

HERITAGE IMPACT ASSESSMENT: PROPOSED BORROW PIT ON THE FARM HOLTE 83, NAMAKWA MAGISTERIAL DISTRICT, NORTHERN CAPE

Required under Section 38(8) of the National Heritage Resources Act (No. 25 of 1999)
as part of a Heritage Impact Assessment.

Report for:

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On behalf of:

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SUMMARY

ASHA Consulting (Pty) Ltd was appointed by N.J. van Zyl to assess the potential impacts to heritage resources that might occur through the proposed reopening and expansion of a borrow pit on Farm Holte 83. The site is located along the southern side of the N14 freeway, some 70 km from Springbok and 34 km from Aggeneys. Its centre is at S29° 25' 29" E18° 33' 47".

The study area is an existing borrow pit and was found to be heavily disturbed by earlier mining, earthmoving and blasted rock fragments, although small areas around the edge were available for the archaeological survey. Vegetation was sparse in these areas with the disturbed areas all covered by gravel and rock.

The desktop study showed that the existing borrow pit post-dates 1973. The site visit showed that heritage resources were absent from the site. However, the broader landscape is considered a heritage resource but impacts to the landscape were found to be of low significance largely because of the very small area involved.

Aside from the low significance impacts to the landscape, there are no heritage concerns for this project. No areas require avoidance or buffering.

It is recommended that the proposed borrow pit be authorised but subject to the following condition:

- The site must be rehabilitated after closure; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

Glossary

Background scatter: Artefacts whose spatial position is conditioned more by natural forces than by human agency.

Early Stone Age: Period of the Stone Age extending approximately between 2 million and 200 000 years ago.

Hominid: a group consisting of all modern and extinct great apes (i.e. gorillas, chimpanzees, orangutans and humans) and their ancestors.

Later Stone Age: Period of the Stone Age extending over the last approximately 20 000 years.

Abbreviations

APHP: Association of Professional Heritage Practitioners

ASAPA: Association of Southern African Professional Archaeologists

BA: Basic Assessment

CRM: Cultural Resources Management

DMRE: Department of Mineral Resources and Energy

EMPr: Environmental Management Program

ESA: Early Stone Age

GP: General Protection

GPS: global positioning system

HIA: Heritage Impact Assessment

LSA: Later Stone Age

MSA: Middle Stone Age

NBKB: Ngwao-Boswa Ya Kapa Bokoni

NEMA: National Environmental Management Act (No. 107 of 1998)

NHRA: National Heritage Resources Act (No. 25) of 1999

SAHRA: South African Heritage Resources Agency

SAHRIS: South African Heritage Resources Information System

Contents

Glossary.....	iii
Abbreviations	iii
1. INTRODUCTION	6
1.1. The proposed project	8
1.1.1. Identification of alternatives.....	8
1.1.2. Aspects of the project relevant to the heritage study.....	8
1.2. Terms of reference	8
1.3. Scope and purpose of the report	8
1.4. The author	9
1.5. Declaration of independence	9
2. LEGISLATIVE CONTEXT	9
2.1. National Heritage Resources Act (NHRA) No. 25 of 1999	9
3. METHODS.....	11
3.1. Literature survey and information sources	11
3.2. Field survey.....	11
3.3. Grading	12
3.4. Consultation.....	12
3.5. Assumptions and limitations	13
4. PHYSICAL ENVIRONMENTAL CONTEXT	13
4.1. Site context	13
4.2. Site description	13
5. FINDINGS OF THE HERITAGE STUDY	15
5.1. Palaeontology	15
5.2. Archaeology	16
5.2.1. Desktop study.....	16
5.2.2. Site visit	17
5.3. Graves	18
5.4. Historical aspects and the Built environment	18
5.4.1. Desktop study.....	18
5.4.2. Site visit	18
5.5. Cultural landscapes and scenic routes	18
5.6. Statement of significance and provisional grading	19
5.7. Summary of heritage indicators	19
6. ASSESSMENT OF IMPACTS	20
6.1. Impacts to the cultural landscape	20
6.2. Evaluation of impacts relative to sustainable social and economic benefits.....	20
6.3. Existing impacts to heritage resources.....	21
6.4. The No-Go alternative	21
6.5. Cumulative impacts	21
6.6. Levels of acceptable change	21
7. INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAM	21

8. CONCLUSIONS 21
 8.1. Reasoned opinion of the specialist.....21

9. RECOMMENDATIONS 21

10. REFERENCES 22

APPENDIX 1 – Curriculum Vitae 24

1. INTRODUCTION

ASHA Consulting (Pty) Ltd was appointed by H.J. van Zyl to assess the potential impacts to heritage resources that might occur through the proposed reopening and expansion of a borrow pit on Farm Holte 83. The site is located along the southern side of the N14 freeway, some 70 km from Springbok and 34 km from Aggeneys (Figures 1 to 3). Its centre is at S29° 25' 29" E18° 33' 47".

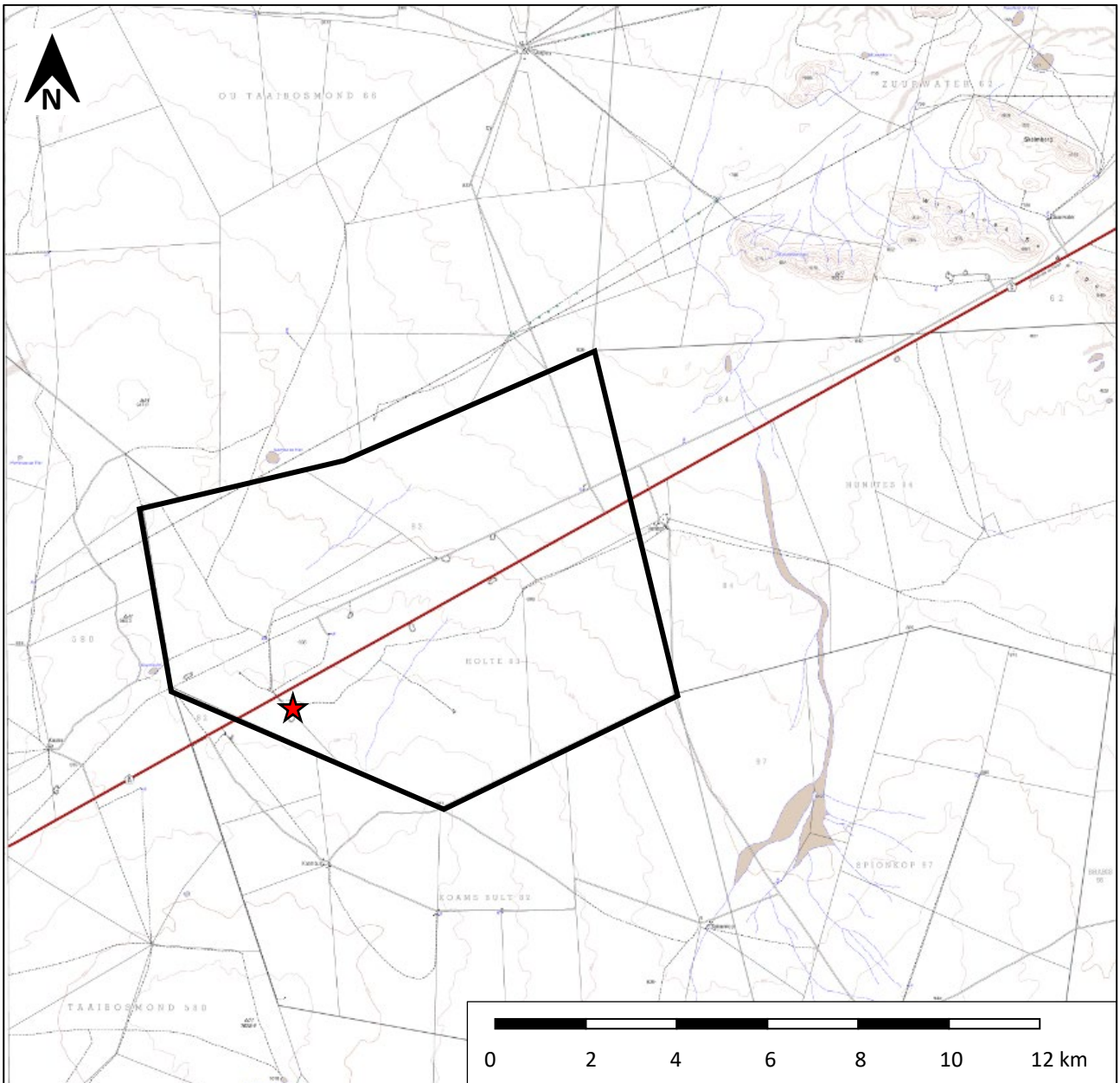


Figure 1: Extract from 1:50 000 topographic map 2918BC showing the location of the site (red star). The black polygon shows the farm boundary. Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.

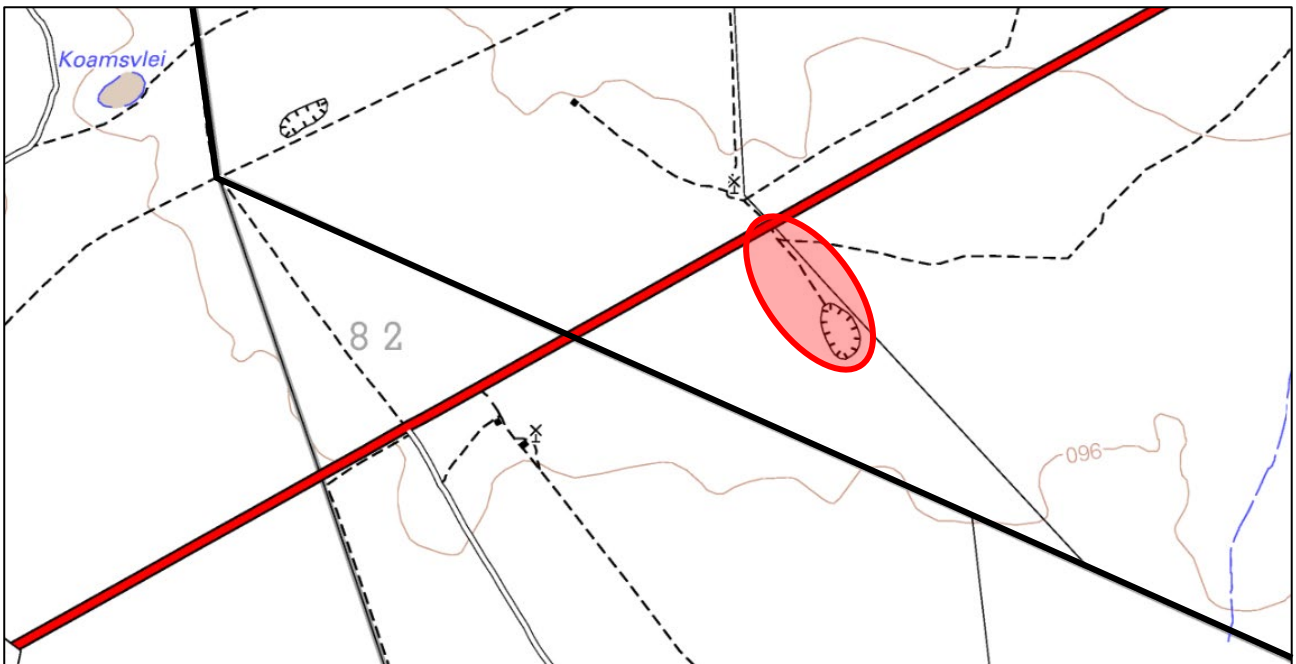


Figure 2: Enlargement of Figure 1 showing the location of the site (red oval).



Figure 3: Aerial view of the wider area showing the landscape and the relationship between the site (red polygon), farm (black polygon), the N14 and Aggeneys.

1.1. The proposed project

Mining will be in the form of an opencast mine that will continue from an existing borrow pit. Access will be taken via the R359 and existing gravel road that leads to the existing borrow pit. Disturbed areas will be demarcated as laydown and stockpile areas. Any virgin areas allocated for mining and stockpiling would first be stripped of all available topsoil. This topsoil would be stockpiled separately for later use when the quarry is rehabilitated. Any oversize material and rocks will be removed and stockpiled separately for later use when the quarry is rehabilitated.

The proposed activity will entail blasting using explosives in order to loosen the hard rock from the existing quarry. The loosened hard rock will be crushed and screened using a mobile crusher, whereafter it will be transported to be stockpiled until sold. Equipment storage will be in containers and portable ablution facilities will be provided. A stockpile area of less than 0.5 ha will be developed. It will also serve as parking area and laydown area with a service bay for minor repairs and maintenance of machinery.

At final closure all leftover product stockpiles as well as oversize material will be backfilled into the excavation and the sides of the excavation will be profiled to form an even depression.

1.1.1. Identification of alternatives

There are no alternatives for this project aside from the No-Go Alternative. The location and mining methodology are determined by the existing quarry with suitable target rock and the nature of that rock.

1.1.2. Aspects of the project relevant to the heritage study

All aspects of the proposed development are relevant, since excavations for foundations and/or services may impact on archaeological and/or palaeontological remains, while all above-ground aspects create potential visual (contextual) impacts to the cultural landscape and any significant heritage sites that might be visually sensitive.

1.2. Terms of reference

ASHA Consulting was asked to assess the potential heritage impacts of the proposed project based on both a site visit and desktop research. Recommendations to avoid or minimise heritage impacts should be provided.

1.3. Scope and purpose of the report

A heritage impact assessment (HIA) is a means of identifying any significant heritage resources before development begins so that these can be managed in such a way as to allow the development to proceed (if appropriate) without undue impacts to the fragile heritage of South Africa. This HIA report aims to fulfil the requirements of the heritage authorities such that a comment can be issued by them for consideration by the National Department of Mineral Resources and Energy (DMRE) who will review the Basic Assessment (BA) and grant or refuse authorisation. The HIA report will outline any management and/or mitigation requirements that will need to be complied with from a

heritage point of view and that should be included in the conditions of authorisation should this be granted.

1.4. The author

Dr Jayson Orton has an MA (UCT, 2004) and a D.Phil (Oxford, UK, 2013), both in archaeology, and has been conducting Heritage Impact Assessments and archaeological specialist studies in South Africa (primarily in the Western Cape and Northern Cape provinces) since 2004 (please see curriculum vitae included as Appendix 1). He has also conducted research on aspects of the Later Stone Age in these provinces and published widely on the topic. He is an accredited heritage practitioner with the Association of Professional Heritage Practitioners (APHP; Member #43) and also holds archaeological accreditation with the Association of Southern African Professional Archaeologists (ASAPA) CRM section (Member #233) as follows:

- Principal Investigator: Stone Age, Shell Middens & Grave Relocation; and
- Field Director: Colonial Period & Rock Art.

1.5. Declaration of independence

ASHA Consulting (Pty) Ltd and its consultants have no financial or other interest in the proposed development and will derive no benefits other than fair remuneration for consulting services provided.

2. LEGISLATIVE CONTEXT

2.1. National Heritage Resources Act (NHRA) No. 25 of 1999

The NHRA protects a variety of heritage resources as follows:

- Section 34: structures older than 60 years;
- Section 35: prehistoric and historical material (including ruins) more than 100 years old as well as military remains more than 75 years old, palaeontological material and meteorites;
- Section 36: graves and human remains older than 60 years and located outside of a formal cemetery administered by a local authority; and
- Section 37: public monuments and memorials.

Following Section 2, the definitions applicable to the above protections are as follows:

- Structures: “any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith”;
- Palaeontological material: “any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace”;
- Archaeological material: a) “material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures”; b) “rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation”; c) “wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as

defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation”; and d) “features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found”;

- Grave: “means a place of interment and includes the contents, headstone or other marker of such a place and any other structure on or associated with such place”; and
- Public monuments and memorials: “all monuments and memorials a) “erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government”; or b) “which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.”

Section 3(3) describes the types of cultural significance that a place or object might have in order to be considered part of the national estate. These are as follows:

- a) its importance in the community, or pattern of South Africa’s history;
- b) its possession of uncommon, rare or endangered aspects of South Africa’s natural or cultural heritage;
- c) its potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage;
- d) its importance in demonstrating the principal characteristics of a particular class of South Africa’s natural or cultural places or objects;
- e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- i) sites of significance relating to the history of slavery in South Africa.

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list “historical settlements and townscapes” and “landscapes and natural features of cultural significance” as part of the National Estate. Furthermore, some of the points in Section 3(3) speak directly to cultural landscapes.

Section 38(8) of the NHRA states that if an impact assessment is required under any legislation other than the NHRA then it must include a heritage component that satisfies the requirements of S.38(3). Furthermore, the comments of the relevant heritage authority must be sought and considered by the consenting authority prior to the issuing of a decision. Under the National Environmental Management Act (No. 107 of 1998; NEMA), as amended, the project is subject to a BA. The present report provides the heritage component. Ngwao-Boswa Ya Kapa Bokoni (Heritage Northern Cape; for built environment and cultural landscapes) and the South African Heritage Resources Agency (SAHRA for archaeology and palaeontology) are required to provide comment on the proposed project in order to facilitate final decision making by the DMRE.

3. METHODS

3.1. Literature survey and information sources

A survey of available literature was carried out to assess the general heritage context into which the development would be set. The information sources used in this report are presented in Table 1. Data were also collected via a field survey.

Table 1: Information sources used in this assessment.

Data / Information	Source	Date	Type	Description
Maps	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical and current 1:50 000 topographic maps of the study area and immediate surrounds
Aerial photographs	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical aerial photography of the study area and immediate surrounds
Aerial photographs	Google Earth	Various	Spatial	Recent and historical aerial photography of the study area and immediate surrounds
Cadastral data	Chief Directorate: National Geo-Spatial Information	Various	Survey diagrams	Historical and current survey diagrams, property survey and registration dates
Background data	South African Heritage Resources Information System (SAHRIS)	Various	Reports	Previous impact assessments for any developments in the vicinity of the study area
Palaeontological sensitivity	South African Heritage Resources Information System (SAHRIS)	Current	Spatial	Map showing palaeontological sensitivity and required actions based on the sensitivity.
Background data	Books, journals, websites	Various	Books, journals, websites	Historical and current literature describing the study area and any relevant aspects of cultural heritage.

3.2. Field survey

The site was subjected to a detailed foot survey on 10 July 2021. This was during winter but, in this very dry area, the season makes no meaningful difference to vegetation covering and hence the ground visibility for the archaeological survey. Other heritage resources are not affected by seasonality. During the survey the positions of finds and survey tracks were recorded on a hand-held Global Positioning System (GPS) receiver set to the WGS84 datum (Figure 4). Photographs were taken at times in order to capture representative samples of both the affected heritage and the landscape setting of the proposed development.

It should be noted that amount of time between the dates of the field inspection and final report do not materially affect the outcome of the report.

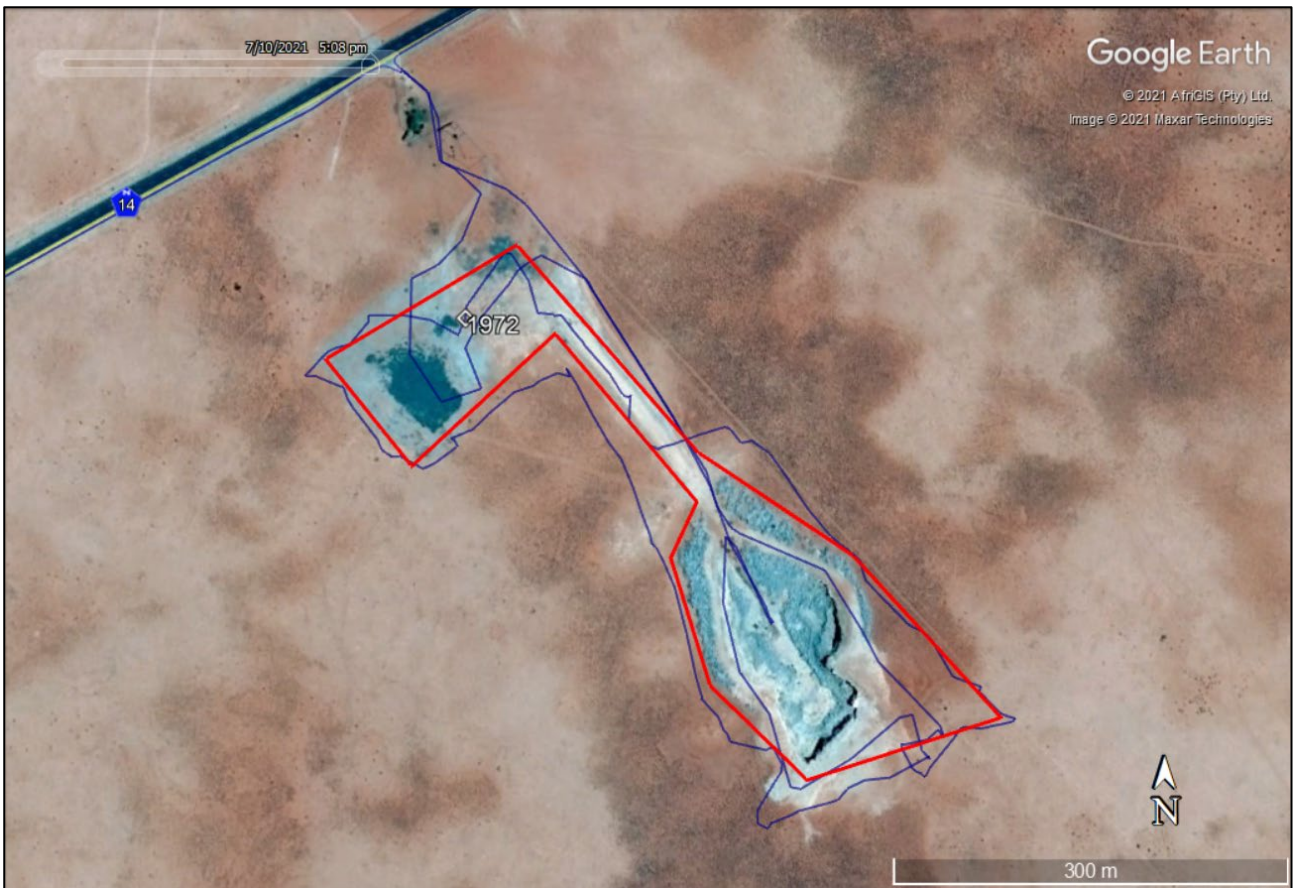


Figure 4: Aerial view of the study area (red polygon) showing the survey tracks (blue lines).

3.3. Grading

S.7(1) of the NHRA provides for the grading of heritage resources into those of National (Grade I), Provincial (Grade II) and Local (Grade III) significance. Grading is intended to allow for the identification of the appropriate level of management for any given heritage resource. Grade I and II resources are intended to be managed by the national and provincial heritage resources authorities respectively, while Grade III resources would be managed by the relevant local planning authority. These bodies are responsible for grading, but anyone may make recommendations for grading.

It is intended under S.7(2) that the various provincial authorities formulate a system for the further detailed grading of heritage resources of local significance but this is generally yet to happen. SAHRA (2007) has formulated its own system¹ for use in provinces where it has commenting authority. In this system sites of high local significance are given Grade IIIA (with the implication that the site should be preserved in its entirety) and Grade IIIB (with the implication that part of the site could be mitigated and part preserved as appropriate) while sites of lesser significance are referred to as having 'General Protection' (GP) and rated as GP A (high/medium significance, requires mitigation), GP B (medium significance, requires recording) or GP C (low significance, requires no further action).

3.4. Consultation

The NHRA requires consultation as part of an HIA but, since the present study falls within the context of an EIA which includes a public participation process (PPP), no dedicated consultation was undertaken as part of the HIA. Interested and affected parties would have the opportunity to provide comment on the heritage aspects of the project during the PPP.

¹ The system is intended for use on archaeological and palaeontological sites only.

3.5. Assumptions and limitations

The field study was carried out at the surface only and hence any completely buried archaeological sites would not be readily located. The vast majority of the site was already disturbed by earthmoving and quarrying (in the south) and earlier stockpiling (in the north), although some areas around the perimeter were available for the archaeological survey. Even these areas, though, were slightly disturbed by a thin layer of blasted rock fragments that fell there during earlier mining.

4. PHYSICAL ENVIRONMENTAL CONTEXT

4.1. Site context

The site is in a very remote location well away from any settlement. It lies alongside the N14 freeway and it is evident that many other borrow pits also lie alongside this road. The surrounding area is flat grassland used only for livestock grazing.

4.2. Site description

The landscape around the site is very flat. The surface is sandy with scattered calcrete nodules and sparse grass cover. The southern half of the study area is mostly taken up by an existing borrow pit, while much of the northern area has been used in the past as a stockpiling area as evidenced by the layer of gravel spread across the surface. This gravel consists of igneous rock fragments surrounded by a spread of calcrete gravel. Although calcrete gravel occurs naturally on the surface, it is evident from Figure 4 that there is an anthropogenic concentration of it in the northern part of the study area. Figures 5 to 10 illustrate the study area.



Figure 5: View towards the northwest from the south-eastern edge of the study area and showing the existing borrow pit in the southern half of the application area.



Figure 6: View towards the northwest from the south-eastern corner of the study area showing the largest undisturbed area with sand and calcrete nodules on the surface.



Figure 7: View towards the southeast along the existing road linking the northern and southern sections of the application area.



Figure 8: View towards the west across the northern part of the application area showing the gravelled surface. Some cement bases related to earlier gravel processing activities are visible to the right.



Figure 9: View towards the east from the western corner of the study area showing the calcrete gravel in the foreground and igneous gravel in the background.



Figure 10: View towards the south along the western margin of the southern part of the study area showing a section of undisturbed ground just outside the application area.

5. FINDINGS OF THE HERITAGE STUDY

This section describes the heritage resources recorded in the study area during the course of the project.

5.1. Palaeontology

The proposed mining area is underlain by Mesklip Granite of the Little Namaqualand Suite. These rocks are entirely unfossiliferous (Almond & Pether 2009) as shown by the extract from the SAHRIS Palaeosensitivity Map shown in Figure 11.

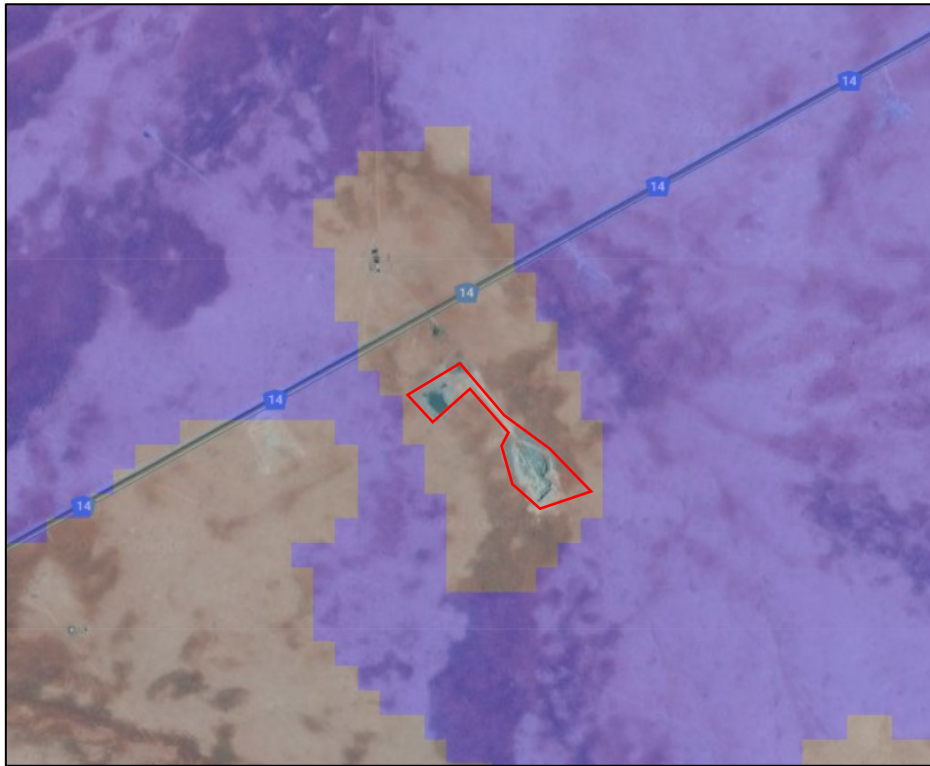


Figure 11: Extract from the SAHRIS Palaeosensitivity map showing the entire study area and immediate surrounds to be of zero palaeontological sensitivity (grey shading). Areas of low sensitivity lie further afield (blue shading).

5.2. Archaeology

5.2.1. Desktop study

A number of surveys have been carried out in the Aggeneys area and surrounds. Morris (2011b, 2011c) and Smith (2012) surveyed areas to the northeast of the present study area and, because of the sand cover, found only a small number of isolated quartz artefacts attributable to background scatter. Morris (2011b) does, however, note the presence of a rock painting on a boulder at Aggeneys, 30 km northeast of the present study area. The painting is a finger painting likely associated with the Khoekhoen. Similar art is found on granite outcrops throughout Namaqualand and elsewhere in Bushmanland but in very low densities (Orton 2013, 2016a). A later survey by Morris (2013) on one of the same farms yielded two important observations. He found bedrock grinding hollows and grooves with associated scatters of stone artefacts, pottery and ostrich eggshell in one area where a surface outcrop of bedrock occurred, and a set of artefact scatters associated with boulders at the foot of a mountain in another. These sites are about 21 km to 23 km northeast of the present study area. On the farm to the north, Orton (2016a, 2016b, 2016c, 2016d) also found only isolated quartz artefacts on the sandy surface. However, in an area about 5.5 km north of the present study area he located a large depression with bedrock in the base and an area where water accumulates. Many scatters of LSA artefacts and grinding grooves were present around this outcrop. The topographic map indicates this hollow as being Nachas se Vlei. Its location is shown on Figure 11, along with two other nearby similar occurrences which have not been visited by the present writer. Within the Ghaamsberg Inselberg, 44 km to the northeast, there are a variety of archaeological traces preserved.

Scatters of Early Stone Age (ESA) artefacts occur in open, often eroding areas, while a small rock shelter preserves a c. 30 cm deep Later Stone Age (LSA) deposit, and rock art is found in the kloof that drains the mountain (Orton 2014). Orton and Webley (2012a) also recorded sites with grinding hollows at Kangnas some 27 km to the west of the current study area.

Further afield, in the vicinity of Pofadder, Orton and Webley (2012b) found another site with grinding hollows to the southeast of the town. To the northeast of Pofadder Orton (2015) located a number of LSA stone artefact scatters directly associated with very small surface rock outcrops. The outcrops had hollows in them that caught rainwater and attracted settlement. Bedrock grooves also occurred at some of these sites.

More generally, it can be noted that archaeological sites in the area tend to be more commonly encountered around the fringes of granite hills, on sand dunes or around pans (Beaumont et al. 1995). Other surveys in the region support this contention (Halkett 2010; Morris 2011a, 2013; Orton & Webley 2012). None of these features occur within close proximity of the present study area.

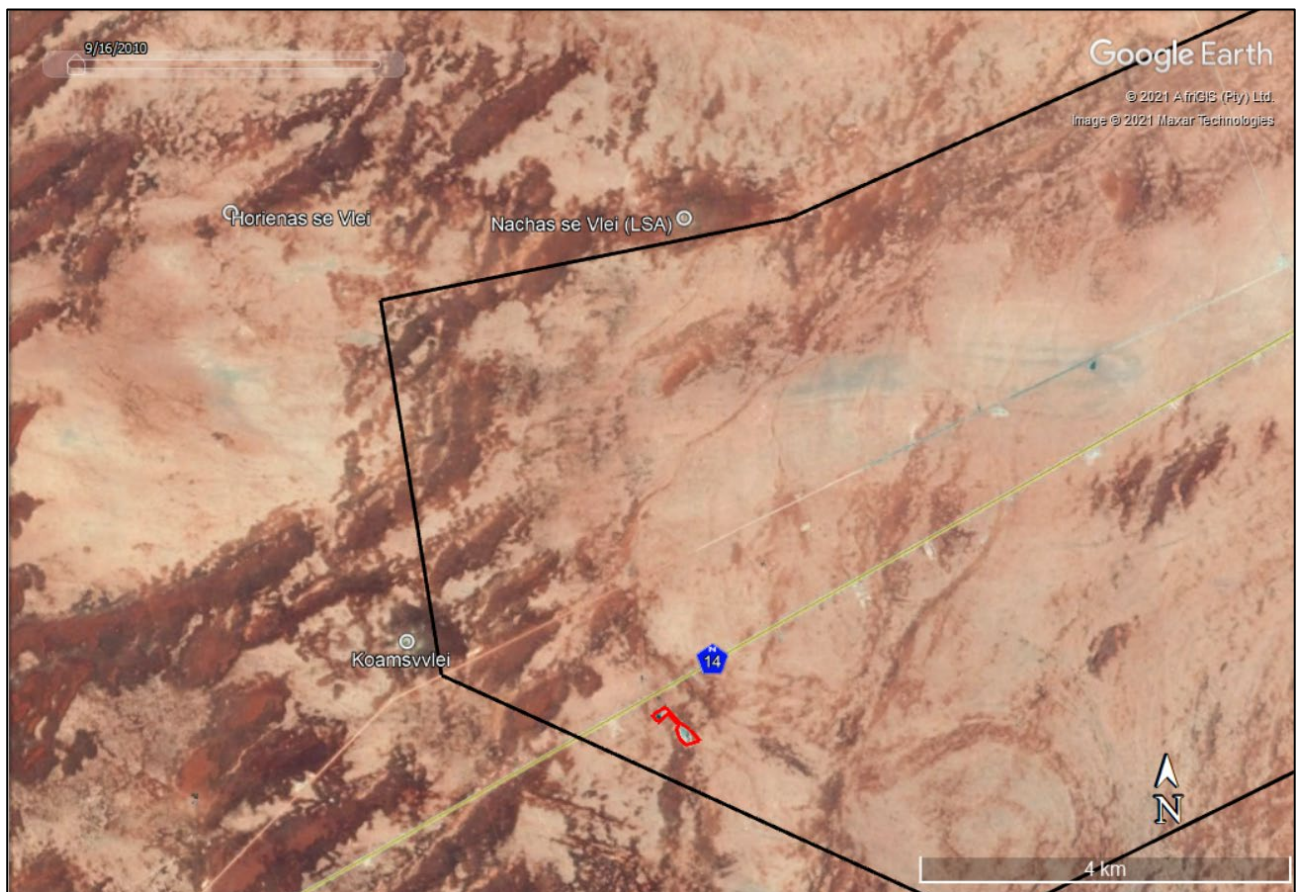


Figure 11: Aerial view of the surrounds of the study area showing places where LSA sites are either known or expected to the north and northwest.

5.2.2. Site visit

No archaeological materials were seen in the study area. A number of cement bases were noted in the northern part of the study area but they are modern, clearly associated with the borrow pit.

5.3. Graves

Rare graves are encountered in the area. Graves not covered by rocks are unlikely to be seen but close to sources of rocks a stone-packed cairn may be evident. Examples have been recorded in two places to the west and south of Aggeneys by Orton (2016a, 2016b, 2016c, 2016d, 2019). The topographic map marks a grave at the Hunites farmstead to the east of Holte.

No sign of any graves was seen in the study area.

5.4. Historical aspects and the Built environment

5.4.1. Desktop study

The site is very remote and far from any settled areas. The nearest town, Aggeneys, is a company town related to the extensive modern mining venture in that area. It was founded in 1976. Some of the place names in the region reflect the living heritage of the Khoekhoen. Ghaamsberg (also Gamsberg), for example, derives from the Khoekhoen word meaning 'grassy spring' (Raper n.d.). There are unconfirmed historical reports that a massacre of Bushmen may have occurred in a kloof of the Ghaamsberg (Robinson 1978) but surveys have failed to yield any evidence. Some 35 km to the west Orton & Webley (2012a) located a number of stone structures on a rocky hill said by the landowner there to relate to the Anglo-Boer War. Whether this is true or not remains unknown, but it is possible since the north-western part of South Africa saw a fair amount of action during the war.

5.4.2. Site visit

No historical materials were seen on the site. A number of cement bases related to the earlier quarrying activities were noted though. It is evident from the 1973 topographic map that the quarry was not yet present, although others did exist along the N14. The cement bases are thus not heritage resources.

5.5. Cultural landscapes and scenic routes

The site lies in a very remote, semi-desert location and in general has very minimal anthropogenic input. These features include fences, farm tracks and occasional windpumps and livestock watering points. Borrow pits are a regular feature along the margins of the N14 with that at the current site being substantially larger than most.

The dry parts of South Africa do hold a distinct aesthetic appeal. The N14 can thus be regarded as a scenic route. The current borrow pit is visible from the N14 (Figure 12) and will become far more visible once machinery is introduced and quarried rock is stockpiled there.

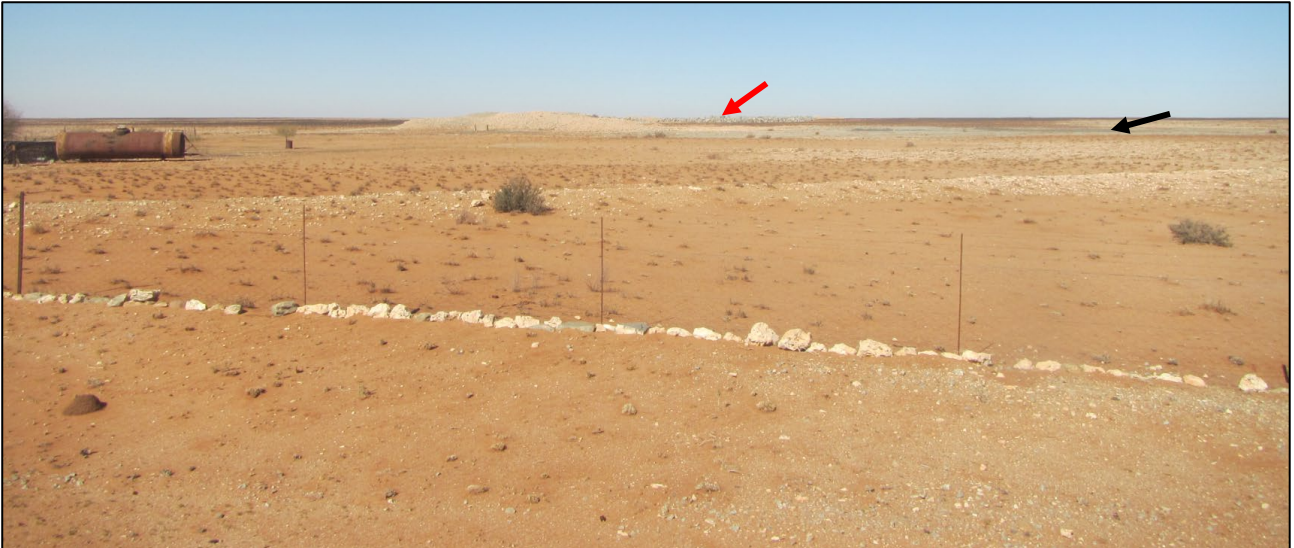


Figure 12: View towards the southeast from the N14. The stockpiling area in the north lies 200 to 270 m from the N14 (black arrow), while the mining area lies 470 to 670 m away on the skyline (red arrow).

5.6. Statement of significance and provisional grading

Section 38(3)(b) of the NHRA requires an assessment of the significance of all heritage resources. In terms of Section 2(vi), “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. The reasons that a place may have cultural significance are outlined in Section 3(3) of the NHRA (see Section 2 above).

No fossils were found and none can be present due to the nature of the geology.

No archaeological resources were found and none are expected due to the extensive disturbance of the area.

No graves were found and none are expected due to the extensive disturbance of the area.

No historical resources were found and none are expected due to the extensive disturbance of the area.

The cultural landscape is largely natural. Although the immediate area has been transformed by modern mining, the wider landscape around the study area has low to medium local cultural significance for its aesthetic value.

5.7. Summary of heritage indicators

The only potential heritage concern for this project is the visual impacts to the landscape that will occur when mining is underway. However, there is nothing that can be done to reduce the impact and no indicators are thus proposed.

6. ASSESSMENT OF IMPACTS

Impacts to palaeontology, archaeology, graves and historical sites are not expected. Only the cultural landscape will be impacted and this is thus the only aspect assessed here.

6.1. Impacts to the cultural landscape

Direct negative impacts to the landscape would occur during all phases of the project but would cease once rehabilitation has been completed. Impacts would be as a result of disturbance to the landscape through the introduction of machinery, noise and stockpiles. The site is in a very flat area close to the N14 scenic route, but because it is limited to a very small area the intensity is rated as low. Because the site is prominently located relative to the N14, the impacts to the scenic route will definitely occur. Nevertheless, because the impact will be fleeting and other abandoned borrow pits also occur along the road, the significance is rated as **low negative** (Table 2). Minimal mitigation measures can be proposed and these are effectively only best practice measures. Nevertheless, if rehabilitation is successful, the post-mitigation significance would be **low positive**. Measures to screen the development are not encouraged, since they would only be further inappropriate intrusions into the landscape. There are no fatal flaws.

Table 2: Assessment of impacts to the cultural landscape.

Potential impacts on the cultural landscape	
Nature and status of impact:	Direct, negative
Extent and duration of impact:	Local, medium term
Intensity	Low
Probability of occurrence:	Definite
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low negative
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	<ul style="list-style-type: none"> - Maintain a tidy working area. - Keep disturbance within approved area. - Ensure effective rehabilitation.
Cumulative impact post mitigation:	Low positive
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low positive

6.2. Evaluation of impacts relative to sustainable social and economic benefits

Section 38(3)(d) of the NHRA requires an evaluation of the impacts on heritage resources relative to the sustainable social and economic benefits to be derived from the development.

The project would provide a small number of jobs but, importantly, it would also feed construction materials into the local economy. These benefits certainly outweigh the very minimal heritage impacts expected.

6.3. Existing impacts to heritage resources

There are currently no obvious threats to heritage resources on the site. The site has already been disturbed by mining but, without activity drawing attention to the site the impacts are considered as being of **low negative** significance.

6.4. The No-Go alternative

If the project were not implemented then the site would stay in its present state. Although the heritage impacts with implementation would be greater than the existing impacts, the loss of socio-economic benefits is more significant and suggests that the No-Go option is less desirable. It is also notable that with implementation there is the opportunity to properly rehabilitate the site after closure of the borrow pit.

6.5. Cumulative impacts

Cumulative impacts are of little concern here because, although many borrow pits occur along the N14, the majority have been rehabilitated and none are currently operational. The proposed project is also focused on the site of earlier impacts which is far preferred over establishing a new borrow pit elsewhere. It offers the opportunity to rehabilitate a site that was not rehabilitated in the past and, overall, the final cumulative impact will likely be positive.

6.6. Levels of acceptable change

Any impact to an archaeological or palaeontological resource or a grave is deemed unacceptable until such time as the resource has been inspected and studied further if necessary. Impacts to the landscape are difficult to quantify but in general a development that visually dominates the landscape from many vantage points is undesirable. None of these impacts is expected.

7. INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAM

There are no heritage requirements over and above the best practice measures that need to be incorporated into the Environmental Management Program (EMPr). The best practice measures include:

- Maintain a tidy working area.
- Keep disturbance within approved area.
- Ensure effective rehabilitation.

8. CONCLUSIONS

Aside from the low significance impacts to the landscape, there are no heritage concerns for this project. No areas require avoidance or buffering.

8.1. Reasoned opinion of the specialist

Because there are no significant impacts expected, it is the opinion of the heritage specialist that the proposed project should be authorised in full.

9. RECOMMENDATIONS

It is recommended that the proposed borrow pit be authorised but subject to the following condition:

- The site must be rehabilitated after closure; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be

reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

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Smith, A.B. 2012. Archaeological Report Proposed 75MW Solar Facility on Farm 62 Zuurwater, Aggeneys, Northern Cape Province. Unpublished report prepared for Cape EAPrac. Rondebosch: University of Cape Town.

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APPENDIX 1 – Curriculum Vitae



Curriculum Vitae

Jayson David John Orton

ARCHAEOLOGIST AND HERITAGE CONSULTANT

Contact Details and personal information:

Address: 23 Dover Road, Muizenberg, 7945
Telephone: (021) 788 1025
Cell Phone: 083 272 3225
Email: jayson@asha-consulting.co.za

Birth date and place: 22 June 1976, Cape Town, South Africa
Citizenship: South African
ID no: 760622 522 4085
Driver's License: Code 08
Marital Status: Married to Carol Orton
Languages spoken: English and Afrikaans

Education:

SA College High School	Matric	1994
University of Cape Town	B.A. (Archaeology, Environmental & Geographical Science)	1997
University of Cape Town	B.A. (Honours) (Archaeology)*	1998
University of Cape Town	M.A. (Archaeology)	2004
University of Oxford	D.Phil. (Archaeology)	2013

*Frank Schweitzer memorial book prize for an outstanding student and the degree in the First Class.

Employment History:

Spatial Archaeology Research Unit, UCT	Research assistant	Jan 1996 – Dec 1998
Department of Archaeology, UCT	Field archaeologist	Jan 1998 – Dec 1998
UCT Archaeology Contracts Office	Field archaeologist	Jan 1999 – May 2004
UCT Archaeology Contracts Office	Heritage & archaeological consultant	Jun 2004 – May 2012
School of Archaeology, University of Oxford	Undergraduate Tutor	Oct 2008 – Dec 2008
ACO Associates cc	Associate, Heritage & archaeological consultant	Jan 2011 – Dec 2013
ASHA Consulting (Pty) Ltd	Director, Heritage & archaeological consultant	Jan 2014 –

Professional Accreditation:

Association of Southern African Professional Archaeologists (ASAPA) membership number: 233
CRM Section member with the following accreditation:

- Principal Investigator: Coastal shell middens (awarded 2007)
Stone Age archaeology (awarded 2007)
Grave relocation (awarded 2014)
- Field Director: Rock art (awarded 2007)
Colonial period archaeology (awarded 2007)

Association of Professional Heritage Practitioners (APHP) membership number: 43

- Accredited Professional Heritage Practitioner

➤ Memberships and affiliations:

South African Archaeological Society Council member	2004 – 2016
Assoc. Southern African Professional Archaeologists (ASAPA) member	2006 –
UCT Department of Archaeology Research Associate	2013 –
Heritage Western Cape APM Committee member	2013 –
UNISA Department of Archaeology and Anthropology Research Fellow	2014 –
Fish Hoek Valley Historical Association	2014 –
Kalk Bay Historical Association	2016 –
Association of Professional Heritage Practitioners member	2016 –

Fieldwork and project experience:

Extensive fieldwork and experience as both Field Director and Principle Investigator throughout the Western and Northern Cape, and also in the western parts of the Free State and Eastern Cape as follows:

Feasibility studies:

- Heritage feasibility studies examining all aspects of heritage from the desktop

Phase 1 surveys and impact assessments:

- Project types
 - Notification of Intent to Develop applications (for Heritage Western Cape)
 - Desktop-based Letter of Exemption (for the South African Heritage Resources Agency)
 - Heritage Impact Assessments (largely in the Environmental Impact Assessment or Basic Assessment context under NEMA and Section 38(8) of the NHRA, but also self-standing assessments under Section 38(1) of the NHRA)
 - Archaeological specialist studies
 - Phase 1 archaeological test excavations in historical and prehistoric sites
 - Archaeological research projects
- Development types
 - Mining and borrow pits
 - Roads (new and upgrades)
 - Residential, commercial and industrial development
 - Dams and pipe lines
 - Power lines and substations
 - Renewable energy facilities (wind energy, solar energy and hydro-electric facilities)

Phase 2 mitigation and research excavations:

- ESA open sites
 - Duinefontein, Gouda, Namaqualand
- MSA rock shelters
 - Fish Hoek, Yzerfontein, Cederberg, Namaqualand
- MSA open sites
 - Swartland, Bushmanland, Namaqualand
- LSA rock shelters
 - Cederberg, Namaqualand, Bushmanland
- LSA open sites (inland)
 - Swartland, Franschhoek, Namaqualand, Bushmanland
- LSA coastal shell middens
 - Melkbosstrand, Yzerfontein, Saldanha Bay, Paternoster, Dwarskersbos, Infanta, Knysna, Namaqualand
- LSA burials
 - Melkbosstrand, Saldanha Bay, Namaqualand, Knysna
- Historical sites
 - Franschhoek (farmstead and well), Waterfront (fort, dump and well), Noordhoek (cottage), variety of small excavations in central Cape Town and surrounding suburbs
- Historic burial grounds
 - Green Point (Prestwich Street), V&A Waterfront (Marina Residential), Paarl

Awards:

Western Cape Government Cultural Affairs Awards 2015/2016: Best Heritage Project.