Heritage Impact Assessment

Heritage Impact Assessment for the Proposed Boshof Solar Park on the farm Rabenthal north of Boshof, Free State Province.

Compiled for:

Africa Geo-Environmental Services (AGES)

Survey conducted & Report compiled by:

Marko Hutten

October 2011

Hutten Heritage Consultants P.O. Box 4209 Louis Trichardt 0920 Tel: +27 76 038 4185 E-mail: <u>marko.hutten@lantic.net</u>

Acknowledgements:

CLIENT:	Africa Geo-Environmental Services (AGES)
CONTACT PERSON:	Mr. J. Botha 120 Marshall Street Polokwane 0699 +27 (0) 15 291 1577 jbotha@ages-group.com
CONSULTANT:	Hutten Heritage Consultants
CONTACT PERSON:	Marko Hutten (BA Hons. Archaeology, UP) Member of the Association of Southern African Professional Archaeologists (#057)
REPORT AUTHOR:	Marko Hutten
FIELD WORKER:	Thomas Mulaudzi

SIGNED OFF BY: MARKO HUTTEN

.....

Executive Summary

Site name and location: Proposed development of the Boshof Solar Park on portion 1 of the farm Rabenthal 264 approximately 10km north of Boshof in the Free State Province.

Local Authority: Lejweleputswa District Municipality.

Developer: Firefly Investments 230 (Pty) Ltd.

Date of field work: 26 September 2011.

Date of report: October 2011.

Findings: One site with significant heritage value was identified during the study. The identified heritage site was situated on the edge of a natural pan which formed part of an ecological sensitive calcareous floodplain on the northern part of the property. The site consisted of an extensive scatter of Stone Age artefacts from the Middle and Late Stone Ages.

The developer indicated that they have no intensions to develop in this ecological sensitive area where the heritage site was identified. It is therefore recommended that the developer keep to the proposed development and avoid the identified heritage site.

If, however it is deemed not to be possible to avoid the identified heritage site, further mitigation measures are recommended. These mitigation measures will include mapping of the identified site, controlled sampling of identified artefacts and the identification, analysis and storage of the recovered sample by a qualified Stone Age specialist.

If the developer sticks to the proposed layout plan for the development, no further sitespecific actions or any further heritage mitigation measures are recommended as no heritage resource sites or finds of any value or significance were identified in the indicated footprint for the development.

The proposed development of the Boshof Solar Park in the indicated area can continue from a heritage point of view if the above mentioned recommendations are adhered to.

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

TABLE OF CONTENTS

1.	INTRODUCTION	5
2.	LEGISLATIVE REQUIREMENTS	5
3.	PROPOSED PROJECT	6
4.	PROJECT AREA DESCRIPTION	6
5.	ARCHAEOLOGICAL HISTORY OF THE AREA	7
6.	METHODOLOGY	10
I I	Physical Survey nterviews Restrictions Documentation	10 10
7.	ASSESSMENT CRITERIA	. 10
I C I	SITE SIGNIFICANCE MPACT RATING: Certainty Duration Mitigation.	. 11 . 12 . 12
8.	ASSESSMENT OF SITES AND FINDS	. 13
	BOSHOF SOLAR PARK	
9.	RECOMMENDATIONS	. 14
	OSHOF SOLAR PARK ITE BH 001	
10.	REFERENCES	. 15

ADDENDUM	A	Photographs
		Photo 1: General view of the proposed site.
		Photo 2: View of the natural pan on the northern side.
		Photo 3: View of the power line across the property.
		Photo 4: View of the labour accommodation.
		Photo 5: View of the eroded area with exposed artefacts.
		Photo 6: Some of the identified artefacts.

ADDENDUM B Location Maps

1. Introduction

Hutten Heritage Consultants was contracted by Africa Geo-Environmental Services (AGES) to conduct a Heritage Impact Assessment (HIA) on the proposed development of the Boshof Solar Park on portion 1 of the farm Rabenthal 264 RD approximately 10km north of Boshof in the Free State Province.

The aim of the study was to identify all heritage sites, to document and to assess their significance within Local, Provincial and National context. The report outlines the approach and methodology implemented before and during the survey, which includes in Phase 1: Information collection from various sources and social consultations; Phase 2: Physical surveying of the area on foot and by vehicle; and Phase 3: Reporting the outcome of the study.

This HIA forms part of the Environmental Impact Assessment (EIA) as required by various Acts and Laws as described under the next heading and is intended for submission to the provincial South African Heritage Resources Agency (SAHRA) for peer review.

Minimum standards for reports, site documentation and descriptions are set by the Association of Southern African Professional Archaeologists (ASAPA) in collaboration with SAHRA. ASAPA is a legal body representing professional archaeology in the Southern African Development Community (SADC) region. As a member of ASAPA, these standards are tried to be adhered to.

The extent of the proposed development sites were determined as well as the extent of the areas to be affected by secondary activities (access routes, construction camps, etc.) during the development.

2. Legislative Requirements

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by the following legislation:

National Environmental Management Act (NEMA) Act 107 of 1998 National Heritage Resources Act (NHRA) Act 25 of 1999 Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002 Development Facilitation Act (DFA) Act 67 of 1995

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources.

National Environmental Management Act (NEMA) Act 107 of 1998 Basic Environmental Assessment (BEA) – Section (23)(2)(d) Environmental Scoping Report (ESR) – Section (29)(1)(d) Environmental Impacts Assessment (EIA) – Section (32)(2)(d) Environmental Management Plan (EMP) – Section (34)(b) National Heritage Resources Act (NHRA) Act 25 of 1999 Protection of Heritage resources – Sections 34 to 36; and Heritage Resources Management – Section 38 Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002 Section 39(3) Development Facilitation Act (DFA) Act 67 of 1995 The GNR.1 of 7 January 2000: Regulations and rules in terms of the Development Facilitation Act, 1995. Section 31.

3. Proposed Project

Firefly Investments 230 (Pty) Ltd has proposed the development of the Boshof Solar Park on portion 1 of the farm Rabenthal 264 RD approximately 10km north of Boshof in the Free State Province. This development will mainly be the establishment of a renewable energy generation facility (Photovoltaic Solar Facility). The generated energy (electricity) will be supplied to the existing Eskom or municipal grid.

After bush clearing, construction will concentrate on the erection of Photovoltaic panels which will be mounted on constructed foundations. The proposed facility shall make use of this photovoltaic technology with a total generating capacity of up to 60 MWp. The generated energy will be connected to the Eskom or municipal grid through an adjacent Eskom power line. Associated engineering infrastructure such as service roads, water and sewerage lines for administrative and accommodation areas and electrical lines will also be installed. The facility will be located on portion 1 of the farm Rabenthal 264 RD approximately 10km north of Boshof in the Free State Province, which measured approximately 428ha in size. The purpose of the study was to determine if the proposed area was suitable for the development of the Solar Park from a heritage point of view.

The project was tabled during August 2011 and the developer intends to commence as soon as possible after receipt of the ROD from the Department of Environmental Affairs.

4. Project Area Description

The proposed development of the Boshof Solar Park will be situated on portion 1 of the farm Rabenthal 264 approximately 10km north of Boshof in the Free State Province. The proposed property was approximately 428ha in size of which approximately 160ha of the area was earmarked for development (photo 1).

The property was situated next to and on the eastern side of the S320 gravel road from Christiana to Boshof. A natural occurring pan was situated at the northern extend of the property (photo 2). The pan extended over into the neighbouring properties. The Kimberley-Giraffe 132kV power line crossed the property from east to west and divided the property in two halves (photo 3). Most of the proposed development will be situated on the southern side of this power line. Most of the area to the north of the power line is a highly sensitive calcareous area with floodplains and will be avoided by the developer as it is also situated within the 50/100 year flood line.

The property is and was used as a cattle and sheep grazing facility. A cattle/sheep camp and temporary labour accommodation facilities were situated approximately in the middle of the property (photo 4). Most of the property was relatively flat with short grass and small shrubs and bushes.

The proposed development will be situated on the Dagbreek 2825 AC and Boshof 2825 CA 1:50 000 topographical maps (See Appendix B: Location Maps).

5. Archaeological History of the Area

As heritage surveys deal with the locating of heritage resources in a prescribed cartographic landscape, the study of archival and historical data and cartographic information can represent a very valuable supporting tool in finding and identifying such heritage resources.

After researching the National Archive records as well as the SAHRA records it was determined that no previous archaeological or historical studies have been performed in the demarcated study area or nearby areas.

The geographical area surrounding Boshof represents archaeological sites dating to the Stone Age, Iron Age and Historical Age. These sites will be discussed briefly in order to provide the reader with background knowledge of the archaeological history of the immediate area surrounding Boshof. The historical background and timeframe of the study area and other areas in Southern Africa can be divided into the Stone Age, Iron Age and Historical period. These can be divided as follows:

Stone Age

The Stone Age is divided into the Early; Middle and Late Stone Age and refers to the earliest people of Southern Africa who mainly relied on stone for their tools.

Early Stone Age: The period from ± 2.5 million years to $\pm 250\ 000$ years ago. This period is associated with Australopithecines and other early *Homo* species. (e.g. Oldowan and Acheullian stone tool industries).

Middle Stone Age: Various lithic industries in SA dating from $\pm 250\ 000\ yrs - 25\ 000\ yrs$ before present. This period is first associated with archaic *Homo sapiens* and later *Homo sapiens sapiens*. (e.g. Howiesons Poort stone tool industry).

Late Stone Age: The period from $\pm 25\ 000$ -yrs before present to the period of contact with either Iron Age farmers or European colonists. This period is associated with *Homo sapiens sapiens*. (e.g. Smithfield, Wilton, Robberg stone tool industries).

The only Stone Age site that could be identified in the area surrounding Boshof was a site dating to the Later Stone Age (Ouzman, 1996). This site is situated on the southern bank of the Vaal River in the district of Boshof, Free State. This site is mainly known for its rock art engravings on the natural boulders scattered throughout the area. These engravings include images of the indigenous animals as well as geometric motifs (Ouzman, 1996). This site also presented with a low concentration LSA lithics (Ouzman, 1996). The lithics and rock art can be associated with the San hunter-gatherer communities who lived in the area.

Iron Age

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the Pre-Historic and Historic Periods. Similar to the Stone Age it to can be divided into three periods:

The Early Iron Age (EIA): Most of the first millennium AD. (e.g. Happy Rest, Silver Leaves).

The Middle Iron Age (MIA): 10th to 13th centuries AD. (e.g. K2, Mapungubwe, Thavhatsena).

The Late Iron Age (LIA): 14th century to colonial period. (e.g. Icon, Letaba, Mutamba).

No Iron Age sites could be identified in the vicinity of Boshof, however approximately 30 km to the north Middle and Late Iron Age sites can be observed.

These sites represent Middle Iron Age sites of the Olifantspoort facies of the Moloko branch of the Urewe tradition (Huffman, 2007). These sites date to AD 1500 – AD 1700 (Huffman, 2007).

Late Iron Age sites are represented by the Thabeng facies also of the Moloko branch of the Urewe tradition (Huffman, 2007). These sites date to AD 1700 – AD 1840 (Huffman, 2007).

Starting after AD 1600 the Sotho-Tswana moved into the area of the central highveld (including the northern parts of the Free State) and was responsible for all the stone walling sites in the area (Dreyer, 1992; Hammond-Tooke, 1993).

Historic Period

The Historic Period intermingles with the later parts of the Stone and Iron Age, and can loosely be regarded as times when written and oral recounts of incidents became available. It also refers to the period of colonial expansion and settlement. 17th Century to present AD (1600 - 2000).

The first Europeans to move into the area of Boshof were the party of Krebs in 1838 (Berg, 1999).

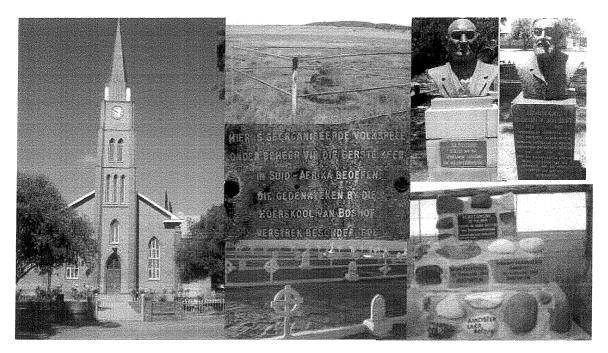
The town of Boshof was founded by Dr. Andrew Murray in 1855 on the farm Van Wyksvlei. The land was first purchased in 1839 by a farmer D. S. Fourie from a Griqua, Dawid Danster, and was sold to the Dutch Reformed Church in 1855. The town was named Boshof after the second president of the Republic of the Orange Free State, Jacobus Nicolaas Boshof (Erasmus, 1995).

The town of Boshof has many historical buildings and monuments associated with the history of the town as well as its involvement during the second Anglo-Boer war.

The town of Boshof saw intense activity during the British march towards the two capitals of the Boer Republics. On the 12th of March 1900 the town was occupied by British forces under command of Lord Methuen and a garrison was installed in the town (Farwell, 1999; Cloete, 2000). The exact location of the garrison is not known and remnants of it may still exits somewhere in the town.

On the 5th of April 1900 a battle took place just outside of Boshof, on the farm Tweefontein, also commonly referred to as 'The Battle of Boshof' which resulted in a British victory and the death of General De Villebois-Mareul (Farwell, 1999; Cloete, 2000; Grobler, 2004). The period between April and May of 1900 saw a number of skirmishes in the area surrounding the town, and was followed by several more skirmishes during the guerrilla phase of the war (late 1900-1902) (Farwell, 1999; Cloete, 2000; Grobler, 2004). An official report on the 30th of April 1902 states that the block house line between Kimberly and Theunissen, via Boshof as well as the line between Boshof and Hoopstad was completed (Cloete, 2000). Therefore remnants of these blockhouses may still exits in areas within and surrounding Boshof.

Volkspele, the traditional dance of Afrikaans speaking South Africans, originated in Boshof. It was the realisation of the ambition of Mr. S. H. Pellissier (bust on the left), a vice-principal of the Rooidak School at Boshof. On 28 February 1914 during a Sunday school picnic, Volkspele was performed for the first time on the farm Vuisfontein, to the south of the study area. Various Volkspele memorials still exist in the area (centre and bottom right).



6. Methodology

Physical Survey

The extent of the proposed development sites were determined as well as the extent of the areas to be affected by secondary activities (access route, construction camp, etc.) during the development.

The physical survey was conducted on foot over the entire area proposed for development. Priority was placed on the undisturbed areas. A systematic inspection of the area on foot along linear transects resulted in the maximum coverage of the proposed area. The survey was conducted on September 26, 2011 and was performed by M. Hutten and field worker T. Mulaudzi.

No sampling was done as no sites or finds of heritage significance were found.

Interviews

The current landowner, Mr. Ben Steyn, was questioned during the survey and he indicated that he was not aware of any sites of heritage value or significance (such as graves) in the proposed area.

Restrictions

Vegetation proved the major restriction in accessibility to some of the areas and also contributed to poor surface visibility after the spate of recent good rains.

Documentation

All sites/findspots located during the foot surveys were briefly documented. The documentation included digital photographs and descriptions as to the nature and condition of the site and recovered materials. The sites/findspots were plotted using a Global Positioning System (GPS) (Garmin GPSmap 60CSx) and numbered accordingly.

7. Assessment Criteria

This chapter describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The significance of archaeological and heritage sites were based on the following criteria:

The unique nature of a site

• The amount/depth of the archaeological deposit and the range of features (stone walls, activity areas etc.)

- The wider historic, archaeological and geographic context of the site
- The preservation condition and integrity of the site
- The potential to answer present research questions.

Site Significance

Site significance classification standards prescribed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used for the purpose of this report.

FIELD	GRADE	SIGNIFICANCE	RECOMMENDED
RATING	GRADE	SIGNIFICANCE	MITIGATION
National	Grade 1		Conservation;
Significance			National Site
(NS)			nomination
Provincial	Grade 2	-	Conservation;
Significance			Provincial Site
(PS)			nomination
Local	Grade	High	Conservation;
Significance	3A	Significance	Mitigation not
(LS)			advised
Local	Grade	High	Mitigation (Part of
Significance	3B	Significance	site should be
(LS)			retained)
Generally	Grade	High / Medium	Mitigation before
Protected A	4A	Significance	destruction
(GP.A)			
Generally	Grade	Medium	Recording before
Protected B	4B	Significance	destruction
(GP.B)			
Generally	Grade	Low Significance	Destruction
Protected C	4C		
(GP.C)			

Impact Rating:

Low or No Significance:

The constraint is absent, but in instances where present, poses a negligible significance on the proposed development in terms of heritage concerns.

Moderate Significance:

The constraint is present and poses a notable but not major significance on the proposed development in terms of heritage concerns. If the constraint can not be avoided, appropriate mitigation measures must be implemented to minimize the significance.

High Significance:

The constraint is present and poses a high significance on the proposed development in terms of heritage concerns. It is recommended that the constraint be avoided or appropriate mitigation measures must be implemented to minimize the significance.

Certainty

DEFINITE: More than 90% sure of a particular fact. Substantial supportive data exist to verify the assessment.

PROBABLE: Over 70% sure of a particular fact, or of the likelihood of an impact occurring.

POSSIBLE: Only over 40% sure of a particular fact, or of the likelihood of an impact occurring.

UNSURE: Less than 40% sure of a particular fact, or of the likelihood of an impact occurring.

Duration

SHORT TERM:	0-5 years
MEDIUM:	6 – 20 years
LONG TERM:	more than 20 years
DEMOLISHED:	site will be demolished or is already demolished

Mitigation

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be classified as follows:

- A No further action necessary
- **B** Mapping of the site and controlled sampling required
- C Preserve site, or extensive data collection and mapping required; and
- D Preserve site

8. Assessment of Sites and Finds

This section will contain the results of the heritage site/find assessment.

Boshof Solar Park

Site BH 001

GPS 28° 26' 52,3" S 25° 11' 29,6" E

A medium to high density scatter of stone tools was identified at this location (\pm 5-10 artifacts in 10m x10m). The site was situated on the southern edge of a natural pan at the northern extent of the study area. The artefacts identified were found scattered all over the eroded edges of the natural pan (photo 5). The scatter of artifacts extended from the central parts of the natural pan to the eastern, southern and western edges of the pan and beyond the extent of the study area to the north. The spread of artifacts ended towards the south at the edge of the natural eroded areas on the edge of the pan. The identified area covered approximately 700m x 300m along the edge of the pan. The clearing on the edge of the pan was exposed to some measure of sheet erosion and this erosion exposed further scatters of stone tools. Most of the artifacts identified were of low quality and were made of poor quality materials. The artifacts were mostly flakes, blades and cores from possibly the Middle and Late Stone Ages (photo 6).

The developer however, has indicated that they have no intension to have any developments at or near the identified heritage site. The identified heritage site is situated on the edges of a natural pan which formed part of a highly ecological sensitive calcareous floodplain. The proposed development will be situated on the southern side of the Kimberley-Giraffe 132 kV power line which is situated outside of the ecological sensitive area and away from the identified heritage site.

Field Rating:	Generally Protected B
Heritage Significance:	Medium Significance
Impact:	Low or No Significance
Certainty:	Unsure
Duration:	Short Term
Mitigation:	A - No further action necessary (if proposed footprint stays the same)

9. Recommendations

The following steps and measures are recommended regarding the investigated area:

Boshof Solar Park

Site BH 001

• The identified heritage site was situated on the edge of a natural pan which formed part of an ecological sensitive calcareous floodplain on the northern extent of the property.

• The developer indicated that they have no intensions to develop in this ecological sensitive area.

• It is therefore recommended that the developer avoid the identified heritage site.

• If, however it is deemed not to be possible to avoid the identified heritage site, further mitigation measures are recommended.

• These mitigation measures will include mapping of the identified site, controlled sampling of identified artefacts and the identification, analysis and storage of the recovered sample by a qualified Stone Age specialist.

• If the developer sticks to the proposed layout plan for the development no further sitespecific actions or any further heritage mitigation measures are recommended as no heritage resource sites or finds of any value or significance were identified in the indicated footprint for the development.

• The proposed development of the Boshof Solar Park in the indicated area can continue from a heritage point of view if the above mentioned recommendations are adhered to.

10. References

1. Deacon, J. 1996. Archaeology for Planners, Developers and Local Authorities. National Monuments Council. Publication no. PO21E.

2. Deacon, J. 1997. Report: Workshop on Standards for the Assessment of Significance and Research Priorities for Contract Archaeology. In: Newsletter No. 49, Sept.1998. South African Association of Archaeology.

3. Evers, T.M. 1983. Oori or Moloko? The origins of the Sotho/Tswana on the evidence of the Iron Age of the Transvaal. S. Afr. J. Sci. 79(7): 261-264.

4. Hall, M.1987. The changing past: Farmers, kings and traders in Southern Africa, 200-1860. Cape Town: David Phillip.

5. Hall, S.L. 1981. Iron Age sequence and settlement in the Rooiberg, Thabazimbi area. Unpublished MA thesis, University of the Witwatersrand.

6. Huffman, T.N. 2007. Handbook to the Iron Age. The Archaeology of Pre-Colonial Farming Societies in Southern Africa. Durban: University of KwaZulu-Natal Press.

7. King, T.F. 1978. The Archaeological Survey: Its Methods and Uses. Interagency Archaeological Services, Department of the Interior, Washington, D.C.

8. Maggs, T.M. O'C. 1976(a). Iron Age communities of the southern Highveld. Pietermaritzburg: Natal Museum.

9. McManamon, F.P. 1984. Discovering Sites Unseen. In Advances in Archaeological Method and Theory 8:223-292, edited by M.B. Schiffer, Academic Press, New York. 10. Miller, C. L. 1989. Evaluating the Effectiveness of Archaeological Surveys. Ontario Archaeology 49:3-12.

11. Pistorius, J.C.C. 1992. Molokwane, an Iron Age Bakwena Village. Johannesburg: Perskor Printers.

12. Schapera, I. 1942. A short history of the Bakgatla ba ga Kgafela of Bechuanaland Protectorate. Cape Town: School of African Studies, University of Cape Town.

13. Schiffer, M. B., Sullivan A.P., and Klinger T.C. 1978. The Design of Archaeological Surveys. World Archaeology 10:1-28.

14. Smith, L.D. 1977. Archeological Sampling Procedures For Large Land Areas: A Statistically Based Approach. USDA Forest Service, Albuquerque.

15. Bergh, J.S. 1999. Geskiedenisatlas van Suid-Afrika. Die vier Noordelike Provinsies. Pretoria: J.L. van Schaik.

16. Korsman, S. A. and Van der Ryst, M. M. 1999. Die vroegste inwoners. In *Geskiedenis atlas van Suid-Afrika: die vier noordelike provinsies*. Pretoria: J. L. van Schaik.

17. Mitchell, P. 2002. The Archaeology of Southern Africa. Cambridge: Cambridge University Press.

APPENDIX A Photographs

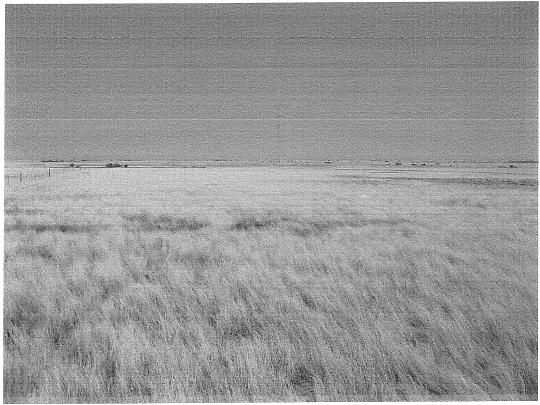


Photo 1: General view of the proposed site.



Photo 2: View of the natural pan on the northern side of the property.

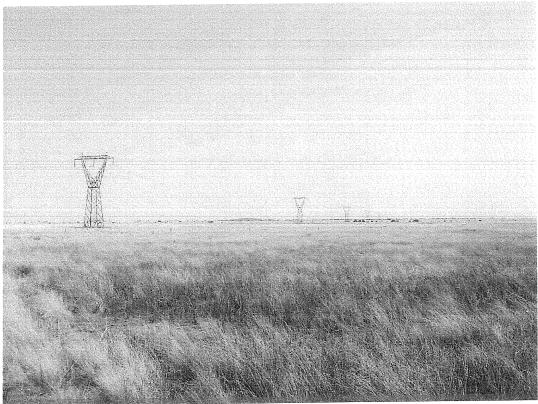


Photo 3: View of the power line across the property.



Photo 4: View of the labour accommodation on the property.

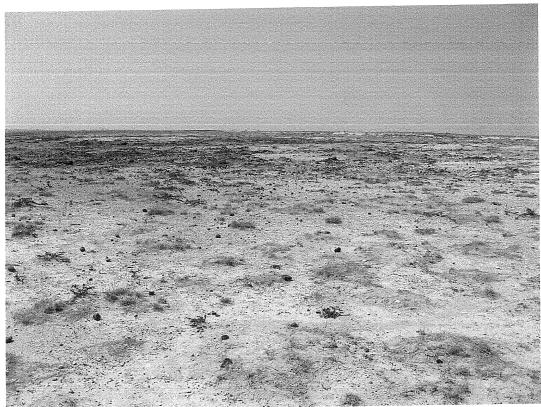


Photo 5: View of the eroded area with exposed artefacts.

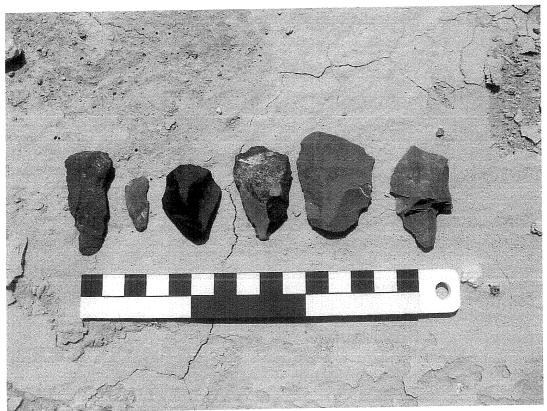


Photo 6: Some of the identified artefacts.

APPENDIX B Location Maps

