

APPLICANT : PIONEER MINERALS (PTY)



MYEZO ENVIRONMENTAL MANAGEMENT SERVICES

Environmental Stewardship



**ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR A MINING RIGHT
APPLICATION ON THE REMAINDER AND PORTION 1 OF THE FARM REMHOOGTE
NO.152 WITHIN PRIESKA MAGISTERIAL DISTRICT, NORTHERN CAPE**

**Environmental management programme report: 20 May 2011 | Applicant: Pioneer
Minerals (Pty) Ltd**

Reference No.:(NC30/5/1/2/2/291 MR)



Volume II (Supporting information - Section 2- 11)

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**ENVIRONMENTAL MANAGEMENT IMPACT ASSESSMENT AND ENVIRONMENTAL
MANAGEMENT PROGRAMME**

**SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT APPLICATION IN
TERMS OF SECTION 39 AND OF REGULATIONS 50 AND 51 OF THE MINERALS
AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (ACT NO. 28 OF
2002) (The Act)**

VOLUME II: ATTACHMENT OF SPECIALIST REPORTS (SECTION 2- 11)

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Appendix 11-1: Archaeology

**Heritage impact assessment for the
PROPOSED DIAMOND MINING DEVELOPMENT ON THE FARM
REMHOOGTE 152, PRIESKA MAGISTERIAL DISTRICT,
NORTHERN CAPE PROVINCE**



HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED DIAMOND MINING DEVELOPMENT ON THE FARM REMHOOGTE 152, PRIESKA MAGISTERIAL DISTRICT, NORTHERN CAPE PROVINCE

Report No: 2011/JvS/018
Status: Final
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Date: March 2011

Prepared for:
Myezo Environmental Management Services
Representative: Ms A Makgato

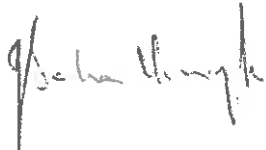
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Declaration:

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
March 2011

EXECUTIVE SUMMARY

HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED DIAMOND MINING DEVELOPMENT ON THE FARM REMHOOGTE 152, PRIESKA MAGISTERIAL DISTRICT, NORTHERN CAPE PROVINCE

Pioneer Minerals (Pty) Ltd is planning to conduct mining activities on the Remainder and Portion 1 of the Farm Remhoogte 152 in the Prieska District of Northern Cape Province. Trans Hex Operations (Pty) Ltd is the owner of a number of alluvial diamond mines on the Middle Orange River between Douglas and Prieska and will be undertaking Pioneer Mineral's prospecting and mining activities. This would be a continuation of mining activities that took place in the 1930s as well as exploration activities of the last few years.

In accordance with Section 38 of the NHRA, an independent heritage consultant was therefore appointed by **Myezo Environmental Management Services** 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 it is planned to develop the mining operations, to assess the significance thereof and to consider alternatives and plans for the mitigation of any adverse impacts.

Three areas of heritage significance have been identified in the study area:

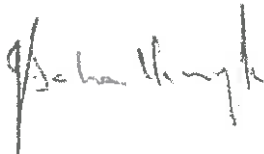
- Stone tools, mostly dating to the MSA, were found as surface material all over. During the site visit it was determined that this type of material occur in its largest concentrations in areas outside the mining area.
 - This material is viewed to have medium significance on a regional level.
- The red dune areas are also considered to be important, especially for occupation during the Later Stone Age. Although the current surface indicators seems to point in the direction of a low occurrence of material, the problem is that important sites can be buried over time by natural processes such as the dunes shifting due to wind action.
 - Material from this area is viewed to have high significance on a regional level.
- Considering the period in which the mining activities at Remhoogte took place, during and after the Great Depression, it can shed much light on the plight of poor people, black and white, during this part of our history. It is anticipated that an intensive survey of the area would lead to interesting information on the number of people involved, their way of life, etc. All of this can be derived from their houses, refuse dumps, cemetery and possibly interviews with former miners.
 - This site is therefore evaluated to have a high significance on a regional level.

The proposed mining activities would definitely have an impact on the following:

- The impact on the MSA material found over large areas would be low. As the highest density of this is found outside the mining area, the impact resulting from further mining activities would be low.
 - Although the best and most dense concentrations of this type of material occur outside the development area, it is recommended that a systematic surface collection of this material is made in the mining area. This can be achieved, for example, by collecting all material occurring in a transect set out over the area.
- With regard to the red dune area, the impact is difficult to determine as it is known that the dunes are prone to being moved by wind. It can cover up a site and later expose it. It is therefore difficult to determine the potential heritage features in the area. However, mining activities would have a high impact on these.

- In the event that any major feature such as a burial or cache of ostrich eggshell flasks are uncovered during mining operation, all work should be halted and an archaeologist should be called in to evaluate the finds.
- The proposed diamond mining would have a definite impact on the remains of the historic mining area.
 - It is recommended that a Phase II study is done prior to further mining activities taking place. This should, at a minimum, include the documentation (mapping and photographing) of all mining related features on the site as well as the systematic recovery (excavation and surface collection) of any material related to old mining activities. If at all possible, the grave should be left in place. If that is not possible, they should be relocated after the proper procedures, as prescribed by the NHRA and SAHRA was followed.

Therefore, from a heritage point of view it is recommended that the proposed development be allowed to continue on condition of acceptance of the above mitigation measures.



J A van Schalkwyk
Heritage Consultant
March 2011

TECHNICAL SUMMARY

Property details						
Province	Northern Cape					
Magisterial district	Prieska					
Local municipality	Siyathemba					
Topo-cadastral map	2923CA, 2923AC, 2922BD					
Closest town	Prieska					
Farm name	Remhoogte 152					
Portions/Holdings	Remainder and Portion 1					
Coordinates	Polygon					
	No	Latitude	Longitude	No	Latitude	Longitude
	A	S 29.54483	E 22.99326	B	S 29.54566	E 23.01416
	C	S 29.55297	E 23.01961	D	S 29.54387	E 23.04244
	E	S 29.55704	E 23.05524	F	S 29.57919	E 23.00500
	G	S 29.56438	E 22.98204			

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

Land use	
Previous land use	Farming/diamond mining
Current land use	Farming

Development	
Description	Development of diamond mining activities
Project name	Remhoogte Diamond Mining

Applicant	
Name of applicant	Pioneer Minerals (Pty) Ltd
Contact person	Mr Vincent Madlela
Contact details	P O Box 723, Parow, 7499 (021) 937 2000
Nature of activity or development	Mining Right Application

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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 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
Middle Stone Age	150 000 - 30 000 BP
Late 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
BP	Before Present
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 DIAMOND MINING DEVELOPMENT ON THE FARM REMHOOGTE 152, PRIESKA MAGISTERIAL DISTRICT, NORTHERN CAPE PROVINCE

1. INTRODUCTION

Pioneer Minerals (Pty) Ltd is planning to conduct mining activities on the Remainder and Portion 1 of the Farm Remhoogte 152 in the Prieska District of Northern Cape Province. Trans Hex Operations (Pty) Ltd is the owner of a number of alluvial diamond mines on the Middle Orange River between Douglas and Prieska and will be undertaking Pioneer Mineral's prospecting and mining activities. This would be a continuation of mining activities that took place in the 1930s as well as exploration activities of the last few years.

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), Act 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 therefore appointed by **Myezo Environmental Management Services** 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 it is planned to develop the mining operations, to assess the significance thereof and to consider alternatives and plans for the mitigation of any adverse impacts.

This HIA report forms part of the Environmental Impact Assessment (EIA) as required by the EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and is intended for submission to the South African Heritage Resources Agency (SAHRA).

2. TERMS OF REFERENCE

The aim of this HIA, broadly speaking, is to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to develop the transmission line.

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.

Table 1: Applicable category of heritage impact assessment study and report.

Type of study	Aim	SAHRA involved	SAHRA response
Heritage Impact Assessment	<p>The aim of a full HIA investigation is to provide an informed heritage-related opinion about the proposed development by an appropriate heritage specialist. The objectives are to identify heritage resources (involving site inspections, existing heritage data and additional heritage specialists if necessary); assess their significances; assess alternatives in order to promote heritage conservation issues; and to assess the acceptability of the proposed development from a heritage perspective.</p> <p>The result of this investigation is a heritage impact assessment report indicating the presence/ absence of heritage resources and how to manage them in the context of the proposed development.</p> <p>Depending on SAHRA's acceptance of this report, the developer will receive permission to proceed with the proposed development, on condition of successful implementation of proposed mitigation measures.</p>	<p>Provincial Heritage Resources Authority</p> <p>SAHRA Archaeology, Palaeontology and Meteorites Unit</p>	<p>Comments on built environment and decision to approve or not</p> <p>Comments and decision to approve or not</p>

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.

A matrix was developed whereby the above criteria were applied for the determination of the significance of each identified site (see Appendix 1). This allowed some form of control over the application of similar values for similar sites.

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. In this regard, various anthropological, archaeological, historical sources and heritage impact assessment reports were consulted (Beaumont 2008; Bergh 1998; Hocking n.d.; Kiberd 2006; Playne 1910-1911; Wilson & Anhaeusser 1998).

- Information on events, sites and features in the larger region were obtained from these sources.

4.2.1.2 Data bases

The *Heritage Atlas Database*, the *Environmental Potential Atlas*, the *Chief Surveyor General (CS-G)* and the *National Archives of South Africa (NASA)* were consulted.

- Database surveys produced a number of sites located in the larger region of the proposed development. Information pertaining to the diamond mining activities on the farm Remhoogte was found at NASA.

4.2.1.3 Other sources

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

- Information of a very general nature was obtained from these sources.

4.2.2 Field survey

The area that had to be investigated was identified by **Myezo Environmental Management Services** by means of maps. During the field survey the heritage practitioner was accompanied by Mr Johan de Villiers, the son of the current owners and who has a keen interest in the history of the region.

4.3 Limitations

- None at present.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1 Site location and description

The study area is Remainder and Portion 1 of the Farm Remhoogte 152 in the Prieska District of Northern Cape Province. As such it is located on the left (southern) bank of the Orange River, approximately 30 km northeast of the town of Prieska (Fig. 1). For more information, see the Technical Summary presented above.



Fig. 1. Location of the study area in regional context.
(Maps 2922: Chief Surveyor-General)

The geology of the region is sedimentary and the escarpment slope comprises Dwyka tillite. The terrace is covered by calcrete and Rooikoppies gravel with sand cover, forming dunes, in places.

The vegetation is classified as Orange River Nama Karoo, which is basically a shrubland, changing to a grassland environment in the more sandy regions.

The area is current used for grazing. However, sections of the study area have already been disturbed by previous diamond mining activities, which would have had a huge impact on the occurrence of heritage sites and features. On the contrary, these activities also contributed to the creation of new heritage features in the landscape.

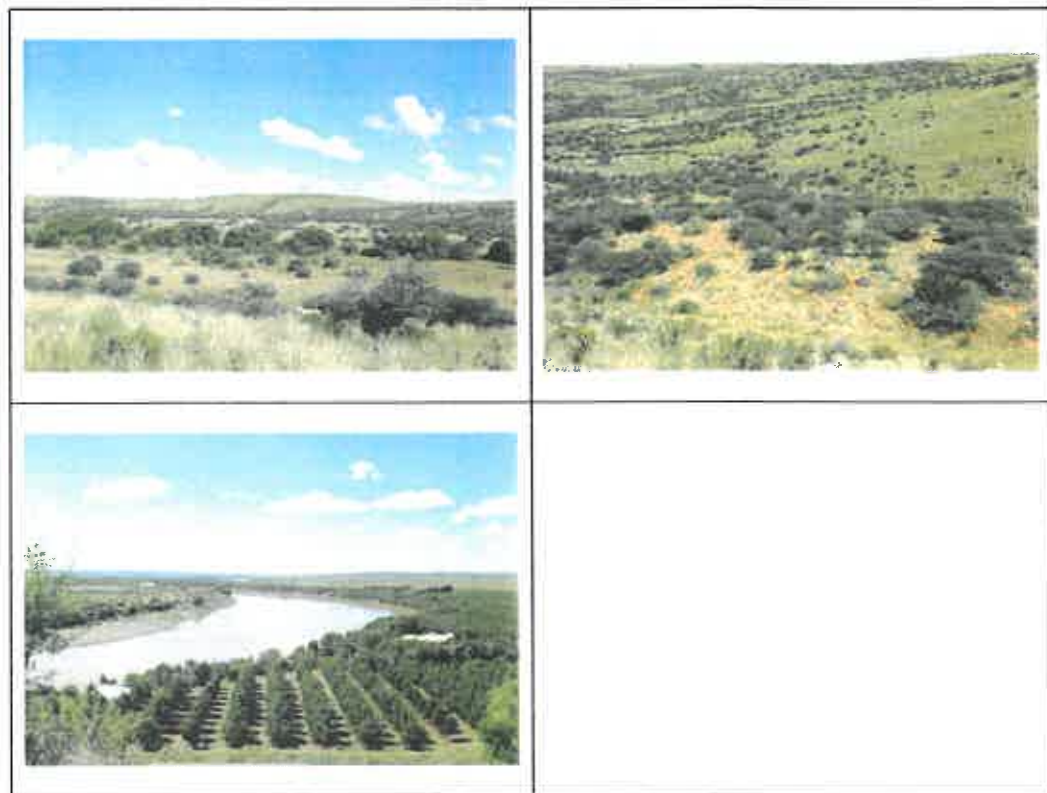


Fig. 2. Elements of the landscape.
(Shrub-land, red dunes and riverine region)

As can be determined from the BID document supplied by **Myezo Environmental Management Services**, the mining activities will involve prospecting by means of drilling, mining by means of removing the diamond bearing gravels, as well as the development of the required infrastructure, such as access roads and water supplies.

Maps taken from the BID document (Fig. 3 & 4) indicates that that the mining operations will be quite intensive and would therefore impact on any heritage sites, features or objects that might occur in the study area.

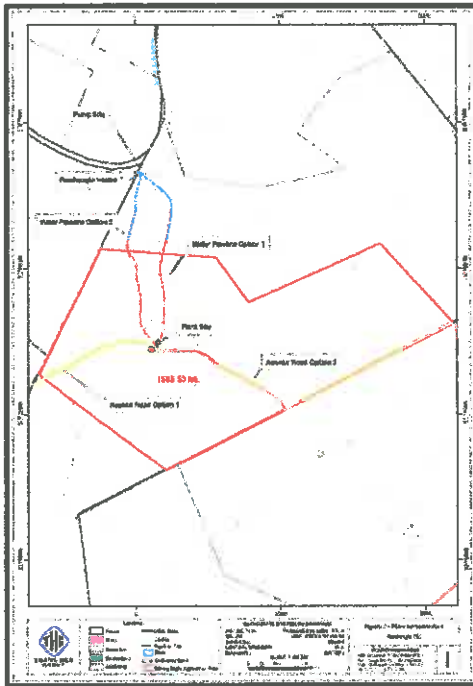


Fig. 3. Development of mining infrastructure – water pipelines and access roads.
(Map supplied by Myezo)



Fig. 4. Mining plan.
(Map supplied by Myezo)

5.2 Identified heritage sites

Very little research on any phase of the history of this part of the country has been done. This is important to keep in mind as it seems that the mining operations would have a large-scale and permanent impact on heritage in the region.

According to Mr de Villiers, son of the current owner of the farm, the river bank has produced many stone tools, bored stones, decorated ostrich eggshells (all broken) and even pieces of pottery. Apparently, many years ago some human remains were uncovered during the making of an orchard, but this was reburied on the spot. This area is also rich in contemporary history with farmsteads, farming related structures and cemeteries.

- **Fortunately, this area would not be impacted on by the proposed mining development.**

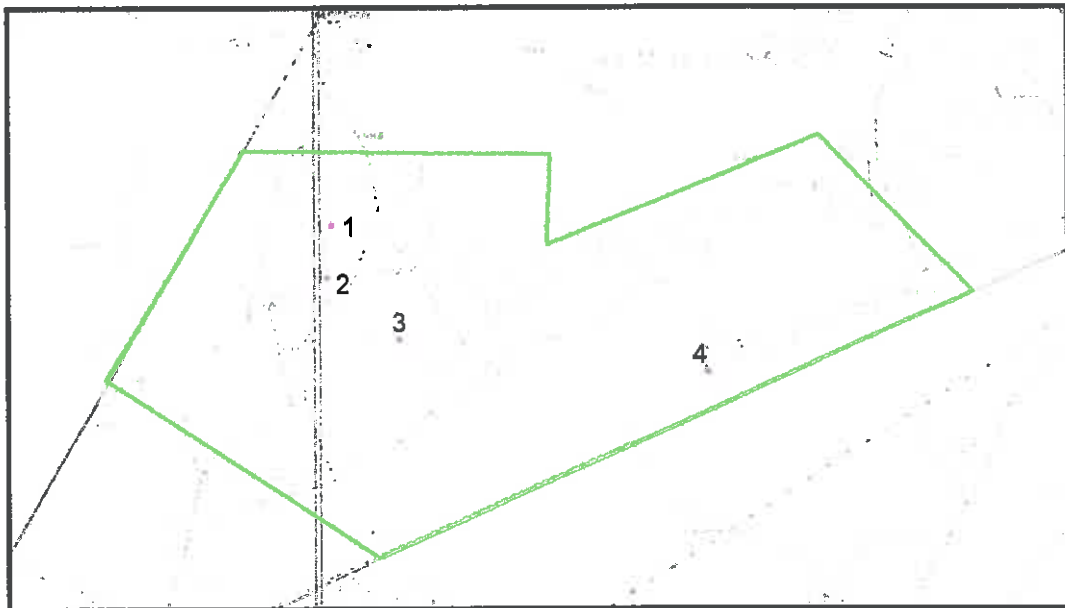


Fig. 5. Map indicating the location of heritage sites or sensitive areas.

Stone Age

Stone Age artefacts, mostly dating to the Middle Stone Age occur in large numbers all over the study area. These are mostly made from banded iron stone and iron rich chert. Cores, flakes and tools are found. The tools are very rough and informal and only a few that can be described as typical were identified. What is interesting is the large number of side-struck flakes. In some areas, on the hills closer to the river, the density of artefacts exceed more than $5/2m^2$, diminishing to $1/10m^2$ in the more sandy regions.

This material is all surface material and is therefore unlikely to occur in primary context. Furthermore, previous mining activities disturbed the soil over large areas and would therefore have disturbed these artefacts even more.

In the region of the red dunes, the occurrence of artefacts seem to decline, but, according to Mr de Villiers and own observations during the site visit, ostrich eggshells that served as water containers as well as stone tools also occur here. This viewpoint is supported by research done by Morris (1994) in a region to the south of the study area.

NHRA Category	Archaeological and palaeontological sites
Protection status	
General Protection - Section 35: Archaeology, palaeontology and meteorites	



Fig. 6. Some of the identified Stone Age material.
MSA flakes and cores, rubbing stone, decorated ostrich eggshell pieces and pottery.

Historic period

One of the first whites to access the region was Dr. Heinrich Lichtenstein, a German explorer that, on his journey to the north crossed the Orange River in the vicinity of Prieska in 1804. The area was largely under the control of the Griekwa, with the well-known Nicholaas Waterboer as their leader. These people led a near nomadic life-style, ranging over large areas with their stock. White farmer that entered the area by the late 19th century seemed to have stuck close to the various rivers where they farmed with sheep as well as some irrigation farming.

The date of the founding of the town of Prieska is not clear, but by 1911 it had a total population of 1648. By this time the asbestos and nitrates occurring in the region was already being mined.

The discovery of diamonds in the larger region during the 1860s would drastically alter the history of the region. Diamonds were first discovered near Hopetown in 1867 and a year later large numbers were discovered in the confluence area of the Vaal and Harts Rivers. By 1870 a few thousand miners were already active along the river, with most in the Pniel and Klipdrift regions. The discovery of the 'Star of South Africa' in 1871 led to the development of mining activities in Kimberly and surrounding areas.

These discoveries gave rise to claims being made by various groups for possession of the diamond fields – the Griekwas, the government of the Orange Free State, the government of the Transvaal Republic, as well as some Tswana-speaking groups in the region. After long discussions, R.W. Keates, Lieutenant-Governor of Natal, was appointed as arbiter. He decided in favour of the Waterboer (Griekwa) claim. However, this did not last very long and in 1871 the British annex the whole area, including the Kimberley diamond fields, as part of the Cape Colony.

Turning to the study area specifically, the following discussion is based on archival sources as well as observations made during the site visit.

Prospecting for diamonds started early and for example in 1919 three individuals, De Villiers, Gurling and Pritchard applied for the right to dredge for diamonds on a portion of the Orange River from the junction of the Vaal River and the Orange River all the way to Prieska.

In 1929 the farm Remhoogte, in the mining district of Barkley West, was proclaimed a "restricted alluvial digging for precious stones" and regulations were made for the distribution of claims.

Apparently things went well for some time and a school (c. 1931) was started. This was followed by shops and a hospital.

The good times did not last long and as early as 1936 a section of the alluvial diggings was worked out and as a result it was de-proclaimed. This was followed by other de-proclamations for example in 1946, with the last de-proclamation that took place as late as 1963.

NHRA Category	Buildings, structures, places and equipment of cultural significance	
Protection status	General Protection - Section 34: Structures older than 60 years	
Location	S 29.55566	E 23.00063



Fig. 5. One of the old diamond mining areas. The Google Earth photo on the right indicates the extent of mining. The mined outcrop on the left-hand side is over 700 metres long.

The houses used by the miners seem to have been quite temporary and flimsy and as a result very little of them remain – mostly a line of stones that indicate a foundation. Furthermore, the houses seem to have been located in haphazard manner across the countryside, most probably in areas where mining did not take place. A school and hospital also existed on the site and the foundation of the former can still be seen. Inspection reports on the school were regularly submitted to the Department of Education.

NHRA Category	Buildings, structures, places and equipment of cultural significance	
Protection status	General Protection - Section 34: Structures older than 60 years	

Location	S 29.56087	E 23.00680
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Fig. 6. Remains of the old school building.

The miners had to work very hard. The diamond bearing gravel was extracted and then taken down to the river where there was sufficient water to wash it in order to recover the diamonds. Remains of some of the equipment used for this are still found on the banks of the Orange River. Fresh drinking water was obtained from a well that is still in operation today.

NHRA Category	Buildings, structures, places and equipment of cultural significance	
Protection status	General Protection - Section 34: Structures older than 60 years	

Location	S 29.56359	E 23.03270
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Fig. 7. The old wind pump that the diamond miners used for obtaining drinking water.

That the circumstances under which the miners lived and work was very demanding can be deduced from the large cemetery located in the mining area. The cemetery contains probably more than 50 graves, include those of adults and children as well as white and black miners.

NHRA Category	Graves, cemeteries and burial grounds
Protection status	
General Protection - Section 36: Graves or burial grounds	

Location	S 29.55129	E 23.00100
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Fig. 8. An old cemetery containing graves of early diamond miners.

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

A matrix was developed whereby the above criteria, as set out in Sections 3(3) and 7 of the NHRA, No. 25 of 1999, were applied for each identified site (see Appendix 1). This allowed some form of control over the application of similar values for similar sites. Three categories of significance are recognized: low, medium and high. 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 a grading as identified in the table below.

Table 1. Summary of identified heritage resources in the study area.

Identified heritage resources	
Category, according to NHRA	Identification/Description
Formal protections (NHRA)	
National heritage site (Section 27)	None
Provincial heritage site (Section 27)	None
Provisional protection (Section 29)	None
Place listed in heritage register (Section 30)	None
General protections (NHRA)	
structures older than 60 years (Section 34)	Yes
archaeological site or material (Section 35)	Yes
palaeontological site or material (Section 35)	None
graves or burial grounds (Section 36)	Yes
public monuments or memorials (Section 37)	None
Other	
Any other heritage resources (describe)	None

Stone Age

Three areas of significance dating to the Stone Age have been identified. However, only two of the areas are of importance for this study (Fig. 9):

- The river bank seems to be rich in Later Stone Age occupation, with much material that has been uncovered here in the past.
 - This material is viewed to have high significance on a regional level. **Fortunately this area would not be impacted on by the proposed mining activities and need not to be considered further.**
- Stone tools, mostly dating to the MSA, were found as surface material all over. During the site visit it was determined that this type of material occur in its largest concentrations in areas outside the mining area.
 - This material is viewed to have medium significance on a regional level.
- The red dune areas are also considered to be important, especially for occupation during the Later Stone Age. Although the current surface indicators seems to point in the direction of a low occurrence of material, the problem is that important sites can be buried over time by natural processes such as the dunes shifting due to wind action.
 - Material from this area is viewed to have high significance on a regional level.

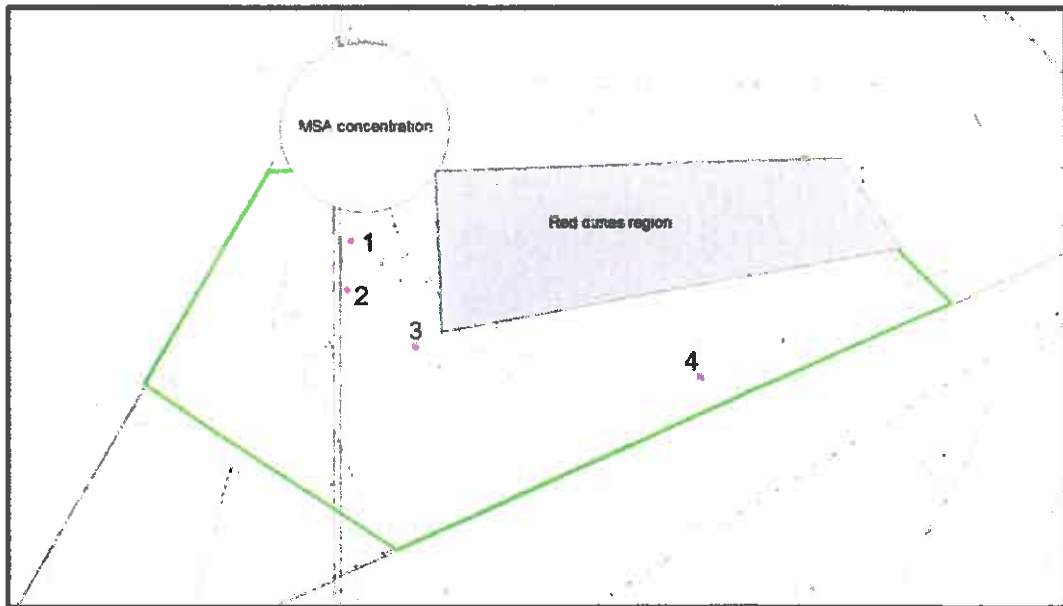


Fig. 9. Areas sensitive for Stone Age materials.

Historic period

Diamond mining has played an important part in the history of the Northern Cape and the country as a whole. In fact it was one of the main issues leading up to the Anglo-Boer War.

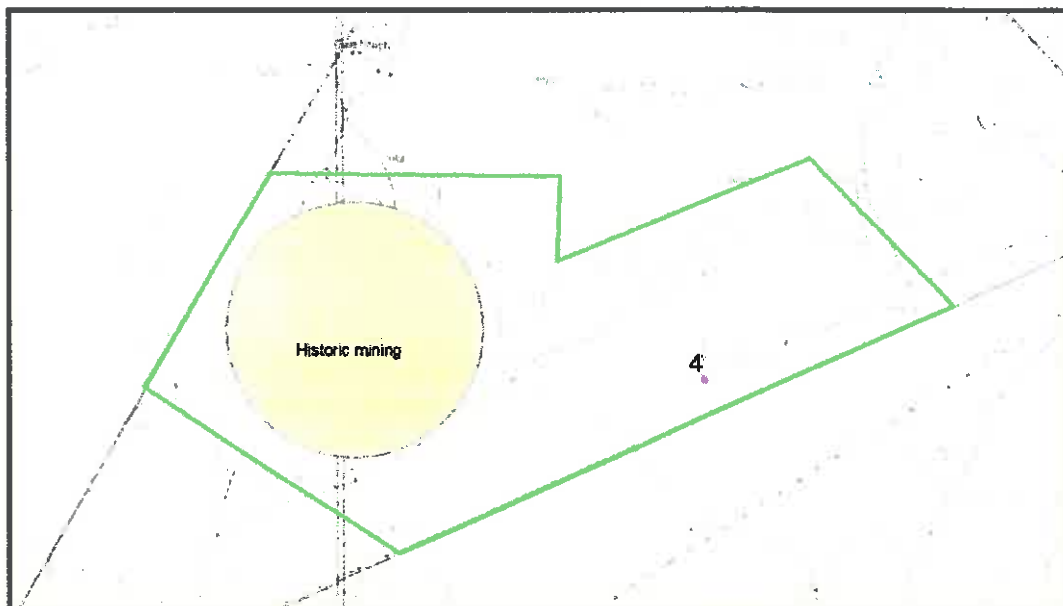


Fig. 10. Sensitive historic mining area.

One of the biggest alluvial mining events in the world took place at Bakerville in North West Province. This event and site is quite well documented, but smaller operation such as that on the farm Remhoogte is not well researched.

- Considering the period in which the mining activities at Remhoogte took place, during and after the Great Depression, it can shed much light on the plight of poor people, black and white, during this part of our history. It is anticipated that an intensive survey of the area would lead to interesting information on the number of people involved, their way of life, etc. All of this can be derived from their houses, refuse dumps, the cemetery and possibly interviews with former miners.
 - This site is therefore evaluated to have a high significance on a regional level.

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.

The proposed mining activities would definitely have an impact on the following:

- The impact on the MSA material found over large areas would be low. As the highest density of this is found outside the mining area, the impact resulting from further mining activities would be low.
 - Although the best and most dense concentrations of this type of material occur outside the development area, it is recommended that a systematic surface collection of this material is made in the mining area. This can be achieved, for example, by collecting all material occurring in a transect set out over the area.
- With regard to the red dune area, the impact is difficult to determine as it is known that the dunes are prone to being moved by wind. It can cover up a site and later expose it. It is therefore difficult to determine the potential heritage features in the area. However, mining activities would have a high impact on these.
 - In the event that any major feature such as a burial or cache of ostrich eggshell flasks are uncovered during mining operation, all work should be halted and an archaeologist should be called in to evaluate the finds.
- The proposed diamond mining would have a definite impact on the remains of the historic mining area.
 - It is recommended that a Phase II study is done prior to further mining activities taking place. This should, at a minimum, include the documentation (mapping and photographing) of all mining related features on the site as well as the systematic recovery (excavation and surface collection) of any material related to old mining activities. If at all possible, the grave should be left in place. If that is not possible, they should be relocated after the proper procedures, as prescribed by the NHRA and SAHRA was followed.

7. CONCLUSIONS

The aim of this survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the area of the proposed development, to assess the significance thereof and to consider alternatives and plans for the mitigation of any adverse impacts.

Three areas of heritage significance have been identified in the study area:

- Stone tools, mostly dating to the MSA, were found as surface material all over. During the site visit it was determined that this type of material occur in its largest concentrations in areas outside the mining area.
 - This material is viewed to have medium significance on a regional level.
- The red dune areas are also considered to be important, especially for occupation during the Later Stone Age. Although the current surface indicators seems to point in the direction of a low occurrence of material, the problem is that important sites can be buried over time by natural processes such as the dunes shifting due to wind action.
 - Material from this area is viewed to have high significance on a regional level.
- Considering the period in which the mining activities at Remhoogte took place, during and after the Great Depression, it can shed much light on the plight of poor people, black and white, during this part of our history. It is anticipated that an intensive survey of the area would lead to interesting information on the number of people involved, their way of life, etc. All of this can be derived from their houses, refuse dumps, cemetery and possibly interviews with former miners.
 - This site is therefore evaluated to have a high significance on a regional level.

The proposed mining activities would definitely have an impact on the following:

- The impact on the MSA material found over large areas would be low. As the highest density of this is found outside the mining area, the impact resulting from further mining activities would be low.
 - Although the best and most dense concentrations of this type of material occur outside the development area, it is recommended that a systematic surface collection of this material is made in the mining area. This can be achieved, for example, by collecting all material occurring in a transect set out over the area.
- With regard to the red dune area, the impact is difficult to determine as it is known that the dunes are prone to being moved by wind. It can cover up a site and later expose it. It is therefore difficult to determine the potential heritage features in the area. However, mining activities would have a high impact on these.
 - In the event that any major feature such as a burial or cache of ostrich eggshell flasks are uncovered during mining operation, all work should be halted and an archaeologist should be called in to evaluate the finds.
- The proposed diamond mining would have a definite impact on the remains of the historic mining area.
 - It is recommended that a Phase II study is done prior to further mining activities taking place. This should, at a minimum, include the documentation (mapping and photographing) of all mining related features on the site as well as the systematic recovery (excavation and surface collection) of any material related to old mining activities. If at all possible, the grave should be left in place. If that is not possible, they should be relocated after the proper procedures, as prescribed by the NHRA and SAHRA was followed.

Therefore, from a heritage point of view it is recommended that the proposed development be allowed to continue on condition of acceptance of the above mitigation measures.

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8.3 Maps and aerial photographs

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8.4 Archival sources

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8.5 Interviews

Mr Johan de Villiers, fourth generation landowner on the farm.

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

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

Significance of impact:

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

Certainty of prediction:

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

Recommended management action:

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

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