resources in the affected area, to determine the potential impacts on such resources, and to avoid and/or minimize such impacts by means of management and/or mitigation measures.

The significance of archaeological resources was assessed in terms of their content and context. Attributes considered in determining significance include artefact and/or ecofact types, rarity of finds, exceptional items, organic preservation, aesthetic appeal, potential for future research, density of finds and the context in which archaeological traces occur.

Survey walk tracks were captured. The position of identified archaeological occurrences, were fixed using a hand held GPS unit set on the map datum wgs 84.

A desk top study was also done.

5.2 Constraints and limitations

Overall, archaeological visibility was very good and no constraints were experienced.

5.3 Identification of potential risks

Based on the results of the study, there are no potential risks associated with the proposed project.

It is highly unlikely that any sub surface archaeological remains, or unmarked human remains will be uncovered during quarrying operations.

5.4 Archaeological context

Despite the Karoo's bleakness and challenging winters, the area had a relatively high carrying capacity and teamed with game long before European colonization. Bushman/San hunter gatherers successfully occupied the central interior of South Africa during the last 4500 years, subsisting on the large herds of grazing animals that occurred during that time (Sampson et al 1989).

Later Stone Age (LSA) archaeological sites dating to the late Holocene (within the last 2000 years) are surprisingly common. Although the Karoo is presently more suited to the keeping of small stock such as sheep and goats, research in the Eastern Karoo has revealed that, at about 1200 – 1400 AD, a climatic fluctuation (known as the mini-ice age) may well have caused an increased rainfall in the central Karoo resulting in the area being more suitable for grazing of cattle and occupation by Khoekhoen pastoralist groups (Hart 2005). Using sophisticated dating methods Sampson (2008) has determined that Khoekhoen herders and San with flocks of sheep were present in the eastern Karoo until the advent of European colonization. They left behind an archaeological legacy that consists of stone *kraal* complexes of which several hundred have been recorded in the Zeekoe Valley in the eastern Karoo and the Riet River area in the Northern Cape (Hart 1989; Sampson 2008).

The indigenous people of the Karoo waged a bitter war against colonial expansion as they gradually lost control of their traditional land. With the implementation of the commando system in the late 18th and early 19th centuries, the Karoo "Bushmen" were eventually destroyed or indentured into farm labour (Hart 1989).

Until quite recently, before the advent of an emerging alternative energy industry, very little archaeological work had been done in the Sutherland area. Evans *et al* (1985) excavated a small rock shelter on the grounds of the South African Astronomical Observatory in Sutherland in the mid 1980's. The site generated a LSA assemblage with a high number of small scrapers, potsherds, ostrich eggshell and marine shell beads. The presence of the marine shell beads points to cultural ties with people along the Cape coast while the small scrapers can be assigned to the Wilton industry between 2000 and 1000 years ago.

Hart (2005) undertook a survey for a golf course to the south of the Sutherland urban edge. The most significant find he made was a complex of 13 stone enclosures which are typical of the *Khoekhoen kraals* that were mapped and described by the author in the Eastern Karoo (Hart 1989, Sampson 2008). A single highly dispersed artefact scatter consisting of mainly waste material (flakes made from *hornfels* or indurated shale) was also found. Hart (2005) also reported finding a dense artefact scatter associated with a shallow rock shelter outside the study area indicating that such material may be found in areas that were sheltered from the wind.

A few dispersed scatters of LSA flakes and chunks, and remnants of stone walled ruins were documented by Kaplan (2009) during a study for a proposed resort south west of Sutherland.

In the last few years, a large number heritage studies for proposed wind and solar energy facilities, covering vast expanses of terrain in and around the Sutherland region, have encountered a mix of pre-colonial archaeological heritage, that include mainly isolated and dispersed scatters of Early, Middle and Later Stone Age remains on the high ridges (Halkett *et al* 2011; Booth 2012, 2015a, b, c; Hart & Kendrick 2014; Hart *et al* 2010), although a rare Early Stone Age workshop site with incomplete and refined handaxes was found on the farm Klipfontein (Hart *et al* 2010).

Studies undertaken so far, appear to suggest that pre-colonial archaeological heritage tends to occur in the valley bottoms close to watercourses and springs, which may explain why the high ridges and escarpments (location sites for most of the wind farms) contains little evidence for pre-colonial occupation (Hart & Kendrick 2014).

Clusters of ancient herder kraals dating to between 1000 and 300 years ago were also documented during the wind farm studies (Hart *et al* 2010). These typically consist of dry stone piled wall enclosures in a roughly circular configuration, sometimes interlocking but not more than half a meter high, and ranging from 3-4m, to 9m in diameter. In the past they are likely to have been associated with reed mat huts or brush shelters which were probably erected a few meters away from the main kraal where sheep and goats were kept. Thin walled pottery and ostrich eggshell is sometimes found within these walled ruins.

A study for a solar energy facility on the Farm Jakhals Valley 99 encountered a diverse selection of archaeological heritage, including remains dating to the Anglo-Boer War, scatters of historic and pre-colonial artefacts, historic and pre-colonial stone walled sites, rock art, and a rare late 18th/early 19th Century shelter with abundant remains including stone implements, ostrich eggshell, pottery and colonial-era items (Orton & Halkett 2011).

Below the Roggeland escarpment, another form of archaeological site has been identified. These are what have been interpreted to be open Khoekhoen herder encampments situated among *Kameeldoring* trees along the dry river beds in the bottom of valleys. The sites are typically quite large (60–80m in diameter); rich with very fine, thin walled and burnished Cape Coastal pottery. There are numerous stone features, informal stone artefacts, grinding surfaces as well as a number of graves, some of which have broken grinding stones placed on top. Also evident were discreet ash middens and animal bone. One or two of the sites has evidence of European goods (19th century glass and ceramics) which may indicate some form of continuous use of the sites by Khoekhoen herders into the colonial period (Hart *et al* 2010).

6. RESULTS

A single archaeological occurrence (Site 015), comprising a LSA chalcedony flake and chunk, was encountered just inside the southern boundary of the application area (Figures 6 & 7).

6.1 Grading of the archaeological remains

The very small number means that the archaeological remains are rated as having Low (3C) significance.

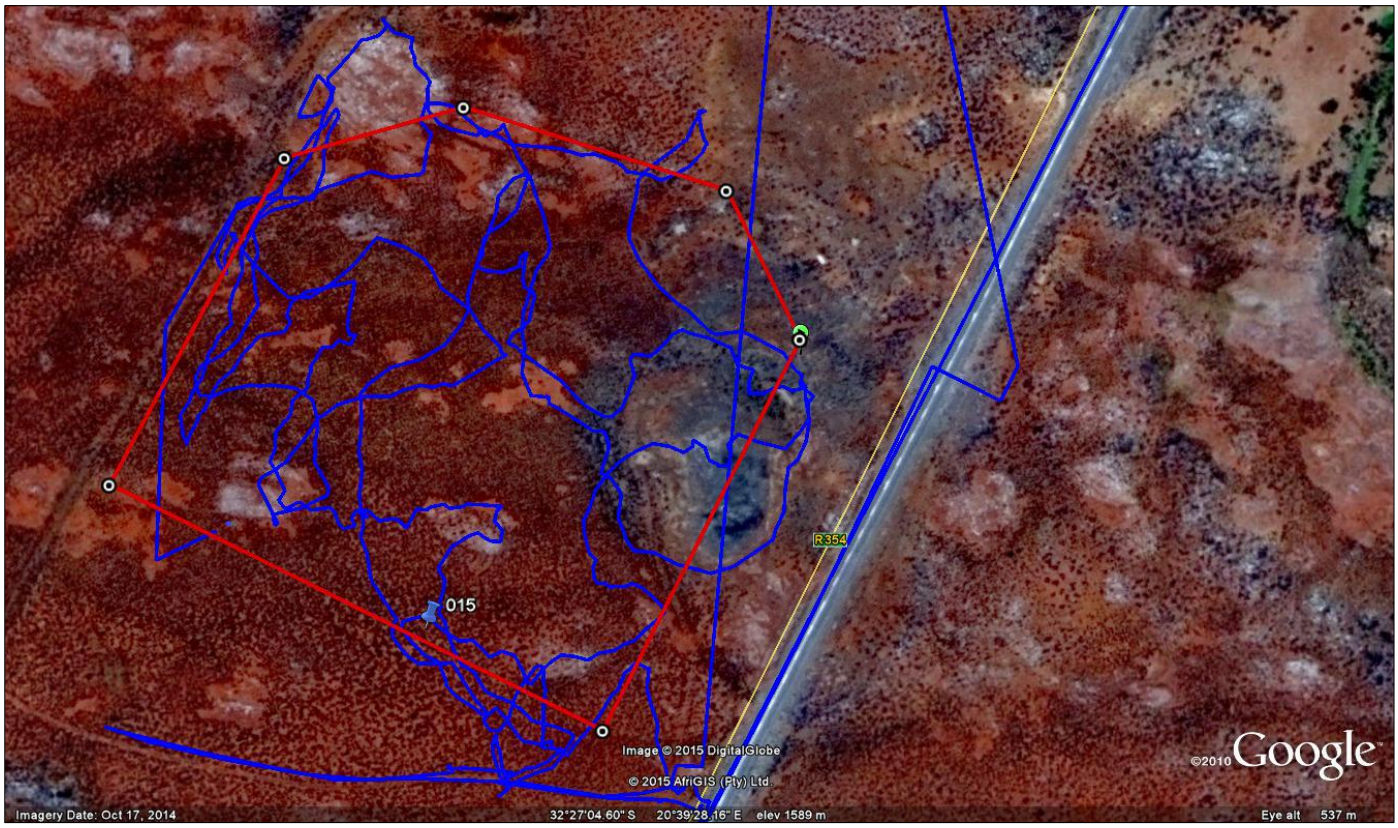

Figure 6. Waypoint of archaeological find. Blue lines are track paths

Figure 7. Site 015. Chalcedony flake and chunk.
Scale in cm

7. ANTICIPATED IMPACTS

It is highly unlikely that any important archaeological heritage will be impacted by the proposed quarry development.

The proposed quarry site is not a sensitive, vulnerable or threatened archaeological landscape.

8. CONCLUSION

The HIA has identified no significant impacts to archaeological material that will need to be mitigated prior to proposed quarrying operations commencing.

From an archaeological perspective there are no objections to the authorization of a quarry on the Farm Jakhals Valley 99/3

9. RECOMMENDATIONS

With regard to the proposed development of a dolerite quarry on the Farm Jackals Valley 99/3, the following recommendations are made by:

1. Should any unmarked human remains be uncovered during sand mining operations these must be immediately reported to the Heritage Western Cape Case Officer, Mr Philip Hine (021 463 4502), or Jonathan Kaplan of ACRM (082 321 0172).

2. The recommendations must be included in the Environmental Management Plan for the proposed project.

10. REFERENCES

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