

**DESKTOP HERITAGE IMPACT ASSESSMENT: PROPOSED 1.5 HA
EXTENSION OF GRAVEL MINE, PORTION 2 OF THE FARM
AROAMS 57, NEAR AGGENEYS, NORTHERN CAPE PROVINCE**

(Assessment conducted under Section 38 (8) of the
National Heritage Resources Act 25 of 1999)

Prepared for:
Christine Fouche
GREENMINED ENVIRONMENTAL
Suite 62
Private Bag X01
Somerset West
7129

Tel: 021 850 8875
Cell: 084 663 2399
Email: ChristineF@greenmined.co.za

JUNE 2012



Prepared by:

Lita Webley
ACO Associates
8 Jacobs Ladder
St James
7945

Phone (021) 650 2357
Fax (021) 650 2352

Lita.webley@aco-associates.com

EXECUTIVE SUMMARY

ACO Associates cc was appointed by Greenmined Environmental on behalf of the client Raumix Aggregates (Pty) Ltd to undertake a desktop heritage Impact Assessment for the extension of a gravel mine (borrow pit) by an additional 1.5ha.

The proposed mining area is within an historic gravel pit and will therefore be a continuation of the same operation. This desktop HIA forms part of a Mine Permit Application for the extension of the mine.

The mine is located on Portion 2 of the farm Aroams 57, some 3km north of the N14. Earlier fieldwork by Webley & Halkett (2012) on Portion 1 of the farm Aroams suggests that while stone artefact scatters may be found in the area, they are generally considered to be of low significance and no mitigation is required.

A desktop review of the literature for the surrounding area suggests the following:

Palaeontology:

- The bedrock under the property is unfossiliferous and of no palaeontological significance. A letter of exemption from John Pether is included in this report.

Archaeology:

- Field surveys to the west, south and north of the property have identified background scatters of stone artefacts. They are generally of low significance as there is no evidence of discrete sites, and there is no associated archaeological material;
- Fieldwork is considered unnecessary in this case.

The Built Environment:

- There are no buildings of heritage significance on the site.

Graves:

- Due care should be taken during construction of the site and if human remains are uncovered, work should stop in that area and SAHRA should be notified.

Cultural Landscape:

- The gravel mine is located 3 km to the north of the N14 and 7.5km north-west of the Gamsberg;
- The landscape of the surrounding area has been significantly impacted by mining activities;
- The size of the gravel mine (1.5 ha) means that its visual impact will be negligible.

Summary

The potential impact of the proposed extension of the gravel mine on the heritage resources of the area are considered to be of minor significance, and no further fieldwork is recommended.

SPECIALIST TEAM AND DECLARATION OF INDEPENDENCE

Lita Webley (BA, BA Hons, MA (Stellenbosch), PhD (UCT)) is an Archaeologist and member of ASAPA accredited with Principal Investigator status. She has been involved with heritage and archaeological impact assessments on a part-time basis since 1996 and full time since 2008. Her PhD thesis was concerned with the archaeology of the Namaqualand region of the Northern Cape and she is familiar with the heritage of the region.

John Pether (MSc. Pr. Sci. Nat. (Earth Sci)) is an independent consultant/researcher and authority on coastal-plain and continental-shelf palaeo-environments.

Dr Lita Webley and Mr John Pether are independent specialist consultants who are in no way connected, financially or otherwise, with the proponent, other than in the delivery of consulting services on the project.

TABLE OF CONTENTS

1. INTRODUCTION	6
2. DEVELOPMENT PROPOSALS.....	7
3. TERMS OF REFERENCE	7
4. LEGISLATION.....	8
5. DESCRIPTION OF THE AFFECTED ENVIRONMENT	8
6. BACKGROUND TO THE AREA	10
6.1 Palaeontology.....	10
6.2 Archaeological Background	10
6.3 Historical Background.....	11
6.4 Cultural Landscape.....	11
7. methodology.....	12
8. IMPACT IDENTIFICATION AND ASSESSMENT	12
9. CONCLUSIONS	13
10. REFERENCES.....	14

**Mr John Pether, M.Sc., Pr. Sci. Nat. (Earth Science)
Geological and Palaeontological Consultant**

P. O. Box 48318, Kommetjie, 7976.

Tel./Fax: (021) 7833023. Cellphone: 083 744 6295. Email: jpether@iafrica.com. Faxmail:
0866 890732

SAHRA Ref. No. 9/2/066/0001

DMR Ref: NCS 30/5/1/3/3/2/1(100052)MP

12 June 2012

The Senior Heritage Officer
Archaeology, Palaeontology and Meteorite Unit
South African Heritage Resources Agency
PO Box 4637
Cape Town, 8000

**NOTE IN SUPPORT OF EXEMPTION FROM DESKTOP PALAEOLOGICAL
IMPACT ASSESSMENT: ENVIRONMENTAL MANAGEMENT PLAN FOR THE
PROPOSED EXTENSION OF EXISTING RAUMIX AGGREGATES (PTY) LTD.
QUARRY NEAR AGGENEYS, NORTHERN CAPE**

Portion of Portion 2 of the Farm Aroams 57, Namaqualand

GREENMINED ENVIRONMENTAL is managing a mining application on behalf of Raumix Aggregates (Pty) Ltd. that involves an extension to an existing quarry near Aggeneys in the Northern Cape Province. The proposed mining area will be 1.5ha.

The quarry exploits granite-gneiss bedrock which is crushed for road-making aggregate. The Koeipoort Granite is part of the highly-metamorphosed Late Precambrian rocks of the Aggeneys Subgroup (Bushmanland Group). Previously subsumed in the "Stalhoek Complex" (Figure 1). This bedrock is not fossiliferous. Quaternary aeolian sand and colluvium mantles the bedrock, but these deposits are very poorly fossiliferous. Moreover, the site of the quarry is effectively bedrock outcrop, with minor Quaternary overburden. **I respectfully submit for consideration by SAHRA that the quarry extension will not impact fossil heritage and that it be exempted from the requirement of a desktop PIA.**

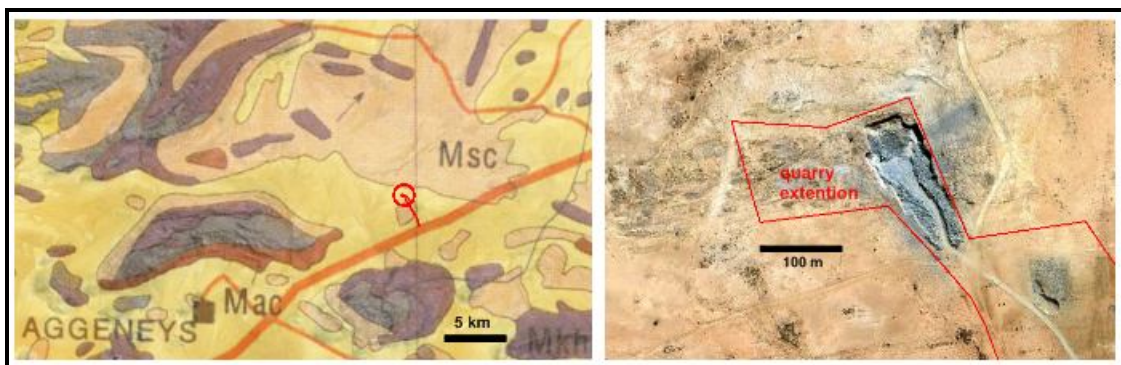
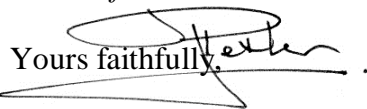


Figure 1. Left: The site (red circle), located on the 1:1000000 geological map. Msc = Stalhoek Complex schists and gneisses that includes the exploited Koeipoort Granite. Right: Detail of site.

Yours faithfully, 

John Pether

1. INTRODUCTION

ACO Associates cc was appointed by Greenmined Environmental on behalf of the client Raumix Aggregates (Pty) Ltd to undertake a desktop Heritage Impact Assessment for the 1.5 ha extension to an existing gravel pit on Portion 2 of the farm Aroams 57, located to the north of the N14 connecting Aggeneys to Pofadder.



Figure 1: The location of the proposed facility on the N14 between Aggeneys and Pofadder.



Figure 2: Location of the proposed gravel mine with respect to the Gamsberg in the south-west, and the village of Aggeneys to the west.

2. DEVELOPMENT PROPOSALS

The proposed mining area is within an historic gravel pit and this project will therefore be a continuation of the same operation.

The areas allocated for mining and stockpiling will first be stripped of all topsoil. This topsoil will be stockpiled separately for later use when the quarry is rehabilitated. Any overburden will be removed separately and either crushed for lower grade aggregates or stockpiled separately for later use when the quarry is rehabilitated. Blasting of rock will be done by in-house personnel. Material will then be fed into the primary feeder bin of the tracked mobile crusher that will travel into the pit for the crushing operation and will move out of the pit during blasting operations. Quarry operations would take cognizance of the 3 meter benching required for the final rehabilitation of the quarry.

Crushed products will be loaded with a CAT 938 H Loader onto 20ton BELL ADT's and transported to temporary stockpile area which will all be fenced off together with the quarry excavation. The estimated footprint of the excavation is 1.5 Ha.

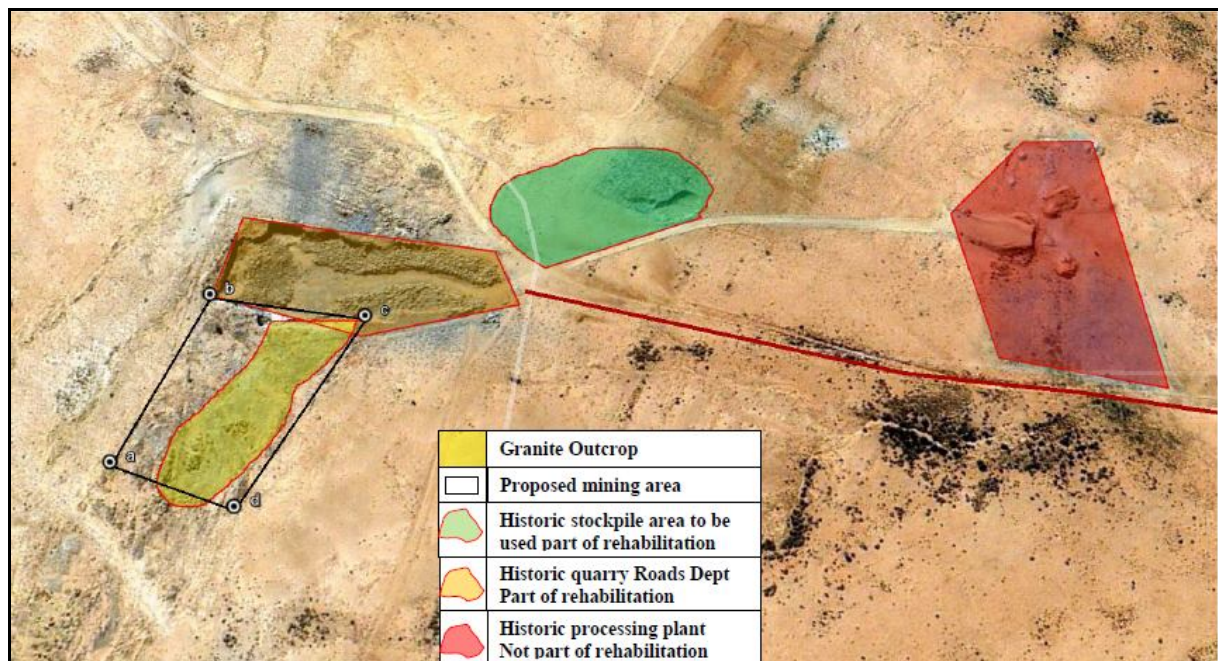


Figure 3: Landscape showing the main mining activities such as excavations, stockpiles, discard dumps and dams, water supply dams and boreholes, accommodation, buildings and processing plants. Note the extensive impact on the existing terrain.

No infrastructure will be affected due to the remote locality of the operation. Existing roads and tracks will be used and in the case of new tracks, this will be addressed at the final closure of the mining operation and rehabilitation.

3. TERMS OF REFERENCE

This assessment includes:

- A letter of exemption from further palaeontological work by Mr John Pether;
- A desk top study to determine the pre-history and history of the property;
- The rating of significance of heritage resources on the property;
- An assessment of whether the development of the property will result in a loss of significant heritage resources;

- Recommendations for mitigation if necessary.

4. LEGISLATION

The National Heritage Resources Act, No 25 of 1999 (Section 38 (1)) makes provision for a compulsory notification of the intent to development when any development exceeding 5000 m² in extent, or any road or linear development exceeding 300m in length is proposed.

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

- Cultural landscapes (Section 3(3))
- Buildings and structures greater than 60 years of age(Section 34)
- Archaeological sites greater than 100 years of age(Section 35)
- Palaeontological sites and specimens
- Shipwrecks and aircraft wrecks
- Graves and grave yards (Section 36).

Only the Western Cape and Kwa-Zulu Natal have functioning Provincial Heritage Authorities, and consequently SAHRA administers heritage in the remaining provinces particularly where archaeology and palaeontology are the dominant concerns. Heritage Northern Cape (Ngwao Boswa Kapa Bokoni) deals largely with built environment issues at this stage. Amongst other things the latter administers:

- World Heritage Sites
- Provincial Heritage Sites
- Heritage Areas
- Register Sites
- 60 year old structures
- Public monuments & memorials

Archaeology, including rock art, graves of victims of conflict and other graves not in formal cemeteries are administered by the national heritage authority, SAHRA.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The area is characterised by an expansive, undulating landscape of red sandy soils covered in dry grasslands and dominated by scattered ancient rocky outcrops, named inselbergs (koppies). The sands and calcretes are of Quaternary origin. No drainage channels occur within the mining area.

In general, the human impact on the environment is limited to farm fences and wind pumps. In this particular area, the land has already been used for the mining of gravel, and significance disturbance of the soil has already occurred.

The site is accessed directly from the N14 via the existing farm road (Figure 4).



Figure 4: Aerial view of existing mining area and the extent of the proposed extensions.



Plate 1: Typical landscape in this general area - flat grassy plains with the mountains in the background.



Plate 2: View of a gravel pit on the pipeline between Pofadder and Pella. This area is just to the north of Aroams 57/2.

6. BACKGROUND TO THE AREA

6.1 Palaeontology

The letter of exemption from further palaeontological work was prepared by Mr John Pether and is appended in full at the start of this report. In brief, the PIA report describes the bedrock of the area as Koeipoort Granite, which is part of the highly-metamorphosed Late Precambrian rocks of the Aggeneys Subgroup (Bushmanland Group). This bedrock is not fossiliferous.

The overlying Quaternary sand cover is very poorly fossiliferous.

6.2 Archaeological Background

Information on the pre-colonial archaeology of the area is derived from a number of impact assessment reports which have been undertaken in the last few years. In general, Morris (2011c) notes that archaeological visibility around Aggeneys and Pofadder is low.

Morris' (2010) survey of the northern slopes of the Gamsberg (7.5 km south-west of the gravel mine) has identified five significant sites on the northern rim of the mountain (Figure 2). It includes an MSA factory, two ESA (Acheulian) workshop sites, a mixed ESA and MSA site and a small cave with no deposit. Morris explains the presence of the MSA site in proximity to the Gamsberg as the need for access to suitable raw material. The appropriate raw material is not easily accessible on the plains between Aggeneys Mountain and the Gamsberg.

Pelser (2011) in his survey of an area around the Paulputs substation near Pofadder describes finding material from the Middle and Later Stone Age, although his illustrations appear to be of LSA artefacts made on quartz. He also mentions the presence of ostrich eggshell.

According to Morris (2011a) Later Stone Age (LSA) sites are the predominant archaeological trace noted in surveys in the Aggeneys-Pofadder region. However, his (2010) surveys of the northern slopes of the Gamsberg identified very few isolated LSA flakes. To the north-west of the Gamsberg he found two stone cairns which could represent graves, as well as a ceramic LSA site. These isolated LSA settlements occur on the plains rather than on the slopes of the Gamsberg itself.

These sites probably represent transient settlement by transhumant hunter-gatherers or herders, moving through the area. Morris refers to Beaumont *et al.* (1995) who have written that "virtually all the Bushmanland sites [LSA] so far located appear to be ephemeral occupations by small groups in the hinterland on both sides of the [Orange] river" (1995:263). This was in sharp contrast to the substantial herder encampments along the Orange River floodplain itself.

In his assessment for an underground pipeline between Pofadder and Pella, Halkett (2010) followed the pipeline over a distance of 15km, ending just to the north of the farm Aroams 57, and he noted that no archaeological material was noted along the pipeline corridor.

In fieldwork conducted by Webley & Halkett (2011) for a new transmission line commencing at the Aggeneys substation, it was observed that LSA sites (consisting mainly of quartz flakes) were concentrated at the base of small koppies. This information is supported by Morris (2011a, b & c) and Pelser (2011). "Surveys have located signs of human occupation

mainly in the shelter of granite koppies, on red dunes which provided clean sand for sleeping, or around the seasonal pans (Beaumont *et al.* 1995).

Finally, in a survey of Portion 1 of the farm Aroams 57, Webley & Halkett (2012) found a background scatter of predominantly quartz, and some quartzite artefacts. The material is particularly prevalent in those areas where the soil surface is covered in quartz pebbles and cobbles. The size of the artefacts suggests that they are of Middle Stone Age date. There are no distinctive features of the artefacts to categorically classify them as MSA. In general, the scatter of stone tools is very widely distributed and does not appear to be concentrated in any specific location. Webley & Halkett (2012) did not think that any mitigation was required.

6.3 Historical Background

Morris (2010) has summarised the colonial history of this frontier zone in his reports for the Aggeneys and Gamsberg areas. Early travel accounts show that “Place names were becoming fixed in this colonial frontier period (in a cadastral sense, on maps and in farm names), many such names having Khoe-San origins encapsulating vestiges of pre-colonial/indigenous social geography”.

Morris (2010) comments that place names, such as Aggeneys/Aggeneis and Gams (Gamsberg) are derived from Nama names. He reviews the various interpretations for the name Aggeneys including the oral history which suggests that a massacre of Bushmen took place in a kloof at Aggeneys (Nienaber & Raper 1977:173). Other interpretations include the possibility that it means “place of red clay” or that it is associated with reeds. Morris (2010) also refers to the thesis by Burger (1986) which links the killing of the Bushmen with the Gamsberg rather than Aggeneys. Morris (2010) comments that recently appreciation has started emerging regarding the “genocide against the Bushmen in this area, with certain mountainous areas (like Gamsberg near Aggeneys) being likely massacre sites”.

Nienaber and Raper cite a local farmer who similarly asserted that the origin of *Gams* or *Gaams* was in the word *Tha-aams*, where *Tha* means “grass” and *aams* means “mouth”. The Nama */Gâ-ams* literally means “Grasmond” or “Grasfontein” (Nienaber & Raper 1977).

According to the Surveyor General’s records, the farm Aroams 57 was surveyed and granted in 1895. This suggests a relatively recent date for the settlement of the area. Morris (2011c) explains that the name is derived from the Nama *‡aro-* meaning “wag-’n-bietjie” tree (*Ziziphus mucronatus*) and *am* or *am-s* meaning “mouth”. The name could thus be translated as “Wag-’n-bietjebosfontein” (Nienaber & Raper 1977).

6.4 Cultural Landscape

The only identified land use in this area is small stock grazing. Due to the temporary nature, and small scale, of the proposed mining operation, it is anticipated that the land will revert back to its former grazing with no impact on production. The proposed gravel mining will take place on farmland, and will not be close to any settlement. The visual impact is likely to be minimal.

The only Cultural Landscape issue which is of significance in this area is the “Cultural Heritage of the Gamsberg”, which is located at least 7.5 km to the south-west of the gravel pit.

Morris (2010) comments: “a call has been made for massacre sites to be identified and declared as Provincial Heritage Sites”. Morris notes that sites such as the Gamsberg could ultimately form part of a /Xam and Khomani Heartland World Heritage Site, already on South

Africa's tentative list. However, it is likely that the main centre for the /Xam WHS will be further south-east, between Kenhardt and Carnarvon.

It is important to point out that the Cultural Landscape of the area between Aggeneys and Pofadder has already been significantly impacted by open cast mining at Black Mountain; the excavation of mining shafts into the northern rim of the Gamsberg; the proposed construction of a solar photovoltaic facility between Gamsberg and Aggeneys and the erection of a number of high voltage transmission lines.

It could be argued that the landscape has already been significantly transformed and the impact of a gravel pit some 3 km to the north of the N14 will be negligible.

7. METHODOLOGY

This HIA report suggests that a desktop assessment is sufficient to address the requirements of the NHRA for the following reasons:

- The proposed extension of the gravel mine will occur in an area which is already disturbed by historic gravel mining;
- The total area of disturbance is only 1.5 ha;
- Contract work on adjoining farms suggests that the likelihood of finding archaeological sites of significance is very low;
- Similarly, a letter of exemption by a palaeontologist indicates that the underlying bedrock is unfossiliferous;
- No other heritage resources, such as built structures over 60 years old, burial grounds, etc occur on this particular portion of the farm, which is located a considerable distance from the main farmhouse.

8. IMPACT IDENTIFICATION AND ASSESSMENT

This impact assessment identifies and evaluates the impacts of the proposed extension of the quarry on the heritage resources of the site. The general area has already been disturbed by historic mining activities.

With respect to Palaeontology, the PIA report indicates that the bedrock under the property is unfossiliferous and of no palaeontological significance. The potential for fossils in the Quaternary sand cover is very low.

It is not anticipated that there will be an impact on *in situ* archaeological sites. While stone artefacts may occur within the proposed mining area, they will already be impacted by historic mining of the area, which is likely to have resulted in disturbance of the top soil. For this reason, the impact of the proposed development on the archaeology of the area is likely to be low.

Table 1: Summary of impacts to archaeological material

Nature of Impact: Impacts to archaeological material could involve destruction of stone artefacts		
	Pre- Mitigation	Post- Mitigation
Extent	Local	Local
Magnitude	On-site	On-site
Duration	Permanent*	Permanent*
Intensity	Negligible	Negligible
Probability	Possibly	Possibly

Significance	Low	Low
Mitigation: Although some archaeological material may be impacted, the impact is considered Low. In the <u>unlikely</u> event that unmarked graves are present and found during the construction phase, work at that location must be halted, the feature should be cordoned off and the heritage authority (SAHRA) notified. They are likely to suggest mitigation in the form of exhumation. No mitigation has been suggested.		
Cumulative Impacts: None		
Operational Phase: n/a		
Decommissioning Phase: Rehabilitation of the landscape will not have any bearing on the archaeology of the site.		

* Once archaeological material is destroyed, it cannot be renewed or replaced.

There are no buildings or structures on that portion of the property identified for the development of the facility. The impacts to the Built Environment are considered to be negligible.

Table 2: Summary of impacts to Cultural Landscape

The EMP report observes that the change in topography, as a result of the excavation, will result in an impact on the visual aspects of the landscape. However, the gravel mine is 3 km to the north of the N14 and will not result in a significant impact on the landscape.

Nature of Impact: The proposed facility may have a visual impact on the cultural landscape		
	Pre- Mitigation	Post- Mitigation
Extent	Local	Local
Magnitude	Local	Local
Duration	Life span of mine	Life span of mine
Intensity	Medium	Medium
Probability	Unlikely	Unlikely
Significance	Low	Low
Mitigation: The rehabilitation programme will result in the area being restored to its original condition		
Cumulative Impacts:		
Operational Phase: n/a		
Decommissioning Phase: n/a		

The applicant will be responsible for the rehabilitation of the historic disturbances within the application area. The goal of rehabilitation with respect to the area is to leave the area level and even, and in a natural state. All stockpiles will be re-moved and stockpiles will be backfilled into the excavation. In terms of a physical transformation of the landscape, the removal and crushing of the gravel for road building purposes will result in a trench of at least 10 m deep. After completion of the mining, the sides of the excavation will be profiled or stepped with contours to prevent erosion.

9. CONCLUSIONS

In conclusion, the following heritage indicators were considered:

Palaeontology:

- The bedrock under the property is unfossiliferous and of no palaeontological significance. The potential for fossils in the Quaternary sand cover is very low.

Archaeology:

- Fieldwork on adjoining properties suggests it is highly likely that no significant, *in situ* archaeological material is expected in the proposed mine area;
- Further field studies are considered unnecessary in this case.

The Built Environment:

- There are no buildings of heritage significance on the site.

Graves:

- Due care should be taken during construction of the site and if human remains are uncovered, work should stop in that area and SAHRA should be notified.

Cultural Landscape:

- The cultural landscape of the surrounding area has been significantly impacted by mining activities;
- The size of the gravel mine (1.5 ha) means that its visual impact will be negligible.

The potential impact of the proposed extension of the gravel mine on the heritage resources of the area are considered to be of minor significance, and no further fieldwork is recommended.

10. REFERENCES

Beaumont, P.B., Smith A.B. and Vogel J.C. 1995. Before the Einiqua: The archaeology of the frontier zone. In Smith A.B. ed. Einiqualand: Studies of the Orange River frontier. UCT Press: 236-264.

Burger, C.R. 1986. 'N ondersoek na die oorsprong en betekenis van plek- en plaasname in die Landdrostdistrik Namakwaland. Unpublished MA thesis: University of Stellenbosch.

Halkett, D. 2010. An assessment of impact on archaeological heritage resulting from replacement of a section of the existing bulkwater supply pipeline from Pella to Pofadder, Northern Cape. Unpublished report for Van Zyl Environmental.

Morris, D. 2010. Cultural Heritage Assessment: Gamsberg. Supplementary observations to a previous specialist report on archaeological resources. Unpublished report.

Morris, D. 2011a. A Phase 1 Heritage Impact Assessment for the proposed Aggeneis – Paulputs 220kV transmission line. Unpublished report for SSI Engineers and Environmental Consultants.

Morris, D. 2011b. SATO Energy Holdings: Zuurwater Photovoltaic Energy Generation Facility development near Aggeneys, Northern Cape. Unpublished report for SATO Energy Holdings.

Morris, D. 2011c. Black Mountain Concentrated Solar Power Facility development at Aggeneys, Northern Cape. Unpublished report for Aurora Power Solutions (Pty) Ltd.

Nienaber, G.S., & Raper, P.E. 1977. *Toponymica Hottentotica*. SA Naamkundesentrum RGN Naamkudesreeks 6.

Pelser, A.J. 2011. A Report on an Archaeological Impact Assessment (AIA) for the proposed solar energy plant on Konkoonsies 91, Pofadder District, Northern Cape. Unpublished report for Robert de Jong & Associates.

Webley, L. & Halkett, D. 2011. Heritage Impact Assessment: Proposed Aggeneis – Oranjemond 400kV line and substations upgrade, Northern Cape Province. Unpublished report for Savannah Environmental (Pty) Ltd.

Webley, L. & Halkett, D. April 2012. Heritage Impact Assessment: Proposed Aggeneys photo-voltaic solar power plant on Portion 1 of the Farm Aroams 57, Northern Cape Province. Unpublished report for Digby Wells Environmental

SAHRA 2009. Archaeology, Palaeontology & Meteorite Unit. Report Mapping Project. Version 1.0