

Phase 1 Cultural Heritage Impact Assessment:

**PROSPECTING RIGHT OF DIAMOND ALLUVIAL AND DIAMOND GENERAL ON PORTION 2 OF THE  
FARM HEUNINGKRANS 137HP, DR KENNETH KAUNDA DISTRICT MUNICIPALITY,  
NORTH WEST PROVINCE**

**Prepared for:**

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**Specialist competency:**

Johan A van Schalkwyk, D Litt et Phil, heritage consultant, has been working in the field of heritage management for more than 40 years. Originally based at the National Museum of Cultural History, Pretoria, he has actively done research in the fields of anthropology, archaeology, museology, tourism and impact assessment. This work was done in Limpopo Province, Gauteng, Mpumalanga, North West Province, Eastern Cape Province, Northern Cape Province, Botswana, Zimbabwe, Malawi, Lesotho and Swaziland. Based on this work, he has curated various exhibitions at different museums and has published more than 70 papers, most in scientifically accredited journals. During this period, he has done more than 2000 Phase 1 and Phase 2 impact assessments (archaeological, anthropological, historical and social) for various government departments and developers. Projects include environmental management frameworks, roads, pipeline-, and power line developments, dams, mining, water purification works, historical landscapes, refuse dumps and urban developments. A complete *curriculum vitae* can be supplied on request.

**Declaration:**

I, J A van Schalkwyk, declare that:

- I am suitably qualified and accredited to act as independent specialist in this application.
- 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, for which a fair numeration is charged.
- The work was conducted in an objective manner and any circumstances that might have compromised this have been reported.



J A van Schalkwyk  
Heritage Consultant  
April 2018



## EXECUTIVE SUMMARY

**Phase 1 Cultural Heritage Impact Assessment:  
PROSPECTING RIGHT OF DIAMOND ALLUVIAL AND DIAMOND GENERAL ON PORTION 2 OF THE  
FARM HEUNINGKRAANS 137HP, DR KENNETH KAUNDA DISTRICT MUNICIPALITY,  
NORTH WEST PROVINCE**

*Blink Klip Mining (Pty) Ltd* applied for the prospecting right for prospecting of diamonds, diamond alluvial and diamond general, on Portion 2 of the farm Heuningkrans 137H, Dr Kenneth Kaunda District Municipality, North West Province.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by *Milnex 189 CC* to conduct a cultural heritage assessment to determine if the proposed prospecting activities would have an impact on any sites, features or objects of cultural heritage significance.

The cultural landscape qualities of the region essentially consist of a rural area in which the human occupation is made up of a limited Stone Age occupation. This was followed much later by Sotho- and Tswana-speaking agro-pastoralist that settled to the north on the study region. They were soon followed by a colonial (farmer) component, which gave rise to the development of small villages and towns that dot the larger landscape. The final transformation was brought about by the development of infrastructure in the region, such as roads and railway lines.

This report describes the methodology used, the limitations encountered, the heritage features that were identified and the recommendations and mitigation measures proposed relevant to this. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval.

During the physical survey, three sites, features or objects of cultural significance were identified.

### Identified sites

7.3.1.1: What seems to have been the original farmstead. It is built with a base of dressed sandstone, to which the walls of stone were added and them plastered over with clay. At present it is in ruins, with only some of the walls remaining. The roof and all other fitting have been removed.

7.3.2.1 – 7.3.2.2: Two informal burial sites have been identified. Due to the dense vegetation cover encountered and the process of bioturbation (burrowing of small mammals and insects), it was impossible to get detailed information on the sites. Apparently, one site contains up to five graves, while in the second case there were many more graves, of which only one was still visible.

### Impact assessment and proposed mitigation measures

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After	Proposed mitigation (Refer to definitions in Section 8.4)
EIA235: Farmstead site					
7.3.1.1	Farmstead	Section 34	Low significance Grade IV-C	8 8	(5) No further action required

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After	Proposed mitigation (Refer to definitions in Section 8.4)
EIA235: Burial Sites					
7.3.2.1	Burial site	Section 36	High significance	36	(1) Avoid/preserve

7.3.2.2	Burial site		Grade IV-A	8	
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Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view, it is recommended that the proposed development be allowed to continue on acceptance of the proposed mitigation measures.

Conditions for inclusion in the environmental authorisation:

- Should archaeological sites or graves be exposed in other areas 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  
March 2018

**TECHNICAL SUMMARY**

<b>Project description</b>	
Description	Prospecting right application for prospecting of diamonds alluvial and diamond general on Portion 2 of the farm Heuningkrans 137HP, Dr Kenneth Kaunda District Municipality, North West Province
Project name	Blink Klip Mining (Pty) Ltd Prospecting Right Portion 2 of the Farm Heuningkrans 137HP

<b>Applicant</b>
Blink Klip Mining (Pty) Ltd

<b>Environmental assessors</b>
Milnex 189 CC
Ms L Esterhuizen

<b>Property details</b>						
Province	North West Province					
Magisterial district	Wolmaransstad					
District municipality	Dr Kenneth Kaunda					
Topo-cadastral map	2726CA					
Farm name	Portion 2, Heuningkrans 137HP					
Closest town	Hoopstad					
Coordinates	Centre point (approximate)					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	-27,64021	26.04471			

<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	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	No
Any other development category, public open space, squares, parks, recreation grounds	No

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

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## **GLOSSARY OF TERMS AND ABBREVIATIONS**

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### **TERMS**

**Bioturbation:** The burrowing by small mammals, insects and termites that disturb archaeological deposits.

**Cumulative impacts:** “Cumulative Impact”, in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

**Debitage:** Stone chips discarded during the manufacture of stone tools.

**Factory site:** A specialised archaeological site where a specific set of technological activities has taken place – usually used to describe a place where stone tools were made.

**Historic Period:** Since the arrival of the white settlers - c. AD 1830 - in this part of the country.

**Holocene:** The most recent time period, which commenced c. 10 000 years ago.

**Iron Age** (also referred to as **Early Farming Communities**): 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. As 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
Later Iron Age	AD 1300 - AD 1830

**Midden:** The accumulated debris resulting from human occupation of a site.

**Mitigation,** means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

**National Estate:** The collective heritage assets of the Nation.

**Pleistocene:** Geological time period of 3 000 000 to 20 000 years ago.

**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	2 500 000 - 150 000 Before Present
Middle Stone Age	150 000 - 30 000 BP
Later Stone Age	30 000 - until c. AD 200

**Tradition:** As used in archaeology, it is a seriated sequence of artefact assemblages, particularly ceramics.

### **ACRONYMS and ABBREVIATIONS**

ASAPA	Association of Southern African Professional Archaeologists
BCE	Before the Common Era (the year 0)

BP	Before Present (calculated from 1950 when radio-carbon dating was established)
CE	Common Era (the year 0)
ESA	Early Stone Age
EIA	Early Iron Age
HIA	Heritage Impact Assessment
I & AP's	Interested and Affected Parties
LIA	Late Iron Age
LSA	Later Stone Age
MIA	Middle Iron Age
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
SAHRIS	South African Heritage Resources Information System



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## **1. INTRODUCTION**

### **1.1 Background**

*Milnex 189 CC* was contracted by *Blink Klip Mining (Pty) Ltd* as independent environmental consultant to undertake the Scoping and EIA process for a prospecting right for prospecting of diamonds alluvial and diamond general, on Portion 2 of the farm Heuningkrans 137H, Dr Kenneth Kaunda District Municipality, North West Province.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. However, 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 *Milnex 189 CC* to conduct a cultural heritage assessment to determine if the proposed prospecting activities would have an impact on any sites, features or objects of cultural heritage significance.

This 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) as amended and is intended for submission to the South African Heritage Resources Agency (SAHRA).

### **1.2 Terms and references**

*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.*

*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.*

*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.*

#### **1.2.1 Scope of work**

The aim of this study is to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where the diamond prospecting activities is to take place. This included:

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

The objectives were to:

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

### 1.2.2 Assumptions and Limitations

The investigation has been influenced by the following factors:

- It is assumed that the description of the proposed project, provided by the client, is accurate.
- No subsurface investigation (i.e. excavations or sampling) were undertaken, since a permit from SAHRA is required for such activities.
- It is assumed that the public consultation process undertaken as part of the Environmental Impact Assessment (EIA) is sufficient and that it does not have to be repeated as part of the heritage impact assessment.
- The unpredictability of buried archaeological remains.
- This report does not consider the palaeontological potential of the site.

## 2. LEGISLATIVE FRAMEWORK

### 2.1 Background

Heritage Impact Assessments are governed by national legislation and standards and International Best Practise. These include:

- South African Legislation
  - National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA);
  - Mineral and Petroleum Resources Development Act, 2002 (Act No. 22 of 2002) (MPRDA);
  - National Environmental Management Act 1998 (Act No. 107 of 1998) (NEMA); and
  - National Water Act, 1998 (Act No. 36 of 1998) (NWA).
- Standards and Regulations
  - South African Heritage Resources Agency (SAHRA) Minimum Standards;
  - Association of Southern African Professional Archaeologists (ASAPA) Constitution and Code of Ethics;
  - Anthropological Association of Southern Africa Constitution and Code of Ethics.
- International Best Practise and Guidelines
  - ICOMOS Standards (Guidance on Heritage Impact Assessments for Cultural World Heritage Properties); and
  - The UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (1972).

### 2.2 Heritage Impact Assessment Studies

South Africa's unique and non-renewable archaeological and palaeontological heritage sites are 'generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, Section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority.

The National Heritage Resources Act (Act No. 25 of 1999, Section 38) provides guidelines for Cultural Resources Management and prospective developments:

*"38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as:*

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50m in length;
- (c) any development or other activity which will change the character of a site:
- (i) exceeding 5 000 m<sup>2</sup> in extent; or
  - (ii) involving three or more existing erven or subdivisions thereof; or
  - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
  - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- (d) the re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.”

And:

- “38 (3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:
- (a) The identification and mapping of all heritage resources in the area affected;
  - (b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;
  - (c) an assessment of the impact of the development on such heritage resources;
  - (d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
  - (e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
  - (f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
  - (g) plans for mitigation of any adverse effects during and after the completion of the proposed development.”

### 3. HERITAGE RESOURCES

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#### 3.1 The National Estate

The National Heritage Resources Act (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. This allowed some form of control over the application of similar values for similar identified sites – see Section 2 of the Addendum below.

## 4. STUDY APPROACH AND METHODOLOGY

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### 4.1 Extent of the Study

This survey and impact assessment covers all facets of cultural heritage located in the study area as presented in Section 5 below and illustrated in Figure 5.

## 4.2 Methodology

### 4.2.1 Desktop review

#### 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 and historical sources were consulted – see list of references in Section 11.

- 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*, various SAHRA databases, the *Environmental Potential Atlas*, the *Chief Surveyor General* and the *National Archives of South Africa* were consulted.

- Database surveys produced a number of sites located in the larger region of the proposed development.

#### 4.2.1.3 Other sources

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

- Features such as areas with a lack of vegetation, possible buildings, hills and pans, were identified and marked for investigation during the field survey.

#### 4.2.1.4 Interpretation

The results of the above investigation are summarised in Table 1 below – see list of references in Section 11 – and can be summarised as follows:

- Stone Age rock art sites occur in a number of places in the vicinity of the Vaal River to the east and northeast of the study area;
- Stone Age tools, dating to the MSA and LSA occur as low-density scatters around natural pans and on some outcrops in the larger region;
- Historic structures, inclusive of buildings, monuments and bridges, occur mostly in an urban environment (Bloemhof and Hoopstad), although they also occur sporadically on farms;
- Formal burial sites occur in an urban setting, with a number of informal ones occurring sporadically throughout the country side.

*Based on the above assessment, the probability of cultural heritage sites, features and objects occurring in the study area is deemed to be **probable, but low**.*

**Table 1: Pre-Feasibility Assessment**

Category	Period	Presence	Reference
Early hominin	Pliocene – Lower Pleistocene		
	Early hominin	None	
Stone Age	Lower Pleistocene – Holocene		
	Early Stone Age	Low	
	Middle Stone Age	Medium	Heritage Database; Küsel (2007)
	Later Stone Age	Medium	Heritage Database; Küsel (2007)
	Rock Art	Medium	Fock & Fock (1989); Heritage Database
Iron Age	Holocene		

	Early Iron Age	None	
	Middle Iron Age	None	
	Late Iron Age	Low	Huffman (2007)
Colonial period	Holocene		
	Contact period	Low	
	Recent history	Medium	Couzens (2004)
	Industrial heritage	Low	Heritage Database

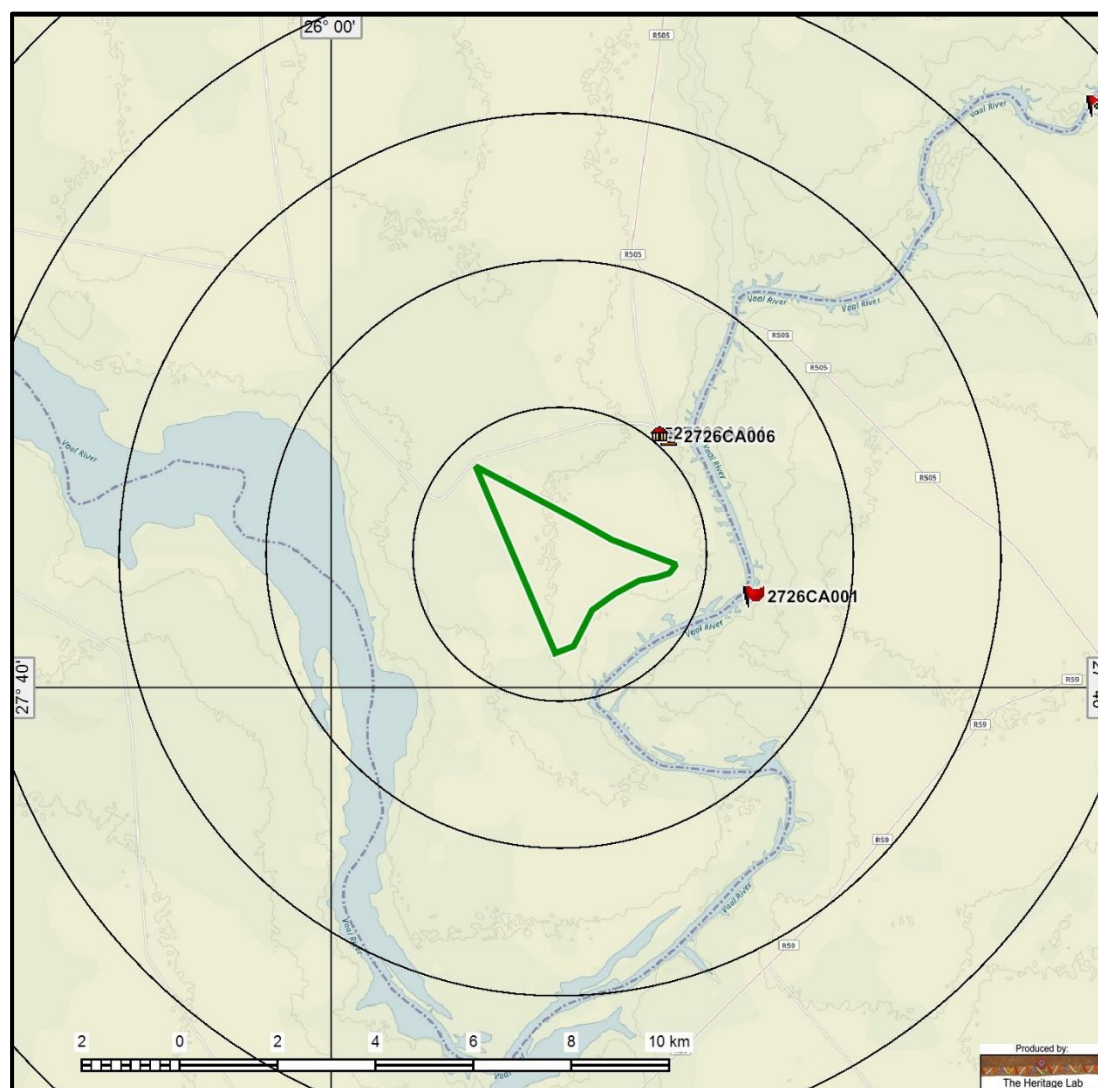


Figure 1. Heritage screening: known heritage sites and features in the larger region. (Circles spaced at 3km apart)

#### 4.2.2 Field survey

The field survey was done according to generally accepted archaeological practices, and was aimed at locating all possible sites, objects and structures. The area that had to be investigated was identified by the Milnex CC by means of maps and .kml files indicating the development area. This was loaded onto an ASUS digital device and used in Google Earth during the field survey to access the areas.

- The survey was conducted on 5 April 2018. The site was surveyed by an intensive pedestrian and vehicular investigation – see Fig. 2 below.

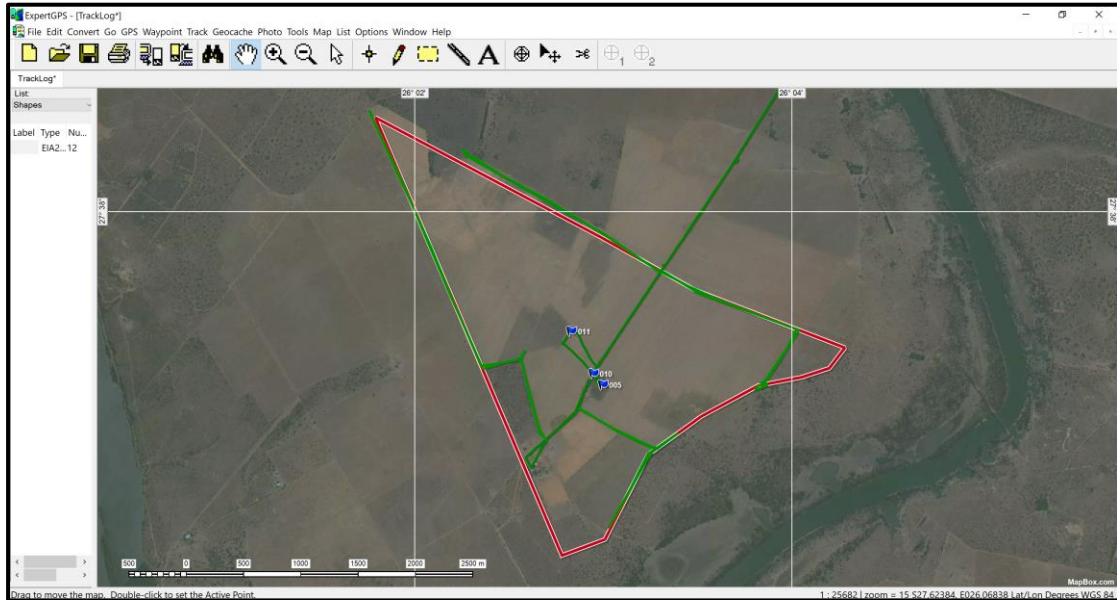


Figure 2. Map indicating the track log of the field survey.  
(Study area = red; tracklog = green)

#### 4.2.3 Factors influencing the field survey

Two factors influenced the physical survey

- Nearly the total area where the prospecting activities are planned is used as agricultural fields, which are currently planted with maize and sunflower. This not only made accessing the areas difficult, but it also very much limited archaeological visibility.
- Good rains on the night preceding the site visit, resulted in soft soil and large pools of standing water, making travelling very difficult.



Vegetation cover



Heavy rains



Figure 3. Vegetation cover encountered during the field survey.

#### 4.2.5 Documentation

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

The track log and identified sites were recorded by means of a Garmin Oregon 550 handheld GPS device. Photographic recording was done by means of a Canon EOS 550D digital camera.

Map datum used: Hartebeeshoek 94 (WGS84).

### 4.3 Public participation

Details of the public participation process followed was obtained from Milnex (2017).

- *Advertisement and notices*

An advertisement was placed in English in the local newspaper (Stellalander newspaper) on 13 September 2017 notifying the public of the EIA process and requesting interested and affected parties (I&APs) to register with, and submit their comments to Milnex 189 cc. I&APs were given the opportunity to raise comments within 30 days of the advertisement.

Site notices were placed on site on the 8 September 2017 in English to inform surrounding communities and immediately adjacent landowners of the proposed development. I&APs were given the opportunity to raise comments.

- *Direct notification and circulation of EIR & EMPR to identified I&APs*

Identified I&APs, including key stakeholders representing various sectors, were directly informed of the proposed development and the availability of the EIR via registered post on 6 September 2017 and were requested to submit comments by 30 October 2017. A copy of this report was made available at the Milnex offices in Schweizer-Reneke, 4 Botha Street, Schweizer-Reneke and Potchefstroom (Waterberry Street, Waterberry Square, 1st floor, Office 5B, Potchefstroom), between 7:30AM and 5PM, Monday to Thursdays and between 7:30AM and 4PM on Fridays.



- *Direct notification of surrounding land owners and occupiers*

Written notices and the availability of the EIR/EMPR are also provided to all surrounding land owners and occupiers on 6 September 2017. The surrounding land owners are given the opportunity to raise comments by 6 October 2017.

- *Consultation*

The Public Meeting was scheduled for 16 November 2017 at 09:00am–10:00am opposite Portion 2 of the farm Heuningkrans 137 on the gravel road.

- *Public Meeting*

Milnex representatives Mr. Mandi Sibanyoni attended the meeting. However no I&AP's attended the meeting.

- *Issues raised by Interested and Affected Parties*

No issues pertaining to heritage sites and features were raised by interested and affected parties.

## 5. PROJECT DESCRIPTION

### 5.1 Site location

The study area is located 42km east of Bloemhof and approximately 49km south of Wolmaransstad in the DR Kenneth Kaunda District Municipality of North West Province (Fig. 4). For more information, see the Technical Summary on p. iii above.

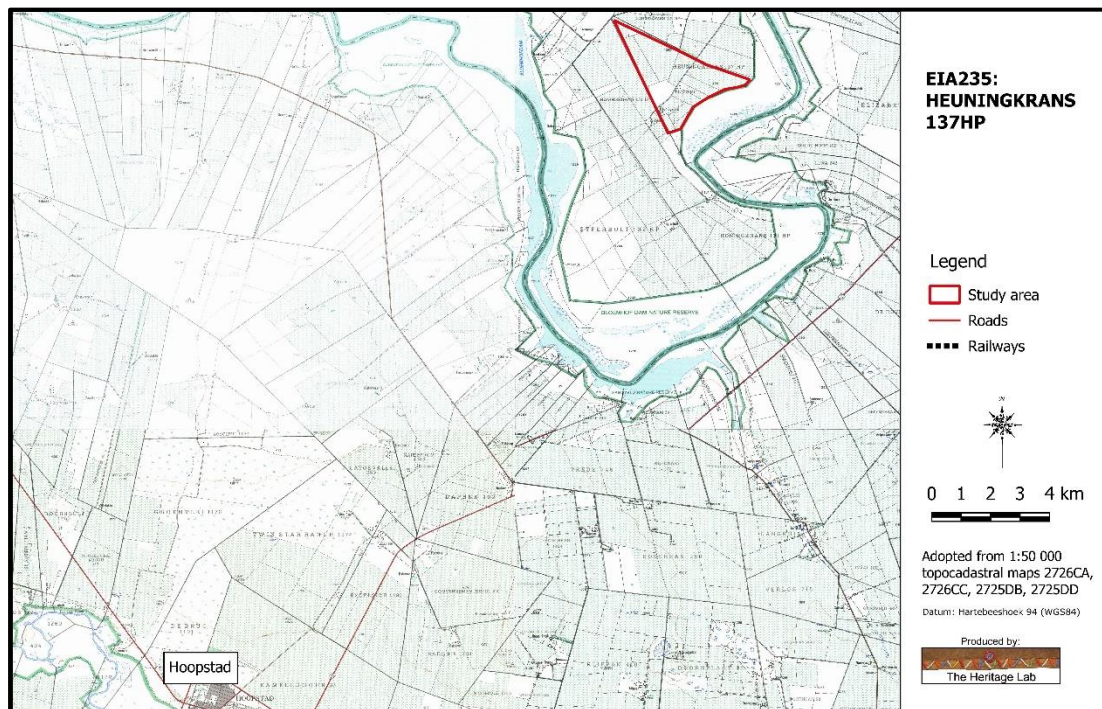


Figure 4. Location of the study area in regional context.

**5.2 Development proposal**

Blink Klip Mining (Pty) Ltd proposes to prospect for diamonds alluvial and diamond general, on Portion 2 of the farm Heuningkrans 137HP, Dr Kenneth Kaunda District Municipality, North West Province (see Fig. 5 below).

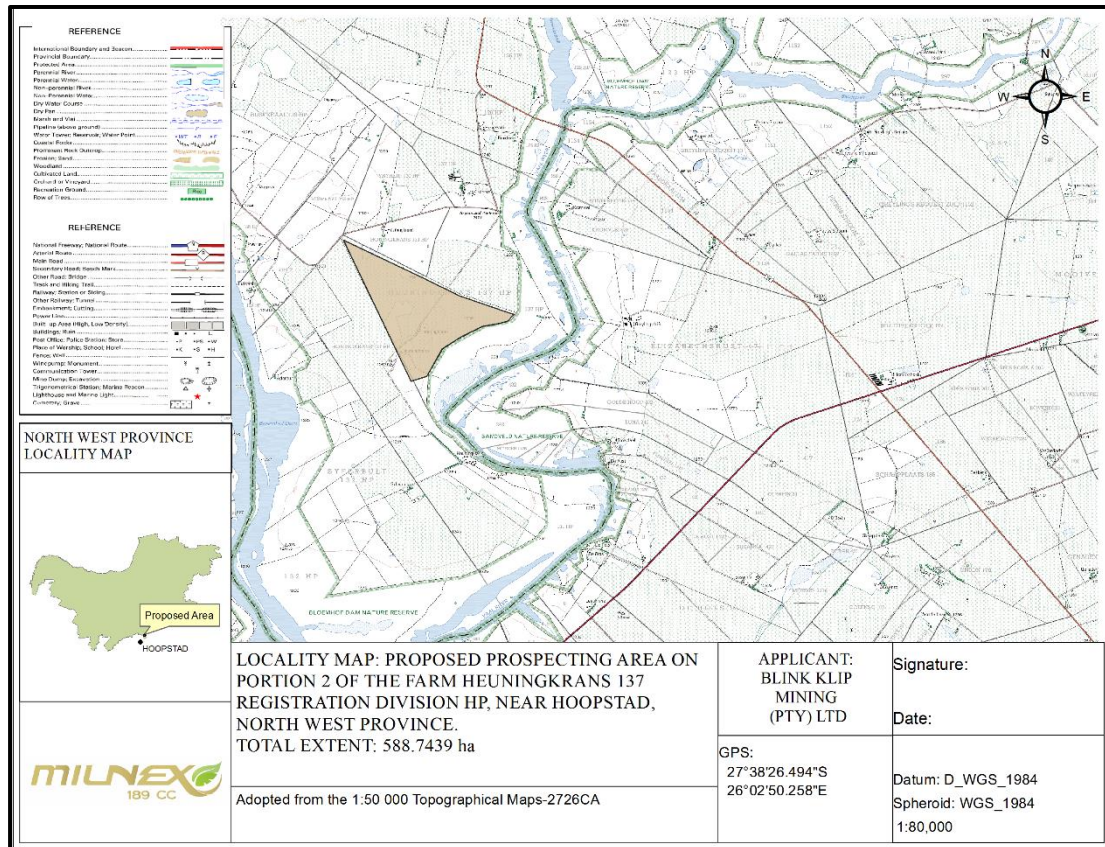


Figure 5. Layout of the proposed development. (Map supplied by Milnex)

**5.2.1 Description of planned non-invasive activities**

(These activities do not disturb the land where prospecting will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc)

**Phase 1: Site Visit**

A site visit will be conducted within 3 months after execution of the Prospecting Right. It is envisaged that the information will be obtained from the site visit to do the desktop studies and other prospecting activities.

**Phase 2: Desktop Studies**

Desktop studies will be undertaken after the site investigation has been done to determine the target areas including the identification of any infrastructure to be built and any potential problems that may need to be addressed.

### 5.2.2 Description of planned invasive activities

(These activities result in land disturbances e.g. sampling, drilling, bulk sampling, etc)

#### *Phase 3: Pitting*

After the desktop studies, the applicant will use the info to draw a pitting map. The location and GPS coordinates of where the first pits will be dug, will be indicated on the map also referred to as a pitting location map. Pits will then be dug by an excavator at these mapped coordinated points. If gravel is found, the applicant will determine the composition and quality of the gravel. For proper evaluation of the composition and the quality of the gravel it is necessary for the applicant to dig these prospecting pits. It is envisaged that the pits will determine the location and intersection of mineralization with 80 pits to be dug (it may be less depending on results) at an extent of 3m (Length) x 3m (Breath) x 3m (Depth).

- $(80 \text{ pits} / 42 \text{ months}) \times 12 \text{ months} = 22.86 \text{ pits dug per year}$
- $\text{Total area to be disturbed per year} = 22.86 \text{ pits} \times (3\text{m} \times 3\text{m}) / 10\,000 = 0.02 \text{ Ha disturbed per year}$
- $\text{Total area disturbed for 42 months} = 80 \text{ pits} \times (3\text{m} \times 3\text{m}) / 10\,000 = 0.072 \text{ Ha disturbed}$

#### *Phase 4: Trenches*

The applicant will proceed with this way of prospecting by means of the open cast / trenching method, simultaneously or after pitting. The location of the trenches will be determined after the gravel has been located by conducting the desktop studies and digging of pits. The trenches will be dug on the parts of the property where the gravel is located. Trenches will be sited on the resource map according to the coordinate of each of the trenches made. The trenches will be dug to remove and wash the gravel. It will be washed by 1 x 14 feet washing pans to determine diamond proceeds per 100 ton of gravel.

The trenches will be sited to determine the geological representivity. Overburden will be stripped and placed next to the trench as determined in the EMP. Gravel will be removed and transported to the plant to be washed. Tailings will be returned to the excavation to fill it up. Hereafter overburden will be dumped in the excavation where after topsoil will be placed in the excavation. It is envisioned that 40 trenches will be dug at an extent of 30 m (Length) x 30 m (Breath) x 3 m (Depth).

- $(40 \text{ trenches} / 42 \text{ months}) \times 12 \text{ months} = 11.43 \text{ trenches dug per year}$
- $\text{Total area to be disturbed per year} = 11.43 \text{ trenches} \times (30 \text{ m} \times 30 \text{ m}) / 10\,000 = 1.03 \text{ Ha disturbed per year}$
- $\text{Total area disturbed for 42 months} = 40 \text{ trenches} \times (30 \text{ m} \times 30 \text{ m}) / 10\,000 = 3.6 \text{ Ha disturbed for 42 months}$

### 5.3 Need and desirability of the proposed activities

Mining has played a vital role in the economy of South Africa for over 100 years. In 2015 the mining industry contributed R286 billion towards South African Gross Domestic Product (GDP) representing 7.1% of overall GDP. Mining is a significant contributor to employment in the nation, with 457 698 individuals directly employed by the sector in 2015. This represents just over 3% of all employed nationally. Diamond mining has 17 885 direct employees. (Chamber of Mines, South Africa, 6:2016)

Diamonds, arguably the ultimate luxury mineral, comprise an intricate lattice of carbon atoms, a crystalline structure that makes them harder than any other form in nature. This characteristic makes diamonds not only popular in jewellery, but also desirable in high-tech cutting, grinding and polishing tools. (Chamber of Mines, South Africa, 12:2016)

Prospecting rights and mining permits have been applied for all around the area, and the outcome of that studies suggest the possibility of encountering further diamond deposits.

The North West Province is an important supplier of rough diamonds to the international market and is a large corner stone of the South African economy.

## 6. DESCRIPTION OF THE AFFECTED ENVIRONMENT

### 6.1 Natural Landscape

The study area lies in a strongly transformed environment with a well-established agricultural landscape.

The geology of the study area is made up of arenite (sedimentary), before changing to shale to the southwest. The original vegetation in the northern section of the study area is classified as Vaal-Vet Sandy Grassveld, which is part of the of the Dry Highveld Grassland Bioregion (Muncina & Rutherford 2006). The topography of the region can be described slightly undulating plains. The Vaal River passes to the south of the study area.

### 6.2 Cultural Landscape

*The aim of this section is to present an overview of the history of the larger region in order to eventually determine the significance of heritage sites identified in the study area, within the context of their historic, aesthetic, scientific and social value, rarity and representivity.*

The cultural landscape qualities of the region essentially consist of a rural area in which the human occupation is made up of a limited Stone Age occupation. This was followed much later by Sotho- and Tswana-speaking agro-pastoralist that settled to the north on the study region. They were soon followed by a colonial (farmer) component, which gave rise to the development of small villages and towns that dot the larger landscape. The final transformation was brought about by the development of infrastructure in the region, such as roads and railway lines.

#### 6.2.1 Stone Age

Very little habitation of the central highveld area took place during Stone Age times. Tools dating to the Early Stone Age period are mostly found in the vicinity of larger watercourses, e.g. the Vaal River or the Harts River and especially in sheltered areas such as at the Taung fossil site. During Middle Stone Age (MSA) times (c. 150 000 – 30 000 BP), people became more mobile, occupying areas formerly avoided. In many cases, tools dating to this period are found on the banks of the many pans that occur all over. The MSA is a technological stage characterized by flakes and flake-blades with faceted platforms, produced from prepared cores, as distinct from the core tool-based ESA technology.

Late Stone Age (LSA) people had even more advanced technology than the MSA people and therefore succeeded in occupying even more diverse habitats. Some sites are known to occur in the region. These are mostly open sites located near river and pans. For the first time we also get evidence of people's activities derived from material other than stone tools. Ostrich eggshell beads, ground bone arrowheads, small bored stones and wood fragments with incised markings are traditionally linked with the LSA.

A number of rock engraving sites dating to the Later Stone Age are known to exist, or used to exist, in the region on the southern side of the Vaal River. On the northern side, one of these sites was removed

as the result of the construction of the canal during the 1990s (Morris et al 1995). Fock & Fock (1989) indicates the existence of a number of others.

Küsel (2007) reported a low scattering of MSA and LSA material in the north western section of the Bloemhof Dam Nature Reserve.

### 6.2.2 Iron Age

Iron Age people started to settle in southern Africa c. AD 300, with one of the oldest known sites at Broederstroom south of Hartbeespoort Dam dating to AD 470. Having only had cereals (sorghum, millet) that need summer rainfall, Early Iron Age (EIA) people did not move outside this rainfall zone, and neither did they occupy the central interior highveld area.

As yet, no sites dating to the Early Iron Age have been reported from the region and most sites date to the Late Iron Age. The occupation of the larger geographical area (including the study area) did not start much before the 1500s. By the 16th century things changed, with the climate becoming warmer and wetter, creating conditions that allowed Late Iron Age (LIA) farmers to occupy areas previously unsuitable, for example the treeless plains of the Free State.

According to Breutz (1959) stone walled sites dating to the Late Iron Age and which can be linked to the Tswana occupation of the area, are found on a number of farms in the region, e.g. Waai Hoek and Brul Pan. However, the historic most important one, named Dithakong, is located some distance to the north-west. This site was first visited by early travellers such as Lichtenstein and John Campbell in the early part of the 19<sup>th</sup> century.

The earliest Iron Age settlers who moved into the North West Province region were Tswana-speakers such as the Tlhaping, Hurutshe, Fokeng, Kgatla and Rolong. In the region of the study area, it was mostly the booRapulana and booRatlou sections of the Rolong (Breutz 1959).

### 6.2.3 Historic period

Many early travellers, hunters and missionaries (Burchell 1824, Campbell 1822, Smith 1834-1836 (Lye 1975), Moffat 1842 and Harris 1852) either passed through the area or close to it. Their writings leave us a tantalising description of what life was in these communities before large-scale interaction with white settlers took place. Some of the first whites to settle here were the missionaries Samuel Broadbent and Thomas Hodgson, who settled some distance to the east of what later became known as Wolmaransstad.

As it is located on the Vaal River, the railway line passing through the region played an important role during the Anglo Boer War (1899-1902). Blockhouses were erected by the British to protect the railway line and bridges across the river. The blockhouses were built Royal Engineers from masonry (Tomlinson 1997). The town and more specifically the station was bombarded by the Boer's during the war (Playne 1910-1911:431).

The last chapter in the history of the region was its incorporation under the policy of homeland development, into the Republic of Bophuthatswana. This was a very fragmented 'State' and it would have needed permanent support by the central government to keep it in place. Since 1994, this has fallen away and the people and the region were reincorporated into the larger Republic of South Africa

The Bloemhof Dam was completed in 1970. The dam changed the flow of the river, covering long stretches of the river banks. It also covered the original crossing point of the Vaal River on the farms Kalkfontein 346 (North West Province) and Bultfontein 34 (Free State). This change in flow brought about the deposition of large amounts of silt

Both Küsel (2007) and Gore (2014) reports the occurrence of demolished farmsteads and in some case associated graves in the north-west section of the Nature Reserve.

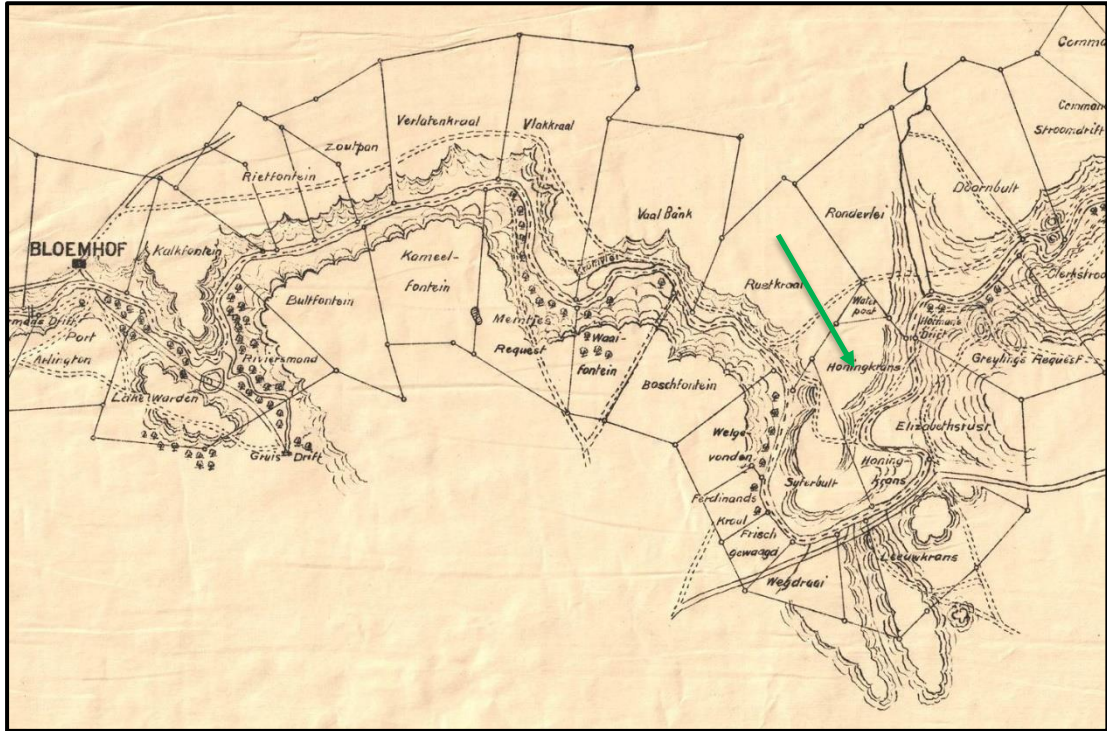


Figure 6. Location of the farm Heuningkrans, formerly known as Honingkrans.

## 7. SURVEY RESULTS

During the physical survey, the following sites, features and objects of cultural significance were identified in the study area – see **Section 5** of the **Addendum** for a more detailed discussion of each of the identified sites, features or objects:

### 7.1 Stone Age

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

### 7.2 Iron Age

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

### 7.3 Historic period

7.3.1.1: What seems to have been the original farmstead. It is built with a base of dressed sandstone, to which the walls of stone were added and them plastered over with clay. At present it is in ruins, with only some of the walls remaining. The roof and all other fitting have been removed.

7.3.2.1 – 7.3.2.2: Two informal burial sites have been identified. Due to the dense vegetation cover encountered and the process of bioturbation (burrowing of small mammals and insects), it was impossible to get detailed information one the sites. Apparently, one site contains up to five graves, while in the second case there were many more graves, of which only one was still visible.

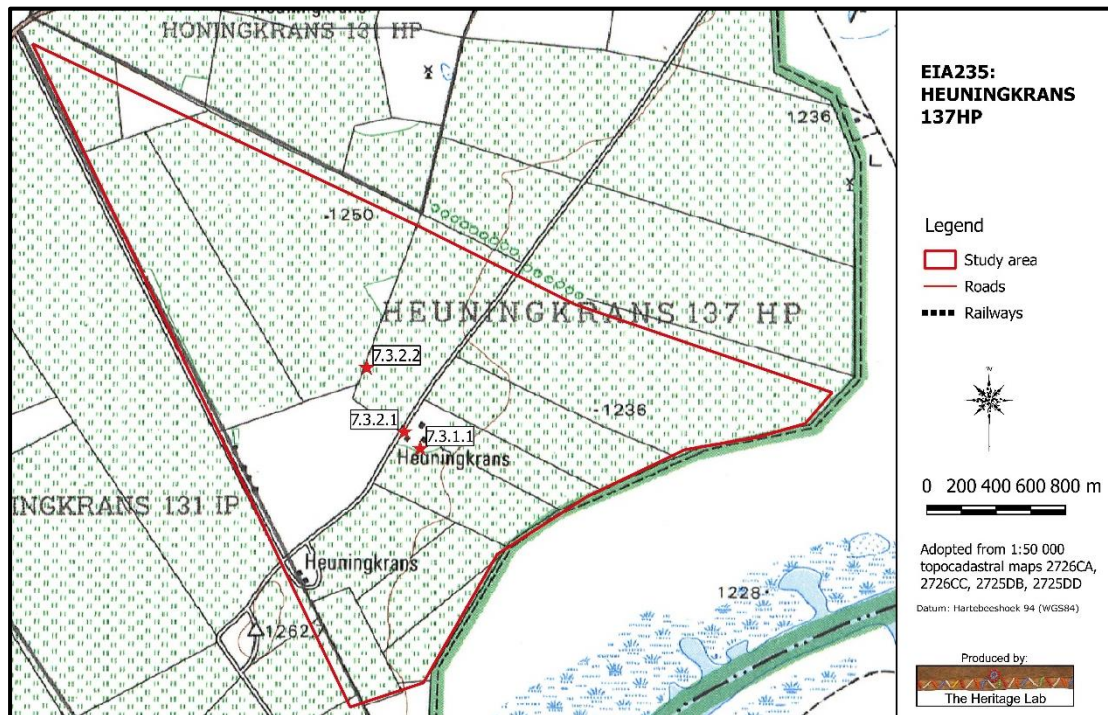


Figure 7. Location of heritage sites in the study area.

## 8. RESULTS: STATEMENT OF SIGNIFICANCE AND IMPACT RATINGS

### 8.1 Impact assessment

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 analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development and its significance is calculated and presented below:

- The impact on identified sites is calculated as follows:

**Table 2: Calculation of the impact on the identified heritage features**

<b>Nature:</b> Farmstead (7.3.1.1) - This site has been rated to have low significance and is seen to be fully documented after inclusion in this report.		
	Without mitigation	With mitigation
Extent	Site	Site
Duration	Permanent	Permanent
Magnitude	Minor	Minor
Probability	Low	Low
Significance	Low (8)	Low (8)
Status (positive or negative)	Neutral	Neutral
Reversibility	Non-reversible	Non-reversible
Irreplaceable loss of resources?	No	No
Can impacts be mitigated	Yes	
Mitigation: Avoidance of site		
Cumulative impact: None		

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After	Proposed mitigation (Refer to definitions in Section 8.4)
EIA235: Farmstead site					
7.3.1.1	Built environment	Section 34	Low significance Grade IV-C	8 8	(5) No further action required

<b>Nature:</b> Burial sites (7.3.2.1-7.3.2.2): These features are rated to have high significance and an unmitigated impact would be direct and have permanent consequences.		
	Without mitigation	With mitigation
Extent	Local area	Site
Duration	Permanent	Permanent
Magnitude	Low	Minor
Probability	Probable	Low
Significance	Medium (36)	Low (8)
Status (positive or negative)	Negative	Neutral
Reversibility	Non-reversible	Non-reversible
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated	Yes	
Mitigation: Avoidance of site		
Cumulative impact: Loss of one of a limited number of similar features in the larger landscape.		

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After	Proposed mitigation (Refer to definitions in Section 8.4)
EIA235: Burial Sites					
7.3.2.1	Burial site	Section 36	High significance	36	(1) Avoid/preserve
7.3.2.2	Burial site		Grade IV-A	8	

## 9. MANAGEMENT AND MITIGATION MEASURES

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the proposed development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted on can be written into the management plan, whence they can be avoided or cared for in the future.



Sources of risk were considered with regards to development activities defined in Section 2(viii) of the NHRA that may be triggered and are summarised in Table 3A and 3B below. These issues formed the basis of the impact assessment described. The potential risks are discussed according to the various phases of the project below.

### 9.1 Objectives

- Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft.
- The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities.

The following shall apply:

- Known sites should be clearly marked in order that they can be avoided during construction activities.
- The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.
- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;
- All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).

### 9.2 Control

In order to achieve this, the following should be in place:

- A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage.
- Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.
- In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.

**Table 3A: Construction Phase: Environmental Management Programme for the project**

<b>Action required</b>	Protection of heritage sites, features and objects		
<b>Potential Impact</b>	The identified risk is damage or changes to resources that are generally protected in terms of Sections 27, 28, 31, 32, 34, 35, 36 and 37 of the NHRA that may occur in the proposed project area.		
<b>Risk if impact is not mitigated</b>	Loss or damage to sites, features or objects of cultural heritage significance		
<b>Activity / issue</b>	<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>

1. Removal of Vegetation 2. Construction of required infrastructure, e.g. access roads, water pipelines	See discussion in Section 9.1 above	Environmental Control Officer	During construction only
<b>Monitoring</b>	See discussion in Section 9.2 above		

**Table 3B: Operation Phase: Environmental Management Programme for the project**

<b>Action required</b>	Protection of heritage sites, features and objects		
<b>Potential Impact</b>	It is unlikely that the negative impacts identified for pre-mitigation will occur if the recommendations are followed.		
<b>Risk if impact is not mitigated</b>	Loss or damage to sites, features or objects of cultural heritage significance		
<b>Activity / issue</b>	<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>
1. Removal of Vegetation 2. Construction of required infrastructure, e.g. access roads, water pipelines	See discussion in Section 9.1 above	Environmental Control Officer	During construction only
<b>Monitoring</b>	See discussion in Section 9.2 above		

### 9.3 Mitigation measures

*Mitigation: means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.*

For the current study, the following mitigation measures are proposed (see Section 4 of the Addendum for a discussion of all mitigation measures):

- Sites 7.3.2.1-7.3.2.2
  - (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation. The site should be retained *in situ* and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall). Depending on the type of site, the buffer zone can vary from
    - 10 metres for a single grave or a built structure, to
    - 50 metres where the boundaries are less obvious, e.g. a Late Iron Age site.

## 10. CONSLUSIONS AND RECOMMENDATIONS

*Blink Klip Mining (Pty) Ltd* applied for the prospecting right for prospecting of diamonds, diamond alluvial and diamond general, on Portion 2 of the farm Heuningkrans 137H, Dr Kenneth Kaunda District Municipality, North West Province.

The cultural landscape qualities of the region essentially consist of a rural area in which the human occupation is made up of a limited Stone Age occupation. This was followed much later by Sotho- and Tswana-speaking agro-pastoralist that settled to the north on the study region. They were soon followed by a colonial (farmer) component, which gave rise to the development of small villages and towns that dot the larger landscape. The final transformation was brought about by the development of infrastructure in the region, such as roads and railway lines.

This report describes the methodology used, the limitations encountered, the heritage features that were identified and the recommendations and mitigation measures proposed relevant to this. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval.

During the physical survey, three sites, features or objects of cultural significance were identified.

#### Identified sites

7.3.1.1: What seems to have been the original farmstead. It is built with a base of dressed sandstone, to which the walls of stone were added and then plastered over with clay. At present it is in ruins, with only some of the walls remaining. The roof and all other fitting have been removed.

7.3.2.1 – 7.3.2.2: Two informal burial sites have been identified. Due to the dense vegetation cover encountered and the process of bioturbation (burrowing of small mammals and insects), it was impossible to get detailed information on the sites. Apparently, one site contains up to five graves, while in the second case there were many more graves, of which only one was still visible.

#### Impact assessment and proposed mitigation measures

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After	Proposed mitigation (Refer to definitions in Section 8.4)
EIA235: Farmstead site					
7.3.1.1	Farmstead	Section 34	Low significance Grade IV-C	8 8	(5) No further action required

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After	Proposed mitigation (Refer to definitions in Section 8.4)
EIA235: Burial Sites					
7.3.2.1	Burial site	Section 36	High significance	36	(1) Avoid/preserve
7.3.2.2	Burial site		Grade IV-A	8	

#### Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view, it is recommended that the proposed development be allowed to continue on acceptance of the proposed mitigation measures.

#### Conditions for inclusion in the environmental authorisation:

- Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

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### **11.3 Maps and aerial photographs**

1: 50 000 Topocadastral maps

Google Earth

## **12. ADDENDUM**

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### **1. Indemnity and terms of use of this report**

The findings, results, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and the author reserve the right to modify aspects of the report including the recommendations if and when new information may become available from ongoing research or further work in this field, or pertaining to this investigation.

Although all possible care is taken to identify all sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. The author of this report will not be held liable for such oversights or for costs incurred as a result of such oversights.

Although the author exercises due care and diligence in rendering services and preparing documents, he accepts no liability and the client, by receiving this document, indemnifies the author against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by the author and by the use of the information contained in this document.

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

## 2. Assessing the significance of heritage resources and potential impacts

A system for site grading was established by the NHRA and further developed by the South African Heritage Resources Agency (SAHRA 2007) and has been approved by ASAPA for use in southern Africa and was utilised during this assessment.

### 2.1 Significance of the identified heritage resources

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

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

1. SITE EVALUATION				
1.1 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				
1.2 Aesthetic value				
It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group				
1.3 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				
1.4 Social value				
Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons				
1.5 Rarity				
Does it possess uncommon, rare or endangered aspects of natural or cultural heritage				
1.6 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.				
2. Sphere of Significance		High	Medium	Low
International				
National				
Provincial				
Regional				
Local				
Specific community				
3. Field Register Rating				
1.	National/Grade 1: High significance - No alteration whatsoever without permit from SAHRA			
2.	Provincial/Grade 2: High significance - No alteration whatsoever without permit from provincial heritage authority.			
3.	Local/Grade 3A: High significance - Mitigation as part of development process not advised.			

4.	Local/Grade 3B: High significance - Could be mitigated and (part) retained as heritage register site	
5.	Generally protected Grade 4A: High/medium significance - Should be mitigated before destruction	
6.	Generally protected Grade 4B: Medium significance - Should be recorded before destruction	
7.	Generally protected Grade 4C: Low significance - Requires no further recording before destruction	

## 2.2 Significance of the anticipated impact on heritage resources

All impacts identified during the HIA stage of the study will be classified in terms of their significance. Issues would be assessed in terms of the following criteria:

### Nature of the impact

A description of what causes the effect, what will be affected and how it will be affected.

### Extent

The physical **extent**, wherein it is indicated whether:

- 1 - The impact will be limited to the site;
- 2 - The impact will be limited to the local area;
- 3 - The impact will be limited to the region;
- 4 - The impact will be national; or
- 5 - The impact will be international.

### Duration

Here it should be indicated whether the lifespan of the impact will be:

- 1 - Of a very short duration (0–1 years);
- 2 - Of a short duration (2-5 years);
- 3 - Medium-term (5–15 years);
- 4 - Long term (where the impact will persist possibly beyond the operational life of the activity); or
- 5 - Permanent (where the impact will persist indefinitely).

### Magnitude (Intensity)

The magnitude of impact, quantified on a scale from 0-10, where a score is assigned:

- 0 - Small and will have no effect;
- 2 - Minor and will not result in an impact;
- 4 - Low and will cause a slight impact;
- 6 - Moderate and will result in processes continuing but in a modified way;
- 8 - High, (processes are altered to the extent that they temporarily cease); or
- 10 - Very high and results in complete destruction of patterns and permanent cessation of processes.

### Probability

This describes the likelihood of the impact actually occurring and is estimated on a scale where:

- 1 - Very improbable (probably will not happen);
- 2 - Improbable (some possibility, but low likelihood);
- 3 - Probable (distinct possibility);
- 4 - Highly probable (most likely); or
- 5 - Definite (impact will occur regardless of any prevention measures).

### Significance

The significance is determined through a synthesis of the characteristics described above (refer to the formula below) and can be assessed as low, medium or high:



$S = (E+D+M) \times P$ ; where  
 S = Significance weighting  
 E = Extent  
 D = Duration  
 M = Magnitude  
 P = Probability

Significance of impact		
Points	Significant Weighting	Discussion
< 30 points	Low	Where this impact would not have a direct influence on the decision to develop in the area.
31-60 points	Medium	Where the impact could influence the decision to develop in the area unless it is effectively mitigated.
> 60 points	High	Where the impact must have an influence on the decision process to develop in the area.

### Confidence

This should relate to the level of confidence that the specialist has in establishing the nature and degree of impacts. It relates to the level and reliability of information, the nature and degree of consultation with I&AP's and the dynamic of the broader socio-political context.

- High, where the information is comprehensive and accurate, where there has been a high degree of consultation and the socio-political context is relatively stable.
- Medium, where the information is sufficient but is based mainly on secondary sources, where there has been a limited targeted consultation and socio-political context is fluid.
- Low, where the information is poor, a high degree of contestation is evident and there is a state of socio-political flux.

### Status

- The status, which is described as either positive, negative or neutral.

### Reversibility

- The degree to which the impact can be reversed.

### Mitigation

- The degree to which the impact can be mitigated.

Nature:		
	Without mitigation	With mitigation
<b>Construction Phase</b>		
Probability		
Duration		
Extent		
Magnitude		
Significance		
Status (positive or negative)		
<b>Operational Phase</b>		
Probability		
Duration		
Extent		
Magnitude		
Significance		
Status (positive or negative)		
Reversibility		
Irreplaceable loss of resources?		
Can impacts be mitigated		

### 3. Mitigation measures

- *Mitigation: means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.*

Impacts can be managed through one or a combination of the following mitigation measures:

- Avoidance
- Investigation (archaeological)
- Rehabilitation
- Interpretation
- Memorialisation
- Enhancement (positive impacts)

For the current study, the following mitigation measures are proposed, to be implemented only if any of the identified sites or features are to be impacted on by the proposed development activities:

- (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources. The site should be retained *in situ* and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall). Depending on the type of site, the buffer zone can vary from
  - 10 metres for a single grave, or a built structure, to
  - 50 metres where the boundaries are less obvious, e.g. a Late Iron Age site.
- (2) Archaeological investigation: This option can be implemented with additional design and construction inputs. This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated. Mitigation is to excavate the site by archaeological techniques, document the site (map and photograph) and analyse the recovered material to acceptable standards. This can only be done by a suitably qualified archaeologist.
  - This option should be implemented when it is impossible to avoid impacting on an identified site or feature.
  - This also applies for graves older than 60 years that are to be relocated. For graves younger than 60 years a permit from SAHRA is not required. However, all other legal requirements must be adhered to.
    - Impacts can be beneficial – e.g. mitigation contribute to knowledge
- (3) Rehabilitation: When features, e.g. buildings or other structures are to be re-used. Rehabilitation is considered in heritage management terms as an intervention typically involving the adding of a new heritage layer to enable a new sustainable use.
  - The heritage resource is degraded or in the process of degradation and would benefit from rehabilitation.
  - Where rehabilitation implies appropriate conservation interventions, i.e. adaptive reuse, repair and maintenance, consolidation and minimal loss of historical fabric.
    - Conservation measures would be to record the buildings/structures as they are (at a particular point in time). The records and recordings would then become the 'artefacts' to be preserved and managed as heritage features or (movable) objects.
    - This approach automatically also leads to the enhancement of the sites or features that are re-used.

- (4) Mitigation is also possible with additional design and construction inputs. Although linked to the previous measure (rehabilitation) a secondary though 'indirect' conservation measure would be to use the existing architectural 'vocabulary' of the structure as guideline for any new designs.
  - The following principle should be considered: **heritage informs design**.
    - This approach automatically also leads to the enhancement of the sites or features that are re-used.
  
- (5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.
  - Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation in order to ensure that no undetected heritage/remains are destroyed.

#### 4. Relocation of graves

If the graves are younger than 60 years, an undertaker can be contracted to deal with the exhumation and reburial. This will include public participation, organising cemeteries, coffins, etc. They need permits and have their own requirements that must be adhered to.

If the graves are older than 60 years old or of undetermined age, an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. This is a requirement by law.

Once it has been decided to relocate particular graves, the following steps should be taken:

- Notices of the intention to relocate the graves need to be put up at the burial site for a period of 60 days. This should contain information where communities and family members can contact the developer/archaeologist/public-relations officer/undertaker. All information pertaining to the identification of the graves needs to be documented for the application of a SAHRA permit. The notices need to be in at least 3 languages, English, and two other languages. This is a requirement by law.
- Notices of the intention needs to be placed in at least two local newspapers and have the same information as the above point. This is a requirement by law.
- Local radio stations can also be used to try contact family members. This is not required by law, but is helpful in trying to contact family members.
- During this time (60 days) a suitable cemetery need to be identified close to the development area or otherwise one specified by the family of the deceased.
- An open day for family members should be arranged after the period of 60 days so that they can gather to discuss the way forward, and to sort out any problems. The developer needs to take the families requirements into account. This is a requirement by law.
- Once the 60 days has passed and all the information from the family members have been received, a permit can be requested from SAHRA. This is a requirement by law.
- Once the permit has been received, the graves may be exhumed and relocated.
- All headstones must be relocated with the graves as well as any items found in the grave.

#### Information needed for the SAHRA permit application

- The permit application needs to be done by an archaeologist.
- A map of the area where the graves have been located.
- A survey report of the area prepared by an archaeologist.
- All the information on the families that have identified graves.
- If graves have not been identified and there are no headstones to indicate the grave, these are then unknown graves and should be handled as if they are older than 60 years. This information also needs to be given to SAHRA.
- A letter from the landowner giving permission to the developer to exhume and relocate the graves.
- A letter from the new cemetery confirming that the graves will be reburied there.
- Details of the farm name and number, magisterial district and GPS coordinates of the gravesite.

5. Inventory of identified cultural heritage sites

<b>NHRA Category</b>	<b>Archaeological Site or Material - Section 35</b>
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**7.3.1.1 Type:** Homestead. **Farm:** Heuningkrans 137HP. **Coordinates:** -27,64694, 26,04998

**Description**  
 What seems to have been the original farmstead. It is build with a base of dressed sandstone, to which the walls were of stone were added and them plastered over with clay. At present it is in ruins, with only some of the walls remaining. The roof and all other fitting have been removed.



<b>Significance of site/feature</b>	Grade 4C: Low significance - Requires no further recording before destruction.
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**Reasoned opinion:** These features do not show and unique features that make them stand out from the hundreds of similar features located in the larger region.

**Impact assessment**  
 Although these features are located inside the prospecting area, it is not certain if they would be impacted on as a detailed mining plan is not yet available.

**Mitigation**  
 (5) No further action required: They are seen to be fully recorded after having been included in this report.

<b>Significance of impact: before/after mitigation</b>					
Extent	Duration	Intensity	Probability	Significance	Weight
1	1	2	2	8	Low

Extent	Duration	Intensity	Probability	Significance	Weight
1	1	2	2	8	Low

**Requirements**

None

**References**

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<b>NHRA Category</b>	<b>Graves, Cemeteries and Burial Grounds - Section 36</b>
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**7.3.2.1 Type:** Burial site. **Farm:** Heuningkrans 137HP. **Coordinates:** -27,64608; 26,04915

**Description**  
 An unknown number of graves – due to the dense vegetation cover it final number could not be determined. According to farm labourers there should be about five in total. As far as the current farm labourers can remember, none have grave stones with any inscription on them.



Vegetation cover



Grave

**7.3.2.2 Type:** Burial site. **Farm:** Heuningkrans 137HP. **Coordinates:** -27,64275; 26,04721

**Description**  
 A burial place consisting of an unknown number of graves – only one possible grave, marked with stones, could be identified. According to the local farm labourers all the graves has disappeared below the soft sandy soil due to warthogs burrowing in the area - this process is known as bioturbation.



Vegetation cover



Possible grave



Warthog burrow

<b>Significance of site/feature</b>	Generally protected: High significance – Grade IV-A
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**Reasoned opinion:** Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.

**Impact assessment**

7.3.2.1 & 7.3.2.2: These features are located inside the prospecting area it seems likely that it would be impacted on. An unmitigated impact would be direct and permanent.

**Mitigation**

(1) Avoidance/Preserve: The burial sites should be retained and avoided. If that is not possible, it should be documented in full prior to the relocation of the graves. In that case, a permit would be required from PHRA/SAHRA, as well as other institution – see Section 4 of Addendum.

**Significance of impact: before/after mitigation**

Extent	Duration	Intensity	Probability	Significance	Weight
2	4	6	3	36	Medium
1	1	2	2	8	Low

Extent	Duration	Intensity	Probability	Significance	Weight
1	1	2	2	8	Low
1	1	2	2	8	Low

**Requirements**

Conservation by local authority. Sites should be mitigated before impact. Permit required from provincial heritage authority, as well as other institutions – see Section 5 of the Addendum.

**References**

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