

# **ARCHAEOLOGICAL IMPACT ASSESSMENT**

## **Proposed borrow pit (Karusa North) on the Farm Rheebokke Fontein 209 Remainder near Sutherland, Northern Cape**

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

Prepared for:

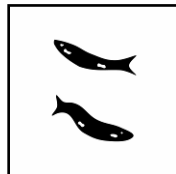
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**DECEMBER  
2015**

## **Executive summary**

### *Introduction*

ACRM was appointed by Site Plan Consulting to conduct a Heritage Impact Assessment (specialist archaeological study) for a proposed soft rock (weathered dolerite) borrow pit on the Farm Rheebokke Fontein 209 Remainder, near Sutherland (Karoo Hoogland Municipality) in the Northern Cape.

The site for the proposed Karusa North borrow pit is located about 52 kms south of Sutherland, Access to the site is via the R354/Matjiesfontein-Sutherland tarred road, along the public gravel road to Kamsberg.

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 at least three large wind energy projects currently underway in the area.

The proposed mining application area is 4.95 ha in extent, of which the borrow pit excavation itself will be less than 1.3 ha. The excavation method will be linear trenches about 10-20m wide, running for a length of about 1.5km. Excavations will be to an average depth of about 3m.

### *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 proposed borrow pit is a long, narrow strip of land (dolerite dyke) that slopes from north to south. The northern slopes of the site are quite steep and densely vegetated, while the southern portion is fairly level. Existing infrastructure in the area includes gravel farm roads, a large sheep kraal, a concrete reservoir and a windmill. There are no significant landscape features in the proposed footprint area. The remains of several historic stone built structures (farmhouse & kraals) were recorded close to the application area. No graves or typical grave markers were found in or near the proposed footprint area.

### *Heritage resources identified*

#### *Archaeological heritage*

Two utilized/miscellaneous retouched flakes were recorded, but the remains have been rated as having Low (Grade 3C) archaeological significance.

The remains a possible Later Stone Age Khoekhoen stone kraal, of Medium-Low (Grade 3C) significance was located about 20m from the north eastern boundary of the proposed borrow pit. The feature has been completely destroyed. One stone chunk was found. The surrounding area was searched in detail but no further evidence, or any other cultural remains were encountered.

#### *Ruins and structures*

A dry, stone built kraal of Medium-Low (Grade 3C) significance was recorded alongside the gravel access road, near the entrance to the proposed site. No artefactual remains were found inside or outside the partially ruined historic structure, which is located about 15m from a much larger stone kraal that is currently being used by the farmer.

Two more ruined structures were recorded about 20m north of the kraal that is being used by the farmer. These comprise a collapsed stone kraal, while the other structure is a collapsed farmhouse with a raised and stamped clay floor. Some historic glass and a few fragments of Oriental ware were found lying outside. According to the farmer (Mr Erasmus van Zyl pers. comm.), the ruins, which are not older than 100 years, were built by early bywoners (white settler farmers) and Coloured farmworkers/shepherd's (skaapwagters). Although protected under Section 34 of the National Heritage Resources Act (Act No. 29 of 1999), the ruins have been graded as having Medium-Low (Grade 3C) significance.

#### *Anticipated Impacts*

No significant archaeological heritage will be impacted by the proposed operation of the Karusa North borrow pit on Farm 209 Remainder.

The stone kraal (Site 054) alongside the gravel access road near the entrance to the application area might be impacted by possible upgrading/widening of the road.

Sites 055 and 056 (stone structures) may be indirectly impacted by proposed mining operations.

#### *Conclusion*

The HIA has identified no significant impacts to archaeological and historical remains that will need to be mitigated prior to proposed, mining operations commencing.

Overall, from an archaeological perspective there are no fatal flaws, and therefore, there are no objections to the authorization of the proposed Karusa North borrow pit on Farm 209 Remainder.

#### *Recommendations*

1. Conserve/protect old buildings and kraals (Sites 054, 055 & 056). The stone ruins must be demarcated (with danger tape or hard fencing) throughout the operational phase of the borrow pit. The ruins/structures must not be demolished or damaged. Minimal intervention is advocated.

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2. A buffer of 20m must be established around Site 057 (possible remains of a Khoekhoen herder kraal).
3. 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 the archaeologist Jonathan Kaplan (082 321 0172).
4. The recommendations must be included in the Environmental Management Plan (EMP) 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 soft rock (weathered dolerite) borrow pit on the Farm Rheebokke Fontein 209 Remainder, near Sutherland (Karoo Hoogland Municipality) in the Northern Cape (Figures 1 & 2).

The proposed Karusa North borrow pit is located about 52 kms south of Sutherland on an isolated portion of the farm. Access to the site is from the R354/Matjiesfontein-Sutherland tarred road, along the public gravel road to Kamsberg.

A geological investigation has established that the proposed borrow pit will provide suitable quality aggregate material for construction of the wind turbine platforms and all access roads of the three scheduled wind farms in the area (Site Plan Consulting 2015).

The proposed application area is 4.95 ha in extent, of which the actual borrow pit excavation itself will be less than 1.3 ha. The excavation method will entail linear trenches about 10-20m wide, running for a length of about 1.5km. Excavations will be to an average depth of 3 m.

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.

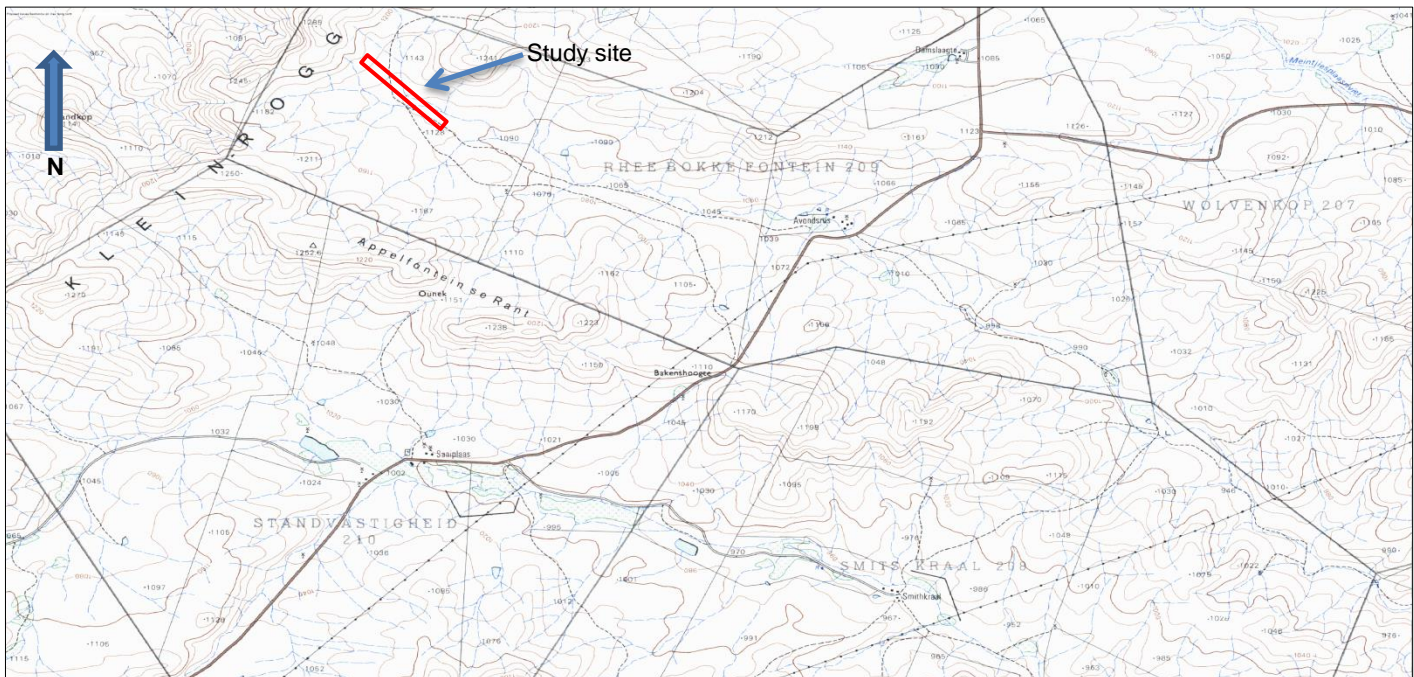


Figure 1. Locality map (3220DC Swartland) indicating the location of the study site.



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Figure 2. Google satellite image of the proposed Karusa North Borrow Pit in relation to Sutherland

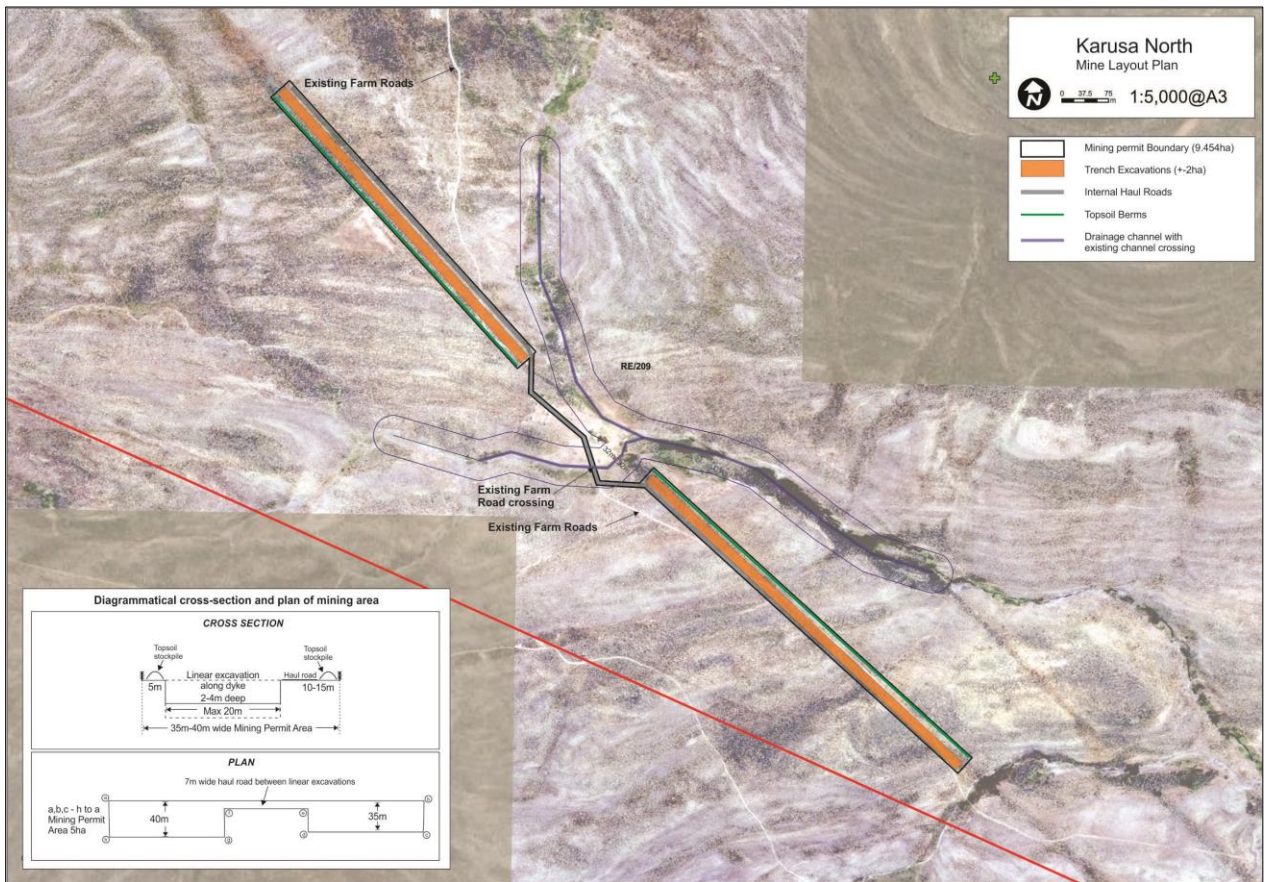


Figure 3. Proposed layout of the Karusa North borrow pit on Farm 209 Remainder, Sutherland.

## **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 were:

- 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 North borrow pit, on the Farm Rheeboeke Fontein 209 Remainder, is located some 52kms south of Sutherland (Figure 4). Access to the site is along the Kamsberg public gravel road, via the R354/Matjiesfontein-Sutherland road. The dolerite dyke, an extension of the Karusa East dolerite dyke/borrow pit (Kaplan 2015a), is reasonably level in the south, rising in the north up the steeper vegetated mountain slopes (Figures 5 & 6). The substrate is characterised by a thin layer of weathered soils and gravels underlain by weathered dolerite (the source material). There are no significant landscape features on the site, although there is a small outcropping of



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sandstone alongside the gravel farm road in the south. There are no buildings or structures in the actual application area, although a number of ruined stone structures were located alongside the proposed site. Surrounding land use is agriculture (grazing) and wilderness. Existing infrastructure in the application area includes a large sheep kraal, gravel farm roads, a small reservoir and a windmill.

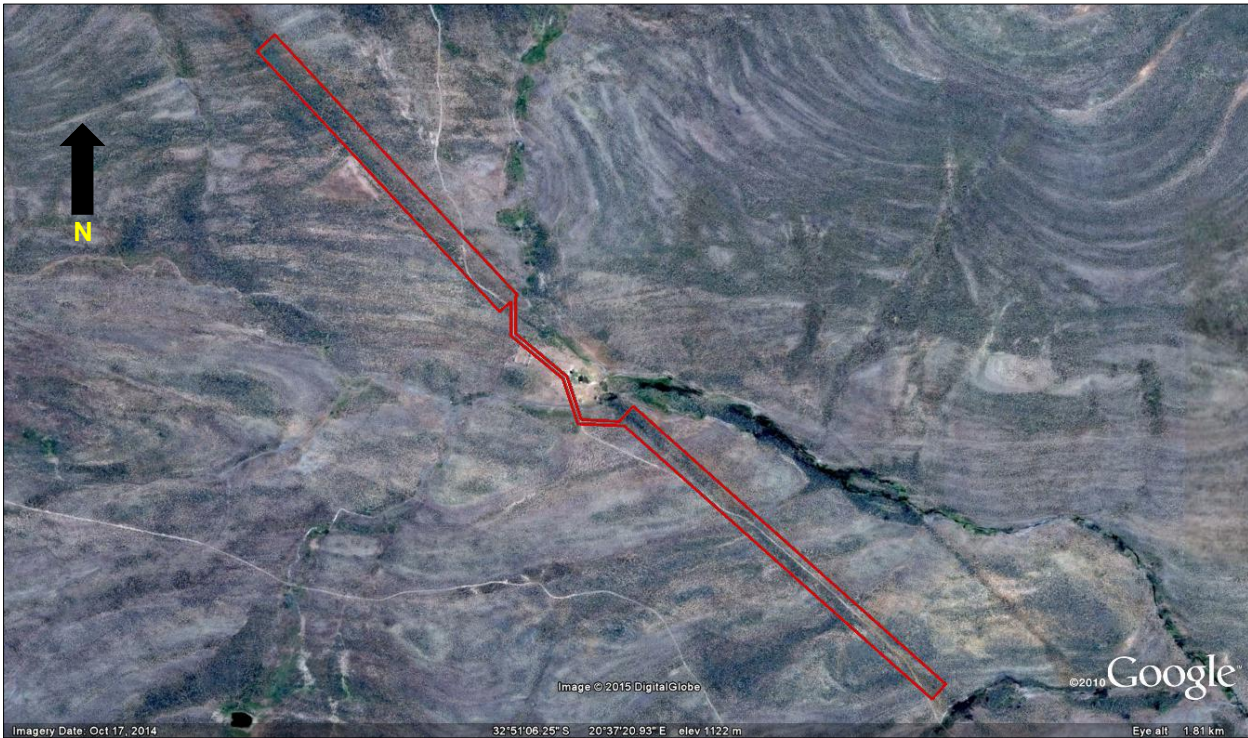


Figure 4. Google satellite map illustrating the proposed application area for the Karusa North Borrow Pit



Figure 5. Proposed Karusa North Borrow Pit. View facing north.





Figure 6. Proposed Karusa North Borrow Pit. View facing north. Arrow indicates the outspan area (kraal, reservoir & windmill). Note the test pit in the foreground and the surrounding densely vegetated land.

## 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 tracks were captured and 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.

Heritage resources identified during the study were graded following the system established by Winter & Baumann (2005) in the guidelines for involving heritage practitioners in EIAs (Table 1).

Grade	Level of significance	Description
1	National	Of high intrinsic, associational and contextual heritage value within a national context, i.e. formally declared or potential Grade 1 heritage resources.
2	Provincial	Of high intrinsic, associational and contextual heritage value within a provincial context, i.e. formally declared or potential Grade 2 heritage resources.
3A	Local	Of high intrinsic, associational and contextual heritage value within a local context, i.e. formally declared or potential Grade 3A heritage resources.
3B	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources
3C	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources

Table 1. Grading of heritage resources (Source: Winter & Baumann 2005)

## 5.2 Constraints and limitations

Archaeological visibility was fairly good in the southern portion of the proposed site, but dense vegetation cover in the northern portion resulted in poor archaeological visibility.

## 5.3 Identification of potential risks

Based on the results of the study, there are no direct potential risks associated with the proposed development of the Karusa North Borrow Pit.

It is unlikely that significant archaeological heritage will be exposed or uncovered during mining operations.

Historic stone built ruins/structures close to the application area must be avoided during mining operations.

## 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 2015a, b), 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

A Google satellite image of the proposed Karusa North Borrow Pit illustrating waypoints of archaeological finds and stone ruins is illustrated in Figure 8.

### 6.1 Archaeological heritage

Two utilized/miscellaneous retouched flakes (Sites 052 & 058) were recorded, but the remains have been graded as having Low (Grade 3C) significance (Figure 9).

The remains of a possible Later Stone Age Khoekhoen kraal (Site 057) of Low (Grade 3C) significance was located about 20m from the north eastern edge of the proposed borrow pit. The feature has been completely destroyed and there is no integrity to the remains (Figure 10). One stone chunk was found. The surrounding area was searched in detail but no further evidence, or any other cultural remains were found.

### 6.2 Built environment heritage

A, dry stone kraal (Site 054) of Medium-Low (Grade 3C) significance was recorded alongside the gravel access road near the entrance to the application area, and about 40m west of a small stream (Figure 11). No artefactual remains were found inside or outside the historic kraal, which is located about 10m from a large sheep enclosure (Site 053) that is currently being used by the farmer (Figure 12).

Two more ruined structures were located about 20m north of the large sheep enclosure and about 25 west of the application area. These comprise a collapsed stone kraal (Site 055), while a collapsed farmhouse (Site 056) with a raised and stamped clay/mud floor was located about 15m further west (Figures 13-15). Some historic glass and a few fragments of Oriental ware were found lying outside. According to the farmer (Mr Erasmus van Zyl pers. comm.), the ruins, which are not older than 100 years, were built by early bywoners (white settler farmers) and Coloured farm workers/shepherd's (skaapwagters). Although the historic ruins are protected under Section 34 of the



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National Heritage Resources Act (Act No. 29 of 1999), the structures have been rated as having Medium-Low (Grade 3C) significance.



Figure 8. Waypoint of archaeological finds. White lines are track paths



Figure 9. Site 052 & 058. Scale is in cm





Figure 10. Site 057. View facing south



Figure 13. Site 055. View facing north west



Figure 11. Site 054. View facing south



Figure 14. Site 056. View facing north



Figure 12. Site 053. View facing south west



Figure 15. Site 056. View facing north west

## **7. ANTICIPATED IMPACTS**

No significant archaeological heritage will be impacted by the proposed operation of a soft rock (weathered dolerite) borrow pit on Farm 209 Remainder.

The stone walled kraal (Site 054) located alongside the gravel access road near the entrance to the application area might be impacted by possible upgrading/widening of the road.

Sites 055 and 056 may be indirectly impacted by proposed mining operations.

## **8. CONCLUSION**

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

Overall, from an archaeological perspective there are no fatal flaws, and therefore, there are no objections to the authorization of the proposed Karusa North borrow pit on Farm 209 Remainder, provided that the recommendations below are implemented

## **9. RECOMMENDATIONS**

With regard to the proposed Karusa North Borrow Pit on the Farm Rheebokke Fontein 209 Remainder, the following recommendations are made:

1. Conserve/protect historic buildings and kraals (Sites 054, 055 & 056). The stone ruins must be demarcated (with danger tape or hard fencing) throughout the operational phase of the borrow pit. The ruins/structures must not be demolished or damaged. Minimal intervention is advocated.
2. A buffer of 20m must be established around Site 057 (a possible Khoekhoen herder kraal).
3. 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 (082 321 0172).
4. The recommendations must be included in the Environmental Management Plan (EMP) for the proposed project.

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