



BPI for Palaeontological Research

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7 December 2009

Dr Robert de Jongh
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Dear Robert,

Farm Keboes 37, Upington: Palaeontological impact

As requested, I have undertaken a desk top study to assess the possible affect on palaeontological heritage which will result from the setting up of housing on the farm Keboes 37 situated south west of Upington.

In my opinion the proposed development will not pose any threat to palaeontological heritage. I propose that the project proceed but should any palaeontological finds be exposed in the course of development then a qualified palaeontologist be contacted to assess what should be done.

Yours sincerely

A handwritten signature in black ink, appearing to read "B. Rubidge".

Professor Bruce Rubidge

KEBOES 37 UPINGTON NORTHERN CAPE PROVINCE: PALAEOLOGICAL IMPACT ASSESSMENT

Introduction

A desk-top study was undertaken to determine that effect on palaeontological heritage which could result from the proposed establishment of housing on the farm Keboes 37 situated south west of Upington, Northern Cape Province.

Geology of the area to be developed

The entire area of the proposed development is underlain by rocks of the Namaqua-Natal Metamorphic Province which are Precambrian in age. As far as can be ascertained from maps of the development area which were made available to me, the area is underlain by granites and charnokites of the Keimoes Suite as well as smaller outcrops of the Areachap Formation.

Palaeontological Heritage

From current knowledge the Namaqua-Natal Metamorphic Province, which comprises igneous and metamorphic rocks, does not contain any fossils and as these rocks are Precambrian age the only fossils which could be expected at the time of formation would be microfossils. Despite the proximity of the study area to the Orange River, from the 1:250 000 Geological Map (2820 Upington, 1997) there are no Tertiary or Quaternary deposits present in the area to be developed and it is thus unlikely that fossils of Tertiary or Quaternary age are present.

Recommendation

The area affected by the proposed development of a holiday resort will have no negative impact on paleontological heritage. It is therefore proposed that, from a palaeontological perspective, development should proceed. If, in the unlikely event that Tertiary or Quaternary fossils are encountered in the course of development, a suitably qualified palaeontologist must be contacted to assess the situation.

References

Cornell DH, Thomas RJ, Moen HFG, Reid DL, Moore JM, Gibson RL. 2006. The Namaqua-Natal Province. *In*: Johnson MR, Anhaeusser and Thomas RJ (Eds). *The Geology of South Africa*. Geological Society of South Africa, Johannesburg/Council for Geoscience, Pretoria. 325-379.

McCarthy TS and Rubidge BS. 2005. The story of Earth and Life – a southern African perspective on the 4.6 billion year journey. Struik Publishers, Cape Town. pp 333.



Professor Bruce Rubidge

**Archaeological impact survey report for
THE LAND USE CHANGE ON SECTIONS OF THE FARM KEBOES 37,
GORDONIA DISTRICT, NORTHERN CAPE PROVINCE**



**ARCHAEOLOGICAL IMPACT SURVEY REPORT FOR THE LAND USE CHANGE
ON SECTIONS OF THE FARM KEBOES 37, GORDONIA DISTRICT, NORTHERN
CAPE PROVINCE**

Report No: 2010/JvS/026
Status: Final
Revision No: 0
Date: April 2010

Prepared for:
CULTMATRIX
Representative: Dr R de Jong

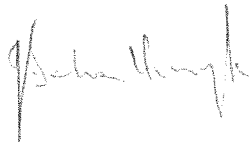
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Declaration:

I, J.A. van Schalkwyk, declare that I do not have any financial or personal interest in the proposed development, nor its developers or any of their subsidiaries, apart from the provision of heritage assessment and management services.



J A van Schalkwyk (D Litt et Phil)
Heritage Consultant
April 2010

EXECUTIVE SUMMARY

ARCHAEOLOGICAL IMPACT SURVEY REPORT FOR THE LAND USE CHANGE ON SECTIONS OF THE FARM KEBOES 37, GORDONIA DISTRICT, NORTHERN CAPE PROVINCE

Newgro Farming (Pty) Ltd proposes to establish irrigation farming (grapes) activities on a Portion of the Remainder of the farm Keboes 37. The total area under consideration is 730 hectare.

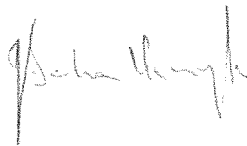
An independent archaeological consultant was appointed by **Cultmatrix** to conduct a survey to locate, identify, evaluate and document sites, objects and structures of cultural importance dating to the Stone Age and Iron Age found within the boundaries of the areas where it is planned to develop the agricultural activities.

This AIA report forms part of the Environmental Impact Assessment (EIA) as required by the EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and was done in accordance with Section 38 of the National Heritage Resources Act, No. 25 of 1999 and is intended for submission to the South African Heritage Resources Agency (SAHRA).

Stone tools, flakes and cores occur in some sections of the site. The density of tools/flakes/cores varies from 0/10m² to approximately 10/10m² in two well-defined areas. The occurrence of stone tools are viewed as find spots rather than sites per se. That means that as most of these are surface finds, they are viewed to be out of context and do not have any significance.

- As no heritage sites are known to occur in the study area, there would be no impact resulting from the proposed development of the farming activities.

Therefore, from an archaeological point of view we recommend that the proposed development can continue. However, we request that if archaeological sites or graves are exposed during construction work, it should immediately be reported to a heritage consultant so that an investigation and evaluation of the finds can be made.



J A van Schalkwyk
Heritage Consultant
April 2010

TECHNICAL SUMMARY

Property details						
Province	Northern Cape					
Magisterial district	Gordonia					
Topo-cadastral map	2821CA					
Closest town	Upington					
Farm name & no.	Keboes 37					
Portions/Holdings	Portion of the Remainder					
Coordinates	Polygons					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	28.65114	21.12986	1	28.63147	21.14839
	2	28.63951	21.12262	2	28.63107	21.16825
	3	28.63909	21.12550	3	28.64525	21.18834
	4	28.64852	21.13659	4	28.65576	21.1607
	5	28.64159	21.14609			

Development criteria in terms of Section 38(1) of the NHR Act	Yes/No
Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	No
Construction of bridge or similar structure exceeding 50m in length	No
Development exceeding 5000 sq m	Yes
Development involving three or more existing erven or subdivisions	No
Development involving three or more erven or divisions that have been consolidated within past five years	No
Rezoning of site exceeding 10 000 sq m	Yes
Any other development category, public open space, squares, parks, recreation grounds	No

Development	
Description	Development of agricultural fields (grapes)
Project name	Keboes

Land use	
Previous land use	Farming
Current land use	Farming

Heritage sites assessment: Site 1		
Site type	Site significance	Site grading (Section 7 of NHRA)
Stone Age	Low	III
Impact assessment		
Impact	Mitigation	Permits required
Low	None	None

Heritage sites assessment: Site 2		
Site type	Site significance	Site grading (Section 7 of NHRA)
Stone Age	Low	
Impact assessment		
Impact	Mitigation	Permits required
Low	None	None

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GLOSSARY OF TERMS AND ABBREVIATIONS**STONE AGE**

Early Stone Age	2 000 000 - 150 000 Before Present (BP)
Middle Stone Age	150 000 - 30 000 BP
Late Stone Age	30 000 - until c. AD 200

IRON AGE

Early Iron Age	AD 200 - AD 900
Middle Iron Age	AD 900 - AD 1300
Late Iron Age	AD 1300 - AD 1830

HISTORIC PERIOD

Since the arrival of the white settlers - c. AD 1840 in this part of the country

ASAPA	Association of Southern African Professional Archaeologists
EIA	Early Iron Age
ESA	Early Stone Age
LIA	Late Iron Age
LSA	Late Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
SAHRA	South African Heritage Resources Agency

ARCHAEOLOGICAL IMPACT SURVEY REPORT FOR THE LAND USE CHANGE ON SECTIONS OF THE FARM KEBOES 37, GORDONIA DISTRICT, NORTHERN CAPE PROVINCE

1. INTRODUCTION

Newgro Farming (Pty) Ltd proposes to establish irrigation farming (grapes) activities on a Portion of the Remainder of the farm Keboes 37. The total area under consideration is 730 hectare.

An independent archaeological consultant was appointed by **Cultmatrix** to conduct a survey to locate, identify, evaluate and document sites, objects and structures of cultural importance dating to the Stone Age and Iron Age found within the boundaries of the areas where it is planned to develop the agricultural activities.

This AIA report forms part of the Environmental Impact Assessment (EIA) as required by the EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and was done in accordance with Section 38 of the National Heritage Resources Act, No. 25 of 1999 and is intended for submission to the South African Heritage Resources Agency (SAHRA).

2. TERMS OF REFERENCE

The scope of work consisted of conducting a Phase 1 archaeological survey of the site in accordance with the requirements of Section 38(3) of the National Heritage Resources Act (Act 25 of 1999).

This include:

- Conducting a desk-top investigation of the area
- A visit to the proposed development site

The objectives were to

- Identify possible archaeological, cultural and historic sites within the proposed development areas;
- Evaluate the potential impacts of construction, operation and maintenance of the proposed development on archaeological, cultural and historical resources;
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural or historical importance.

3. HERITAGE RESOURCES

3.1 The National Estate

The NHRA (No. 25 of 1999) defines the heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations that must be considered part of the national estate to include:

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;

- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, including-
 - ancestral graves;
 - royal graves and graves of traditional leaders;
 - graves of victims of conflict;
 - graves of individuals designated by the Minister by notice in the Gazette;
 - historical graves and cemeteries; and
 - other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- sites of significance relating to the history of slavery in South Africa;
- movable objects, including-
 - objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - objects to which oral traditions are attached or which are associated with living heritage;
 - ethnographic art and objects;
 - military objects;
 - objects of decorative or fine art;
 - objects of scientific or technological interest; and
 - books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

3.2 Cultural significance

In the NHRA, Section 2 (vi), it is stated that "cultural significance" means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This is determined in relation to a site or feature's uniqueness, condition of preservation and research potential.

According to Section 3(3) of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of

- its importance in 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; and
- sites of significance relating to the history of slavery in South Africa.

4. STUDY APPROACH AND METHODOLOGY

4.1 Extent of the Study

This survey and impact assessment covers the area as presented in Section 5 and as illustrated in Figure 1 and 2.

4.2 Methodology

4.2.1 Preliminary investigation

4.2.1.1 Survey of the literature

A survey of the relevant literature was conducted with the aim of reviewing the previous research done and determining the potential of the area. Standard works such as Rudner (1953), Humphreys (1976), Morris (1995), Parsons (2007, 2008), Couzens (2004) and Raper (2004) were consulted.

- An overview of the history of the larger region was obtained, indicating the range of possible heritage sites that could be expected.

4.2.1.2 Data bases

The *Heritage Atlas Database*, the *Environmental Potential Atlas* and the *National Archives of South Africa* were consulted.

- Information on a number of sites located outside the study area was obtained. These sites are mostly contemporary, dealing with the farming developments in the region and graves and cemeteries.

4.2.1.3 Other sources

Aerial photographs and topocadastral and other maps were also studied - see the list of references below.

- Little information of actual use was obtained from these sources.

4.2.2 Field survey

The field survey was done according to generally accepted archaeological practices, and was aimed at locating all possible sites, objects and structures. The two areas that had to be investigated, were identified by members of **Cultmatrix** by means of maps and during a site visit. A number of parallel transects were walked across the two sites. Special attention was given to hills, outcrops and streambeds (all dry).

4.2.3 Documentation

All sites, objects and structures that are identified are documented according to the general minimum standards accepted by the archaeological profession. Coordinates of individual localities are determined by means of the *Global Positioning System* (GPS)¹ and plotted on a map. This information is added to the description in order to facilitate the identification of each locality.

Map datum used: Hartebeeshoek 94 (WGS84).

¹ According to the manufacturer a certain deviation may be expected for each reading. Care was, however, taken to obtain as accurate a reading as possible, and then to correlate it with reference to the physical environment before plotting it on the map.

5.3 Overview of the region

Stone Age

Occupation of the larger region took place since the Early Stone Age, with occurrences of Middle Stone Age more frequent than the Early Stone Age. However, it is mostly during the Later Stone Age when population density increased.

Recently Parsons (2007, 2008) demonstrated that the so-called Swartkop and Dornfontein industries possibly relate to different socio-economies – those of hunter-gatherers and stock keepers. Based on an analysis of material recovered from five sites in the Northern Cape Province, all dating to the last two millennia, she compares variability between assemblages attributed to the Swartkop and Doornfontein industries and identifies areas of overlap and difference.

Iron Age

The spread of Iron Age peoples did not extend this far to the west (Humphreys 1976).

Historic period

The town of Upington, originally known as Olijvenhoutsdrift, was founded in 1871 as part of a mission station by the German missionary Rev Schröder. The town was renamed in 1884 after Sir Thomas Upington, who was the Prime Minister of the Cape Colony and who visited the town in 1884.

An irrigation canal was started by Rev Schröder in 1883. It was completed in 1885. By 1884 there were already 77 irrigation farms. Nowadays, it is disputed that Schröder was the original builder of the canal, and it is claimed that he only carried on with an idea that was started by a local inhabitant by the name of Abraham September.

Most of the known, declared heritage sites (provincial) are located in the vicinity of the Orange River and has to do with irrigation activities.

5.4 Identified sites

5.4.1 *Stone Age*

Stone tools, flakes and cores occur in the eastern section of Study Area 1 and in the central section of Study Area 2 (Fig. 2). The material used is mostly banded ironstone, chert and some hornfels, all found in the river. The tools mostly seem to date to the Middle Stone Age, due to the occurrence of faceted platforms, although some that might be classified as Late Stone Age also occurs (Fig. 6 & 11). These are very typical of Smithfield A and B assemblages and include end- and side scrapers as well as constricted scrapers. No formal settlement site could be linked to the areas of increased tool density and no material such as ostrich eggshells or rock engravings occur anywhere in the development site. No features (stone cairns marking burial sites) such as discussed by Morris (1995) were identified, probably as the study areas are too far from the river and there is not sufficient soil to bury people in.

- The density of tools/flakes/cores varies from 0/10m² to approximately 10/10m². In Study Area 1, the latter distribution only occurs on the western border of the site, close to a small hill outcrop (Fig. 5). In Study Area 2 this density was found on a small hill-like feature in the centre of the surveyed block.

5.4.2 Iron Age

- No sites, features or objects of cultural significance dating to the Iron Age were identified in the study area.

5.4.3 Historic period

Quarrying activities took place on a large scale at the foot of the hill in Study Area 1. The rock was drilled and then blasted loose. It is presumed that this material was used in road making activities some time in the past.

6. SITE SIGNIFICANCE AND ASSESSMENT

6.1 Heritage assessment criteria and grading

According to the NHRA, No. 25 of 1999, Section 2(vi), the *significance* of heritage sites and artefacts is determined by its aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential.

A matrix was developed whereby the above criteria, as set out in Sections 3(3) and 7 of the NHRA, No. 25 of 1999, were applied for each identified site (see Appendix 1). This allowed some form of control over the application of similar values for similar sites.

The NHRA stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act:

- **Grade I:** Heritage resources with qualities so exceptional that they are of special national significance;
- **Grade II:** Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and
- **Grade III:** Other heritage resources worthy of conservation, on a local authority level.

The occurrence of sites with a Grade I significance will demand that the development activities be drastically altered in order to retain these sites in their original state. For Grade II and Grade III sites, the application of mitigation measures would allow the development activities to continue.

6.2 Statement of significance

In terms of Section 7 of the NHRA, all the sites currently known or which are expected to occur in the study area are evaluated to have Grade III significance.

6.3 Impact assessment

Impact analysis of cultural heritage resources under threat of the proposed development, are based on the present understanding of the development.

- As no heritage sites are known to occur in the study area, there would be no impact resulting from the proposed development of the farming activities.

7. RECOMMENDATIONS

The aim of the survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the area in which it is proposed to develop farming activities.

Stone tools, flakes and cores occur in some sections of the site. The density of tools/flakes/cores varies from 0/10m² to approximately 10/10m² in two well-defined areas. The occurrence of stone tools are viewed as find spots rather than sites per se. That means that as most of these are surface finds, they are viewed to be out of context and do not have any significance.

- As no heritage sites are known to occur in the study area, there would be no impact resulting from the proposed development of the farming activities.

Therefore, from an archaeological point of view we recommend that the proposed development can continue. However, we request that if archaeological sites or graves are exposed during construction work, it should immediately be reported to a heritage consultant so that an investigation and evaluation of the finds can be made.

8. REFERENCES

8.1 Data bases

Chief Surveyor General

Environmental Potential Atlas, Department of Environmental Affairs and Tourism.

Heritage Atlas Database, Pretoria.

National Archives of South Africa

8.2 Literature

Acocks, J.P.H. 1975. *Veld Types of South Africa*. Memoirs of the Botanical Survey of South Africa, No. 40. Pretoria: Botanical Research Institute.

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Rudner, I. 1953. Decorated ostrich egg-shell and stone implements from the Upington area. *South African Archaeological Bulletin* 8(31):82-84.

Smith, A.B. (ed.) 1995. *Einiqualand: studies of the Orange River frontier*. Cape Town: University of Cape Town Press.

8.3 Maps

1: 50 000 Topocadastral maps – 2821CA

APPENDIX 1: CONVENTIONS USED TO ASSESS THE IMPACT OF PROJECTS ON HERITAGE RESOURCES

Significance

According to the NHRA, Section 2(vi) the **significance** of a heritage sites and artefacts is determined by it aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

Matrix used for assessing the significance of each identified site/feature

1. Historic value				
Is it important in the community, or pattern of history				
Does it have strong or special association with the life or work of a person, group or organisation of importance in history				
Does it have significance relating to the history of slavery				
2. Aesthetic value				
It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group				
3. Scientific value				
Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage				
Is it important in demonstrating a high degree of creative or technical achievement at a particular period				
4. Social value				
Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons				
5. Rarity				
Does it possess uncommon, rare or endangered aspects of natural or cultural heritage				
6. Representivity				
Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects				
Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class				
Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality.				
7. Sphere of Significance		High	Medium	Low
International				
National				
Provincial				
Regional				
Local				
Specific community				
8. Significance rating of feature				
1.	Low			
2.	Medium			
3.	High			

Significance of impact:

- low where the impact will not have an influence on or require to be significantly accommodated in the project design
- medium where the impact could have an influence which will require modification of the project design or alternative mitigation
- high where it would have a "no-go" implication on the project regardless of any mitigation

Certainty of prediction:

- Definite: More than 90% sure of a particular fact. Substantial supportive data to verify assessment
- Probable: More than 70% sure of a particular fact, or of the likelihood of that impact occurring
- Possible: Only more than 40% sure of a particular fact, or of the likelihood of an impact occurring
- Unsure: Less than 40% sure of a particular fact, or the likelihood of an impact occurring

Recommended management action:

For each impact, the recommended practically attainable mitigation actions which would result in a measurable reduction of the impact, must be identified. This is expressed according to the following:

- 1 = no further investigation/action necessary
- 2 = controlled sampling and/or mapping of the site necessary
- 3 = preserve site if possible, otherwise extensive salvage excavation and/or mapping necessary
- 4 = preserve site at all costs
- 5 = relocate/retain graves

Legal requirements:

Identify and list the specific legislation and permit requirements which potentially could be infringed upon by the proposed project, if mitigation is necessary.

APPENDIX 2. RELEVANT LEGISLATION

All archaeological and palaeontological sites, and meteorites are protected by the National Heritage Resources Act (Act no 25 of 1999) as stated in Section 35:

(1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA.

(2) Subject to the provisions of subsection (8)(a), all archaeological objects, palaeontological material and meteorites are the property of the State. The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collection policy acceptable to the heritage resources authority and may in so doing establish such terms and conditions as it sees fit for the conservation of such objects.

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

(4) No person may, without a permit issued by the responsible heritage resources authority-

- (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
- (c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
- (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

In terms of cemeteries and graves the following (Section 36):

(1) Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit.

(2) SAHRA must identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with the grave referred to in subsection (1), and must maintain such memorials.

(3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority-

- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- (b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

The National Heritage Resources Act (Act no 25 of 1999) stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act:

- **Grade I:** Heritage resources with qualities so exceptional that they are of special national significance;
- **Grade II:** Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and
- **Grade III:** Other heritage resources worthy of conservation, and which prescribes heritage resources assessment criteria, consistent with the criteria set out in section 3(3), which must be used by a heritage resources authority or a local authority to assess the intrinsic, comparative and contextual significance of a heritage resource and the relative benefits and costs of its protection, so that the appropriate level of grading of the resource and the consequent responsibility for its management may be allocated in terms of section 8.

APPENDIX 3: SURVEY RESULTS

See Appendix 1 for an explanation of the conventions used in assessing the cultural remains.

Map datum used: Hartebeeshoek 94 (WGS84).

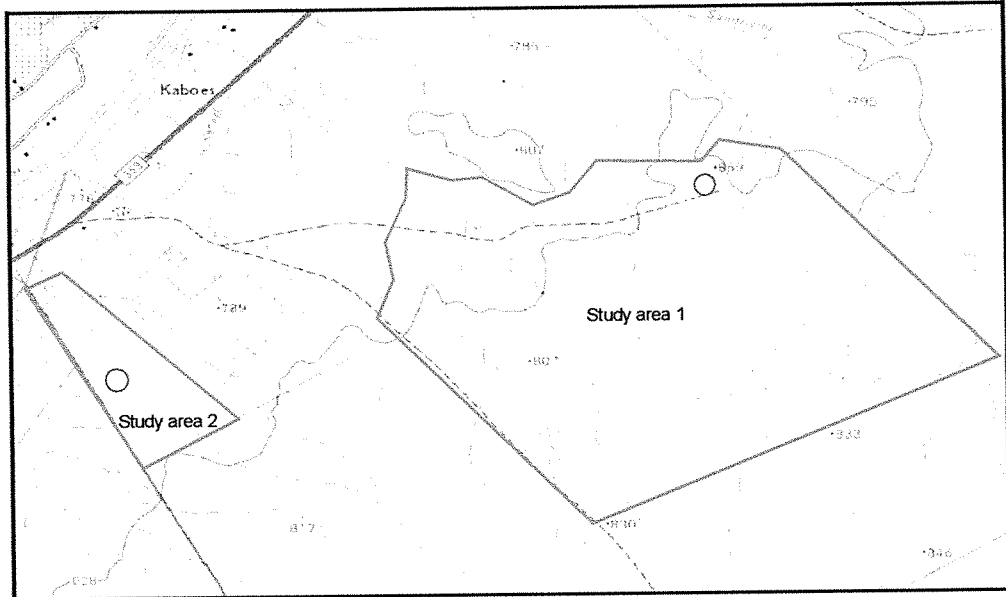


Fig. 2. The study areas outlined in green, showing the location where the stone tools were identified (red circles).
(Maps 2821CA: Chief Surveyor-General)

APPENDIX 4: ILLUSTRATIONS



Fig. 3. Aerial photograph of the sites.
(Photo: Google Earth)



Fig. 4. The study area (1) looking north.



Fig. 5. The small hill on the north-eastern side of study area (1).



Fig. 6. Stone tools and flakes found in study area (1).



Fig. 7. View over the western section of study area (1), showing the agricultural development.

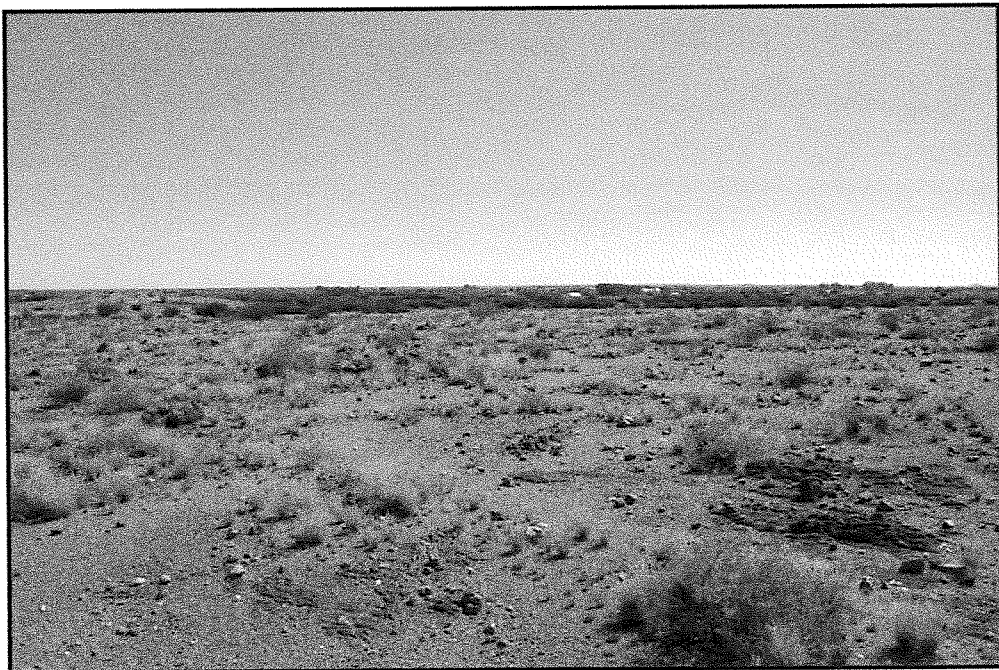


Fig. 8. View over study area (2), looking north.

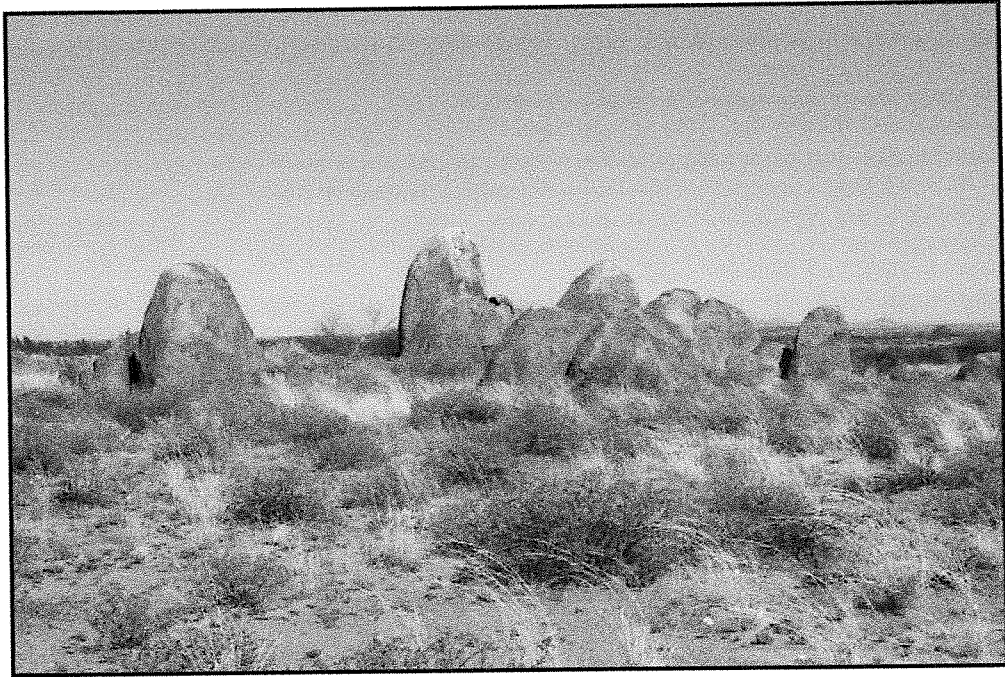


Fig. 9. Granite outcrops on study area (2).

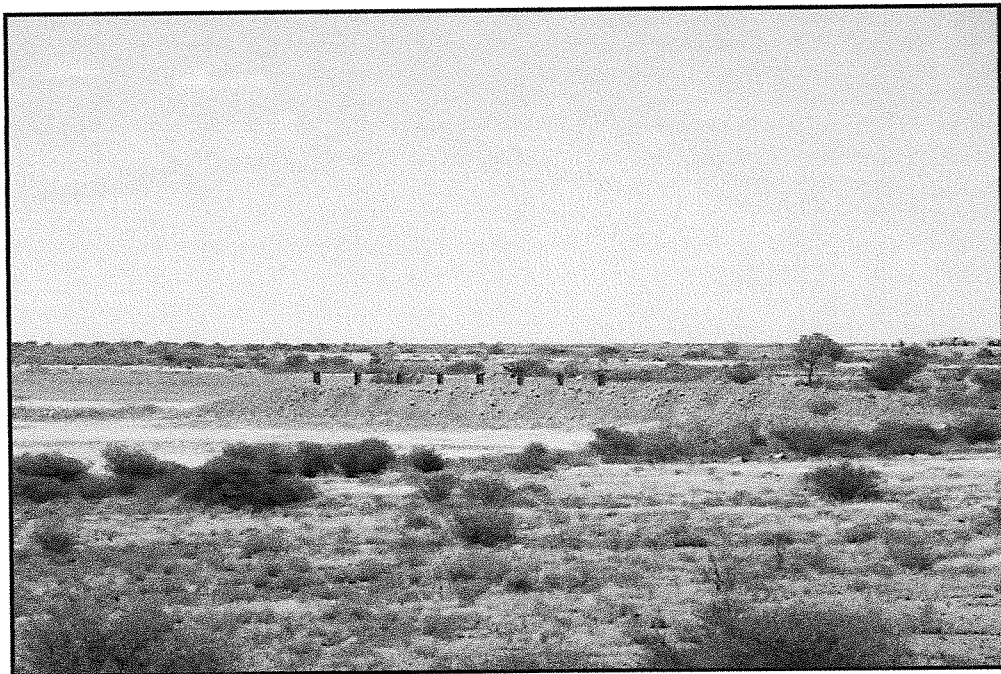


Fig. 10. The rifle range at study area (2).



Fig. 11. Stone tools and flakes found in study area (2).