

# **ARCHAEOLOGICAL IMPACT ASSESSMENT**

## **Proposed borrow pit (Karusa R354) on the Farm Karreebosch 200/1 near Sutherland, Northern Cape**

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

Prepared for:

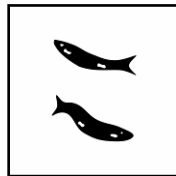
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## **Executive summary**

### *Introduction*

ACRM was appointed by Site Plan Consulting to conduct a Heritage Impact Assessment (specialist archaeological study) for a proposed dolerite borrow pit on Portion 1 of the Farm Kareebosch 200, near Sutherland (Karoo Hoogland Municipality) in the Northern Cape.

The proposed Karusa R354 borrow pit is located 44 kms 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 borrow pit will provide suitable quality aggregate material for the construction/maintenance of gravel access roads, and turbine platforms to serve several large wind energy projects currently underway in the area.

The proposed application area is 4.52 ha in extent, of which the borrow pit excavation itself will be less than 1.0 ha. The excavation method will be linear trenches about 10-15m wide, running for a length of 1.4km. Excavations will be to an average depth of 3m. Mining is to be conducted as a standard open cast operation with direct loading into dump trucks or mobile crusher hopper. The dolerite dyke has previously been mined for road gravel material.

### *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 also captured.

The receiving environment (two adjacent dykes crossing the farm) is fairly level, with slightly undulating low ridgelines. Seasonal drainage channels are visible to the north and south of the site. There are no significant landscape features. Some of the old (unrehabilitated) excavation trenches are still visible on the site, which provided the gravel for surrounding farm roads.

### *Heritage Resources Identified*

A few isolated flakes and chunks were found in the application area, while two Later Stone Age retouched tools (on older Middle Stone Age flakes), including a chalcedony chunk were found on a small patch of gravel.

No buildings, structures or features are present in the application area.

### *Grading of the archaeological resources*

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

### *Graves*

A possible grave was recorded 10m outside the south eastern boundary of the application area. Burials are rated as having High significance.

### *Anticipated Impacts*

Mining of a borrow pit on the Farm Karreebosch 200/1 will not impact on significant archaeological heritage.

A possible grave may be impacted by mining operations.

### *Conclusion*

There are no objections to the authorization of the proposed Karusa R354 borrow pit on the Farm Karreebosch 200/1.

A possible grave (Site 061) must be protected during the operational phase of the project.

### *Recommendations*

1. Site 061 must be fenced off prior to mining operations commencing. Alternatively a buffer of at least 10m must be established around the site.
2. Should any (other) 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 (082 321 0172).
3. The above recommendations must be included in the Environmental Management (EMP) Plan for the proposed project.

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## 1. INTRODUCTION

ACRM was appointed by Site Plan Consulting, on behalf of Power Construction (Pty) Ltd, to conduct a Heritage Impact Assessment (specialist archaeological study) for a proposed dolerite borrow pit on the Farm Karreebosch 200/1, near Sutherland (Karoo Hoogland Municipality) in the Northern Cape (Figures 1 & 2).

The proposed Karusa R354 borrow pit is located 44 kms south of Sutherland, alongside the R354. A geological investigation has established that the borrow pit will provide suitable quality aggregate material for the construction/maintenance of gravel access roads, and turbine platforms to serve several large wind energy projects currently underway on a number of farms in the Sutherland area (Site Plan Consulting 2015). The proposed application area is 4.52 ha in extent, of which the actual borrow pit excavation itself will be less than 1.0 ha. The excavation method will entail linear trenches about 10-15m wide, running for a length of 1.4km (Figure 3). Excavations will be to an average depth of 3m. The dolerite dyke has previously been mined for road gravel.

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 with direct loading into dump trucks or mobile crusher hopper. Mining under the Mining Permit would allow 2 - maximum 5 years of activity. Proposed activities, for example site office, containers, screening plant, etc, will be established within the application area.

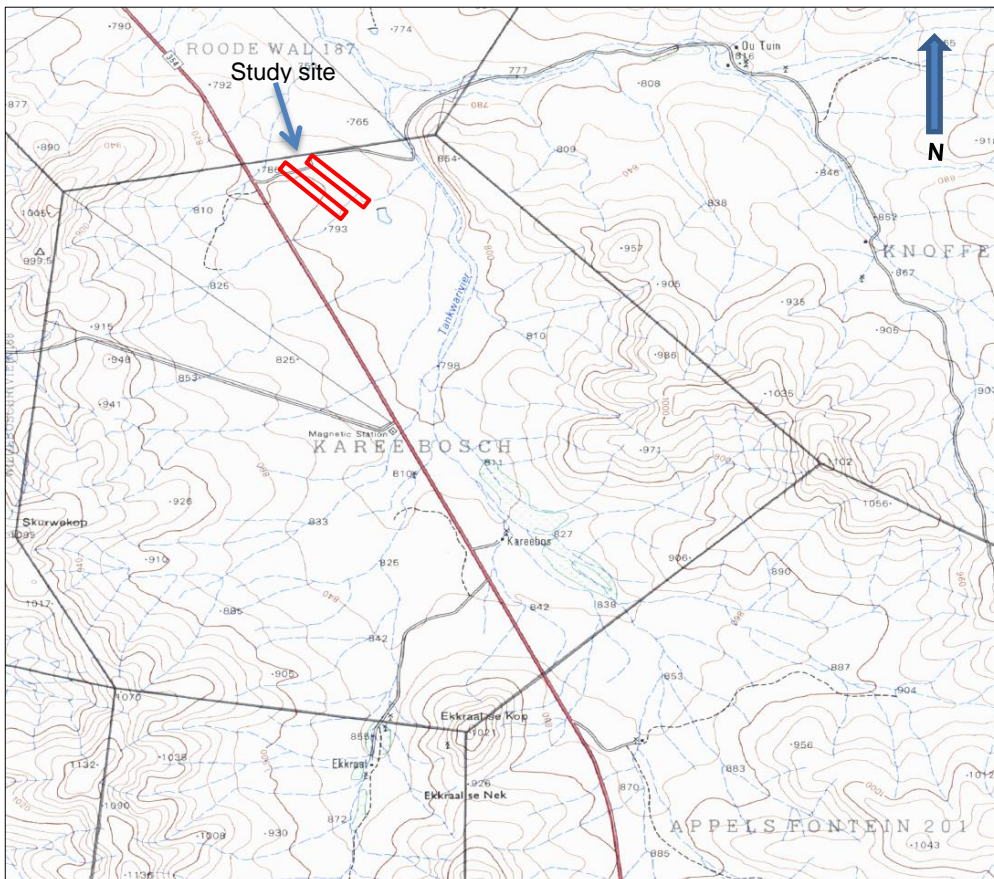


Figure 1. Locality map (3220DC Swartland).

Archaeological Impact Assessment, proposed borrow pit on Farm 200/1, near Sutherland



Figure 2. Google satellite image of the proposed Karusa R354 borrow pit in relation to Sutherland.

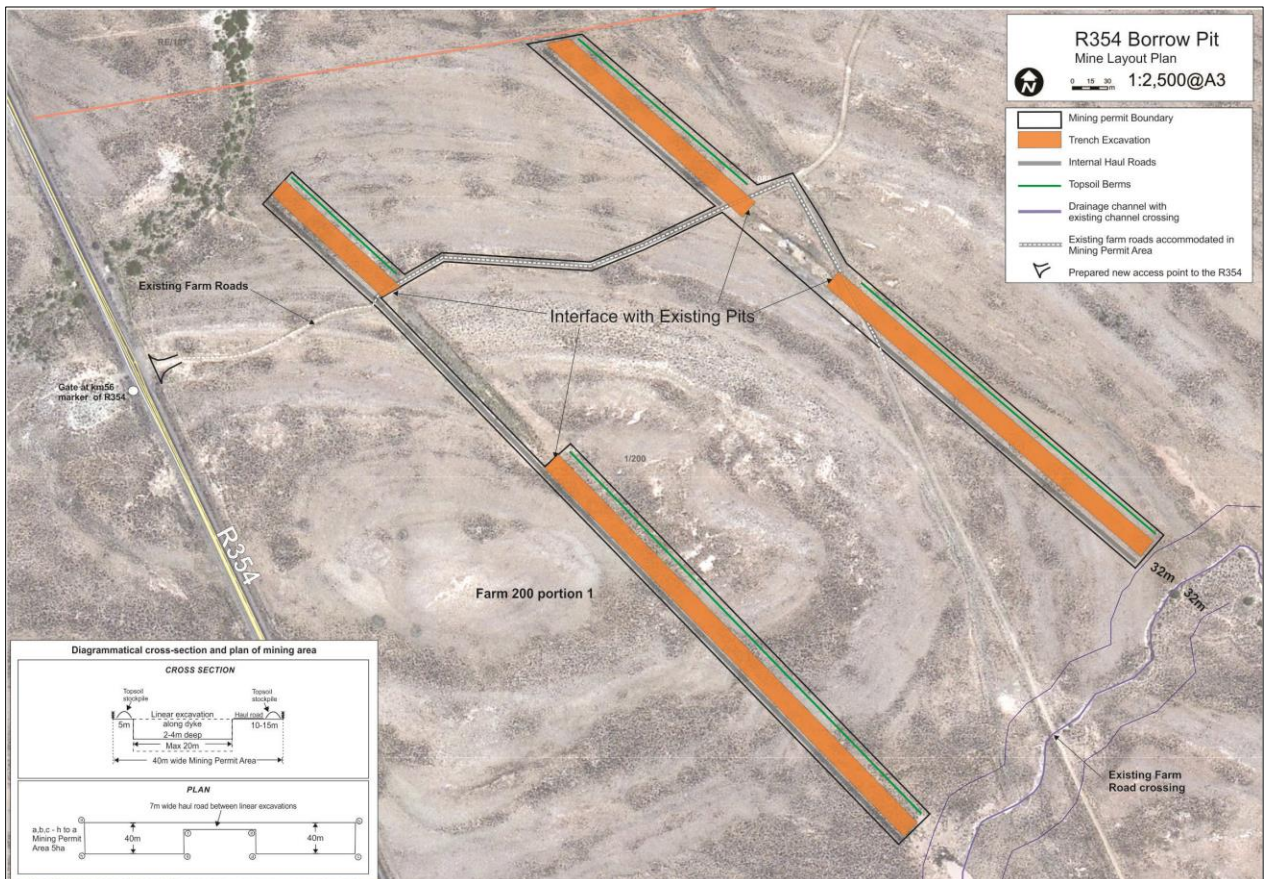


Figure 3. Proposed layout of the soft rock borrow pit on the Farm Karreebosch 200/1, Sutherland.

## **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 m<sup>2</sup> 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 borrow pit;
- 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 Karusa R354 borrow pit (two adjacent dykes crossing the farm) is located 44 kms south of Sutherland alongside the R354/Matjiesfontein-Sutherland road (Figure 4). Access to site is via a farm gate. The receiving environment is fairly level with slightly undulating low ridgelines. The dyke has previously been mined where the material was used for road gravel. Seasonal drainage channels/streams are visible to the north and south of the site, connecting to a larger drainage channel to the east. Deep trenches from when mining originally took place are still visible in the footprint area. The substrate is characterised by a thin layer of weathered soils and upper gravels underlain by

weathered dolerite (the source material). Some outcroppings of sandstone and mudstone occur in places. There are no significant landscape features on the site. There are no old buildings or structures in the proposed application area. Surrounding land use is agriculture (marginal grazing) and wilderness. Existing infrastructure includes gravel farm roads (Figures 5-9).



Figure 4. Google satellite map illustrating the proposed application area for the Karusa R354 borrow pit.



Figure 5. View of the proposed site (eastern dyke) facing south.





Figure 6. View of the proposed site (eastern dyke) facing north.



Figure 7. View of the proposed site (western dyke) facing south.



Figure 8. View of the proposed site (western dyke) facing south.



Figure 9. View of the proposed site (western dyke) facing north. Note the drainage channel/stream and the R354 in the background.

## **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 (refer to Figure 10). 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**

Archaeological visibility was reasonably good, but much of the western dyke is covered in dense vegetation resulting in poor archaeological visibility (refer to Figure 8).

### **5.3 Identification of potential risks**

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

A possible grave was encountered 10m outside the southern boundary of the application area (i. e. the eastern dyke).

### **5.4 Archaeological context**

Despite the Karoo's bleakness and challenging winters, the area had a relatively high carrying capacity and teemed 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 18<sup>th</sup> and early 19<sup>th</sup> 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 of heritage related studies for proposed wind and solar energy facilities, covering vast expanses of terrain 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; Kaplan 2015), 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 19<sup>th</sup> 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

Several isolated tools of Low (Grade 3C) significance were recorded during the study (Figure 10 & Table 1). These include a chalcedony chunk (Site 062), a chalcedony flake (Site 063) and a snapped chert flake (Site 065). One retouched silcrete LSA flake and a broken silcrete end scraper, made on older MSA flakes, including a chalcedony chunk (Site 064) was found on a patch of eroded gravel near the southern boundary of the western dyke (Figures 11 & 12).



Figure 10. Karusa R354 Borrow Pit. Waypoints of archaeological finds. Red lines are track paths.



Figure 11. Tools from R354 Borrow Pit. Scale is in cm



Figure 12. Site 064. View facing north.

## 7. Graves

A possible pre-colonial grave (Site 061) was located 10m outside the south eastern boundary of the application area (Figure 13). The feature comprises what appears to be a number of round dolerite boulders placed in a circle. No head or foot stone is present, indicating that this is not a Christian grave (Figures 14 & 15). No grave goods such as jars, or tins were noted. While there is no conclusive evidence that the feature is indeed a grave, it is felt that the precautionary principle should apply and that it should be left untouched and protected. Site 061 has potentially been rated as having moderate/high (Grade 3B) significance.



Figure 13. Google satellite map illustrating location of Site 061 (possible grave)



Figure 14. Possible grave (Site 061). View facing south



Figure 15. Possible grave (Site 061). View facing north

Site	Farm	Lat/long	Find	Grading	Suggested mitigation
	Karreebosch 200/1				
061		32°46'10.60"S 20°31'58.44"E	Possible grave	Moderate-high 3B	10m buffer or site to be fenced off
062		32°46'9.22"S 20°31'57.29"E	Chalcedony chunk	Low 3C	None required
063		32°46'0.12"S 20°31'44.82"E	Chalcedony flake	Low 3C	None required
064		32°46'16.17"S 20°31'50.02"E	Silcrete retouched flake and scraper on older MSA flakes; chunk on patch of gravel	Low 3C	None required
065		32°46'1.24"S 20°31'31.74"E	Snapped chalcedony flake	Low 3C	None required

Table 1. Spreadsheet of waypoints and description of archaeological finds

## 8. ANTICIPATED IMPACTS

No important archaeological heritage will be impacted by the proposed operation of the Karusa R354 borrow pit.

A possible pre-colonial grave (Site 061) may be impacted by proposed mining operations.

## 9. CONCLUSION

The HIA has identified no significant impacts to pre-colonial archaeological material that will need to be mitigated prior to proposed, mining operations commencing.

Measures must be put in place to protect a possible pre-colonial grave (Site 061) located 10m outside the application area.

From an archaeological perspective there are no objections to the authorization of a borrow pit (Karusa R354) on Farm 200/1.

## **10. RECOMMENDATIONS**

With regard to the proposed development of the Karusa R354 borrow pit on the Farm Karreebosch 200/1, the following recommendations are made:

1. Site 061 must be fenced off prior to the mining operations commencing. Alternatively a buffer of at least 10m must be established around the `site`
2. Should any (other) 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 (082 321 0172).
3. The above recommendations must be included in the Environmental Management Plan (EMP) for the proposed project.



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