

**Heritage impact assessment for the  
PROPOSED GRAVENHAGE MANGANESE PROJECT, JOHN TAOLO  
GAETSEWE DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE**



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MANGANESE PROJECT, JOHN TAOLO GAETSEWE DISTRICT  
MUNICIPALITY, NORTHERN CAPE PROVINCE**

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**Declaration:**

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



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

**EXECUTIVE SUMMARY**

**HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED GRAVENHAGE MANGANESE PROJECT, JOHN TAOLO GAETSWENE DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE**

Aquila Steel (Africa) Pty Ltd (Aquila) a wholly owned subsidiary of Aquila Resources Limited is currently in the process of applying for a mining right for the Gravenhage Project. The Gravenhage Project ('the project') will be located on Portion 114 of the Farm Gravenhage 703 approximately 45 km north of Hotazel Town.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by **Synergistics Environmental** to conduct a Heritage Impact Assessment (HIA) to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where the abovementioned development is to take place.

- As no heritage sites in the study area, there would be no impact resulting from the proposed development.

Therefore, from a heritage point of view it is recommended that the proposed development be allowed to continue. However, it is requested that should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.



J A van Schalkwyk  
Heritage Consultant  
August 2010

**TECHNICAL SUMMARY**

<b>Property details</b>						
Province	Northern Cape					
Magisterial district	Kuruman					
Topo-cadastral map	2622DD					
Closest town	Hotazel					
Farm name	Gravenhage 107					
Portions/Holdings	114					
Coordinates	Polygon					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	S 26.78687	E 22.79142	2	S 26.80554	E 22.77480
	3	S 26.81289	E 22.78774	4	S 26.80966	E 22.81384
	5	S 26.81172	E 22.84089	6	S 26.79807	E 22.85641
	7	S 26.78629	E 22.84472			

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

<b>Development</b>	
Description	Development of mining activities
Project name	Gravenhage Manganese Project

<b>Land use</b>	
Previous land use	Farming
Current land use	Farming

<b>Heritage sites assessment</b>		
<i>Site type</i>	<i>Site significance</i>	<i>Site grading (Section 7 of NHRA)</i>
None		

<b>Impact assessment</b>		
<i>Impact</i>	<i>Mitigation</i>	<i>Permits required</i>
None	None	None

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## **GLOSSARY OF TERMS AND ABBREVIATIONS**

### TERMS

**Study area:** Refers to the entire study area as indicated by the client in the accompanying Fig. 1 - 2.

**Stone Age:** The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who (mostly) did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

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

**Iron Age:** Period covering the last 1800 years, when new people brought a new way of life to Southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and they herded cattle as well as sheep and goats. These people, according to archaeological evidence, spoke early variations of the Bantu Language. Because they produced their own iron tools, archaeologists call this the Iron Age.

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

**Historical Period:** Since the arrival of the white settlers - c. AD 1840 - in this part of the country

### ABBREVIATIONS

ADRC	Archaeological Data Recording Centre
ASAPA	Association of Southern African Professional Archaeologists
CS-G	Chief Surveyor-General
EIA	Early Iron Age
ESA	Early Stone Age
LIA	Late Iron Age
LSA	Later Stone Age
HIA	Heritage Impact Assessment
MSA	Middle Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
SAHRA	South African Heritage Resources Agency

# HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED GRAVENHAGE MANGANESE PROJECT, JOHN TAOLO GAETSEWE DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE

## 1. INTRODUCTION

Aquila Steel (Africa) Pty Ltd (Aquila) a wholly owned subsidiary of Aquila Resources Limited is currently in the process of applying for a mining right for the Gravenhage Project. The Gravenhage Project ('the project') will be located on Portion 114 of the Farm Gravenhage 703 approximately 45 km north of Hotazel Town. It is anticipated that the project will involve the mining of approximately 1.5 Mt of ore per annum with primary and secondary crushing, wet screening, stockpiling and the blending of the ore. The ore will be trucked to a siding in Hotazel and loaded onto wagons to be railed for export to customers. Mining activities are expected to last between 20 to 30 years. Mining will be undertaken using open pit methods for the first 3 to 7 years (to be confirmed) and thereafter mining will be underground using mechanized board and pillar mining using electrohydraulic drill rigs and LHDs as primary earth moving equipment. The mining right area will be divided into 6 blocks and mining will be undertaken in four phases.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. According to Section 27(18) of the National Heritage Resources Act (NHRA), No. 25 of 1999, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by **Synergistics Environmental** to conduct a Heritage Impact Assessment (HIA) to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where the abovementioned development is to take place.

## 2. TERMS OF REFERENCE

The scope of work for this study consisted of:

- Conducting of a desk-top investigation of the area, in which all available literature, reports, databases and maps were studied;
- A visit to the proposed development area.

The objectives were to

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

### 3. HERITAGE RESOURCES

#### 3.1 The National Estate

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

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

#### 3.2 Cultural significance

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

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

- its importance in the community, or pattern of South Africa's history;
- its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;



- its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- sites of significance relating to the history of slavery in South Africa.

## 4. STUDY APPROACH AND METHODOLOGY

### 4.1 Extent of the Study

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

### 4.2 Methodology

#### 4.2.1 Preliminary investigation

##### 4.2.1.1 Survey of the literature

A survey of the relevant literature was conducted with the aim of reviewing the previous research done and determining the potential of the area: Breutz (1963), Legasick (1969), SA Manganese Amcor (1977), Beaumont & Vogel (1984), Snyman (1986), Beaumont & Morris (1990), Couzens (2004) and Dreyer (2007) were consulted.

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

##### 4.2.1.2 Data bases

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

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

##### 4.2.1.3 Other sources

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

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

##### 4.2.1.4 Interviews

Mr Pieter Botha, the geologist in charge of exploration on the site. He has been working here for the past eighteen months.

- Mr Botha explained the geology, with a lack of stone, outcrops and permanent open water sources, thereby indicating the absence of human habitation of the region in the past.

#### 4.2.2 Field survey

The area that had to be investigated was identified by **Synergistics Environmental** by means of maps. The site was surveyed by accessing the available roads and tracks, a large number of which have been made for the current exploration activities. In addition the rims of the various pans were investigated as well as the dunes.

#### 4.2 Limitations

In some sections the vegetation cover was very high and dense, limiting archaeological visibility.

### 5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

#### 5.1 Site location and description

The Gravenhage Manganese Project will be located in the Kalahari Manganese Field which contains South Africa's major deposit of metallurgical ore. Over large parts of the resource the seam is split by a sill of approximately 1.5 m thick leaving two manganese seams that have to be mined separated from the sill. The average seam thickness is 5 metres.

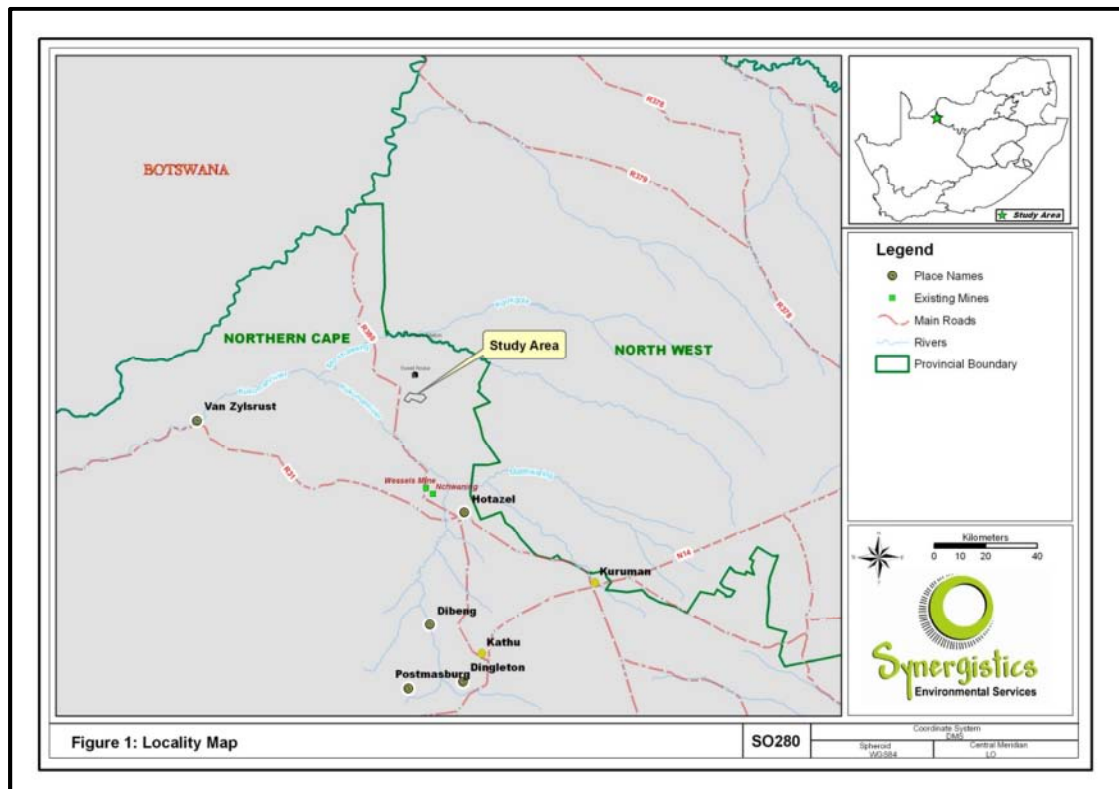


Fig. 1. Location of the study area in regional context.

The terrain around the mining right application area is relatively flat with some pans distributed around the study area. The study area is dominated by *Acacia erioloba* (Camel Thorn) and some distribution of *Boscia albitrunca* (Shepherd's tree). South west of the study area is the Kuruman River which flows ephemerally in a north westerly direction.

The farm Gravenhage 703/114, which is applied for is currently used for the farming of cattle. South of the study area there are existing manganese mining operations which include Gloria, Wessels, Mamatwan and Nchwaning mining operations. West of the study area is the R380 which might be used to transport ore to existing sidings in Hotazel.

The mining right application will be made for the Farm Gravenhage 703/114. Open pit mining will take place within Block 3 and it is anticipated that the majority of the infrastructure will be required for the mining operations will be located to the west and east of the open pit area. The layout of the infrastructure, waste dumps and stockpile areas is still to be determined as part of the feasibility study.

## 5.2 Regional overview

### *Stone Age*

Occupation of the region took place during the Stone Age. Most of this, however, seems to date to the Early Stone Age and centres in the areas where there are hills, e.g. to the east and south. For example, in the vicinity of Kathu, Beaumont & Morris (1990) and Dreyer (2007) identified to occurrence of extensive Early Stone Age occupation.

Less obvious in its presence are the Later Stone Age sites, some of which are indicated by Beaumont & Vogel (1984). They equate these sites, some which occur in the larger region, with Cape Coastal pottery associated with amorphous LSA (herders) or Wilton (hunter-gatherers) in the period 100 BC to AD 1900.

### *Iron Age*

Early Iron Age occupation did not take place in the region and seems as if the earliest people to live settled lives here were those of Tswana-speaking origin (Tlhaping and Tlharo) that settled mostly to the north and a bit to the west of Kuruman. However, they continued spreading westward and by the late 18<sup>th</sup> century some groups occupied the Langeberg region. With the annexation of the Tswana areas by the British in 1885, the area became known as British Betchuana Land. A number of reserves were set up for these people to stay in. In 1895 the Tswana-speakers rose up in resistance to the British authority as represented by the government of the Cape Colony. They were quickly subjected and their land was taken away, divided up into farms and given out to white farmers to settle on (Snyman 1986).

### *Historic period*

Many early explorers, hunters, traders and missionaries travelled through the area on their way to Kuruman on what was to become known as the "missionary road". Anderson, Burchell, Harris, Holub, Lichtenstein and Moffat are but a few of the better-known names to pass through here.

In 1902 Olifantshoek got its first permanent inhabitant, Edward Finnis and in 1903 Michael Colley opened a shop. The slow growth of Olifantshoek can be attributed to the fact that for many years Deben (Dibeng) was the main seat of the church in the region and local people preferred to go there.

Although prospecting for minerals, especially diamonds occurred in the area and some knowledge was available on the iron deposits, it was only during the 1940s that the extent of the iron and manganese deposits were established. This was followed by the establishment of towns such as Sishen (1952) and Kathu in 1972.

As already indicated, the larger region as well as the study area has been sparsely populated and has largely been used for cattle farming. Very little development took place on the farm Gravenhage and most facilities such as water troughs etc. is largely in a state of disrepair (Fig. 7).

### 5.3 Identified sites

#### 5.3.1 Stone Age

- No sites, features or objects dating to the Stone Age were identified in the study area.

#### 5.3.2 Iron Age

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

#### 5.3.3 Historic period

- No sites, features or objects dating to the historic period were identified in the study area.

## 6. SITE SIGNIFICANCE AND ASSESSMENT

### 6.1 Heritage assessment criteria and grading

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

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

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

### 6.2 Statement of significance

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

### **6.3 Impact assessment**

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

- As no heritage sites occur in the study area, there would be no impact resulting from the proposed development of the manganese mining operations.

## **7. CONCLUSIONS**

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

- As no heritage sites in the study area, there would be no impact resulting from the proposed development.

Therefore, from a heritage point of view it is recommended that the proposed development be allowed to continue. However, it is requested that should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

## 8. REFERENCES

### 8.1 Data bases

Chief Surveyor General  
Environmental Potential Atlas, Department of Environmental Affairs and Tourism.  
Heritage Atlas Database, Pretoria.  
National Archives of South Africa

### 8.2 Literature

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

Beaumont, P.B. & Vogel, J.C. 1984. Spatial patterning of the ceramic Later Stone Age in the Northern Cape Province, South Africa. In Hall, M., Avery, G., Avery, D.M., Wilson, M.L. and Humphreys, A.J.B. (eds.) 1984. *Frontiers: South African Archaeology Today*. Cambridge Monographs in African Archaeology 10. BAR International Series 207: 80-95.

Beaumont, P & Morris, D (eds.) 1990. *Guide to the archaeological sites in the Northern Cape*. Kimberley: McGregor Museum.

Breutz, P-L. 1963. *The Tribes of the Districts of Kuruman and Postmasburg*. Ethnological Publications No. 49. Pretoria: Government Printer.

Couzens, T. 2004. *Battles of South Africa*, Cape Town: David Philip.

Dreyer, J. 2007. First Phase archaeological and cultural heritage assessment of the proposed Garona-Mercury transmission power line, Northern Cape, North-West and Free State. Bloemfontein: Unpublished report.

Legassick, M. 1969. The Sotho-Tswana Peoples before 1800. In Thompson, L. (ed) 1969. *African Societies in southern Africa*. London: Heinemann. Pp. 86-125.

S A Manganese Amcor Ltd. 1977. *Kalahari Wealth: the story of manganese, 1926-1976*. Cape Town: Purnell.

Snyman, P.H.R. 1986. Die Langeberg-rebellie en die totstandkoming van Olifantshoek. *Contree* 20:16-26.

Snyman, P.H.R. 1987. Die rol van Sendelinge, die owerheid en ekonomiese faktore in die ontstaan van Kuruman, 1886-1913. *Contree* 22:5-14.

### 8.3 Maps and aerial photographs

1: 50 000 Topocadastral maps: 2427CB  
Google Earth

### 8.4 Interviews

Mr P Botha, exploration geologist, Aquila Resources

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

### Significance

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

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

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

**Significance of impact:**

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

**Certainty of prediction:**

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

**Recommended management action:**

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

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

**Legal requirements:**

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



## APPENDIX 2. RELEVANT LEGISLATION

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

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

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

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

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

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

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

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

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

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

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

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

**APPENDIX 3: SURVEY RESULTS**

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

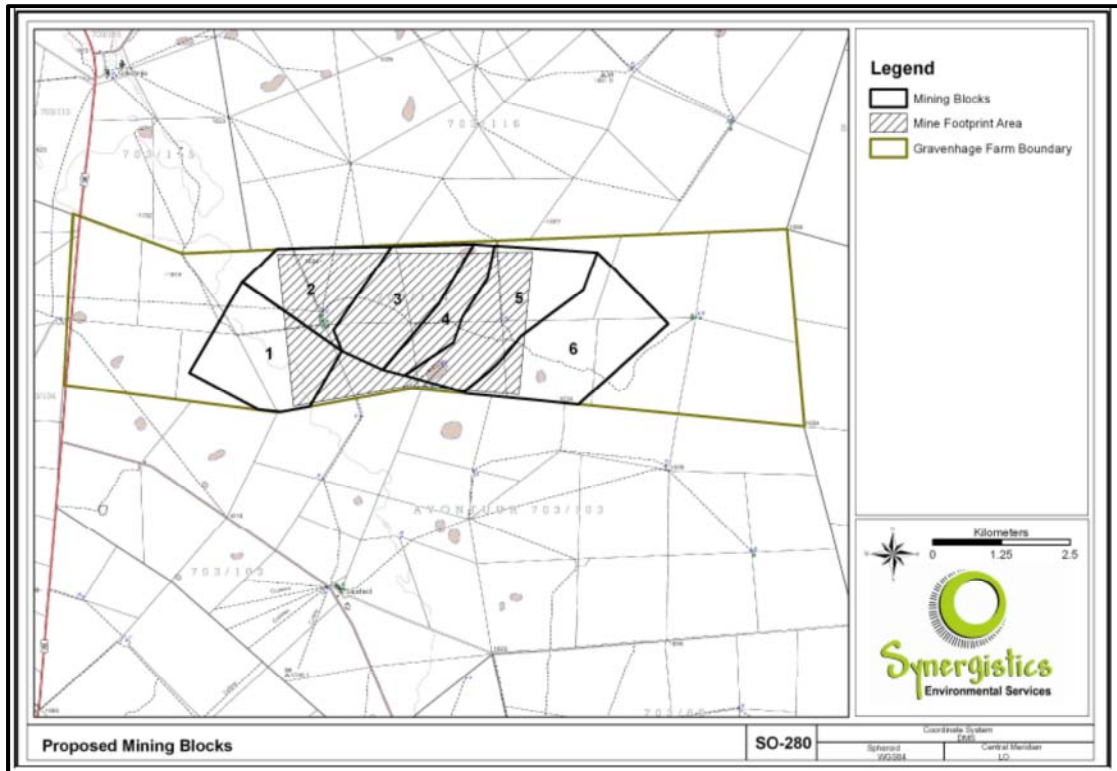


Fig. 2. The Mining Right Application Area and the Mining Footprint Area. (Maps 2622DD: Chief Surveyor-General).

**Sites identified in the study area: Nil**

**APPENDIX 4: ILLUSTRATIONS**

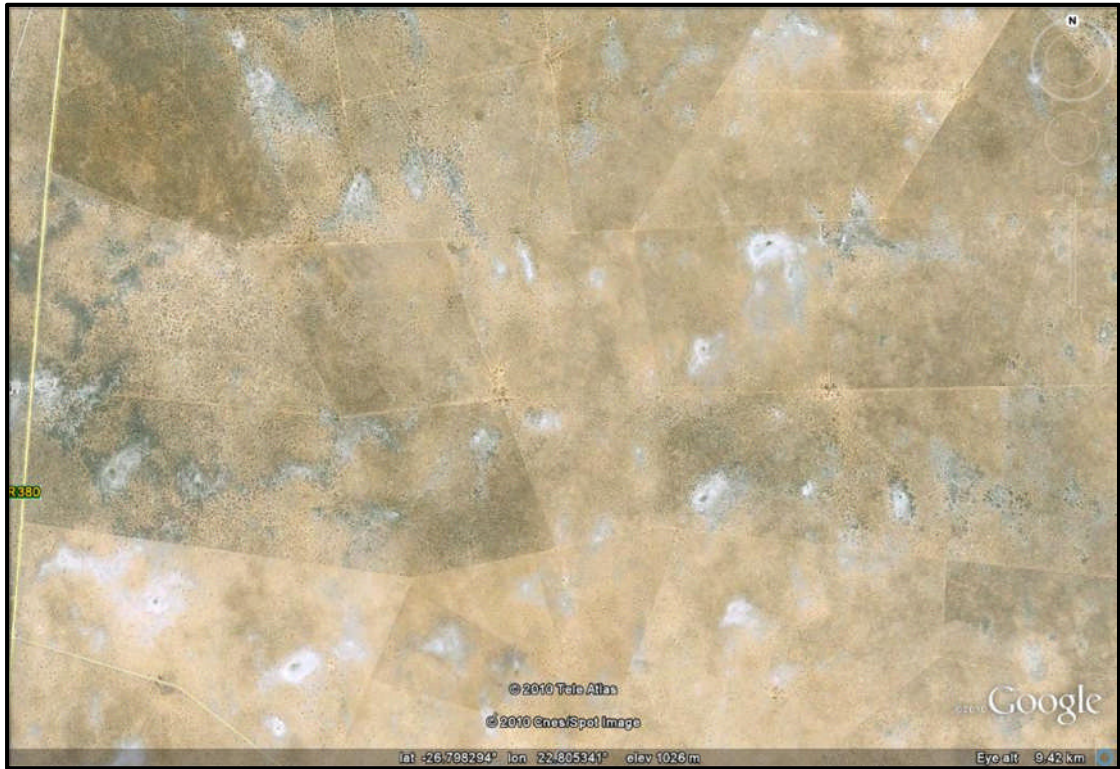


Fig. 3. Aerial view of the study area.  
(Photo: Google Earth)



Fig. 4. View of the study area looking west.



Fig. 5. One of the few dunes in the area.



Fig. 6. One of the large pans.



Fig. 7. Remains of some of the farming infrastructure.