

Archaeological Impact Assessment

**For the proposed hard rock quarry for construction aggregate on the Farm: Wonderheuvel 70
portion 1, in the Carnarvon Registration Division**

Prepared For
Site Plan Consulting
By



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**VERSION 1.0
15 April 2014**

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EXECUTIVE SUMMARY

Site name and location: The proposed Quarry project referred to as the Plaas Skuur Quarry is located on the Farm Wonderheuvel, Farm Number 70 Portion 1, north of the Brandvlei-Carnarvon gravelled Public road, some 60km North-West of Carnarvon, Northern Cape.

Purpose of the study: Phase 1 Archaeological Impact Assessment to determine the presence of cultural heritage sites and the impact of the proposed project on these resources within the areas demarcated for the solar development.

1:50 000 Topographic Map: 3021 DA

EIA Consultant: Site Plan Consulting CC

Developer: Brink and Heath Civils (Pty) Ltd

Heritage Consultant: Heritage Contracts and Archaeological Consulting CC (HCAC).

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Date of Report: 15 April 2014

Findings of the Assessment:

An archaeological survey was conducted on the proposed quarry site on the farm Wonderheuvel 70 Portion 1. Four sites of heritage significance were identified consisting of a historical engraving site (Site 1), a historical farmstead (Site 2) a contemporary farm labourer dwelling (Site 3) and a cemetery (Site 4). Only Site 1 and Site 3 will be directly impacted on by the proposed development while a secondary impact is expected for Site 2 while Site 4 will not be impacted on at all. These 4 sites are linked to each other forming part of the cultural landscape of the area and providing insight to the cultural layering of the area and to previous farm owners and travellers using the landscape since the late 1800's that is not available in written accounts.

Because of the 'sense of place' important to heritage resources, it is recommended that the 4 sites are mapped and recorded, the record should include the entire complex, that is historical engravings, houses, outbuildings, kraals, graves and labourer housing. The engravings will have to be individually recorded after which it is recommended that the engraved stones should be moved to an open air museum with an interpretive panel on site as well as at the open air museum.

General

The possible occurrence of unmarked or informal graves and subsurface finds can thus not be excluded. If during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find.

Disclaimer: *Although all possible care is taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. Heritage Contracts and Archaeological Consulting CC and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.*

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- The results of the project;
- The technology described in any report;
- Recommendations delivered to the Client.

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ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BIA: Basic Impact Assessment
CRM: Cultural Resource Management
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
EMP: Environmental Management Plan
ESA: Early Stone Age
GPS: Global Positioning System
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act
MSA: Middle Stone Age
NEMA: National Environmental Management Act
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency

**Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations and must be read and interpreted in the context it is used.*

GLOSSARY

Archaeological site (remains of human activity over 100 years old)

Early Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000, to recently, 100 years ago)

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

Historic building (over 60 years old)

1 BACKGROUND INFORMATION

<i>Kind of study</i>	Archaeological Impact Assessment
<i>Type of development</i>	Quarry
<i>Rezoning/subdivision of land</i>	Rezoning
<i>Consultant:</i>	Site Plan Consulting CC
<i>Farm owner:</i>	Unknown

Heritage Contracts and Archaeological Consulting CC was contracted by Site Plan Consulting to conduct an Archaeological Impact Assessment for the proposed Plaas Skuur Quarry. The project is located on the Farm Wonderheuvel, Farm Number 70 Portion 1, north of the Brandvlei-Carnarvon gravelled Public road, some 60km North-West of Carnarvon, Northern Cape. The Archaeological Impact Assessment report forms part of the EIA for the proposed project.

The aim of the study is to identify cultural heritage sites, document, and assess their importance within local, provincial and national context. It serves to assess the impact of the proposed project on non-renewable heritage resources, and to submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, background study of the area; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.

During the survey 4 heritage sites were identified. General site conditions and features on sites were recorded by means of photographs, GPS locations, and site descriptions. Possible impacts were identified and mitigation measures are proposed in the following report.

This report must also be submitted to the SAHRA for peer review.

1.1 Terms of Reference

Field study

Conduct a field study to: a) systematically survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of identified as significant areas; c) determine the levels of significance of the various types of heritage resources recorded in the project area.

Reporting

Report on the identification of anticipated and cumulative impacts the operational units of the proposed project activity may have on the identified heritage resources for all 3 phases of the project; i.e., construction, operation and decommissioning phases. Consider alternatives, should any significant sites be impacted adversely by the proposed project. Ensure that all studies and results comply with the relevant legislation and the code of ethics and guidelines of ASAPA.

To assist the developer in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

1.2. Archaeological Legislation and Best Practice

Phase 1, an AIA or a HIA is a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of a heritage specialist input is to:

- » Identify any heritage resources, which may be affected;
- » Assess the nature and degree of significance of such resources;
- » Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- » Assess the negative and positive impact of the development on these resources;
- » Make recommendations for the appropriate heritage management of these impacts.

The AIA or HIA, as a specialist sub-section of the EIA, is required under the National Heritage Resources Act NHRA of 1999 (Act 25 of 1999), Section 23(2)(b) of the NEMA and sections 39(3)(b)(iii) of the MPRDA.

The AIA should be submitted, as part of the EIA, BIA or EMP, to the PHRA if established in the province or to SAHRA. SAHRA will be ultimately responsible for the professional evaluation of Phase 1 AIA reports upon which review comments will be issued.

'Best practice' requires Phase 1 AIA reports and additional development information, as per the EIA, BIA/EMP, to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 AIA reports authored by professional archaeologists, accredited with ASAPA or with a proven ability to do archaeological work.

Minimum accreditation requirements include an Honours degree in archaeology or related discipline and 3 years post-university CRM experience (field supervisor level).

Minimum standards for reports, site documentation and descriptions are set by ASAPA in collaboration with SAHRA. ASAPA is a legal body, based in South Africa, representing professional archaeology in the SADC region. ASAPA is primarily involved in the overseeing of ethical practice and standards regarding the archaeological profession. Membership is based on proposal and secondment by other professional members.

Phase 1 AIAs are primarily concerned with the location and identification of sites situated within a proposed development area. Identified sites should be assessed according to their significance. Relevant conservation or Phase 2 mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Conservation or Phase 2 mitigation recommendations, as approved by SAHRA, are to be used as guidelines in the developer's decision making process.

Phase 2 archaeological projects are primarily based on salvage/mitigation excavations preceding development destruction or impact on a site. Phase 2 excavations can only be conducted with a permit, issued by SAHRA to the appointed archaeologist. Permit conditions are prescribed by SAHRA and includes (as minimum requirements) reporting back strategies to SAHRA and deposition of excavated material at an accredited repository.

In the event of a site conservation option being preferred by the developer, a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as minimum requirement.

After mitigation of a site, a destruction permit must be applied for from SAHRA by the client before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5]) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in this age category, located inside a formal cemetery administrated by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation.

If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning; or in some cases, the MEC for Housing and Welfare.

Authorisation for exhumation and reinterment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

1.3 Description of Study Area

1.3.1 Location Data

The project is located on the Farm Wonderheuvel, Farm Number 70 Portion 1, north of the Brandvlei-Carnarvon gravelled public road, some 60km North-West of Carnarvon, Northern Cape.

Carnarvon falls within the bioregion described by Mucina *et al* (2006) as the Upper Karoo Bioregion and within the Nama Karoo Biome. The vegetation type which occurs on the site is described as Upper Karoo Hardeveld. Land use in the study area is characterized by agriculture, dominated by sheep farming. The study area is located between two non-perennial streams on a low dolerite ridge with low vegetation cover. Larger hills are present at a distance from the site to the South. The climate can be described as arid to semi-arid with rainfall occurring from November to April.

1.3.2. Location Map

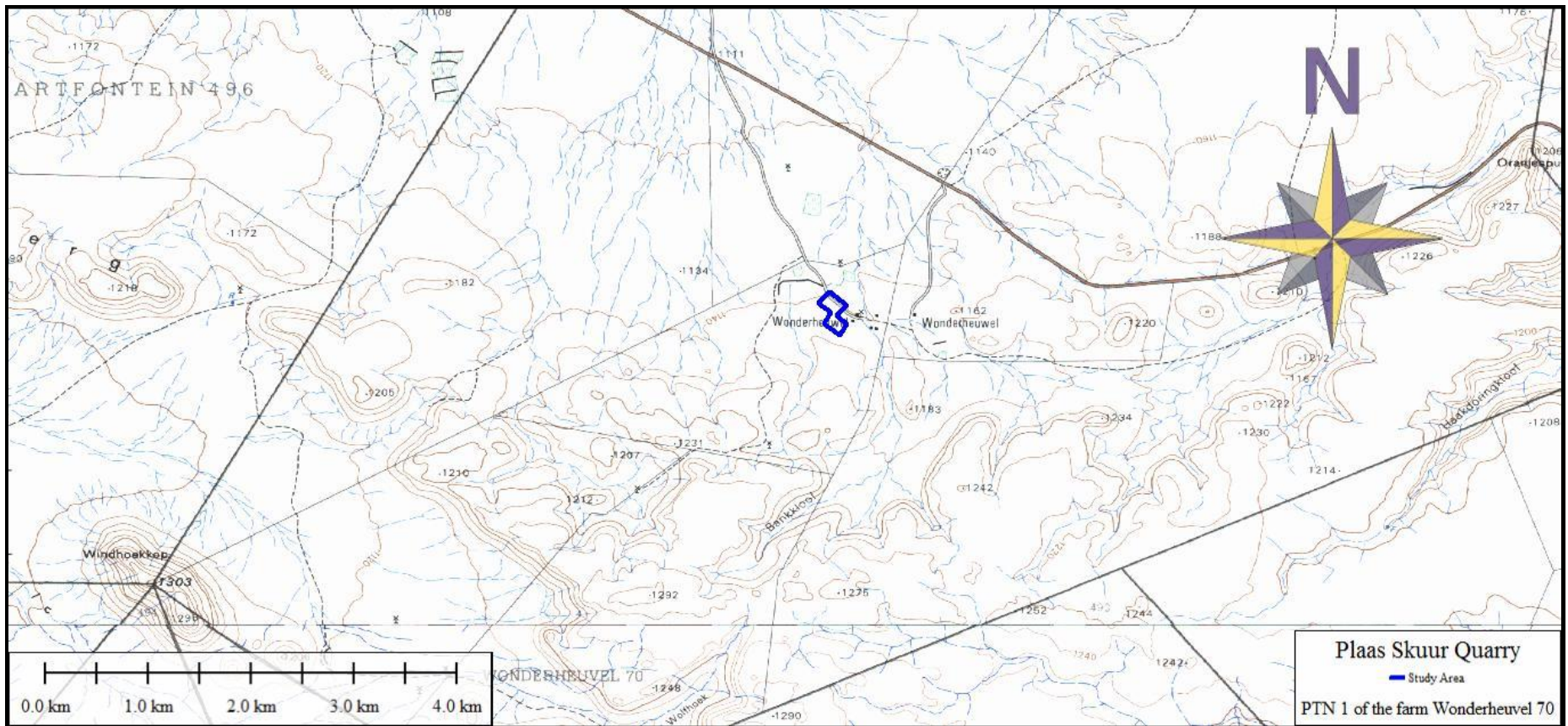


Figure 1: Location map of the proposed quarry.

1.3.3. Google Maps

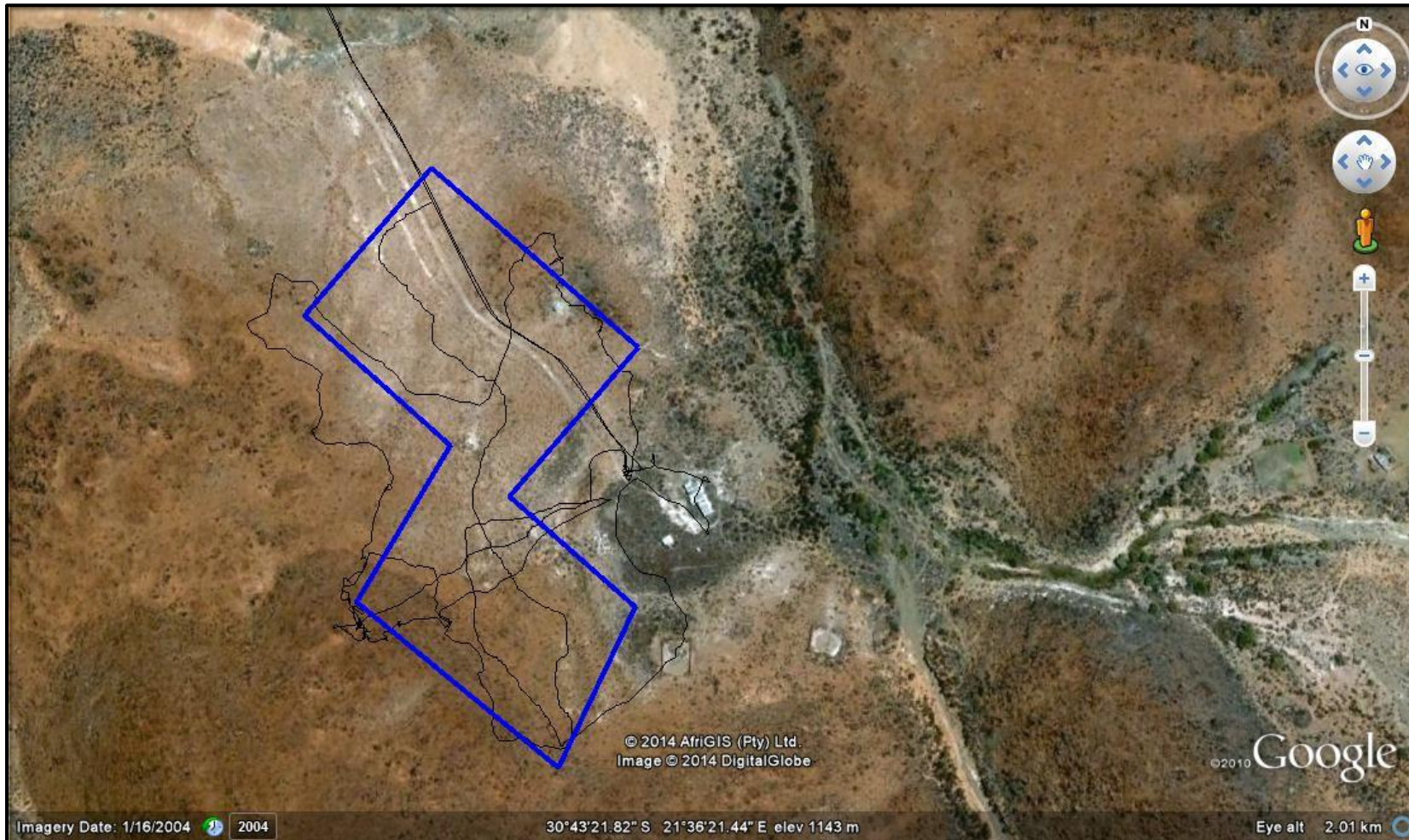


Figure 2: Google Image of the proposed project and track log (in black) of the areas that was covered during the survey.

2. APPROACH AND METHODOLOGY

The aim of the study is to cover archaeological databases and historical sources to compile a background history of the study area followed by field verification; this was accomplished by means of the following phases.

2.1 Phase 1 - Desktop Study

The first phase comprised a desktop study, gathering data to compile a background history of the area in question. It included scanning existing records for archaeological sites, historical sites, graves, architecture, oral history and ethnographical information on the inhabitants of the area.

2.1.1 Literature Search

2.1.2 Information Collection

The SAHRA report mapping project (Version 1.0) and South African Heritage Information System were consulted to collect data from previously conducted CRM projects in the region to provide a comprehensive account of the history of the study area.

2.1.3 Consultation

Heritage Contracts and Archaeological Consulting CC conducted brief consultations with Mr De Wet Nel a local historian residing in Carnarvon as well as with Mrs Marietjie Kotze, who used to live on the farm and is a granddaughter of the Krugers buried in the cemetery on the farm.

2.1.4 Google Earth and Mapping Survey

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where sites of heritage significance might be located.

2.1.5 Genealogical Society of South Africa

The database of the Genealogical Society was consulted to collect data on any known graves in the area.

2.2 Phase 2 - Physical Surveying

A field survey of the study area of 4.8 ha was conducted; focussing on drainage lines, hills and outcrops, high lying areas and disturbances in the topography. The study area was surveyed by means of vehicle and extensive surveys on foot by a professional archaeologist on the 30th of March 2014.

All sites discovered inside the proposed development area was plotted on 1:50 000 maps and their GPS co-ordinates noted. Digital photographs were taken at all the sites.

2.3. Restrictions

Due to the fact that most cultural remains may occur below surface, the possibility exists that some features or artefacts may not have been discovered/ recorded during the survey. The extensive distribution of engraved rocks might also mean that not all the engravings were recorded. The possible occurrence of unmarked graves and other cultural material cannot be excluded. Only the surface infrastructure footprint areas were surveyed as indicated in the location map, and not the entire farm. This study did not assess the impact on the palaeontological component of the project. Although Heritage Contracts and Archaeological Consulting CC surveyed the area as thoroughly as possible, it is incumbent upon the developer to stop operations and inform the relevant heritage agency should further cultural remains, such as stone tool scatters, artefacts, bones or fossils, be exposed during the process of development.

3 NATURE OF THE DEVELOPMENT

The overall Mine Layout Plan during the full production phase of hard rock quarrying hereafter to reveal the following:

a) A 4.923ha area as the Mining Permit Area, accommodating:

a. the excavation measuring +-160mx100m (excluding 10m perimeter border) at ngl.

Following indications of good rock quality obtained during investigative water-drilling of the site during 2013, a minimum depth of good quality rock to 16m has been proven, and as such a total depth to some 20m is planned, with two final faces of 10m each, as per below diagrammatic cross section.

The box-cut will be accessed through provision of a 1:5 sloped haul road.

As the excavation floor will marginally flood (albeit seasonally) following closure from infiltration by seepage and rainwater, the haul road will be retained following post mining rehabilitation to offer animals access to the drinking water sump which 7 Background Information Document – Plaas Skuur Quarry #2711/BID/R1

The box-cut will be accessed through provision of a 1:5 sloped haul road. As the excavation floor will marginally flood (albeit seasonally) following closure from infiltration by seepage and rainwater, the haul road will be retained following post mining rehabilitation to offer animals access to the drinking water sump which would develop in the quarry floor through rainwater catchment. Given the elevation of the ridge as well as the findings of the 2013 water-drilling, no groundwater table will be encountered but minor seepage into the sump may occur for short periods following rains to supplement the direct storm water catchment). (The 2013 drilling held negative findings in regard to recoverable groundwater reserves, with no groundwater having been recorded over the site).

b. **the stockpiling area** for crushed aggregate materials, from which the stockpiled material will be loaded and delivered directly to construction sites.

c. **the crushing and screening plant area.**

d. **the logistical facilities** with containerised site office, basic equipment store, personnel amenities, and parking bays to serve the site employees.

4. HISTORICAL AND ARCHAEOLOGICAL BACKGROUND OF THE STUDY AREA

4.1 Databases Consulted

SAHRA Report Mapping Project

The SAHRA Report Mapping project (version 1) and SAHRIS have numerous surveys on record for the greater Carnarvon area. Studies completed by Dreyer (2007 a, b, c) were consulted for this study as well as Van Schalkwyk 2007. The studies recorded grave sites as well as Stone Age finds and historical homesteads.

Genealogical Society and Google Earth Monuments

Neither the Genealogical Society nor the monuments database at Google Earth (Google Earth also include some archaeological sites and historical battlefields) have any recorded sites in the study area.

Public Consultation

Mr De Wet Nel, a local history specialist as well as a member (Mrs Marietjie Kotze) of the Kruger family who owned the farm in the early 1900's until recently was consulted. Mrs Kotze confirmed that her family, the Krugers, resided on the farm in the homestead (Site 2) and that her grandparents were buried there (Site 4). The names of her family members (JJN Kruger – her father) correspond with some of the engravings found at Site 1. Mrs Kotze confirmed that her sister, Mrs Cecilia Dalton will also be able to provide information on the farm and area. HCAC was unable to reach her.

4.2 Archaeological and Historical Information Available on the Study Area

The following report will endeavour to give an account of the history of the area and district in which it is located.

4.2.1. Historiography and Methodology

This study is by no means all-inclusive, and there are doubtlessly still sources to be found on the history of the property and area researched in this study.

4.2.2. Maps of the Area under Investigation

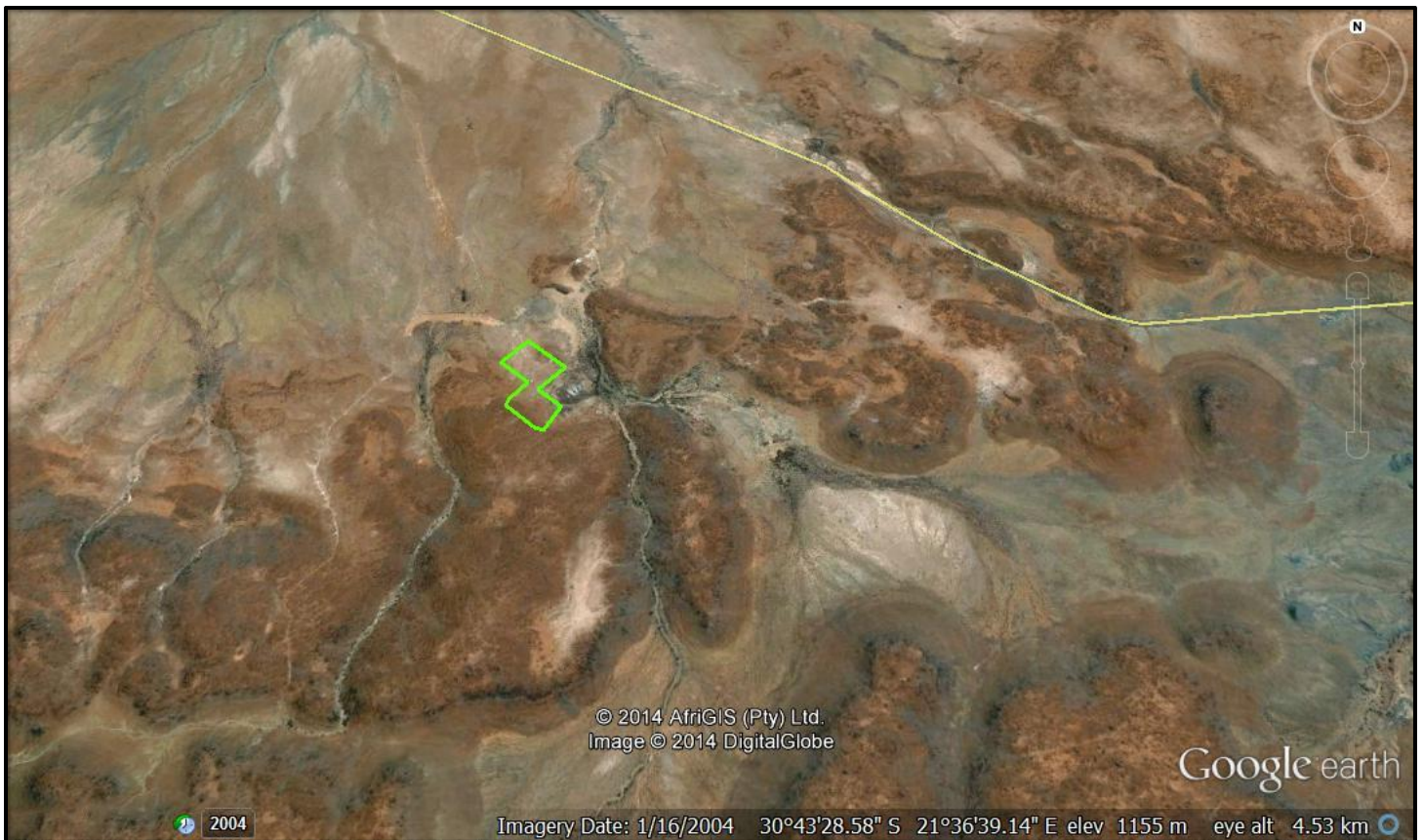


Figure 3: A Google Earth image showing the outline of Wonderheuveld 70. The farm is located in a largely undeveloped area. (Google Earth 2011)

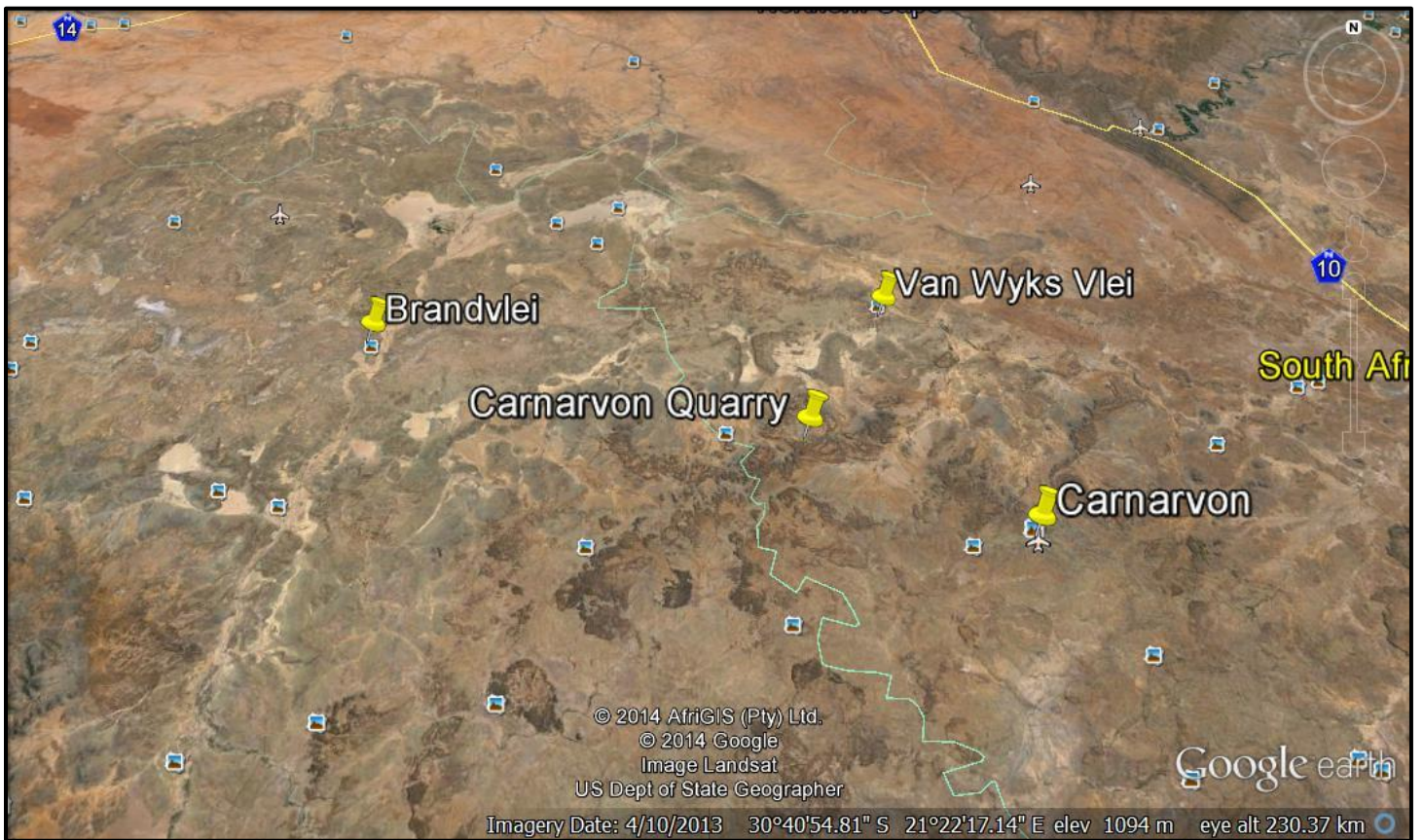


Figure 4: Google Earth Image showing Wonderheuveld 70 in relation to Carnarvon, Van Wyks Vlei and Brandvlei as well as the N14 and N10 (Google Earth 2011)



Figure 5: Map of the Cape Colony in 1901. This map was compiled from information supplied by the Attorney General's Department at the time. The lighter areas, including the Carnarvon District, were occupied at this stage of the Anglo-Boer War. (National Archives of South Africa 1901)

4.2.3. A Brief History of Human Settlement and Black And White Interaction in the Farm Area

In order to understand the historical context of a certain area, it is necessary to consider the geographic and climatic nature of the region in question.

The Anglo-Boer War was an event that had a great role to play in shaping South Africa's history. This conflict took place between 1899 and 1902, and did not only affect the lives of white South Africans, but had a very important impact on the country's black and coloured populations. As Bill Nasson puts it, "Despite the gaps in our knowledge, we are now beginning to appreciate the full and complex dimensions of black involvement in 'the white man's war'". (Nasson 1988: p. 239). The Anglo Boer War also made its mark on the 'Hard Man's Karoo' where Carnarvon and the study area is situated. Koeelkop close to Carnarvon is where a British Blockhouse overlooking the town was located. This was an important look out for the town guards during the Anglo Boer War. The Block house was reduced to ruins, but has recently been rebuilt.

Carnarvon is also home to a monument that commemorates the coloured soldiers from the community who died in the two world wars (Schoeman 2013).

4.2.3.1. History of Carnarvon

The San-Bushmen roamed the area hundreds of years ago and used the typical Karoo hills for ceremonial events such as initiation rites. The San were hunter-gatherers and their lifestyle and culture could not survive in an era when migrating livestock farmers moved into the region.

The Cape Government granted grazing rights in the area that today is Carnarvon to a Pieter Hugo in 1758 (Schoeman 2013)

The farmers had access to more advanced weapons than the San and therefor hunted game in a more efficient way. As the grazing was limited and now had to be shared with domestic animals the food supplies of the San diminished. This caused them to kill domestic animals for food, angering local farmers and resulting in skirmishes. The San either moved away or started to work for the farmers, resulting in a nomadic hunter gatherer culture that was lost forever.

The only evidence that remains today of their presence is the thousands of rock engravings on the black boulders of the Karoo.

Livestock farmers comprised a wide variety of cultures such as white European trekboers, Basters, Khoi, Koranna and Xhosa. Xhosa communities moved up to the Orange River as early as 1795. A group subsequently settled at Schietfontein. In 1839 the Cape governor granted the land to the Xhosa – including the farms Schietfontein, Harmsfontein and Rhenosterpoort. 110 Xhosa families settled in this area by the end of 1839 (Schoeman 2013). Eight years later the area was served by a Rhenish mission under Reverend Christian Wilhelm Alheit. The mission station educated the Xhosa people and a village named Harmsfontein was established in 1860.

In 1874, it changed its name to honour the British Colonial Secretary, Lord Carnarvon. Henry Howard Molyneux Herbert, the fourth Earl of Carnarvon (1813-1890), studied for his BA degree at the University of Oxford, became under-secretary of Colonies in 1858 and State Secretary in 1866. His son, Lord Carnarvon was a renowned Egyptologist (Schoeman 2013). Present day Lord Carnarvon (George Reginald Oliver Molyneux Herbert, 8th Earl of Carnarvon) and Lady Carnarvon live in Highclere castle.

Many of the buildings in Carnarvon bear testament to the rich history of the area. Both AG Visser and DF Malherbe (well-known writers) lived in the town and taught the local children there. A.G. Visser was also once the mayor of the town, while D.F Malherbe was the principal of the local school from 1907 - 1909.

The area is also known for its Corbelled houses, built by the early settlers and trekboers entirely of stone due to a lack of other suitable building material. Corbelled houses in this area date back to between 1825 and 1875. Interestingly corbeled houses can be found all over the world with known examples in Russia, Italy, Portugal, Spain, France the former Yugoslavia and in the West of Ireland. Locally Sotho tribes in the North Eastern Free State also used this technique to build shelters with walls that were slightly lower than the 1,8 to 2m high Corbelled houses of the Karoo.



Figure 6: An example of a restored Corbelled House located south of the study area on the farm Stuurmansfontein.

4.2.3.2. Brandvlei

Brandvlei was developed near a Sak River floor in the heart of Bushmanland where, according to legend, 'Ou Brand', a 19th century trekboer, settled. The town was cut in two by a flash-flood in 1961 and after it recovered a municipality was formed in 1962.

4.2.3.3. Van Wyksvlei

Van Wyksvlei lies close to the first, state-funded dam, built in 1882. The dam is still in use today. It was established in 1880 and named after a local farmer.

5. HERITAGE SITE SIGNIFICANCE AND MITIGATION MEASURES

The presence and distribution of heritage resources define a 'heritage landscape'. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area, or a representative sample, depending on the nature of the project. In the case of the Carnarvon quarry the local extent of its impact necessitates a representative sample and only the footprint of the areas demarcated for development were surveyed. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface.

This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following criteria were used to establish site significance:

- » The unique nature of a site;
- » The integrity of the archaeological/cultural heritage deposits;
- » The wider historic, archaeological and geographic context of the site;
- » The location of the site in relation to other similar sites or features;
- » The depth of the archaeological deposit (when it can be determined/is known);
- » The preservation condition of the sites;
- » Potential to answer present research questions.

Furthermore, The National Heritage Resources Act (Act No 25 of 1999, Sec 3) distinguishes nine criteria for places and objects to qualify as 'part of the national estate' if they have cultural significance or other special value. These criteria are:

- » Its importance in/to the community, or pattern of South Africa's history;
- » Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- » Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- » Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- » Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- » Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- » Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- » Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa;

- » Sites of significance relating to the history of slavery in South Africa.

5.1. Field Rating of Sites

Site significance classification standards prescribed by SAHRA (2006), and approved by ASAPA for the SADC region, were used for the purpose of this report. The recommendations for each site should be read in conjunction with section 9 of this report.

<i>FIELD RATING</i>	<i>GRADE</i>	<i>SIGNIFICANCE</i>	<i>RECOMMENDED MITIGATION</i>
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

5.2 Impact Rating of Assessment

The criteria below are used to establish the impact rating of a site:

- » The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- » The **duration**, wherein it will be indicated whether:
 - * the lifetime of the impact will be of a very short duration (0-1 years), assigned a score of 1;
 - * the lifetime of the impact will be of a short duration (2-5 years), assigned a score of 2;
 - * medium-term (5-15 years), assigned a score of 3;
 - * long term (> 15 years), assigned a score of 4; or
 - * permanent, assigned a score of 5;
- » The **magnitude**, quantified on a scale from 0-10 where; 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1-5 where; 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- » The **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- » the **status**, which will be described as either positive, negative or neutral.
- » the degree to which the impact can be reversed.
- » the degree to which the impact may cause irreplaceable loss of resources.
- » the *degree* to which the impact can be mitigated.

The **significance** is calculated by combining the criteria in the following formula:

$$S=(E+D+M)P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

6. BASELINE STUDY-DESCRIPTION OF SITES

It is important to note that the entire farm was not surveyed but only the footprint of the proposed Carnarvon quarry as indicated in Figure 1. During the survey 4 sites were recorded. Site 1 (Figure 8) is located in the south western portion of the quarry footprint and will be directly impacted and more detail is provided in section 6.1.2 of this report. 100 meters to the east of the quarry is a historical homestead (Site 2). The historical homestead consists of a dilapidated farm house (Figure 11) as well as several rectangular stone packed kraals (Figure 13). Scattered over this area are pieces of porcelain and earthenware as well as glass and historical metal artefacts such as horse shoes and lead bully beef cans, probably from deflated middens. Amongst others, glass fragments of Otto Landsberg and Company snuff bottle dating to the late 1800's, were found. Historical middens are expected in this area. No direct impact is foreseen on Site 2 however a secondary impact from the mining development during the operational phase is expected. A recent mud brick dwelling (Site 3) probably a farm labourer dwelling is located on the eastern periphery of the quarry footprint and will be impacted on (Figure 10). The current access road to the quarry passes a family cemetery (Site 4) with elaborate tombstones. Some of the head stones date back to the 1930's (Figures 16 – 19). It was in this area that renowned tombstone maker Cornelius de Waal crafted intricate and beautiful tombstones in the same time

frame. De Waal's work is known to be mostly on sandstone tombstones, but the possibility is not excluded that he might have been the creator of some of the tombstones in this cemetery. No impact is foreseen on Site 4.

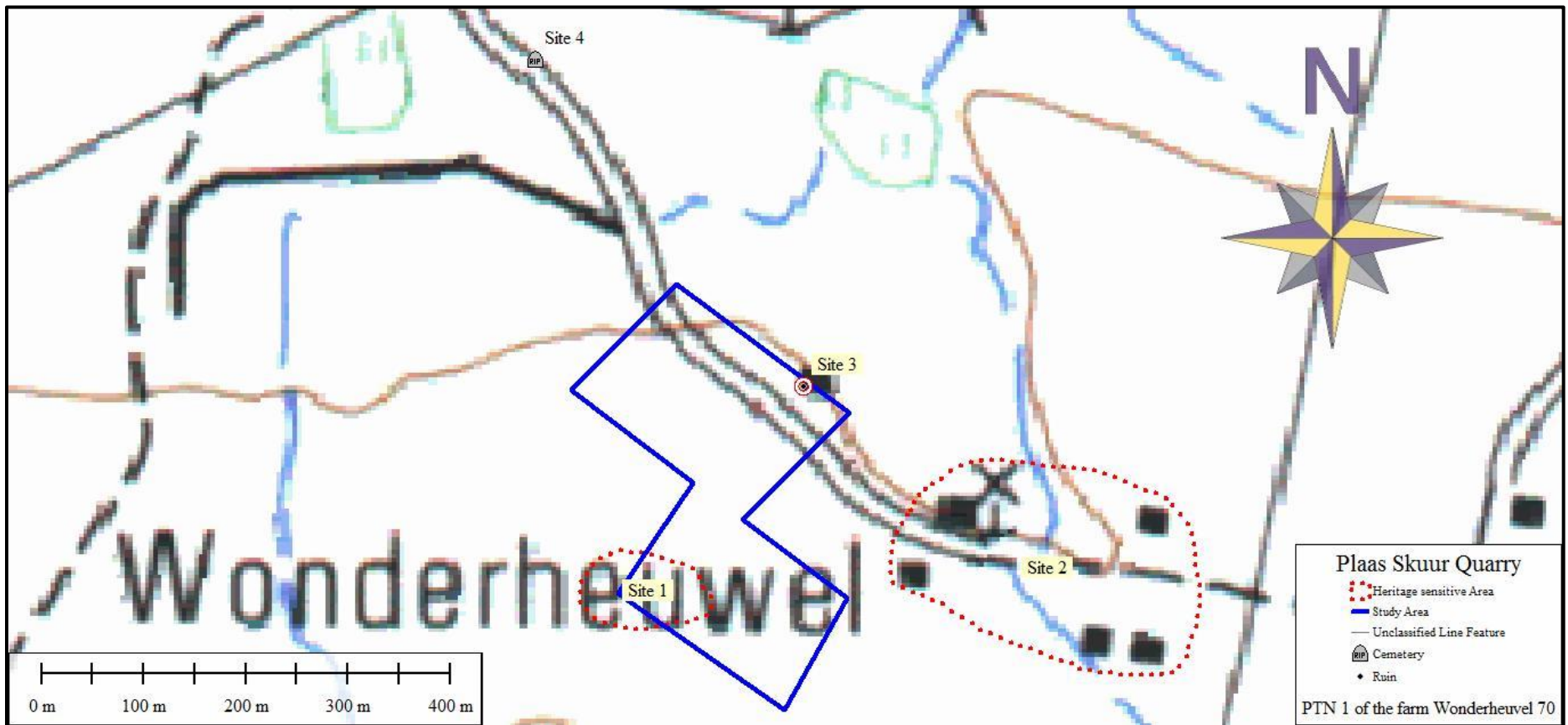


Figure 7: Site distribution map



Figure 8. General view of site 1



Figure 9. General site conditions including the Homestead in the distance.



Figure 10: Structure at Site 3



Figure 11: Dilapidated farm dwelling



Figure 12. Existing access road.



Figure 13. Stone packed rectangular kraal.



Figure 14: Dolerite ridge that will be mined



Figure 15: Stone packed walls of rectangular kraal



Figure 16: Grave in the formal cemetery.



Figure 17: Elaborate tombstone in formal cemetery.

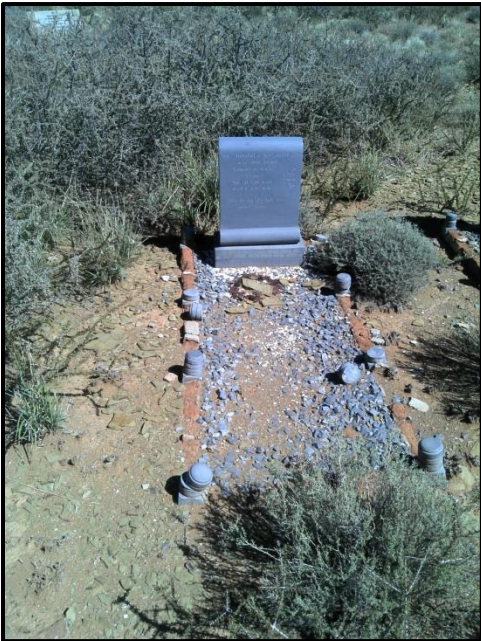


Figure 18: Grave in cemetery



Figure 19: Graves in cemetery.

6.1. DESCRIPTION OF FINDS

6.1.1 Sites with Coordinates

Field number	Type Site	Cultural Markers	Co ordinate
Site 1	Rock engraving Site	Black boulders with engravings in both Afrikaans / Dutch as well as English.	S30.72395 E21.60402
Site 2	Historical Farm house	Historical buildings and rectangular stone packed kraals	S30.72310 E21.60593
Site 3	Farm Labourer Dwelling	Mud brick building	S30.72167 E21.60483
Site 4	Cemetery	Family cemetery with elaborate grave stones.	S30.71913 E21.60263

6.1.2. Site 1 Site description

Site Number	Site 1	1:50 000 map nr	3021 DA
Site Data	Description:		
Type of site	Open site		
Site categories	Historical Engravings		
Context	<p>In the quarry footprint numerous rock engravings were identified with dates ranging from the early 1800's to the early 1900's. The engravings include names (Kruger, Retief, Olwage, and Theron) as well as initials, dates of birth and dates of marriage. The engravings are written in both English and Dutch and also include verses and drawings (hand prints, pictures of flowers and animals) as well as descriptions of travellers and events.</p> <p>Engravings include the names of the Krugers and their wives/</p>		

	<p>sisters – Malie and Martha (A.M.) Kruger feature prominently. The engravings include descriptions of wedding days ('Did is sedan in het jar 1867 ons Troudag 8 Mei' written inside a hand with the words 'Dit is myn hand' underneath and three years later the birth date of F.J Olwage in 1864 on 29 January on the same boulder). The words 'Tans of Togt' with the date 1894 and the name J.A. Poalt indicate that travellers also used the site.</p>
Cultural affinities, approximate age and significant features of the site;	<p>The dates of the engravings range from the late 1800's to the 1900's.</p>
Estimation or measurement of the extent	<p>The site covers an area of 0.65 ha. On closer inspection of the dolerite ridge more engravings can be expected</p>
Description of artefacts	<p>Engravings on dolerite boulders including names, dates, verses and drawings.</p>
Field Rating (Recommended grading or field significance) of the site:	<p>Local Significance (LS), Grade 3B</p>
Statement of Significance (Heritage Value)	<p>Medium to High Local significance</p>

Photographs:



Figure 20: Engravings of names and dates including Thomas Theron



Figure 21: Engraving of a hand with description of a marriage and the date.



Figure 22: Rock engraving including the name Gert Kruger.



Figure 23: Rock engraving



Figure 24: Engraving of a horse



Figure 25: Engraving of an ostrich

Impact evaluation of the proposed project on heritage resources

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and historical material or objects.

	Without mitigation	With mitigation
Extent	Local (2)	Local (2)
Duration	Permanent (5)	Permanent (5)
Magnitude	Moderate (6)	Moderate (5)
Probability	Definite (5)	Definite (5)
Significance	65 High	60 Medium
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	

Mitigation:

It is recommended that the entire site should be preserved as a first option. However due to the nature of the mining permits this is not currently feasible. It is therefore recommended that the entire site including the Homestead, cemetery and engraving site is mapped and recorded. The engravings will have to be individually recorded (traced) after which it is recommended that the engraved stones should be moved to a local museum with the required approval and permits from the heritage authorities. Interpretive panels must be erected at the site and where the engraved stone are curated. If any archaeological material is uncovered during construction or operation a qualified archaeologist must be contacted to verify and record the find. Mitigation will then include documentation and sampling of the material. This will also be required if any paleontological material is uncovered.

Cumulative impacts:

The site is of local significance as the names carved in the engravings correspond with some of the names on the grave stones and the descendant are still residing in the Carnarvon area. The Krugers in Carnarvon lived on the farm and the site includes engravings carved in the same area over 100 years by both residents of the area and travellers. It is also of interest that unlike other engraving sites in the area related to the San, this site contains descriptions of people and events as well as dates in related to both the farm owners and travellers in the area. It is important that this information should be recorded and mapped.

Residual Impacts: Depletion of the historical record of the area. Archaeological and historical sites are non-renewable and impact without mitigation on any archaeological context or material will be permanent and destructive.

7. RECOMMENDATIONS

The proposed development will have a negative impact on the heritage resources of the area, but by employing the correct mitigation measures the impact of the project will be managed as information on an area where little historical research has been conducted will become available. Due to the nature of the mining permit it is not feasible to relocate the quarry at this point. The engraving site together with the other elements that make up the cultural landscape is of local significance as the names carved in the engravings correspond with some of the names on the grave stones and the Krugers in Carnarvon lived on the farm and still reside in the area. The site includes engravings carved in the same area over 100 years by both residents of the area and travellers. It is also of interest as Site 1 contains descriptions of people and events as well as dates related to both the farm owners and travellers in the area. It is therefore recommended that because of the 'sense of place' important to heritage resources all 4 sites should be mapped and recorded, the record should include the entire complex, that is the engraving site, houses, outbuildings, kraals, graves and labourer housing.

Site 1: The engravings will have to be individually recorded and traced after which it is recommended that the engraved stones should be moved to a local museum. Due to the nature of the size of the engraved boulders an open air heritage site such as the "Erfernis Terrein at Doornbult" close to Hopetown some 85km away can be considered. Heritage Contracts and Archaeological Consulting also managed to locate two daughters of the Kruger family. It is recommended that an archival study of the farm should be included in the mitigation and research and that they are also consulted as part of this process.

Site 2: It is recommended that the construction/operational staff is educated about the significance of the site and that the entire area should be demarcated during construction and operation of the quarry to prevent any damage to the site.

Site 3: The mud brick building is of low significance and no further action is necessary for this site.

Site 4: The cemetery is fenced and if the current access road is used no impact is foreseen on the site.

An architectural historian needs to record all standing buildings 60 years or older,
These recommendations are made subject to approval by SAHRA.

9. PROJECT TEAM

Jaco van der Walt, Project Manager

10. STATEMENT OF COMPETENCY

I (Jaco van der Walt) am a member of ASAPA (no 159), and accredited in the following fields of the CRM Section of the association: Iron Age Archaeology, Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation. This accreditation is also valid for/acknowledged by SAHRA and AMAFA.

I have been involved in research and contract work in South Africa, Botswana, Zimbabwe, Mozambique and Tanzania; having conducted more than 300 AIAs since 2000.

11. REFERENCES

- Burton, A. R. E. 1903. *Cape Colony for the Settler*. Cape Town: J. C. Juta & Co.
- Dreyer, C. 2007a. First Phase Archaeological And Cultural Heritage Assessment Of The Proposed Borrow Pit Sites Along The P02996 Road Between Carnarvon & The Ska Site, Northern Cape. Unpublished report.
- Dreyer, C. 2007b. First Phase Archaeological and Cultural Heritage Investigation of the Proposed Upgrading Of the Oxidation Pond System at Carnarvon, Northern Cape. Unpublished report.
- Dreyer, C. 2007c. First Phase Archaeological and Cultural Heritage Assessment of the Grave Site along the Dr2996 & Dr2337 Roads, Carnarvon District, Northern Cape. Unpublished Report.
- Evans M. M. 2000. *Encyclopedia of the Boer War. 1899 – 1902*. Cornwall: MPG Books Limited.
- Hocking, A. 1983. *Kaiaas and cocopans: the story of mining in South Africa's Northern Cape*. Johannesburg: Hollards Publishers.
- Mucina, L. & Rutherford, M.C. 2006. The vegetation map of South Africa, Lesotho and Swaziland. SANBI, Pretoria.
- Nasson, B. 1988. The War of Abraham Esau 1899-1901: Martyrdom, Myth and Folk Memory in Calvinia. *African Affairs*, Vol. 87, No. 347 (Apr., 1988), pp. 239-265.
- Schoeman, C. 2013. The Historical Karoo. Zebra Press (Random House Struik)
- Van Schalkwyk, J. 2007. Heritage Impact Assessment for the Proposed Karoo Array Telescope Development, Williston Municipal District, Northern Cape Province. Unpublished report.

Electronic Sources:

www.carnarvon.co.za