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**PROJECT 2010/16**

**FINAL HERITAGE IMPACT ASSESSMENT REPORT:  
PROPOSED LAND USE CHANGE TO PROVIDE FOR  
AGRICULTURAL ACTIVITIES ON PORTIONS OF THE  
REMAINDER OF THE FARM KEBOES 37, KAI! GARIB  
MUNICIPALITY, NORTHERN CAPE PROVINCE**



**SUBMITTED FOR CONSIDERATION TO  
SAHRA Archaeology, Palaeontology and Meteorites Unit  
Northern Cape Provincial Heritage Resources Authority**

**On behalf of**

**Marquerite Geldenhuys  
MEG Omgewingsimpakstudies  
Upington**

**DATE: 28 May 2010**

**KEBOES 37 FINAL HIA MAY 2010**

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## EXECUTIVE SUMMARY

This report contains a final heritage impact assessment (HIA) investigation in accordance with the provisions of Sections 38(1) and 38(3) of the *National Heritage Resources Act (25/1999)* for purposes of authorising a proposed change of land use on portions of the Remainder of the farm Keboes 37. This HIA forms part of the process of obtaining the necessary environmental authorisations for the project through an EIA, which comprises a change of land use of 730 hectares agricultural land to provide for irrigation farming. The farm is located on the south bank of the Orange River near Kanoneiland, about 9 km south of Louisvale, and is divided by the R 359 road from the river itself.

**The report is accompanied by a separate archaeological impact assessment report (JA van Schalkwyk) and a palaeontological impact assessment report (desktop study) (B Rubidge).**

The affected area consists of working (operating) irrigation and grazing farms located in a typical Lower Orange River environment. These farms display heritage typical features that occur in the Orange River Broken Veld, such as their large size, irrigation furrows and pipelines, fences, tracks, farmsteads, irrigated fields, numerous dry gullies, etc. Farmsteads are clustered close to rivers and main roads and very little else regarding the built environment exists in the interior further away from the river due to the natural environment and the circumstance that the region has always been thinly populated. Scatterings of stone artefacts are a relic of earlier human habitation.

As a cultural landscape this environment can be classified as historic farmland and, to a lesser extent, a historic archaeological landscape.

The proposed project affects two study areas, a larger one to the east with an irregular shape and a smaller trapezium-shaped area to the west, with the following central co-ordinates:

- 28°38'33.47"S 21° 9'57.84"E (larger area)
- 28°38'42.40"S 21° 7'45.04"E (smaller area)

The larger study area consists of Orange River Broken Veld that gently slopes down towards the river, with numerous dry larger and smaller dry gullies, fences, tracks, the beginnings of irrigation farming (cleared areas) and a steep, stony hillock in the north as its main landscape feature. Consisting of norite, this hillock has been mined for producing materials for gravel.

The smaller study area consists of Orange River Broken Veld that gently slopes down towards the river, with tracks, a dry wooded gully, a low knoll in the centre as a landscape feature, a large rifle range and a small wollastonite quarry in the north-western corner. It borders on the southern furrow system of the Orange River.

The intended development comprises the change of land use for irrigation farming and this provided the following "triggers" for an HIA:

- Development larger than 5000 square meters
- The region is known for its stone artefacts
- Possible historic built environment associated with irrigation farming

The general aim of any HIA is to ensure that the needs of socio-economic development are balanced by the needs to preserve significant heritage resources.

The purpose of this report is to identify and assess features of heritage significance, identify possible impacts and propose management measures to mitigate negative impacts. This information must enable the relevant heritage authority to approve the proposed development as required in terms of Section 38 of the NHRA.

Heritage impacts are categorised as:

- Direct or physical impacts, implying alteration or destruction of heritage features within the project boundaries
- Indirect impacts, e.g. restriction of access or visual intrusion concerning the broader environment

- Cumulative impacts that are combinations of the above

Impact can be managed through one or a combination of the following measures (encapsulated in the *Burra Charter*):

- Mitigation
- Avoidance
- Compensation
- Enhancement (positive impacts)
- Rehabilitation
- Interpretation
- Memorialisation

This report complies as follows with the provisions of Section 38 (3) of the *National Heritage Resources Act* (Act 25 of 1999):

**(a) Identification and mapping of heritage resources**

**(b) Cultural significance**

**(c) Predicted impacts**

**(f) Impact management measures**

See Table 1 (below).

**TABLE 1: Identification of heritage features, impacts and mitigation measures**

S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact type, certainty and significance	
Buildings, structures, places and equipment of cultural significance	Rifle range	28°38'49.07"S 21° 7'57.31"E	Low local	Smaller	Possible alteration or destruction – low negative	Mitigation: Photo documentation before alterations or destruction
	Wollastonite quarry (abandoned)	28°38'22.27"S 21° 7'22.36"E	Low local	Smaller	Possible alteration or destruction – low negative	None
	Norite quarry plant (abandoned)	28°38'0.02"S 21°10'2.52"E	Low local	Larger near hillock	Neutral	None – outside suitable irrigation farming area
Areas to which oral traditions are attached or which are associated with intangible heritage	Dry gullies and other areas	-	Low local	Larger	Neutral	None – dry gullies are associated with Sunday school picnics and other forms of recreation but are outside suitable farming area
Historical settlements and landscapes	None	-	-	-	-	-
Landscapes and natural features of cultural significance	None	-	-	-	-	-
Geological sites of scientific or cultural importance	None	-	-	-	-	None
Archaeological sites	Stone Age artefacts	Around rocky hillock and low knoll	Low local	Larger and smaller	Neutral	None – out of context surface finds located in areas unsuitable for farming
	Chance finds	Unknown	Low local?	Both	Unknown	Report and evaluate any graves or large archaeological features when found

S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact type, certainty and significance	
Graves and burial sites	None	-	-	-	-	-
Features associated with labour history	None	-	-	-	-	
Movable objects	None	-	-	-	-	

**(d) Social and economic benefits**

The development will have no direct benefits related to the conservation of heritage resources (structures) since none of significance were identified and will be affected.

The socio-economic benefits are associated with the production of grapes and other products for export purposes and the retention and creation of jobs.

**(e) Public consultation**

Appendix 4 contains a summarised public participation report done as part of the EIA process.

**(g) Mitigation during construction**

Except for monitoring of any chance finds (graves, archaeological features) during site preparation and construction work, no mitigation measures apply.

**Findings**

The two areas proposed for irrigation farming are located in a cultural landscape classified primarily as historic farmland and secondarily as archaeological. This class of landscape is of relatively low heritage sensitivity because it is able to absorb new development with some adverse effects through some mitigation.

The predicted impacts are of a direct and physical nature. Visual intrusion as an indirect impact is not an issue since irrigation farming is already practised on surrounding areas. Noise, dust, pollution and restrictions of access patters as indirect impacts are also not issues.

Cultmatrix states that there are no compelling reasons not to authorise the proposed change of land use and that the proposed development can continue provided that the following mitigation measures are adopted as a heritage management tool:

1. Should any hidden human remains (highly unlikely) be disturbed, exposed or uncovered during (plant) site clearing and excavations, these should immediately be reported to an archaeologist. Burial remains should not be disturbed or removed until inspected by an archaeologist.
2. Site clearing and excavation activities must be monitored for the occurrence of any hidden archaeological material (Stone Age tools) and similar chance finds and if any are exposed, this should be reported to an archaeologist so that an investigation and evaluation of the finds can be made.
3. The rifle range should be photographed before any alterations or destruction.
4. 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.



**RC DE JONG**  
Public Officer and Principal Investigator

**Date: 28 May 2010**



# 1. REPORT CONTEXT

## 1.1 General notes

1. The structure of this report is based on:
  - SOUTH AFRICAN HERITAGE RESOURCES AGENCY, Heritage Impact Assessment: Notification of intent to develop (form)
  - DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING, PROVINCIAL GOVERNMENT OF THE WESTERN CAPE, 2005, Guideline for involving heritage specialists in EIA processes (document)
  - DEPARTMENT OF ENVIRONMENT AFFAIRS AND TOURISM, Integrated Environmental Management Guidelines
  - SOUTH AFRICAN HERITAGE RESOURCES AGENCY, 2006, *Minimum standards: Archaeological and palaeontological components of impact assessment reports* (unpublished).
  - WORLD BANK, *Environmental Assessment Sourcebook Update No 8, September 1994: Cultural Heritage in Environmental Assessment*.
  - Best-practice HIA reports submitted by Cultmatrix and other heritage consultants
2. This report is informed by the *National Heritage Resources Act (25/1999)* (NHRA) and is consistent with the various ICOMOS charters for places of cultural significance.
3. Recommendations contained in this application do not exempt the applicant from complying with any national, provincial and municipal legislation or other regulatory requirements, including any protection or management or general provision in terms of the NHRA.
4. Rights and responsibilities that arise from this report are those of the applicant and not that of Cultmatrix cc. Cultmatrix cc assumes no responsibility for compliance with conditions that may be required by SAHRA in terms of this report.
5. Cultmatrix assumes no responsibility whatsoever for any loss or damages that may be suffered as a direct or indirect result of information contained in this application. Any claim that may however arise is limited to the amount paid to Cultmatrix for services rendered to compile this report.

## 1.2 Purpose of the report

The purpose of this report is to identify and assess features of heritage significance, identify possible impacts and propose management measures to mitigate negative impacts. This information must enable the relevant heritage authority to approve the proposed development as required in terms of Section 38 of the NHRA.

The below table lists and describes the three general categories of heritage impact assessment studies and reports, which offices are involved (i.e. to which SAHRA or provincial offices reports should be submitted) and which type of response is required from these offices.

**TABLE 2: Applicable category of heritage impact assessment study and report**

Type of study and report	Aim	SAHRA office involved	Requested SAHRA response
Screening: Not this report	The aim of the screening investigation is to provide an informed heritage-related opinion about the proposed development by an appropriate heritage specialist. The objectives of this investigation are to screen potential heritage issues through a site inspection, to develop a broad understanding of heritage policy-related context, to review any existing data on the history and heritage significance of the site, to check if the site has any formal heritage status, to discuss the proposed development with heritage contacts and to scan the development proposals. The result of this investigation is a brief statement indicating potential heritage impacts/issues and the need for further investigation.	-	-
		-	-
		-	-

Type of study and report	Aim	SAHRA office involved	Requested SAHRA response
Scoping (basic assessment): Not this report	The aim of the scoping investigation is to analyse heritage issues and how to manage them within the context of the proposed development. The objectives are to assess heritage significance (involving site inspections and basic desktop and archival research); to identify the need for further detailed inputs by heritage specialists, to consult with local heritage groups and experts, to review the general compatibility of the development proposals with heritage policy and to assess the acceptability of the proposed development from a heritage perspective. The result of this investigation is a heritage scoping report indicating the presence/absence of heritage resources and how to manage them in the context of the proposed development.	-	-
		-	-
		-	-
Full HIA: This report	The aim of the full HIA investigation is to analyse and recommend heritage management mitigation measures and monitoring programmes. The objectives are to analyse heritage issues, to research the chronology of the site and its role in the broader context, to undertake a comprehensive assessment of heritage significance, to analyse the nature and scale of the proposed development, to consult with local heritage groups and experts as part of the broader EIA stakeholder engagement process, to establish the compatibility of the proposed development with heritage and other statutory frameworks and to assess alternatives in order to promote heritage conservation issues.	Northern Cape Provincial Heritage Resources Authority	Comments on built environment and decision on approval of development
		SAHRA Palaeontology, Archaeology and Meteorites Unit	Comments
		-	-

### 1.3 Terms of reference

- To survey the proposed farming areas as well as the surrounding environment
- To identify and map heritage resources that may be affected directly and
- To assess the cultural significance of these heritage resources
- To assess the impact of the development on these heritage resources
- To assess the benefits of conserving these heritage resources in relationship to the socio-economic benefits of the development
- To provide the public with an opportunity to comment on the heritage aspects of the proposed development
- To consider alternatives if heritage resources will be affected in a negative manner
- To determine methods to mitigate negative impacts before, during and after construction activities
- To compare sections of the authorised route with sections of the amended route in terms of heritage impact risks

### 1.4 History of the report

This report is the final report and has been preceded by two drafts, the contents of which were agreed to by the client and the developer.

### 1.5 Legal context of the report

ACT	COMPONENT	IMPLICATION	RELEVANCE	COMPLIANCE
NHRA	S 34	Impacts on buildings and structures older than 60 years	None	-
	S 35	Impacts on archaeological and palaeontological heritage resources	Graves and large/concentrated sites	Monitor during site preparation work
	S 36	Impacts on graves	None	-
	S 37	Impacts on public monuments	None present	-
	S 38	Developments requiring an HIA	Development is listed activity	Full HIA
NEMA	EIA Regulations	Activities requiring an EIA	Development is subject to an EIA	HIA is part of EIA
Other	-	-	-	-

## 1.6 Planning context of the report

No information was available but the assumption is that the proposed new farming development is part of the municipal SDF and IDP.

## 1.7 Development criteria in terms of Section 38 of the NHRA

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

## 1.8 Property details

1.8	Property details	
1.8.1	Name and location of property	Keboes farming
1.8.2	Erf or farm numbers	Portions of Remaining Extent of Keboes 37, Kenhardt Registration Division, Cape Town
1.8.3	Magisterial district	Gordonia
1.8.4	Closest town	Uppington
1.8.5	Local authority	Kai! Garib
1.8.5	Current use	Agricultural (grazing)
1.8.5	Current zoning	Agricultural
1.8.5	Predominant land use of surrounding properties	Agricultural
1.8.9	Total extent of properties	670 hectares

## 1.9 Property ownership

1.9	Property owners	
1.9.1	Farms	Kanoneiland Fruit Farms Pty Ltd
1.9.2	Name and contract address	-
1.9.3	Telephone number	-
1.9.4	Fax number	-
1.9.5	E-mail	-

## 1.10 Developer

1.10	Developer	
1.10.1	Name and contact address	Newgro Farming Pty Ltd
1.10.2	Telephone number	-
1.10.3	Fax	-
1.10.4	E-mail	-

## 1.11 Environmental practitioner

1.11	Environmental Specialist	
1.11.1	Name and contact address	Marquerite Geldenhuys, MEG Omgewingsimpakstudies, Private Bag X 5879, Postnet Suite 63, Uppington 8800
1.11.2	Telephone number	(054) 491-3144
1.11.3	Fax	As above
1.11.4	E-mail	<a href="mailto:megeldenhuys@vodamail.co.za">megeldenhuys@vodamail.co.za</a>

## 1.12 Heritage impact assessment practitioners

<b>Specialist 1</b>		
1.12.1	Name and contact address	Dr RC de Jong (Principal Member: Cultmatrix cc), PO Box 12013, Queenswood 0121, Pretoria
1.12.2	Qualifications and field of expertise	PhD (Cultural History) UP (1990), Post-Graduate Museology Diploma UP (1979), generalist heritage management specialist with experience in museums and heritage since 1983
1.12.3	Relevant experience in study area	Desktop studies for mining developments near Kenhardt
1.12.4	Telephone number	(082) 577-4741
1.12.5	Fax number	(086) 612-7383
1.12.6	E-mail	<a href="mailto:cultmat@iafrica.com">cultmat@iafrica.com</a>

<b>Specialist 2</b>		
1.12.1	Name and contact address	Dr JA van Schalkwyk, PO Box 26389, Monument Park 0105
1.12.2	Qualifications and field of expertise	DLitt et Phil (UNISA), Post-Graduate Museology Diploma UP, general heritage management specialist with experience in museums and heritage, ASAPA accredited archaeologist
1.12.3	Relevant experience in study area	Archaeological studies for HIAs in the broader area
1.12.4	Telephone number	(012) 347-7270
1.12.5	Fax number	
1.12.6	E-mail	<a href="mailto:jvschalkwyk@mweb.co.za">jvschalkwyk@mweb.co.za</a>

<b>Specialist 3</b>		
1.12.1	Name and contact address	Prof B Rubidge, Department of Earth Sciences, University of the Witwatersrand
1.12.2	Qualifications and field of expertise	PhD
1.12.3	Relevant experience in study area	Palaeontological studies, Director of the Bernard Price Institute for Palaeontological Research
1.12.4	Telephone number	(011) 717-6682
1.12.5	Fax number	(011) 717-6694
1.12.6	E-mail	<a href="mailto:Bruce.rubidge@wits.ac.za">Bruce.rubidge@wits.ac.za</a>

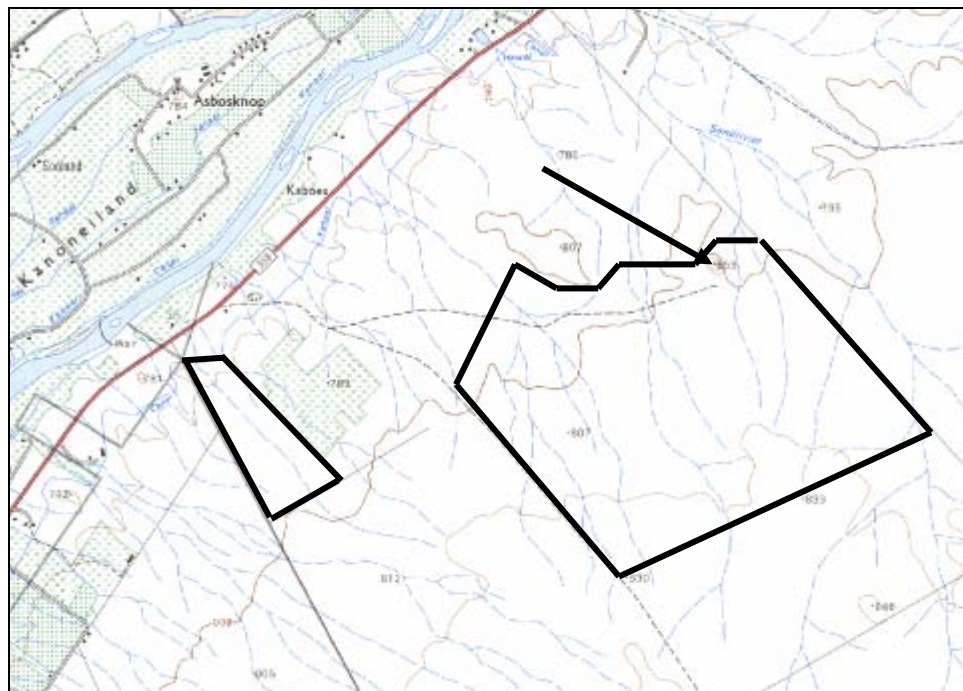
## 2. DEVELOPMENT CONTEXT

### 2.1 Development site/area location and boundaries

The farm Keboes 37 is located on the south bank of the Orange River near Kanoneiland, about 9 km south of Louisvale, and is divided by the R 359 road from the river itself.



**FIGURE 1: General location of the study areas**



**FIGURE 2: Portion of 2821 CA (1990) indicating the two study areas on Keboes 37 and indicating the rocky hillock that is the main landscape feature (arrow)**



**FIGURE 3: Google earth image (2004) of the two study areas on Keboes, showing significant features**

## 2.2 Description of distinguishing regional features

### 2.2.1 Environmental features

**TABLE 3: Environmental features**

COMPONENT	DESCRIPTION
Acocks veld type	Orange River Broken Veld
Geological and mining	Wollastonite and norite quarries
Geology	Granite and arenite
Hydrology	Sand River and seasonal tributaries
Land cover	Shrubland
Land use	Cultivated and grazing areas
Vegetation	Orange River Nama Karoo
Landscape sensitivity index	1-3 (low)
Slope	0-9%
Terrain morphology	Slightly irregular plains
Wetlands	None

## 2.2.2 Heritage features

**TABLE 4: Heritage features**

<b>S 3(2) NHRA heritage resource</b>	<b>DESCRIPTION</b>
Buildings, structures, places and equipment of cultural significance	Tracks, fences, quarries, cultivated lands
Areas to which oral traditions are attached or which are associated with intangible heritage	Dry gullies
Historical settlements and landscapes	None
Landscapes and natural features of cultural significance	Historic farmland
Geological sites of scientific or cultural importance	None
Archaeological and palaeontological sites	Area is known for Middle and late Stone Age artefacts (out of context)
Graves and burial grounds	Not inside study area
Areas of significance related to labour history	None
Movable objects	None

## 2.2.3 Site description

The affected area consists of working (operating) irrigation and grazing farms located in a typical Lower Orange River environment. These farms display heritage typical features that occur in the Orange River Broken Veld, such as their large size, irrigation furrows and pipelines, fences, tracks, farmsteads, irrigated fields, numerous dry gullies, etc. Farmsteads are clustered close to rivers and main roads and very little else regarding the built environment exists in the interior further away from the river due to the natural environment and the circumstance that the region has always been thinly populated. Scatterings of stone artefacts are a relic of earlier human habitation.

As a cultural landscape this environment can be classified as historic farmland and, to a lesser extent, a historic archaeological landscape.

The proposed project affects two study areas, a larger one to the east with an irregular shape and a smaller trapezium-shaped area to the west, with the following central co-ordinates:

- 28°38'33.47"S 21° 9'57.84"E (larger area)
- 28°38'42.40"S 21° 7'45.04"E (smaller area)

The larger study area consists of Orange River Broken Veld that gently slopes down towards the river, with numerous dry larger and smaller dry gullies, fences, tracks, the beginnings of irrigation farming (cleared areas) and a steep, stony hillock in the north as its main landscape feature. Consisting of norite, this hillock has been mined for producing materials for gravel.

The smaller study area consists of Orange River Broken Veld that gently slopes down towards the river, with tracks, a dry wooded gully, a low knoll in the centre as a landscape feature, a large rifle range and a small wollastonite quarry in the north-western corner. It borders on the southern furrow system of the Orange River.

### 2.2.4 Surrounding environment

AREA	DESCRIPTION
East	Farm land
North	Farm land
West	Orange River and R 359
South	Farm land

### 2.3 Development description

2.3	Development description	
2.3.1	Nature of proposed development	Irrigation farming
2.3.2	Predicted impacts on heritage value of site and contents	None
2.3.3	Structures older than 60 years affected by proposed development	No
2.3.4	Rezoning or change of land use	Yes: Grazing to cultivation
2.3.5	Construction work	Yes: Preparation of lands, installation of pipes, etc.
2.3.6	Total floor area of proposed development	-
2.3.7	Extent of land coverage of development	-
2.3.8	Earth moving and excavation	Yes
2.3.9	Number of storeys	-
2.3.10	Maximum height above ground level	-
2.3.11	Monetary value development	Not available
2.3.12	Time frames	Urgent



**FIGURE 4: General view across the larger study area looking north towards the Orange River, with the low rocky hillock (right)**





**FIGURE 5: Irrigation system installed on a part of the larger study area**



**FIGURE 6: General view across the smaller study area looking north towards the Orange River (dark green band)**

### 3. HERITAGE IMPACT CONTEXT

#### 3.1 Cultural landscape evidence

The concept of cultural landscapes is of more recent origin and, although the definitions of the National Heritage Resources Act bear reference, is primarily grounded in international doctrinal texts in the form of Charters and Recommendations produced by ICOMOS and UNESCO. The most recent and authoritative text is the World Heritage Cultural Landscapes handbook, published by the World Heritage Centre (2009).

The term “cultural landscape” embraces a diversity of manifestations of the interaction between humankind and its natural environment. Cultural landscapes often reflect specific techniques of sustainable *land-use*, considering the characteristics and limits of the natural environment they are established in, and a specific spiritual relation to nature. Cultural landscapes are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal. They are categorized on the basis both of their value and of their representativity in terms of a clearly defined geo-cultural *region* and also for their capacity to illustrate the essential and distinct cultural elements of such regions. The term “cultural landscape” embraces a diversity of manifestations of the interaction between humankind and its natural environment.

The World Heritage Committee distinguishes between three categories of cultural landscapes:

- Clearly defined landscapes, designed and created intentionally by people, such as parkland and urban areas
- Organically evolved landscapes that has developed over time, including relic landscapes (where a certain activity has ceased to exist) and continuing landscapes (which retain an active social role and where the evolutionary process is still in progress)
- Associative landscapes, which are essentially natural landscapes with significant human associations in the realm of the intangible heritage

All three categories exist in the study area. However, they are too broad in terms of the practical mapping and assessment of heritage elements; hence, the following criteria for classifying the type of cultural landscape have been used:

**TABLE 5: Cultural landscape classification**

HERITAGE LANDSCAPE CONTEXT	ELEMENTS	EVIDENCE
A. PALAEOLOGICAL LANDSCAPE CONTEXT	Fossil remains. Such resources are typically found in specific geographical areas, e.g. the Karoo and are embedded in ancient rock and limestone/calcrete formations.	None
B. ARCHAEOLOGICAL LANDSCAPE CONTEXT (SECONDARY LANDSCAPE)	<b>Archaeological remains dating to the following periods:</b> <ul style="list-style-type: none"> <li>• Early Stone Age</li> <li>• Middle Stone Age</li> <li>• Late Stone Age</li> <li>• Early Iron Age</li> <li>• Late Iron Age</li> <li>• Historical</li> </ul>	Scattered Stone Age artefacts
C. HISTORICAL BUILT URBAN LANDSCAPE CONTEXT	<ul style="list-style-type: none"> <li>• Historical townscapes/streetscapes</li> <li>• Historical structures; i.e. older than 60 years</li> <li>• Formal public spaces</li> <li>• Formally declared urban conservation areas</li> <li>• Places associated with social identity/displacement</li> </ul>	None
D. HISTORICAL FARMLAND	These possess distinctive patterns of settlement and historical features such	Grazing and cultivated lands

HERITAGE LANDSCAPE CONTEXT	ELEMENTS	EVIDENCE
<b>CONTEXT (PRIMARY LANDSCAPE)</b>	<b>as:</b> <ul style="list-style-type: none"> <li>• <b>Historical farm werfs</b></li> <li>• <b>Historical farm workers villages/settlements</b></li> <li>• <b>Irrigation furrows</b></li> <li>• <b>Tree alignments and groupings</b></li> <li>• <b>Historical routes and pathways</b></li> <li>• <b>Distinctive types of planting</b></li> <li>• <b>Distinctive architecture of cultivation e.g. planting blocks, trellising, terracing, ornamental planting.</b></li> </ul>	
E. HISTORICAL RURAL TOWN CONTEXT	<ul style="list-style-type: none"> <li>• Historical mission settlements</li> <li>• Historical townscapes</li> </ul>	None
F. PRISTINE/NATURAL LANDSCAPE CONTEXT	<ul style="list-style-type: none"> <li>• Historical patterns of access to a natural amenity</li> <li>• Formally proclaimed nature reserves</li> <li>• Evidence of pre-colonial occupation</li> <li>• Scenic resources, e.g. view corridors, viewing sites, visual edges, visual linkages</li> <li>• Historical structures/settlements older than 60 years</li> <li>• Pre-colonial or historical burial sites</li> <li>• Geological sites of cultural significance.</li> </ul>	None
G. RELIC LANDSCAPE CONTEXT	<ul style="list-style-type: none"> <li>• Past farming settlements</li> <li>• Past industrial sites</li> <li>• Places of isolation related to attitudes to medical treatment</li> <li>• Battle sites</li> <li>• Sites of displacement,</li> </ul>	None
H. BURIAL GROUND & GRAVE SITE CONTEXT	<ul style="list-style-type: none"> <li>• Pre-colonial burials (marked or unmarked, known or unknown)</li> <li>• Historical graves (marked or unmarked, known or unknown)</li> <li>• Human remains (older than 100 years)</li> <li>• Associated burial goods (older than 100 years)</li> <li>• Burial architecture (older than 60 years)</li> </ul>	None
I. ASSOCIATED LANDSCAPE CONTEXT	<ul style="list-style-type: none"> <li>• Sites associated with living heritage e.g. initiation sites, harvesting of natural resources for traditional medicinal purposes</li> <li>• Sites associated with displacement &amp; contestation</li> <li>• Sites of political conflict/struggle</li> <li>• Sites associated with an historic event/person</li> <li>• Sites associated with public memory</li> </ul>	None
J. HISTORICAL FARM WERF CONTEXT	<ul style="list-style-type: none"> <li>• Setting of werf and its context</li> <li>• Composition of structures</li> <li>• Historical/architectural value of individual structures</li> <li>• Tree alignments</li> <li>• Views to and from</li> <li>• Axial relationships</li> <li>• System of enclosure, e.g. werf walls</li> <li>• Systems of water reticulation and irrigation, e.g. furrows</li> <li>• Sites associated with slavery and farm labour</li> <li>• Colonial period archaeology</li> </ul>	None
K. HISTORICAL INSTITUTIONAL LANDSCAPE CONTEXT	<ul style="list-style-type: none"> <li>• Historical prisons</li> <li>• Hospital sites</li> <li>• Historical school/reformatory sites</li> <li>• Military bases</li> </ul>	None
L. SCENIC/VISUAL	<ul style="list-style-type: none"> <li>• Scenic routes</li> </ul>	None

HERITAGE LANDSCAPE CONTEXT	ELEMENTS	EVIDENCE
K. AMENITY LANDSCAPE CONTEXT	<ul style="list-style-type: none"> <li>• View sheds</li> <li>• View points</li> <li>• Views to and from</li> <li>• Gateway conditions</li> <li>• Distinctive representative landscape conditions</li> <li>• Scenic corridors</li> </ul>	

### 3.2 Determining levels of sensitivity and potential impacts

Sensitivity is the ability of a cultural landscape (or heritage resource) to absorb changes or adapt to changes whilst maintaining an acceptable degree of cultural significance.

Within the context of this study, levels of sensitivity can generally be associated with certain classes or categories of cultural landscapes as tabulated below.

**TABLE 6: Relationship between cultural landscape classes and levels of sensitivity**

Sensitivity level	Implication	Landscape class	Evidence
D	Ability to absorb without adverse effects and very little mitigation	Relic landscapes	Of little or no intrinsic, associational or contextual heritage value due to disturbed, degraded conditions or extent of irreversible damage
<b>C</b>	<b>Ability to absorb with some adverse effects and some mitigation</b>	<b>Historical farmland Historical farm werfs Institutional landscapes</b>	<b>Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context</b>
B	Ability to absorb with considerable adverse effects and intensive mitigation	Burial grounds and graves Palaeontological and archaeological landscapes Associated landscapes	Of moderate to high intrinsic, associational and contextual value within a local context
A	No or very little ability to absorb	Historical built environments Natural landscapes Amenity/Visual/Scenic landscapes	Of high intrinsic, associational and contextual heritage value within a national, provincial and local context

### 3.3 Determining potential impacts

**TABLE 7: Categories of development types**

CATEGORY	DESCRIPTION	EVIDENCE
A: Minimal intensity development	<ul style="list-style-type: none"> <li>• No rezoning involved; within existing use rights</li> <li>• No subdivision involved</li> <li>• Upgrading of existing infrastructure within existing envelopes</li> <li>• Minor internal changes to existing structures</li> <li>• New building footprints limited to less than 1000m<sup>2</sup></li> </ul>	No
B: Low-intensity development	<ul style="list-style-type: none"> <li>• Spot rezoning with no change to overall zoning of a site</li> <li>• Linear development less than 100m</li> <li>• Building footprints between 1000m<sup>2</sup>-2000m<sup>2</sup></li> <li>• Minor changes to external envelop of existing structures (less than 25%)</li> <li>• Minor changes in relation to bulk and height of immediately adjacent structures (less than 25%).</li> </ul>	No
<b>C: Moderate intensity development</b>	<ul style="list-style-type: none"> <li>• <b>Rezoning of a site between 5000m<sup>2</sup>-10 000m<sup>2</sup></b></li> <li>• <b>Linear development between 100m and 300m</b></li> <li>• <b>Building footprints between 2000m<sup>2</sup> and 5000m<sup>2</sup></b></li> <li>• <b>Substantial changes to external envelop of existing</b></li> </ul>	<b>Irrigation farming</b>

CATEGORY	DESCRIPTION	EVIDENCE
	<b>structures (more than 50%)</b> <ul style="list-style-type: none"> <li>• <b>Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 50%)</b></li> </ul>	
D: High intensity development	<ul style="list-style-type: none"> <li>• Rezoning of a site in excess of 10 000m2</li> <li>• Linear development in excess of 300m</li> <li>• Any development changing the character of a site exceeding 5000m2 or involving the subdivision of a site into three or more erven</li> <li>• Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 100%)</li> </ul>	None

### 3.4 Expected impact significance

**TABLE 8: Expected impact significance matrix**

HERITAGE CONTEXT	TYPE OF DEVELOPMENT			
	CATEGORY A	CATEGORY B	CATEGORY C	CATEGORY D
A: High heritage value	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected	Very high heritage impact expected
B: Medium to high heritage value	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected
C: Medium to low heritage value	Little or no heritage impact expected	Minimal heritage impact expected	<b>Moderate heritage impact expected</b>	High heritage impact expected
D: Low heritage value	Little or no heritage impact expected	Little or no heritage impact expected	Minimal heritage value expected	Moderate heritage impact expected

## 4. HERITAGE IMPACT ASSESSMENT

### 4.1 Approach

#### 4.1.1 Definitions and assumptions

The following aspects have a direct bearing on the investigation and the resulting report:

- *Cultural (heritage) resources* are all non-physical and physical human-made occurrences, as well as natural occurrences that are associated with human activity. These include all sites, structures and artefacts of importance, either individually or in groups, in the history, architecture and archaeology of human (cultural) development.
- The *cultural significance* of sites and artefacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their 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.
- The *value* is related to concepts such as *worth, merit, attraction or appeal*, concepts that are associated with the (current) usefulness and condition of a place or an object. Hence, in the development area, there are instances where elements of the place have a high level of significance but a lower level of value.
- It must be kept in mind that significance and value are not mutually exclusive, and that the evaluation of any feature is based on a combination or balance between the two.
- Isolated occurrences: findings of artefacts or other remains located apart from archaeological sites. Although these are noted and samples are collected, it is not used in impact assessment and therefore do not feature in the report.
- Traditional cultural use: resources which are culturally important to people.
- All archaeological remains, artificial features and structures older than 100 years and historic structures older than 60 years are protected by the relevant legislation, in this case the National Heritage Resources Act (NHRA) (Act No. 25 of 1999). No archaeological artefact, assemblage or settlement (site) and no historical building or structure older than 60 years may be altered, moved or destroyed without the necessary authorisation from the South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority. Full cognisance is taken of this Act in making recommendations in this report.
- The guidelines as provided by the NHRA (Act No. 25 of 1999) in Section 3, with special reference to subsection 3, and the Australian ICOMOS Charter (also known as the Burra Charter) are used when determining the cultural significance or other special value of archaeological or historical sites.
- It should be kept in mind that archaeological deposits usually occur below ground level. Should artefacts or skeletal material be revealed at the site during construction, such activities should be halted, and it would be required that the heritage consultants would be required to be notified in order for an investigation and evaluation of the find(s) to take place (*cf.* NHRA (Act No. 25 of 1999), Section 36 (6)).

#### 4.1.2 Limiting/Restricting factors

The investigation has been influenced by the following factors related to the overall HIA:

- Unpredictability of buried archaeological remains (absence of evidence does not mean evidence of absence)

### 4.1.3 Field work

This was done through foot and vehicle investigations of the study area in March 2010. The archaeological visibility was good.

### 4.1.4 Desktop study

- Published literature
- Aerial images (contemporary)
- Cadastral diagrams
- Archival records
- Maps (historical and contemporary)
- Title deeds

### 4.1.5 Verbal information

- Farmer (Mr Abrie Coetzee)

## 4.2 General issues of site and context

<b>4.2.1 Context</b>		
	<i>(check box of all relevant categories)</i>	<i>Brief description/explanation</i>
	Urban environmental context	<ul style="list-style-type: none"> <li>• Roads</li> <li>• Vacant land</li> <li>• Former grazing land</li> <li>• Farmland with modern buildings</li> <li>• Mining areas</li> </ul>
x	Rural environmental context	
	Natural environmental context	
<b>Formal protection (NHRA)</b>		
	Is the property part of a protected area (S. 28)?	No
	Is the property part of a heritage area (S. 31)?	No
<b>Other</b>		
	Is the property near to or visible from any protected heritage sites?	No
	Is the property part of a conservation area or special area in terms of the Zoning Scheme?	No
	Does the site form part of a historical settlement or townscape?	No
x	Does the site form part of a rural cultural landscape?	Yes: Farm land
	Does the site form part of a natural landscape of cultural significance?	No
	Is the site within or adjacent to a scenic route?	No
	Is the property within or adjacent to any other area which has special environmental or heritage protection?	No
	Does the general context or any adjoining properties have cultural significance?	No

<b>4.2.2 Property features and characteristics</b>		
	<i>(check box if YES)</i>	<i>Brief description</i>
x	Have there been any previous development impacts on the property	Yes: Roads, tracks, grazing land, buildings, quarries, fences
x	Are there any significant landscape features on the property?	Rocky hillock and granite boulders
	Are there any sites or features of geological significance on the property?	No
	Does the property have any rocky outcrops on it?	No
x	Does the property have any fresh water sources (springs, streams, rivers) on or alongside it?	Yes: Orange River, Sand River, tributaries
	Does the property have any sea frontage?	No
	Does the property form part of a coastal dune system?	No
	Are there any marine shell heaps or scatters on the property?	No
	Is the property or part thereof on land reclaimed from the sea?	No

<b>4.2.3 Heritage resources on the property</b>		
	<i>(check box if present on the property)</i>	<i>Name / List / Brief description</i>
<b>Formal protections (NHRA)</b>		
	National heritage site (S. 27)	No
	Provincial heritage site (S. 27)	No
	Provisional protection (s.29)	No
	Place listed in heritage register (S. 30)	No
<b>General protections (NHRA)</b>		
	structures older than 60 years (S. 34)	No
x	archaeological site or material (S. 35)	Possible (chance finds)
	palaeontological site or material (S. 35)	No
	graves or burial grounds (S. 36)	No
	public monuments or memorials (S. 37)	No
<b>Other</b>		
	Any heritage resource identified in a heritage survey (state author and date of survey and survey grading/s)	No
	Any other heritage resources (describe)	No

<b>4.2.4 Property history and associations</b>		
	<i>(check box if YES)</i>	<i>Brief description/explanation</i>
x	Provide a brief history of the property (e.g. when granted, previous owners and uses).	See Appendix 1
	Is the property associated with any important persons or groups?	No
	Is the property associated with any important events, activities or public memory?	No



<b>4.2.4 Property history and associations</b>		
	Does the property have any direct association with the history of slavery?	No
	Is the property associated with or used for living heritage?	No
	Are there any oral traditions attached to the property?	Yes: Sunday school camps and picnics

### 4.3 Summarised identification and significance assessment of heritage resources

See Appendix 3 for significance assessment criteria

**TABLE 9: Identification and significance assessment of heritage features**

S 3(2) NHRA heritage resource category	ELEMENTS	INDICATORS OF HERITAGE SIGNIFICANCE										CUMULATIVE SIGNIFICANCE RATING (TOTAL 30) 1-9 = Low 10-19 = Medium 20-30 = High
		HISTORICAL	RARE	SCIENTIFIC	TYPICAL	AESTHETIC	TECHNOLOGICAL	PERSON COMMUNITY	LANDMARK	MATERIAL CONDITION	SUSTAINABILITY	
Buildings, structures, places and equipment of cultural significance	Rifle range, quarries	1	0	0	1	0	0	3	0	2	1	8 = Low
Areas to which oral traditions are attached or which are associated with intangible heritage	Gullies	1	0	0	1	0	0	3	0	2	1	8 = Low
Historical settlements and landscapes	None	-	-	-	-	-	-	-	-	-	-	-
Landscapes and natural features of cultural significance	Farm land	2	0	1	1	1	2	3	1	2	3	16 = Medium
Geological sites of scientific or cultural importance	None	-	-	-	-	-	-	-	-	-	-	-
Archaeological and palaeontological sites	Stone Age artefacts	1	0	1	2	1	1	2	0	2	0	10 = Medium to low local
Graves and burial grounds	None	-	-	-	-	-	-	-	-	-	-	-
Areas of significance related to labour history	None	-	-	-	-	-	-	-	-	-	-	-
Movable objects	None	-	-	-	-	-	-	-	-	-	-	-

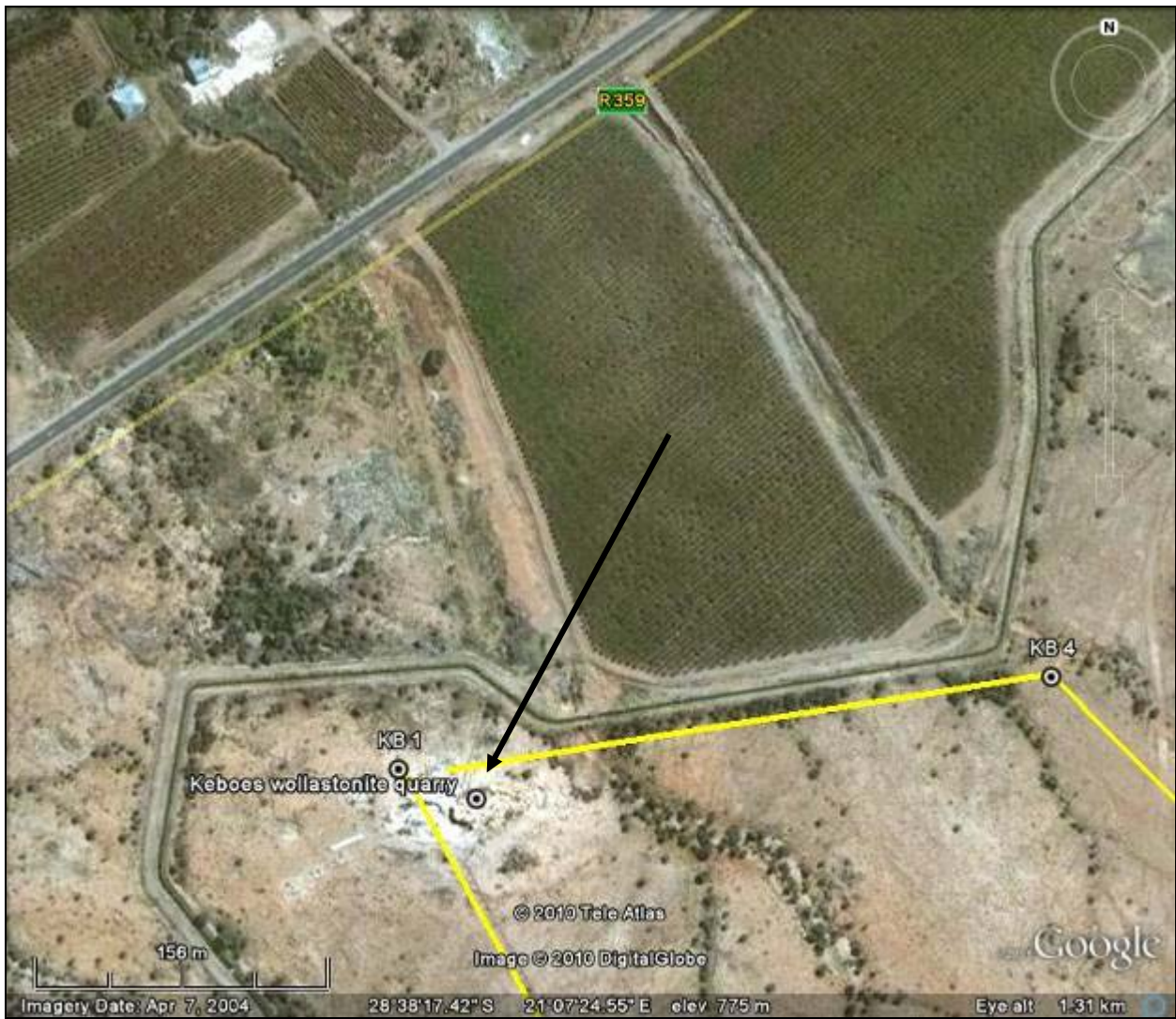
#### 4.4 Impact assessment



**FIGURE 7: Google Earth image (2004) of the study area indicating the positions of identified heritage features**

##### 4.4.1 Wollastonite quarry

S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact type, certainty and significance	
Buildings, structures, places and equipment of cultural significance	Wollastonite quarry (abandoned)	28°38'22.27"S 21° 7'22.36"E	Low local	Smaller	Possible alteration or destruction – low negative	None



**FIGURE 8: Google Earth image showing the quarry**

**4.4.2 Rifle range**

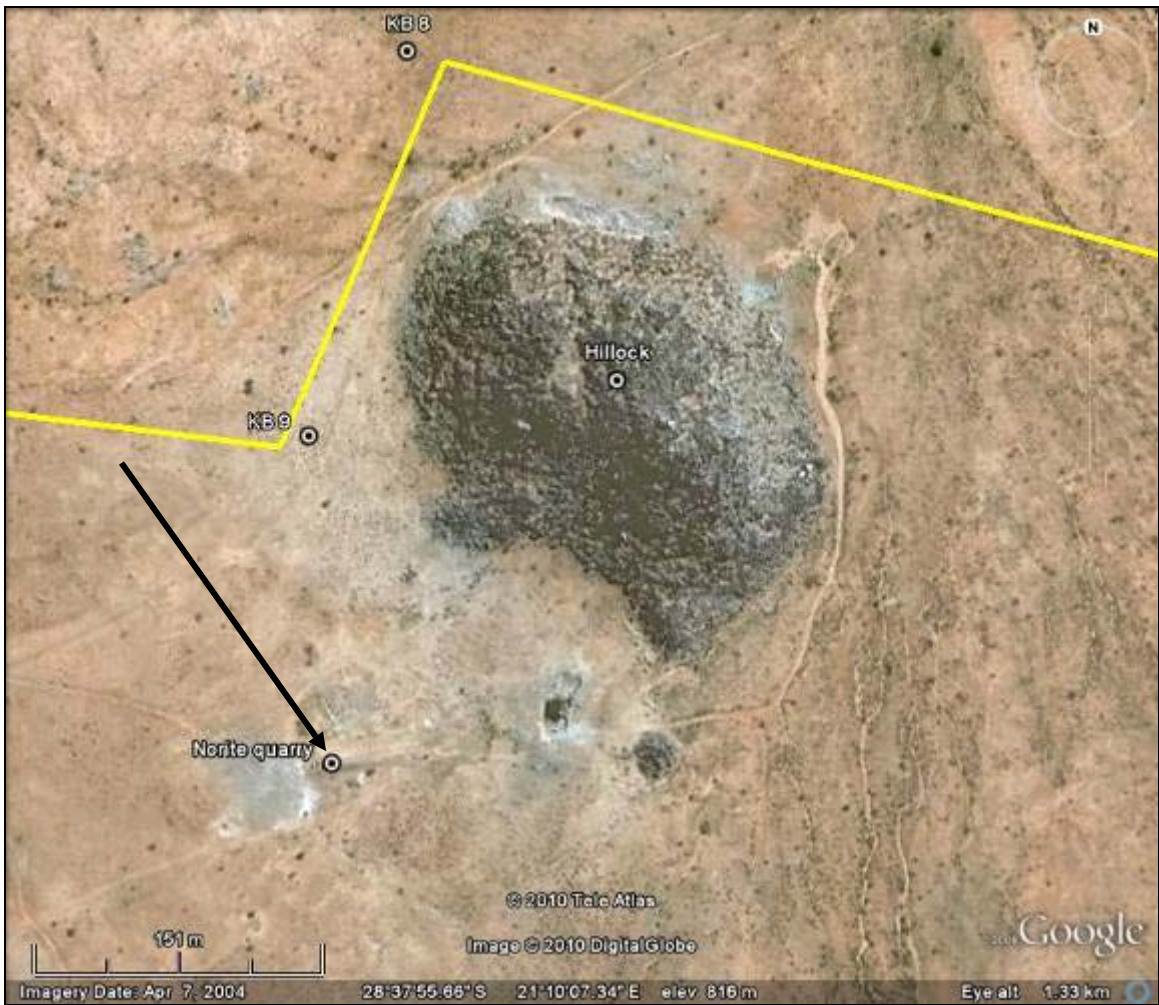
S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact certainty and significance	
Buildings, structures, places and equipment of cultural significance	Rifle range	28°38'49.07"S 21° 7'57.31"E	Low local	Smaller	Possible alteration or destruction – low negative	Mitigation: Photo documentation before alterations or destruction



**FIGURE 9: Rifle range visible on Google Earth image**

**4.4.3 Norite quarry plant**

S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact certainty and significance	
Buildings, structures, places and equipment of cultural significance	Norite quarry plant (abandoned)	28°38'0.02"S 21°10'2.52"E	Low local	Larger near hillock	Neutral	None – outside suitable irrigation farming area



**FIGURE 10:** Google Earth image indicating the position of the abandoned norite quarry plant in relationship to the rocky hillock



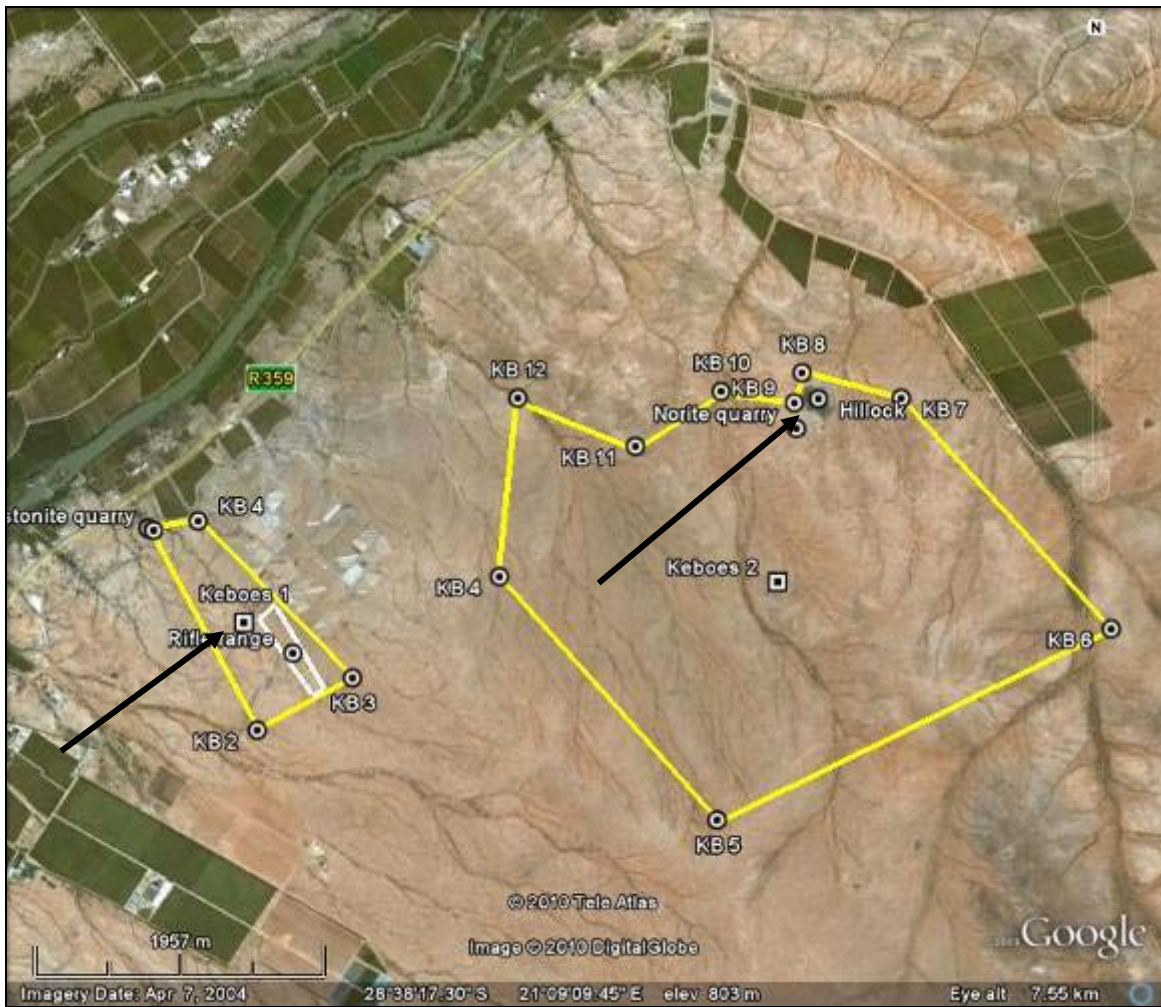
**FIGURE 11:** Ramp forming part of the quarry



**FIGURE 12: The name of the quarry operator, Izak van Zyl, was engraved on a boulder on the side of the hillock on 29 September 1957**

**4.4.4 Stone Age artefacts**

S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact certainty and significance	
Archaeological sites	Stone Age artefacts	Around rocky hillock and low knoll	Low local	Larger and smaller	Neutral	None – out of context surface finds located in areas unsuitable for farming
	Chance finds	Unknown	Low local?	Both	Unknown	Report and evaluate any graves or large archaeological features when found



**FIGURE 13: Google Earth image (2004) of the study areas indicating the locations where Stone Age artefacts were identified**



**FIGURE 14: Assemblage of stone tools and flakes found near the hillock (larger study area)**

#### 4.4.5 Summarised impact assessment

**TABLE 10: Identification of heritage features, impacts and impact management measures**

S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact type, certainty and significance	
Buildings, structures, places and equipment of cultural significance	Rifle range	28°38'49.07"S 21° 7'57.31"E	Low local	Smaller	Possible alteration or destruction – low negative	Mitigation: Photo documentation before alterations or destruction
	Wollastonite quarry (abandoned)	28°38'22.27"S 21° 7'22.36"E	Low local	Smaller	Possible alteration or destruction – low negative	None
	Norite quarry plant (abandoned)	28°38'0.02"S 21°10'2.52"E	Low local	Larger near hillock	Neutral	None – outside suitable irrigation farming area
Areas to which oral traditions are attached or which are associated with intangible heritage	Dry gullies and other areas	-	Low local	Larger	Neutral	None – dry gullies are associated with Sunday school picnics and other forms of recreation but are outside suitable farming area
Historical settlements and landscapes	None	-	-	-	-	-
Landscapes and natural features of cultural significance	None	-	-	-	-	-
Geological sites of scientific or cultural importance	None	-	-	-	-	None
Archaeological sites	Stone Age artefacts	Around rocky hillock and low knoll	Low local	Larger and smaller	Neutral	None – out of context surface finds located in areas unsuitable for farming
	Chance finds	Unknown	Low local?	Both	Unknown	Report and evaluate any graves or large archaeological features when found
Graves and burial sites	None	-	-	-	-	-
Features associated with labour history	None	-	-	-	-	-
Movable objects	None	-	-	-	-	-

#### 4.5 Social and economic benefits

The development will have no direct benefits related to the conservation of heritage resources (structures) since none of significance were identified and will be affected.

The socio-economic benefits are associated with the production of grapes and other products for export purposes and the retention and creation of jobs.

#### 4.6 Consultation with affected communities

Appendix 4 contains a summarised public participation report done as part of the EIA process.

Mr Abrie Coetzee (farmer) was consulted.



#### **4.7 Identification of other risk sources**

The following project actions will very likely impact negatively on any potential palaeontological and archaeological sites and remains.

The actions are likely to occur during the preparation phases of the proposed project:

- Excavations may expose or uncover objects and artefacts and unmarked human burials.

#### **4.8 Key mitigation and enhancement measures before and during construction**

- Monitor for chance finds (e.g. burial sites, old waste disposal sites, ruins, foundations etc)

#### **4.9 Consideration of alternatives**

No alternatives are considered.

#### **4.10 Summarised findings and recommendations**

The two areas proposed for irrigation farming are located in a cultural landscape classified primarily as historic farmland and secondarily as archaeological. This class of landscape is of relatively low heritage sensitivity because it is able to absorb new development with some adverse effects through some mitigation.

The predicted impacts are of a direct and physical nature. Visual intrusion as an indirect impact is not an issue since irrigation farming is already practised on surrounding areas. Noise, dust, pollution and restrictions of access patterns as indirect impacts are also not issues.

Cultmatrix states that there are no compelling reasons not to authorise the proposed change of land use and that the proposed development can continue provided that the following mitigation measures are adopted as a heritage management tool:

1. Should any hidden human remains (highly unlikely) be disturbed, exposed or uncovered during (plant) site clearing and excavations, these should immediately be reported to an archaeologist. Burial remains should not be disturbed or removed until inspected by an archaeologist.
2. Site clearing and excavation activities must be monitored for the occurrence of any hidden archaeological material (Stone Age tools) and similar chance finds and if any are exposed, this should be reported to an archaeologist so that an investigation and evaluation of the finds can be made.
3. The rifle range should be photographed before any alterations or destruction.
4. 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.

## APPENDIX 1: SOCIO-CULTURAL HISTORY OF DEVELOPMENT AREA

When the Swedish-born traveller and explorer Hendrik Wikar reached the middle reaches of the Orange River in 1778 after a long land journey that started in Cape Town, he met Khoisan communities who called themselves the *Einiqua*, or *River People*, divided into three “kraals”: the Namnykoa near the Augrabies Falls, the Kaukoa on islands west of Keimoes, and the Aukokoa of Kanoneiland and other islands to the east. He was followed by Robert Gordon, a Cape officer who was appointed to survey the interior. Gordon likewise documented the people and the landscape. Many years later the Gordonia District was named after him. Both Wikar and Gordon probably would have travelled past the area where Keboes is located.

The Einiqua were not the first communities who lived along the Orange River. 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. The Stone Age artefacts that were found in the course of the investigation are associated with this period of human settlement. The spread of Iron Age communities did not extend this far to the west.

By 1730 the first wave of *Trekboere* reached the middle Orange River, nomadic farmers who periodically settled where there was water and grazing for their livestock. Very few of them chose to settle permanently, even after the Orange River was proclaimed as the Cape Colony’s northern border in December 1847. However, the Cape Colonial government did not have the resources to manage this vast area, which was regarded as a semi-desert only suitable to the *Trekboere* and the Khoisan communities (in particular the Korana) who likewise led a nomadic lifestyle. From the mid-1880s it was administered as part of British Bechuanaland, which was established a separate British colony in the interior.

Droughts and other environmental factors eventually resulted in increasing competition between the *Trekboere* and the Khoisan communities, which increased in violence in the mid-1860s and ended in the First Korana War of 1868-1869. This was exacerbated when the colonial government started granting grazing licenses to the *Trekboere* in 1867. By 1878 the land south of the Orange River had been surveyed into enormous farms, which were available for rental as grazing for periods between one and five years. Amongst these was a large farm of 37 000 hectares, which was formally proclaimed in 1883.

In 1878-1879 the Second Korana War took place, during which Korana groups established Kanoneiland as a fortified stronghold. It is said that six of them made a cannon from the trunk of a large aloe to beat off the forces of the Cape Artillery Corps. The cannon exploded and killed its crew, giving Kanoneiland its name. Its Khoisan name is *Keboes*, an onomatopoeic rendering of the sound of cannon. This indigenous name has remained through the name of the large farm to the south, which officially became Keboes in 1883.

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. In 1895 British Bechuanaland became part of the Cape Colony, which meant that the Lower Orange River regions, Gordonia, Namaqualand and Bushman land, now fell under the Cape Colonial Government.

Kanoneiland originated during the depression of 1927-1932 on the initiative of private settlers. In 1928 they were given permission by the national government to remain on the island. The pioneer of irrigation on the Lower Orange River, Japie Lutz (after whom Lutzville was named), helped them dig the first furrow south of the river. In 1939 the management of the settlement was transferred to the Kanoneiland Settlement Management Board. This board took over the ownership of a number of government farms in 1940, including Keboes, as Crown Grants. This gave the impetus for the development of irrigation farming on Keboes and the other farms south of the Orange River.

Mining was another economic activity, though of less importance than farming. The presence of granite gave rise to quarrying for the production of road-making gravel, such as the Van Zyl quarry on Keboes that started in the late 1950s. The region is also known for deposits of wollastonite. Named after Lord William Hyde Wollaston (1766-1828), a British chemist and mineralogist, it was a geological curiosity until its uses were developed in the 1950s. In the Gordonia District the most significant deposits occur at Keimoes and on the farm Eksteenkuil 35, west of Keboes. A small deposit on Keboes was mined for a couple of years. Wollastonite is used locally for the manufacture of ceramic tiles and in some filter applications.

## APPENDIX 2: INFORMATION SOURCES USED IN THIS REPORT

### Databases

Environmental Potential Atlas, Department of Environmental Affairs and Tourism.  
Heritage Sites Database, Pretoria

### Literature

BERGH, JS (ed), 1999, *Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies*. Pretoria: JL van Schaik.

ICOMOS Australia. 1999. *The Australia ICOMOS Burra Charter for the conservation of places of cultural significance*.

*Living with the land. A manual for documenting cultural landscapes in the Northwest Territories*. Yellowknife (Canada), 2007.

LOUBSER, JA, 1959, *Kakamas: Geskiedkundige Dorp van die Oranje*. Cape Town: Matthee-Mitchell.

*National Heritage Resources Act (Act 25 of 1999)*

RAPER, PE, 2004, *New Dictionary of South African Place Names*. Johannesburg/Cape Town: Jonathan Ball.

SMITH, AB (ed), 1995, *Einiqualand: Studies of the Orange River Frontier*. Cape Town: UCT Press.

*Standard Encyclopedia of Southern Africa*.

WILSON, MGC, & ANHAEUSSER, CR, 1998, *The mineral resources of South Africa*, Council for Geoscience Handbook 16. Pretoria: Council for Geoscience.

### Maps

2821 CA Kanonkop (1990)  
Cadastral diagrams of the farm (Chief Surveyor-General)  
Maps provided by client

### Aerial photos

Google Earth  
Images provided by client

### Verbal information

Mr Abrie Coetzee, Roepersfontein and Keboes

## APPENDIX 3: GLOSSARY OF TERMS

### Cultural significance (Burra Charter)

Aesthetic, historic, scientific, social or spiritual importance, meaning or noteworthiness for past, present or future generations

Cultural significance is embodied in the place itself (intrinsic significance), its fabric, setting, use, associations, meanings, records, related places and related objects.

Cultural significance is assessed in terms of the following criteria, some of which are embodied in the NHRA:

- Historic value: Material or intangible evidence resulting from changing social, political and environmental circumstances or conditions
- Rarity: Unique or unusual features also possess rarity value, apart from their age. Section 34 of the NHRA provided general protection for all structures older than 60 years. This does not imply that recently erected structures cannot possess rarity, or for that matter cultural value.
- Scientific value: Indicates research potential (the capacity to yield more knowledge)
- Typical: Indicates that the feature is a good example of a certain class or type of heritage resource
- Aesthetic: Other than artistic or architectural expression, aesthetic value can also be evident in craftsmanship, technique, visual cohesion (harmony), visual evidence of permanence and stability, setting etc.
- Technological: Indicates value in terms of a technological achievement
- Personal/Community: Indicates value in terms of association with a certain person, community, organisation or cultural group
- Landmark: A sense of place or belonging involves the physical and visual relationship between a feature and its environment.
- Condition (material integrity): Indicates substantial evidence of authentic fabric with minor degree of lost or obliterated fabric; also refers to a structure's restoration potential
- Sustainability: The potential for lasting economic viability (use) and the perpetuation of the original use or part thereof.

### Heritage resources/features (NHRA)

Any place or object of cultural significance, including:

(a) places, buildings, structures and equipment of cultural significance;

(b) places to which oral traditions are attached or which are associated with living heritage;

(c) historical settlements and townscapes;

(d) landscapes and natural features of cultural significance;

(e) geological sites of scientific or cultural importance;

(f) archaeological and palaeontological sites;

(g) graves and burial grounds, including—

(i) ancestral graves;

(ii) royal graves and graves of traditional leaders;

(iii) graves of victims of conflict;

(iv) graves of individuals designated by the Minister by notice in the *Gazette*;

(v) historical graves and cemeteries; and

(vi) other human remains, which are not covered in terms of the Human Tissue Act, 1983 Act No. 65 of 1983);

(h) sites of significance relating to the history of slavery in South Africa;

(i) movable objects, including—

(i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;

(ii) objects to which oral traditions are attached or which are associated with living heritage;

(iii) ethnographic art and objects;

(iv) military objects;

(v) objects of decorative or fine art;  
(vi) objects of scientific or technological interest; and  
(vii) 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).

#### Heritage significance (NHRA)

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

#### Historic period

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

#### Impact

A description of the effect of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space

#### Impact assessment

Issues that cannot be resolved during screening (Level 1) and scoping (Level 2) and thus require further investigation

#### Intangible heritage

Defined in terms of the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (2003) as:

- Oral traditions and expressions, including language as a vehicle of the intangible cultural heritage;
- Performing arts;
- Social practices, rituals and festive events;
- Knowledge and practices concerning nature and the universe;
- Traditional craftsmanship.

The "intangible cultural heritage" means the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity.

Visual and social impact assessments as part of an HIA are directly associated with intangible cultural heritage.

## **Iron Age**

Early Iron Age (EIA)	AD 200 - AD 1000
Late Iron Age (LIA)	AD 1000 - AD 1830

## **Issue**

A question that asks what the impact of the proposed development will be on some element of the environment

## **Maintenance**

Keeping something in good health or repair

## **Management actions**

Actions that enhance benefits associated with a proposed development or avoid, mitigate, restore, rehabilitate or compensate for the negative impacts

## **Preservation**

Conservation activities that consolidate and maintain the existing form, material and integrity of a cultural resource

## **Reconstruction**

Re-erecting a structure on its original site using original components

## **Rehabilitation**

Re-using an original building or structure for its historic purpose or placing it in a new use that requires minimal change to the building or structure characteristics and its site and environment.

## **Restoration**

Returning the existing fabric of a place to a known earlier state by removing additions or by reassembling existing components

**SAHRA** - South African Heritage Resources Agency

## **Stone Age**

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

## **Value**

Worth, conservation utility, desirability to conserve etc in terms of physical condition, level of significance (importance), economy (feasibility), possible new uses and associations/comparisons with similar features elsewhere

## APPENDIX 4: PUBLIC PARTICIPATION REPORT SUMMARY

Compiled by MEG Omgewingstudies

### KEBOES/NEWGRO FARMING – EIA REPORT MAY 2010

#### SECTION D

#### 4 PUBLIC PARTICIPATION

A detailed public participation process had been followed to identify all possible interested and affected parties (I & AP=s) as well as any issues of significance to the project.

##### 4.1 Notification

Steps taken to notify potentially interested and affected parties of the application: The public participation process had been done by means of a newspaper advertisement in “Gemsbok” (6 November 2009), an on-site notice (annexure 10), consultation with various stakeholders, as well as organizations, government departments etc.

##### *Proof of notification*

Advertisements and notices, notifying potentially interested and affected parties of the application, has been displayed, placed or given.

##### 4.2 Registered interested and affected parties

During the public participation process the following interested and affected parties were identified and had been consulted:

NAME	ADDRESS	NOTIFIED BY:
DENC Department of Environment and Nature Conservation	Private Bag X6102, KIMBERLEY, 8300	SCOPING REPORT
DWA Department of <b>Water Affairs</b>	Private Bag X5912, UPINGTON, 8800	SCOPING REPORT
DWA	Private Bag X5912,	SCOPING REPORT

Department of Agricultural, <b>Forestry</b> and Fisheries	UPINGTON, 8801	
Department of <b>Agricultural</b> , Forestry and Fisheries	P O Box 52, UPINGTON, 8801	SCOPING REPORT
<b>ADJACENT LAND OWNERS AND INTERESTED PARTIES:</b>		
Kai !Garib Municipality	P O Box 174, KAKAMAS, 8870	LETTER
GP Viljoen Trust	P O Box 73, LOUISVALE, 8809	LETTER
Roodeland Boerdery	P O Box 30, KANONEILAND, 8806	LETTER
Blaauwsekop Irrigation Board	P O Box 21, KANONEILAND, 8806	LETTER

#### 4.3 Issues identified

The following comments have been received from adjacent land owners as well as interested and affected parties (See Annexure 5 – 9):

<b>NAME</b>	<b>DATE RECEIVED</b>	<b>COMMENTS AND RESPONSE</b>
DWA Department of <b>Water Affairs</b>	23.11.2009	<p>The comments and inputs from Department of Water Affairs and Forestry (Upington), were formally requested, and received on the 23 November 2009.</p> <p>In the comments received from DWAF it was brought under the attention of the applicant that the remainder of the Farm Keboes 37 only has 42 hectares of water available and that the water rights of portion 75 of the Farm Keboes 37, (120 hectares water rights) may not be used on this portion. The necessary applications for additional water rights for this development will have to be lodged with the Department of Water Affairs.</p> <p>No natural runoff area may be disturbed without the necessary permit</p>



		<p>application and approval from the said department.</p> <p>The required information with regard to the handling of solid waste and sewage will be provided to the department as soon as it is obtained from the various roleplayers (Annexure 5).</p>
Department of Agricultural, <b>Forestry</b> and Fisheries	19.11.2009	<p>Due to the fact that the area is situated within the Bushmanland Arid Grassland region the department requested that a specialist study in this regard be undertaken. This was done and the report from Dr Van Rooyen is attached as Annexure 3. The department's concerns on the protection of protected tree species and the use of chemicals have been addressed under par. 6.2 of this EIA Report. The Vegetation Survey done by Dr N van Rooyen also addresses the issues relating to the occurrence and protection of endemic succulent shrubs and herbs in the Bushmanland Arid Grassland (Annexure 3). Reference is also made to the requirements of the National Veld and Forest Fire Act and the owner's responsibility in this regard. This will be brought under the attention of the applicant (Annexure 6).</p>
Department of <b>Agriculture</b> , Forestry and Fisheries	03.11.2009	<p>Indicated that they are also responsible for the issuing of plough certificates and that this will be considered once the necessary test has been done to determine the possibility to irrigate the soil. These tests will be done in conjunction with the said department and will also be a legal requirement before the commencement of the project (Annexure 7).</p>
<b>ADJACENT LAND OWNERS AND INTERESTED PARTIES:</b>		
Kai !GaribMunicipality	03.11.2009	No objection to the proposed development (Annexure 8)
GP Viljoen Trust	10.11.2009	He requested that this development

		must make adequate provision for drainage to prevent flooding/damming of water on the adjacent property to the east. (Annexure 9)
Roodeland Boerdery	13.11.2009	No objections received.
Blaauwsekop Irrigation Board	13.11.2009	No objections
Gemsbok Advertisement	13.11.2009	No comments received (Annexure 11)