

Phase 1 Cultural Heritage Impact Assessment:

**THE PROPOSED CONSOLIDATION OF TWO OPENCAST MINING PROPERTIES  
ON THE FARM HARTEBEESTPOORT B 410JQ, BRITS REGION, MADIBENG  
DISTRICT MUNICIPALITY, NORTH WEST PROVINCE**

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**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 remuneration 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  
September 2017



## EXECUTIVE SUMMARY

### Phase 1 Cultural Heritage Impact Assessment: THE PROPOSED CONSOLIDATION OF TWO OPENCAST MINING PROPERTIES ON THE FARM HARTEBEESTPOORT B 410JQ, BRITS REGION, MADIBENG DISTRICT MUNICIPALITY, NORTH WEST PROVINCE

Extra Dimensions 1158 (Pty) Limited is an opencast dimension stone mining company that currently operates on portion 1143 of the farm Hartebeestpoort B 410 JQ. The applicant wishes to consolidate two largely developed mining areas, situated directly adjacent to each other, which belongs to the same holding company (Eagle Valley Granite (Pty) Ltd). The primary mining activities (extraction & disposal of dimension stone (Gabbro – Norite) will remain the same and the footprints of both mining areas have already been established.

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a pre-colonial element (Stone Age and Iron Age) as well as a much later colonial (farmer and industrial) component. The second component, although much younger, is an industrial one which is largely made up of mining heritage.

#### Identified heritage sites

- (8.3.2.1) A stone walled structure that can be linked to the Tswana-speaking settlement in the region after 1600.
  - This feature has Medium local significance – Grade IV-A
- (8.3.3.1) An irrigation canal that forms part of the larger Crocodile River Irrigation Scheme. As such it is difficult to date as it was developed in different phases after the completion of the Hartebeespoort Dam (1925).
  - This feature has Medium local significance – Grade IV-A

#### Impact assessment

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

- (8.3.2.1) A stone walled structure dating to the Late Iron Age.
  - Impact = None: the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: Avoid site.
- (8.3.3.1) An irrigation canal that forms part of the larger Crocodile River Irrigation Scheme.
  - Impact = None: the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: Avoid site.


Heritage sites	Significance of impact	Mitigation measures
Extra Dimensions: Construction Phase		
Without mitigation	n/a	n/a
With mitigation	n/a	n/a
Extra Dimension: Operation Phase		
Without mitigation	n/a	n/a
With mitigation	n/a	n/a

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 during quarrying activities, 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  
September 2017

<b>TECHNICAL SUMMARY</b>
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<b>Project description</b>	
Description	Consolidation of two largely developed mining areas
Project name	Extra Dimensions

<b>Applicant</b>
Extra Dimensions 1158 (Pty) Ltd

<b>Environmental assessors</b>
EIM Environmental Solutions (Pty) Ltd
Mr J van der Linde

<b>Property details</b>						
Province	North West					
Magisterial district	Brits					
District municipality	Madibeng					
Topo-cadastral map	2527DA					
Farm name	Hartebeestpoort B 410JQ					
Closest town	Brits					
Coordinates	Centre point (approximate)					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	-25.62681	27.67471			

<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	Dimension stone quarrying

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## GLOSSARY OF TERMS AND ABBREVIATIONS

### TERMS

**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
Later Stone Age	30 000 - until c. AD 200

**Iron Age:** Period covering the last 1800 years, when new people brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and they herded cattle as well as sheep and goats. 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

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

**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.

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

### ABBREVIATIONS

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

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## 1. INTRODUCTION

Extra Dimensions 1158 (Pty) Limited is an opencast dimension stone mining company that currently operates on portion 1143 of the farm Hartebeestpoort B 410 JQ.

The applicant wishes to consolidate two largely developed mining areas, situated directly adjacent to each other, which belongs to the same holding company (Eagle Valley Granite (Pty) Ltd). The primary mining activities (extraction & disposal of dimension stone (Gabbro – Norite) will remain the same and the footprints of both mining areas have already been established. Extra Dimensions 1158 (Pty) Limited applied for the consent of the minister to amend rights permits programmes or plans in terms of section 102 of the Mineral and Petroleum Resources Development Act, 2002, (Act no. 28 of 2002).

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 *EIM* to conduct a cultural heritage assessment to determine if the proposed consolidation of the two properties 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).

## 2. TERMS OF REFERENCE

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.

### 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 two mining areas that are to be consolidated. This includes:

- 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.

## 2.2 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.

## 3. LEGISLATIVE FRAMEWORK

The HIA is 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) – see Appendix 4 for more detail on this Act
  - 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).

## 4. HERITAGE RESOURCES

### 4.1 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).

### 4.2 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 3). This allowed some form of control over the application of similar values for similar identified sites.

## 5. STUDY APPROACH AND METHODOLOGY

### 5.1 Extent of the Study

This survey and impact assessment covers the area as presented in Section 7 below and illustrated in Figures 2 & 3.

### 5.2 Methodology

#### 5.2.1.1 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.

#### 5.2.1.2 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.

#### 5.2.1.3 Other sources

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

- Information of a very general nature were obtained from these sources

#### 5.2.1.4 Interviews

- Mr Fanie Grobler, site manager at the mining facility.

The results of the above investigation are summarised in Table 1 below – see list of references in Section 11.

**Table 1: Pre-Feasibility Assessment**

Category	Period	Probability	Reference
Early hominin	Pliocene – Lower Pleistocene		
	Early hominin	None	
Stone Age	Lower Pleistocene – Holocene		
	Early Stone Age	Low	
	Middle Stone Age	Low	
	Later Stone Age	Low	
	Rock Art	None	
Iron Age	Holocene		
	Early Iron Age	None	
	Middle Iron Age	None	
	Later Iron Age	Low	Horn (1996); Pistorius (1995)
Colonial period	Holocene		
	Contact period	Low	Breutz (1953)
	Recent history	Medium	Breutz (1953); Van Schalkwyk (2014b)
	Industrial heritage	Medium	

5.2.2 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 EIM by means of maps and .kml files indicating the development area. This was loaded onto a ASUS device and used in Google Earth during the field survey to access the areas.

The site was visited on 24 August 2017 in the company Mr F Grobler, the site manager. The site was investigated by visiting the unmined areas – see Fig. 1 below.

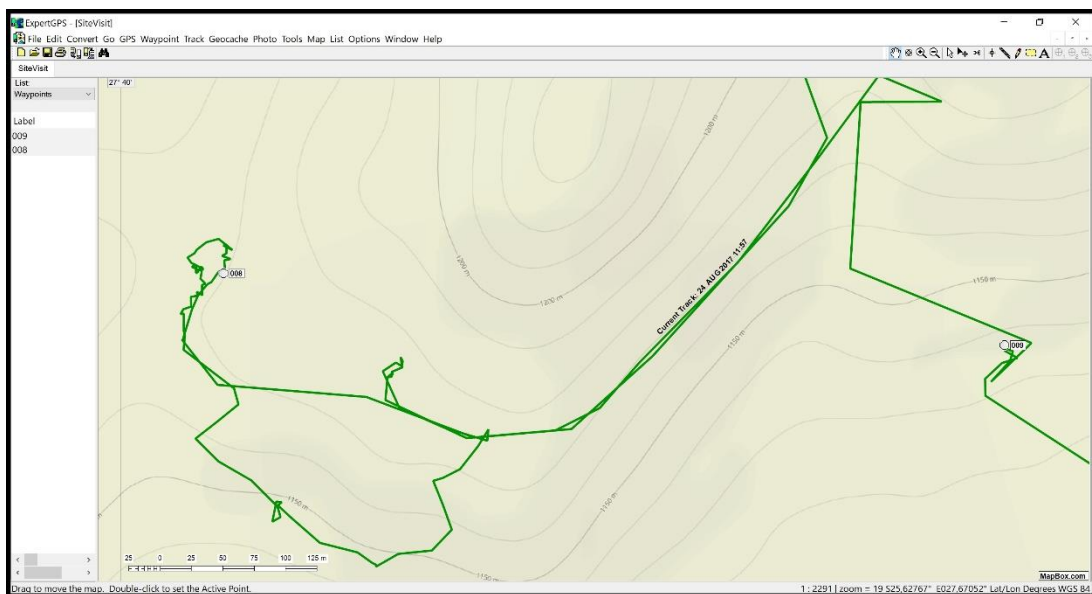


Fig. 1. Map indicating the track log of the field survey.

### 5.2.3 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).

## 6. SITE SIGNIFICANCE AND ASSESSMENT

### 6.1 Heritage assessment criteria and grading

The National Heritage Resources Act, Act no. 25 of 1999, stipulates the assessment criteria and grading of heritage sites. The following grading categories are distinguished in Section 7 of the Act:

**Table 2: Site Grading System.**

SAHRA Cultural Heritage Site Significance			
Field Rating	Grade	Significance	Recommended Mitigation
National Significance	Grade I	High significance	Conservation by SAHRA, national site nomination, mention any relevant international ranking. No alteration whatsoever without permit from SAHRA
Provincial Significance	Grade II	High significance	Conservation by provincial heritage authority, provincial site nomination. No alteration whatsoever without permit from provincial heritage authority.
Local Significance	Grade III-A	High significance	Conservation by local authority, no alteration whatsoever without permit from provincial heritage authority. Mitigation as part of development process not advised.
Local Significance	Grade III-B	High significance	Conservation by local authority, no external alteration without permit from provincial heritage authority. Could be mitigated and (part) retained as heritage register site.
Generally Protected A	Grade IV-A	High/medium significance	Conservation by local authority. Site should be mitigated before destruction. Destruction permit required from provincial heritage authority.
Generally Protected B	Grade IV-B	Medium significance	Conservation by local authority. Site should be recorded before destruction. Destruction permit required from provincial heritage authority.
Generally Protected C	Grade IV-C	Low significance	Conservation by local authority. Site has been sufficiently recorded in the Phase 1 HIA. It requires no further recording before destruction. Destruction permit required from provincial heritage authority.

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, III and IV sites, the applicable of mitigation measures would allow the development activities to continue.

### 6.2 Methodology for the assessment of potential impacts

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

- The **nature**, a description of what causes the effect, what will be affected and how it will be affected;
- 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;
- The **duration**, wherein it is indicated whether the lifetime 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 (> 15 years); or
  - 5 - permanent;
- 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;
- The **probability** of occurrence, which 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);
- The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high;
- The **status**, which is described as either positive, negative or neutral;
- The degree to which the impact can be reversed;
- The degree to which the impact may cause irreplaceable loss of resources; and
- The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

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

The **significance weightings** for each potential impact are calculated as follows:

**Table 3: Significance Ranking**

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
-	-	-	-	-	-
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	Medium	Where the impact could influence the decision to			

Extent	Duration	Magnitude	Probability	Significance	Weight
points					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.

**7. PROJECT DESCRIPTION**

**7.1 Site location**

The site that was investigated is located on a portion of the farm Hartebeestpoort 410JQ, located halfway between Brits and Rustenburg in North West Province (Fig. 2). For more information, please see the Technical Summary presented on p. iv above.

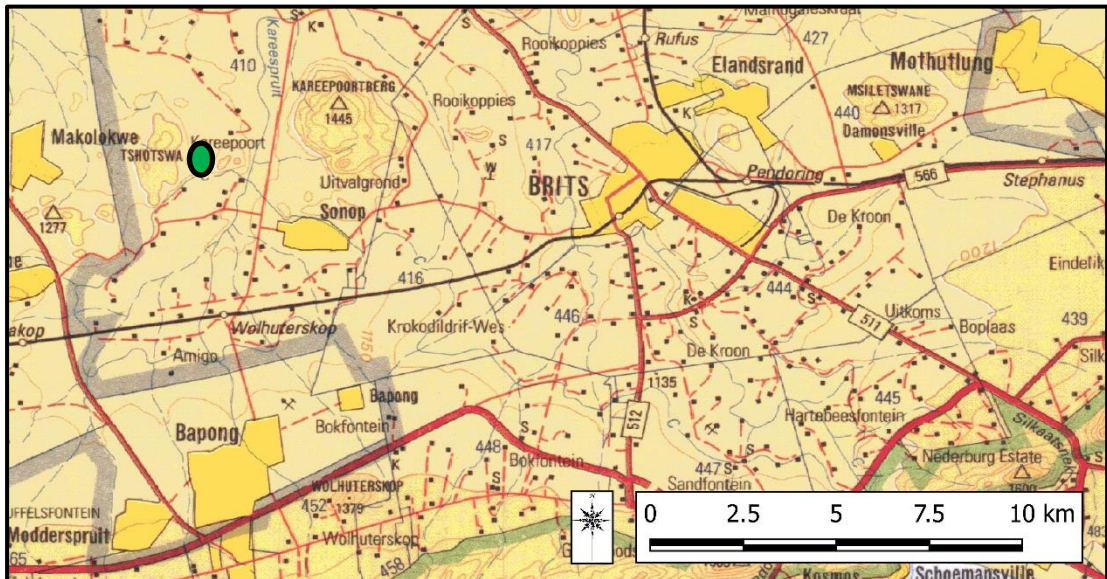


Fig. 2. Location of the study area in regional context. (Map 2526: Chief Surveyor-General)

**7.2 Development proposal**

The following information was taken from the “Plan of Study for Undertaking the Environmental Impact Assessment Process”, compiled by EIM Environmental Solutions, June 2017:

The applicant wishes to consolidate two largely developed mining areas, situated directly adjacent to each other, which belongs to the same holding company (Eagle Valley Granite (Pty) Ltd). The primary mining activities (extraction & disposal of dimension stone (Gabbro – Norite) will remain the same and the footprints of both mining areas have already been established.

The proposed revision of the Environmental Management Programme Report is based on the understanding that the mining activities on portion 1143 & 1144 are lawful. The proposed consolidated mining area is surrounded by other dimension stone operations and associated activities as well as agricultural land uses. The ridge summit which forms the central section

of the consolidated mining area proposal will be left undeveloped as a conservation zone, since the site falls inside a Critical Biodiversity Area (Type 2).

The workshop and office area footprints have already been established. A real possibility exists that the workshop and office area may be moved closer to the central part of the mining area as the mining area developed more towards the west.



Fig. 3. Layout of the proposed development.  
(Map supplied by EIM)

## 8. DESCRIPTION OF THE AFFECTED ENVIRONMENT

### 8.1 Site description

The topography of the area varies from broken hills in the eastern portion of the survey area, to plains, bisected by a number of smaller rivers in the western and largest section. It is currently used for grazing and granite quarrying is taking place in the eastern section. Informal settlement is expanding on a daily basis in the western section.

The geology is made up of gabbro and the soil is classified as turf. The original vegetation of the area consisted of two veld types – Mixed Bushveld in the western section and Clay Thorn Bushveld in the eastern section

From the aerial image in Fig. 4 below, it can be seen that most of the area has been subjected to previous and current quarrying activities.





Fig. 4. View of the study area.

From the 1943 version of the topocadastral map in Fig. 5 (below) it can be seen that very little development existed in the region more than 60 years ago. However, since then the area has intensively been settled by formal as well as informal settlers.

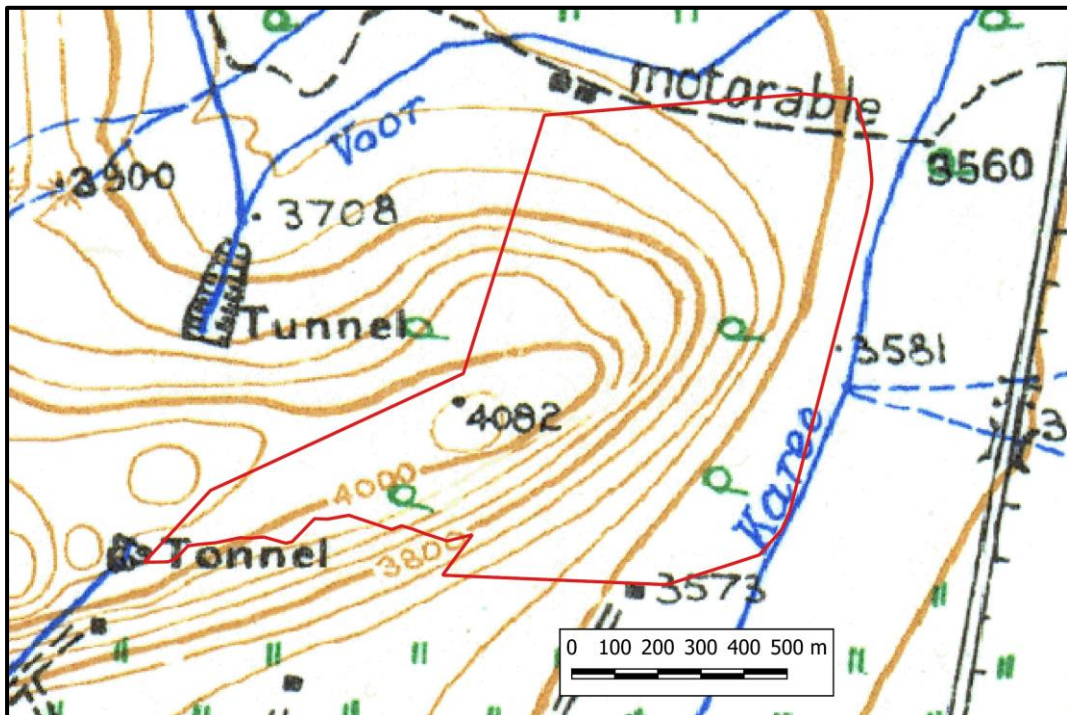


Fig. 5. The study area on the 1943 version of the topocadastral map. (Map 2527DA: Chief Surveyor-General)

## 8.2 Overview of the region

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 – see Section 3.2 and Appendix 3 for more information.

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a pre-colonial element (Stone Age and Iron Age) as well as a much later colonial (farmer and industrial) component. The second component, although much younger, is an industrial one which is largely made up of mining heritage.

### *Stone Age and Iron Age*

Human occupation of the larger region took place since Early Stone Age time. However, this was a low density occupation, predominantly in the Magalies Mountains, where shelter could be found. During the Middle Stone Age population numbers increased and people started to venture further afield, exploring the streams and outcrops to the north of the mountain range. For some still unknown reason, occupation declined during the Later Stone Age and people again concentrated in the mountain range.

Iron Age people started to settle in southern Africa c. AD 300, with one of the oldest known sites at Broederstroom south of Hartebeespoort Dam dating to AD 470. However, the occupation of the larger geographical area (including the study area) did not start much before the 1500s. This does not detract from the scale of the settlements found and the number of potential inhabitants. Because of their specific technology and economy, Iron Age people preferred to settle on the alluvial soils near rivers for agricultural purposes, but also for firewood and water. In this particular area, because of the turf soil, which is not suitable for settling on, they preferred to settle close to the gabbro outcrops, using the abundance of stone to create their complex village layouts.

### *Historic period*

The Voortrekkers moved into the area during the first half of the 18<sup>th</sup> century. They took up farms and established towns. Rustenburg, for example, was founded in 1850 and proclaimed as town in 1851. They were preceded by a number of hunters, missionaries and travellers who also left behind records of the area. The town of Brits was laid out on the farm Roode Kopjes in May 1924 (Raper 2004).

It was only much later and largely because of the pioneering work done by Hans Merensky that the rich platinum, chrome and other ore bodies of the region were discovered and exploited on a large scale.

From the early version (1943) of the 1:50 000 topocadastral map (Fig. 7 below), it can be determined that little development existed in the region and no occupation took place in the study areas specifically.

## 8.3 Identified sites

The following sites, features and objects of cultural significance were identified in the study area – see Appendix 6 for a discussion of each individual site.

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 4. Summary of Identified Heritage Resources in the Study Area.**

IDENTIFIED HERITAGE RESOURCES			
NHRA category	Number	Coordinates	Impact rating
<i>Formal protections (NHRA)</i>			
National heritage site (Section 27)	None	-	-
Provincial heritage site (Section 27)	None	-	-
Provisional protection (Section 29)	None	-	-
Listed in heritage register (Section 30)	None	-	-
<i>General protections (NHRA)</i>			
Structures older than 60 years (Section 34)	None	-	-
Archaeological site or material (Section 35)	8.3.2.1	-25.62907, 27.66749	Low
Palaeontological site or material (Section 35)	None	-	-
Graves or burial grounds (Section 36)	None	-	-
Public monuments or memorials (Section 37)	None	-	-
<i>Other</i>			
Any other heritage resources (describe)	8.3.3.1	-25.62958, 27.67366	Low

#### 8.3.1 Stone Age

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

#### 8.3.2 Iron Age

- (8.3.2.1) A stone walled structure that can be linked to the Tswana-speaking settlement in the region after 1600.
  - This feature has Medium local significance – Grade IV-A

#### 8.3.3 Historic period

- (8.3.3.1) An irrigation canal that forms part of the larger Crocodile River Irrigation Scheme. As such it is difficult to date as it was developed in different phases after the completion of the Hartebeespoort Dam (1925).
  - This feature has Medium local significance – Grade IV-A

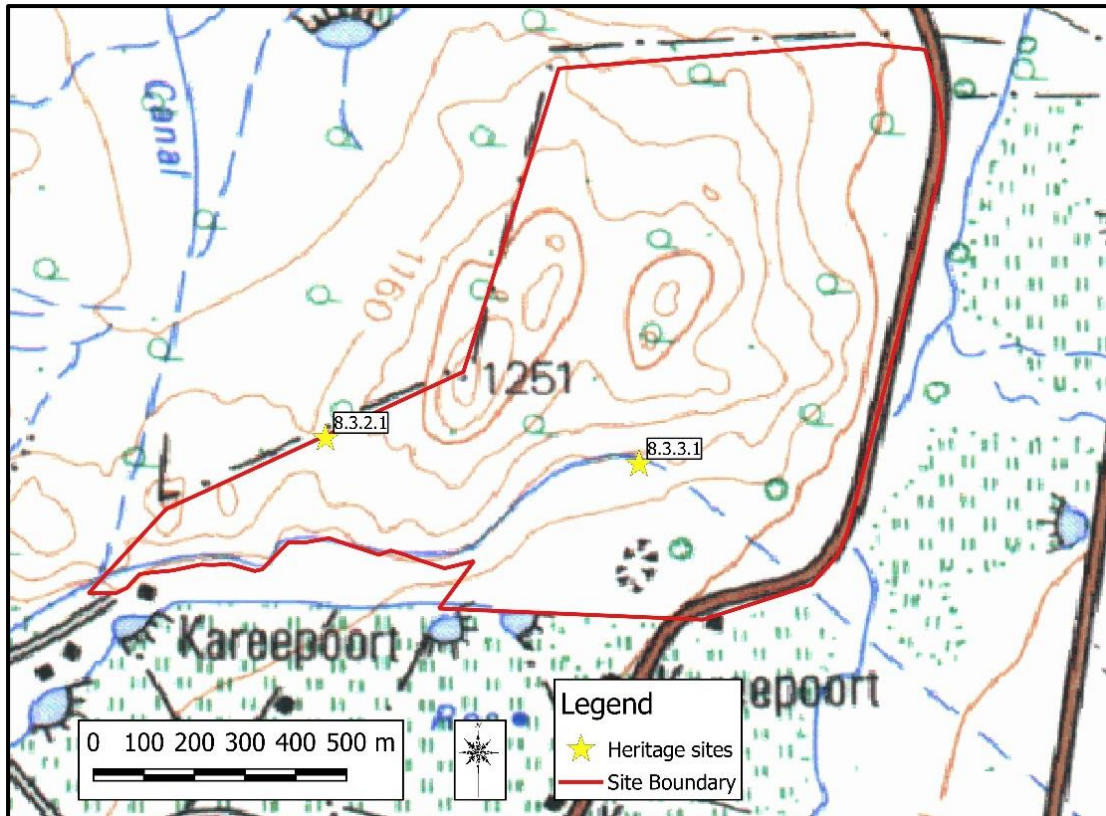


Fig. 6. Location of the identified sites.  
(Map 2527DA: Chief Surveyor-General)

#### 8.4 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.

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

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

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 5 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.

**Table 5. Potential Risk Sources.**

	Activity	Description	Risk
Issue 1	Removal of Vegetation	Vegetation removal for site preparation and the installation of required infrastructure, e.g. access roads and water pipelines.	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.
Issue 2	Construction of required infrastructure, e.g. access roads, water pipelines	Construction machinery and vehicles will be utilised to construct the required infrastructure, e.g. access roads and water pipelines.	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.

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development and is presented in Appendix 7 and summarised in Table 6 below:

- (8.3.2.1) A stone walled structure dating to the Late Iron Age.
  - Impact = None: the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: Avoid site.
- (8.3.3.1) An irrigation canal that forms part of the larger Crocodile River Irrigation Scheme.
  - Impact = None: the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: Avoid site.

**Table 6: Impacts on identified Heritage Sites**

Heritage sites	Significance of impact	Mitigation measures
Extra Dimension: Construction Phase		
Without mitigation	n/a	n/a
With mitigation	n/a	n/a
Extra Dimension: Operation Phase		
Without mitigation	n/a	n/a
With mitigation	n/a	n/a

## 8.5 Comparison of Alternatives

No alternatives were considered.

## 9. MANAGEMENT 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.

### 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 7: Environmental Management Programme for the project:**

<b>Construction</b>	
<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		
<b>Operation</b>			
<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		

## 10. RECOMMENDATIONS

Extra Dimensions 1158 (Pty) Limited is an opencast dimension stone mining company that currently operates on portion 1143 of the farm Hartebeestpoort B 410 JQ. The applicant wishes to consolidate two largely developed mining areas, situated directly adjacent to each other, which belongs to the same holding company (Eagle Valley Granite (Pty) Ltd). The primary mining activities (extraction & disposal of dimension stone (Gabbro – Norite) will remain the same and the footprints of both mining areas have already been established.

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a pre-colonial element (Stone Age and Iron Age) as well as a much later colonial (farmer and industrial) component. The second component, although much younger, is an industrial one which is largely made up of mining heritage.

### Identified heritage sites

- (8.3.2.1) A stone walled structure that can be linked to the Tswana-speaking settlement in the region after 1600.
  - This feature has Medium local significance – Grade IV-A
- (8.3.3.1) An irrigation canal that forms part of the larger Crocodile River Irrigation Scheme. As such it is difficult to date as it was developed in different phases after the completion of the Hartebeestpoort Dam (1925).
  - This feature has Medium local significance – Grade IV-A

Impact assessment

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

- (8.3.2.1) A stone walled structure dating to the Late Iron Age.
  - Impact = None: the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: Avoid site.
- (8.3.3.1) An irrigation canal that forms part of the larger Crocodile River Irrigation Scheme.
  - Impact = None: the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: Avoid site.

Heritage sites	Significance of impact	Mitigation measures
Extra Dimensions: Construction Phase		
Without mitigation	n/a	n/a
With mitigation	n/a	n/a
Extra Dimension: Operation Phase		
Without mitigation	n/a	n/a
With mitigation	n/a	n/a

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 during quarrying activities, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.



## 11. REFERENCES

### 11.1 Data bases

Chief Surveyor General  
Environmental Potential Atlas, Department of Environmental Affairs and Tourism.  
Heritage Atlas Database, Pretoria  
National Archives of South Africa  
SAHRA Archaeology and Palaeontology Report Mapping Project (2009)  
SAHRIS Database

### 11.2 Literature

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

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Van Schalkwyk, J.A. 2014b. *Cultural heritage impact assessment for the High Blue Granite Quarry, Berseba, Bakwena ba Mogopa magisterial district, North West Province*. Pretoria: Unpublished report 2014/JvS/055.

Van Warmelo, N.J. 1935. *A Preliminary survey of the Bantu Tribes of South Africa*. Ethnological Publications No. 5. Pretoria: Government Printer.

Van Warmelo, N.J. 1977. *Anthropology of Southern Africa in Periodicals to 1950*. Pretoria: Government Printer.

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

1: 50 000 Topocadastral maps

Google Earth

**APPENDIX 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.

**APPENDIX 2. SPECIALIST COMPETENCY**Johan (Johnny) van Schalkwyk

J 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, Northern Cape, 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 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.

### APPENDIX 3. CONVENTIONS USED TO ASSESS THE SIGNIFICANCE OF HERITAGE RESOURCES

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.

#### Significance

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
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 A: High/medium significance - Should be mitigated before destruction	
6.	Generally protected B: Medium significance - Should be recorded before destruction	
7.	Generally protected C: Low significance - Requires no further recording before destruction	

**APPENDIX 4. 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.

The National Heritage Resources Act (Act no 25 of 1999) 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, and which prescribes heritage resources assessment criteria, consistent with the criteria set out in section 3(3), which must be used by a heritage resources authority or a local authority to assess the intrinsic, comparative and contextual significance of a heritage resource and the relative benefits and costs of its protection, so that the appropriate level of grading of the resource and the consequent responsibility for its management may be allocated in terms of section 8.

Presenting archaeological sites as part of tourism attraction requires, in terms 44 of the Act, a Conservation Management Plan as well as a permit from SAHRA.

(1) Heritage resources authorities and local authorities must, wherever appropriate, co-ordinate and promote the presentation and use of places of cultural significance and heritage resources which form part of the national estate and for which they are responsible in terms of section 5 for public enjoyment, education, research and tourism, including-

- (a) the erection of explanatory plaques and interpretive facilities, including interpretive centres and visitor facilities;
- (b) the training and provision of guides;
- (c) the mounting of exhibitions;
- (d) the erection of memorials; and
- (e) any other means necessary for the effective presentation of the national estate.

(2) Where a heritage resource which is formally protected in terms of Part I of this Chapter is to be presented, the person wishing to undertake such presentation must, at least 60 days prior to the institution of interpretive measures or manufacture of associated material, consult with the heritage resources authority which is responsible for the protection of such heritage resource regarding the contents of interpretive material or programmes.

(3) A person may only erect a plaque or other permanent display or structure associated with such presentation in the vicinity of a place protected in terms of this Act in consultation with the heritage resources authority responsible for the protection of the place.



## APPENDIX 5. 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.

**APPENDIX 6. INVENTORY OF IDENTIFIED CULTURAL HERITAGE SITES**

<b>Location</b>	No. 8.3.2.1	Stone walled site	S 25.62907, E 27.66749
-----------------	-------------	-------------------	------------------------

**Description**

A stone walled structure that can be linked to the Tswana-speaking settlement in the region after 1600. This site has already been impacted on by a previous quarrying operator, probably as far back as the 1960s. The main settlement area of the site, which would have been located against the foot of the hill, has been covered by large granite blocks that were discarded. It is estimated that less than 50% of the site remains.

**Significance of site/feature** | Medium local significance – Grade IV-A

**Impact assessment**

The current quarry owners have no intention of ever mining in this area.

**Significance of impact**

Extent	Duration	Magnitude	Probability	Significance	Weight
1	2	4	3	21	Low

**Mitigation**

As no quarrying is going to take place in this part of the mine, no further action is required

**Requirements**

None

**References**

1: 50 000 topocadastral map:



<b>Location</b>	No. 8.3.3.1	Irrigation canal	S 25.62958, E 27.67366
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**Description**

An irrigation canal that forms part of the larger Crocodile River Irrigation Scheme. As such it is difficult to date as it was developed in different phases after the completion of the Hartebeestpoort Dam (1925). The section passing across the study area is specifically interesting as it uses the principle of a syphon to elevate the water by as much as 10 metres to cross over the hill.

**Significance of site/feature**

Medium local significance – Grade IV-B

**Impact assessment**

The quarry operator is well-aware of this feature and its alignment and cannot do any work in its vicinity which would have a negative impact on the feature.

**Significance of impact**

Extent	Duration	Magnitude	Probability	Significance	Weight
1	2	2	2	10	Low

**Mitigation**

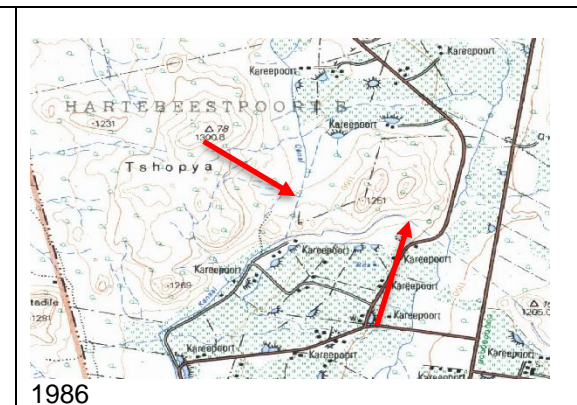
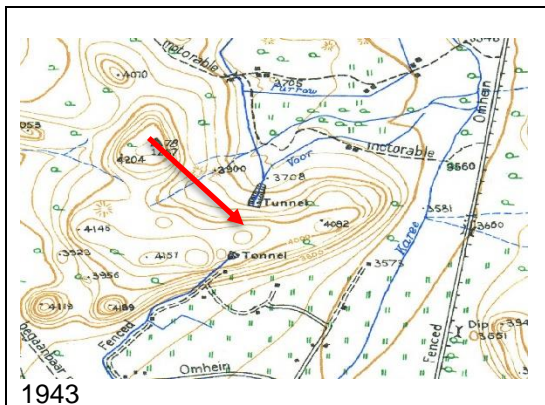
As no quarrying is going to take place in this part of the mine, no further action is required

**Requirements**

None

**References**

1: 50 000 topocadastral map



<b>APPENDIX 7. IMPACT TABLES</b>
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<b>Nature:</b> Loss of sites, features or objects of cultural significance. As no sites, features or objects of cultural significance are known to exist in the development area, there would be no impact as a result of the proposed development.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Construction Phase</b>		
<i>Probability</i>	Definite (1)	Definite (1)
<i>Duration</i>	Permanent (4)	Permanent (4)
<i>Extent</i>	Limited to the site (1)	Limited to the site (1)
<i>Magnitude</i>	Minor (2)	Minor (2)
<b>Significance</b>	<b>7 (low)</b>	<b>7 (low)</b>
<i>Status (positive or negative)</i>	Negative	Negative
<b>Operational Phase</b>		
<i>Probability</i>	Definite (1)	Definite (1)
<i>Duration</i>	Permanent (4)	Permanent (4)
<i>Extent</i>	Limited to the site (1)	Limited to the site (1)
<i>Magnitude</i>	Minor (2)	Low (2)
<b>Significance</b>	<b>7 (low)</b>	<b>7 (low)</b>
<i>Status (positive or negative)</i>	Negative	Negative
<b>Reversibility</b>	Low	Moderate
<i>Irreplaceable loss of resources?</i>	Moderate	Low
<i>Can impacts be mitigated?</i>	Yes	