



Archaeological Impact Assessment

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Merafe Resources - Schoongezicht
Coal Mine Project on Portion 2 of the
farm Rondevlei 208 IR and a Portion
of Portion 7 and a portion of the
Remaining Extent of the farm
Schoongezicht 225 IR, District
Delmas, Mpumalanga

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**Professional Grave
Solutions (Pty)
Limited**

(Registration No: 2003/008940/07)

Bergarend St 906, Waverley, Pretoria, 0186

PO Box 32542, Totiusdal, 0134 South Africa

TEL: +27 12 332 5305,

FAX: 0866 580199

ACKNOWLEDGEMENT OF RECEIPT

CLIENT: Digby Wells & Associates (Pty) Ltd

CONTACT PERSON: Ms. Marike Fourie, Tel: (011) 789 9495, Fax: (011) 504 1440,
Fax to email: 086 502 1588, email: marike@digbywells.co.za

SIGNATURE: _____

LEADING CONSULTANT: Professional Grave Solutions - Heritage Unit

CONTACT PERSON: Wouter Fourie

SIGNATURE: _____

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EXECUTIVE SUMMARY

Professional Grave Solutions - Heritage Unit was appointed by Digby Wells & Associates to undertake a Phase 1 Archaeological Impact Assessment that forms part of the Environmental Management Programme for the Merafe Resources - Schoongezicht Coal Mine Project on Portion 2 of the farm Rondevlei 208 IR and a Portion of Portion 7 and a portion of the Remaining Extent of the farm Schoongezicht 225 IR, District Delmas, Mpumalanga.

No heritage sites were identified within the mining application area. A single cemetery consisting of 15 graves were identified some 60 metres to the east of the eastern boundary of the mining application area.

No impact is envisaged on this site.

If at any stage the mining application area is extended and the cemetery is included in the application area, the cemetery needs to be fenced and a buffer of 20 meters be left around the site and adequate access be provided for the family to visit the graves if mining is to progress in the direction of the cemetery.

General

If during mining any possible finds are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find.

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1. INTRODUCTION

Professional Grave Solutions - Heritage Unit was appointed by Digby Wells & Associates to undertake a Phase 1 Archaeological Impact Assessment that forms part of the Environmental Management Programme for the Merafe Resources - Schoongezicht Coal Mine Project on Portion 2 of the farm Rondevlei 208 IR and a Portion of Portion 7 and a portion of the Remaining Extent of the farm Schoongezicht 225 IR, District Delmas, Mpumalanga.

The aim of the study is to identify all heritage sites, document, and assess their importance within Local, Provincial and National context. From this we aim to assist the developer in managing the discovered heritage resources in a responsible manner, in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999) (NHRA).

The report outlines the approach and methodology utilised before and during the survey, which includes in Phase 1: Information collection from various sources and public consultations; Phase 2: Physical surveying of the area on foot and by vehicle; and Phase 3: Reporting the outcome of the study.

No heritage sites were identified within the mining application area. A single cemetery consisting of 15 graves were identified some 60 metres to the east of the eastern boundary of the mining application area.

General site conditions and features on site were recorded by means of photos, GPS location, and description. Possible impacts were identified and mitigation measures are proposed in the following report.

2. APPROACH AND METHODOLOGY

2.1 Project Description

The site is located 11km north-east of Delmas in the Mpumalanga Province. It lies approximately 2km south of the N12. A railway and major road connecting Springs and Kendal traverse the northern boundary of the property. Argent rail siding is located approximately 4km to the northeast.

The Schoongezicht deposit forms part of the Delmas-Vischkuil Coalfield which is the connecting link between the Springs coalfield in the west and the Witbank coalfield in the east. .

Three seams occur on the property:

- The Upper Top Seam which has an average thickness of 0.64m
- The Upper Main Seam which has an average thickness of 4.53m
- The Lower Seam which has an average thickness of 2.75m

It is proposed that the deposit of 9.341Mt is to be mined using opencast methods:

The mining method will be a truck and shovel opencast operation utilising separate fleets for overburden removal and coal and parting removal.

The first step in the operation would be to strip the topsoil which overlies most of the area. The topsoil is assumed to have an average depth of 1m and this will be stockpiled on a designated area for use in the rehabilitation phase of the project. Once the topsoil has been removed, the truck and shovel fleet will excavate the rest of the soft material until the hard overburden is reached. The hard overburden will be drilled and blasted to the depth of the upper seam and where this upper seam is not present drill and blasting will take place to the top of the middle seam.

This overburden will then be removed by means of truck and shovel and tipped into the pit where the coal has already been extracted which will allow for rehabilitation as the mine progresses.

Schoongezicht Colliery will supply ESKOM as well as both the inland and international coal market.

The intention is to begin mining in the latter half of 2009 and to have completed mining by the end of 2019.

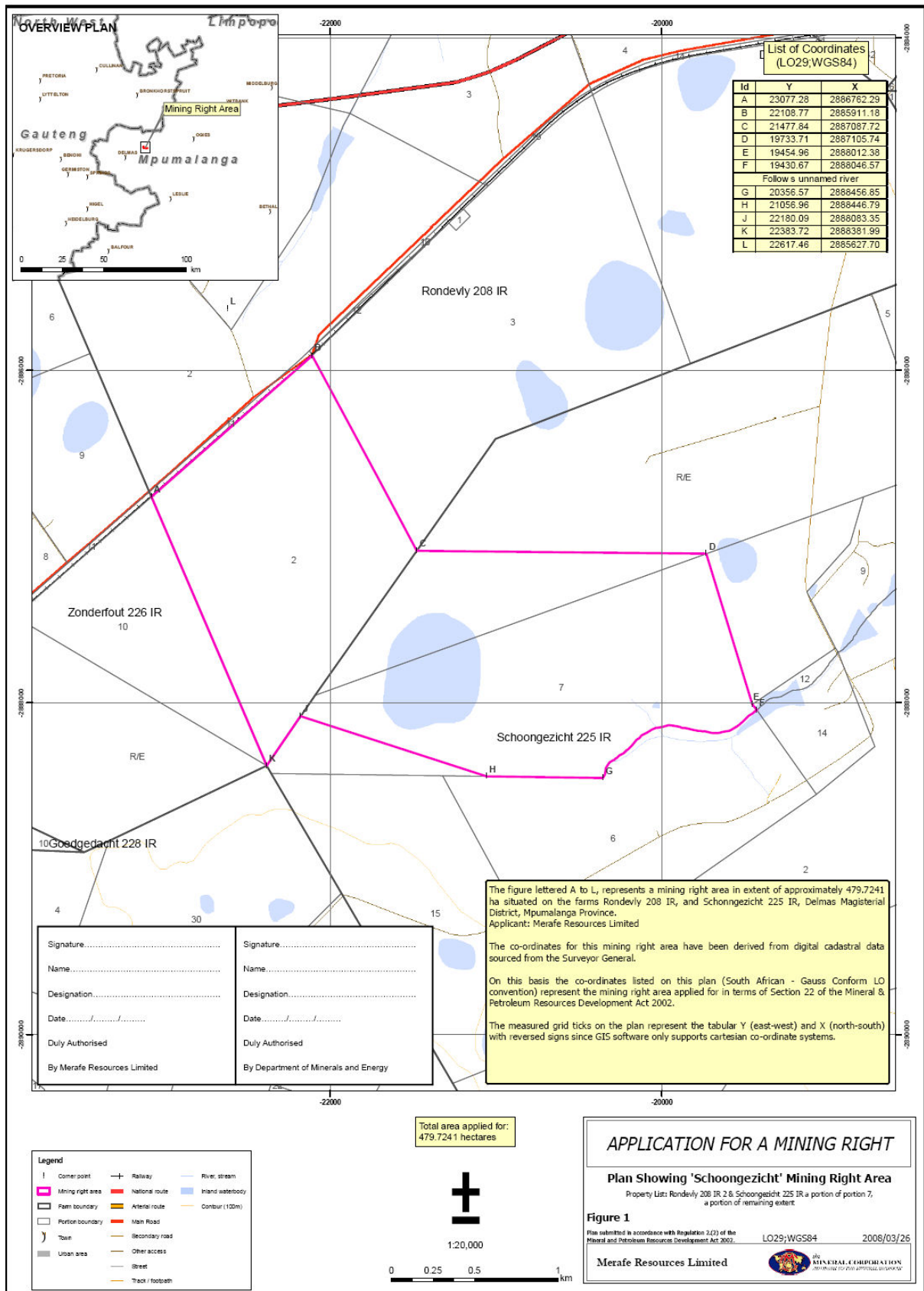


Figure 1 – Locality Map

The aim of the study is to study data available to compile a background history of the study area; this was accomplished by means of the following phases.

2.2 PHYSICAL SURVEYING

The project area comprises of approximately 470 ha. Due to the nature of cultural remains, the majority that occur below surface, a physical walk through of the study area was conducted. A controlled-exclusive surface survey was conducted over a period of two days, by means of vehicle and extensive surveys on foot by PGS.

Aerial photographs and 1:50 000 maps of the area were consulted and literature of the area were studied before undertaking the survey. The purpose of this was to identify topographical areas of possible historic and pre-historic activity. All sites discovered both inside and bordering the proposed development area was plotted on 1:50 000 maps and their GPS co-ordinates noted. 35mm photographs on digital film were taken at all the sites.

3. LEGISLATIVE REQUIREMENTS AND TERMINOLOGY

3.1 Legislation

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by the following legislation:

- i. National Environmental Management Act (NEMA) Act 107 of 1998
- ii. National Heritage Resources Act (NHRA) Act 25 of 1999
- iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
- iv. Development Facilitation Act (DFA) Act 67 of 1995

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources.

- i. National Environmental Management Act (NEMA) Act 107 of 1998
 - a. Basic Environmental Assessment (BEA) – Section (23)(2)(d)
 - b. Environmental Scoping Report (ESR) – Section (29)(1)(d)
 - c. Environmental Impacts Assessment (EIA) – Section (32)(2)(d)
 - d. Environmental Management Plan (EMP) – Section (34)(b)
- ii. National Heritage Resources Act (NHRA) Act 25 of 1999
 - a. Protection of Heritage resources – Sections 34 to 36; and
 - b. Heritage Resources Management – Section 38

- iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
 - a. Section 39(3)
- iv. Development Facilitation Act (DFA) Act 67 of 1995
 - a. The GNR.1 of 7 January 2000: Regulations and rules in terms of the Development Facilitation Act, 1995. Section 31.

3.2 Abbreviations and Terminology

ASAPA:	Association of South African Professional Archaeologists
CRM:	Cultural Resource Management
DEAT:	Department of Environmental Affairs and Tourism
DWAF:	Department of Water Affairs and Forestry
EIA practitioner:	Environmental Impact Assessment Practitioner
EIA:	Environmental Impact Assessment
EIA:	Early Iron Age
ESA:	Early Stone Age
GPS:	Global Positioning System
HIA:	Heritage Impact Assessment
I&AP:	Interested & Affected Party
LSA:	Late Stone Age
LIA:	Late Iron Age
MSA:	Middle Stone Age
MIA:	Middle Iron Age
NEMA:	National Environmental Management Act
NHRA:	National Heritage Resources Act
PHRA:	Provincial Heritage Resources Agency
PSSA:	Palaeontological Society of South Africa
ROD:	Record of Decision
SAHRA:	South African Heritage Resources Agency

Archaeological resources

This includes:

- i. material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- ii. rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;

- iii. wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- iv. features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in the change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

- i. construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- ii. carrying out any works on or over or under a place;
- iii. subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- iv. constructing or putting up for display signs or boards;
any change to the natural or existing condition or topography of land;
- v. any removal or destruction of trees, or removal of vegetation or topsoil

Heritage resources

This means any place or object of cultural significance

4. ASSESSMENT CRITERIA

This chapter describes the evaluation criteria used for the sites listed below.

The significance of archaeological sites was based on four main criteria:

- **site integrity** (i.e. primary vs. secondary context),
- **amount of deposit, range of features** (e.g., stonewalling, stone tools and enclosures),
- **uniqueness** and
- **potential** to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

- A - No further action necessary;
- B - Mapping of the site and controlled sampling required;
- C - Preserve site, or extensive data collection and mapping of the site; and
- D - Preserve site

Impacts on these sites by the development will be evaluated as follows

4.1 IMPACT

The potential environmental impacts that may result from the proposed development activities.

4.1.1 Nature and existing mitigation

Natural conditions and conditions inherent in the project design that alleviate (control, moderate, curb) impacts. All management actions, which are presently implemented, are considered part of the project design and therefore mitigate against impacts.

4.2 EVALUATION

4.2.1 Site Significance

Site significance classification standards prescribed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used for the purpose of this report.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	-	High / Medium Significance	Mitigation before destruction
Generally Protected	-	Medium	Recording before destruction

B (GP.B)		Significance	
Generally Protected C (GP.C)	-	Low Significance	Destruction

4.2.2 Impact Rating

Each impact identified will be assessed in terms of probability (likelihood of occurring), extent (spatial scale), intensity (severity) and duration (temporal scale). To enable a scientific approach to the determination of the impact significance (importance), a numerical value will be linked to each rating scale. The sum of the numerical values will define the significance. The following criteria will be applied to the impact assessment for the project.

Table 1: Probability

Category	Rating	Description
Definite	3	More than 90 percent sure of a particular fact or of the likelihood of that impact occurring
Probable	2	70 to 89 percent sure of a particular fact or of the likelihood of that impact occurring
Possible	1	40 to 69 percent sure of a particular fact or of the likelihood of that impact occurring
Improbable	0	Less than 40 percent sure of a particular fact or of the likelihood of that impact occurring

Table 2: Extent

Category	Rating	Description
Site	1	Immediate project site
Local	2	Up to 5 km from the project site
Regional	3	20 km radius from the project site
Provincial	4	Mpumalanga Province
National	5	South African
International	6	Neighbouring countries/overseas

Table 3: Duration

Category	Rating	Description
Very short-term	1	Less than 1 year

Short-term	2	1 to 4 years
Medium-term	3	5 to 10 years
Long-term	4	11 to 15 years
Very long-term	5	Greater than 15 years
Permanent	6	Permanent

Table 4: Intensity

Category	Rating	Description
Very low	0	Where the impact affects the environment in such a way that natural, cultural and social functions are not affected
Low	1	Where the impact affects the environment in such a way that natural, cultural and social functions are only marginally affected
Medium	2	Where the affected environment is altered but natural, cultural and social function and processes continue albeit in a modified way
High	3	Where natural, cultural or social functions or processes are altered to the extent that they will temporarily cease
Very high	4	Where natural, cultural or social functions or processes are altered to the extent that they will permanently cease

Table 5: Significance Rating

Score	Significance Rating
2 – 4	Low
5 – 7	Low to Moderate
8 – 10	Moderate
11 - 13	Moderate to High
14 – 16	High
17 – 19	Very High

5. BACKGROUND OF AREA

5.1 ARCHAEOLOGICAL BACKGROUND

The Stone Age is divided in Earlier; Middle and Later Stone Age and refers to the earliest people of South Africa who mainly relied on stone for their tools.

Earlier Stone Age: The period from \pm 2.5 million yrs - \pm 250 000 yrs ago. Acheulean stone tools are dominant.

Middle Stone Age: Various lithic industries in SA dating from \pm 250 000 yrs – 22 000 yrs before present.

Later Stone Age: The period from \pm 22 000-yrs before present to the period of contact with either Iron Age farmers or European colonists.

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the Pre-Historic and Historic periods. Similar to the Stone Age it can be divided into three periods:

The Early Iron Age: Most of the first millennium AD.

The Middle Iron Age: 10th to 13th centuries AD

The Late Iron Age: 14th century to colonial period.

5.2 HISTORICAL BACKGROUND

5.2.1. CARTOGRAPHIC MATERIAL

Evaluation of the 1958 Topographical map 2628BB (surveyed in 1965) indicates no structures existing on the study area.

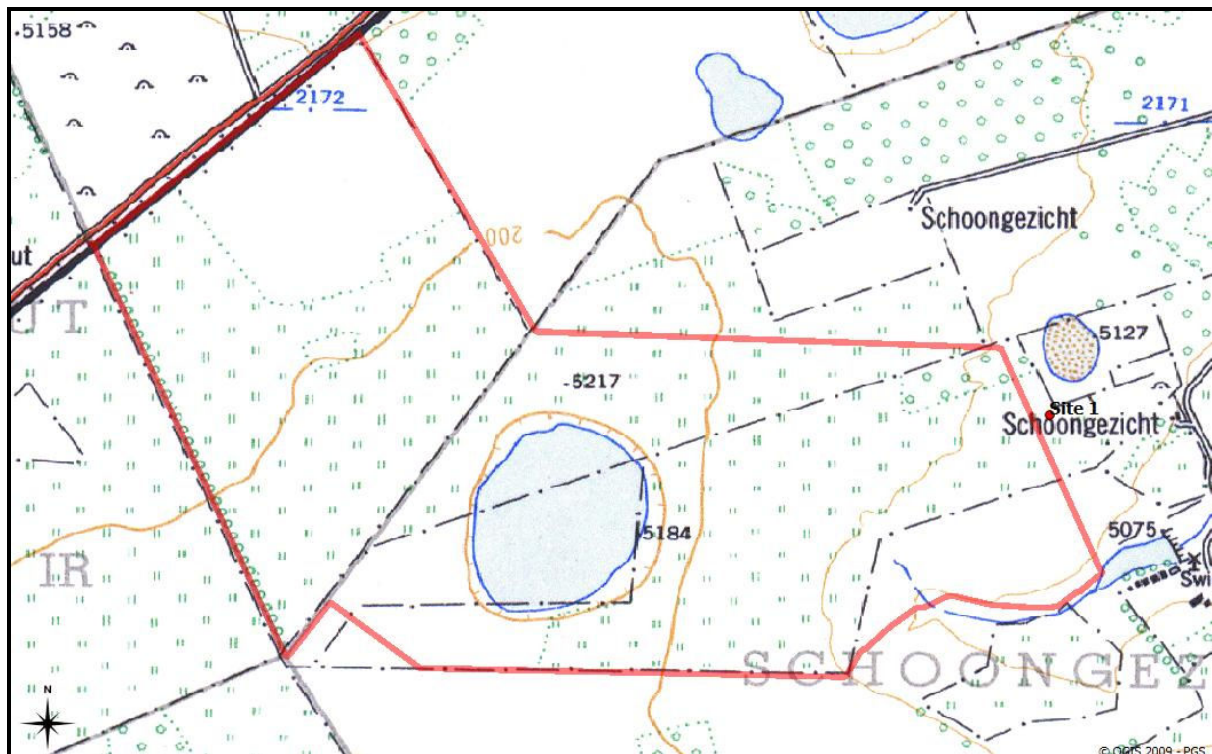


Figure 2 - Study area indicated on 1958 topographical map 2628BB

6. SITES OF SIGNIFICANCE

The study area is located on topographical sheet 2628BB.

A very large portion of the study area consists of maize fields approximately 2m tall. The height and density of the fields impaired the consultant's visibility considerably. The areas not covered by maize fields were also covered by dense vegetation. Although this vegetation is not very tall, it covers the surface completely, severely hampering the visibility of any surface features.

Local people consulted

The cemetery was pointed out to the consultant by Mr. Richard Masuka and Mr. Johannes Mafifi. Both gentlemen are currently working on one of the farms containing the survey area and have done so for some years. They are adamant that no other cemeteries or historic structures exist in the study area. This was confirmed by Mr. Morris Maseko who lives just to the east of the study area and who knows the area well. The following persons were also consulted although they were not able to assist the consultant with relevant information:

- Mr. Willie Venter
- Mr. Booysen
- Some relatives of Mr. Morris Maseko



Figure 3 - View of vegetation growth in survey area



Figure 4 – View of study area with pan in the centre of the study area

6.1 Site 1

Description of Site:		
Site Number	Site 1	
Map reference	Topo-sheet number	Number of Map in report
	2629AA	Annexure A
GPS coordinates: <i>Indicate Model and datum - WGS 84</i>	X	Y
Garmin 60Csx, WGS 84	E28 48.236	S26 05.719
Site Data	Description	
Type of site (e.g. open scatter; shell midden, cave /shelter);	<p>The site consists of approximately 15 graves roughly aligned in three rows containing five graves each. Five of the graves have cement headstones and grave dressings while the dressings of the remaining ten graves consist of oval shaped stone dressings. No headstones were observed at these graves. The inscriptions on three of the cement headstones were legible. They indicate that the graves belong to:</p> <ul style="list-style-type: none"> • Anna Nzima (1933) • Swartlan Nzima (1931) • Petrus Nzima (date illegible) <p>The site is situated next to a small farm road with maize fields enclosing it on three sides. According to the survey information the cemetery is situated 50m east of the site boundary.</p>	
Site categories (e.g. Earlier Stone Age, Late Iron Age);	Recent Historic	
Estimation or measurement of the extent (maximum dimensions) and orientation of the site(s);	30x40m	



Figure 5 - Photo of cemetery

Photographs and diagrams (Figure numbers)



Figure 6 - Inscribed headstone

Statement of Significance
(Heritage Value)

The site is of high significance.

Field Rating <i>(Recommended grading or field significance) of the site:</i>	Generally protected (GP.A)				
Impact Evaluation <i>of development on site</i>	Impact on site is seen as high negative.				
Recommendations <i>including:</i>	<p>The cemetery is situated 60 metres outside the mining application area and is not expected to be impacted on by the proposed mining activities.</p> <p>If at any stage the mining application area is extended and the cemetery is included in the application area, the cemetery needs to be fenced and a buffer of 20 meters be left around the site and adequate access be provided for the family to visit the graves if mining is to progress in the direction of the cemetery.</p>				
Summary					
Significance Rating	Field Rating	Probability	Extent	Duration	Intensity
1	GP.A	0	1	n/a	0

7. ASSUMPTIONS AND LIMITATIONS

Not subtracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the archaeological and heritage resources located during the fieldwork do not necessarily represent all the archaeological and heritage resources located there. This may be due to various reasons, including the subterranean nature of some archaeological sites and dense vegetation cover. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted. Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This is true for graves and cemeteries as well.

Note: Survey conditions were seriously hampered by rainy conditions and excessive vegetation growth that made surveying of the area difficult.

8. LEGAL AND POLICY REQUIREMENTS

8.1 General principles

In areas where there has not yet been a systematic survey to identify conservation worthy places, a permit is required to alter or demolish any structure older than 60 years. This will apply until a survey has been done and identified heritage resources are formally protected. Archaeological and palaeontological sites, materials, and meteorites are the source of our understanding of the evolution of the earth, life on earth and the history of people. In the new legislation, permits are required to damage, destroy, alter, or disturb them. People who already possess material are required to register it. The management of heritage resources are integrated with environmental resources and this means that before development takes place heritage resources are assessed and, if necessary, rescued.

In addition to the formal protection of culturally significant graves, all graves, which are older than 60 years and are not in a cemetery (such as ancestral graves in rural areas), are protected. The legislation protects the interests of communities that have interest in the graves: they may be consulted before any disturbance takes place. The graves of victims of conflict and those associated with the liberation struggle will be identified, cared for, protected and memorials erected in their honour. Anyone who intends to undertake a development must notify the heritage resource authority and if there is reason to believe that heritage resources will be affected, an impact assessment report must be compiled at the developer's cost. Thus developers will be able to proceed without uncertainty about whether work will have to be stopped if a heritage resource is discovered.

According to the National Heritage Act (Act 25 of 1999 section 32) it is stated that:

An object or collection of objects, or a type of object or a list of objects, whether specific or generic, that is part of the national estate and the export of which SAHRA deems it necessary to control, may be declared a heritage object, including –

- objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects, meteorites and rare geological specimens;
- visual art objects;
- military objects;
- numismatic objects;
- objects of cultural and historical significance;
- objects to which oral traditions are attached and which are associated with living heritage;

- objects of scientific or technological interest;
- books, records, documents, photographic positives and negatives, graphic material, film or video 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), or in a provincial law pertaining to records or archives; and
- any other prescribed category.

Under the National Heritage Resources Act (Act No. 25 of 1999), provisions are made that deal with, and offer protection, to all historic and pre-historic cultural remains, including graves and human remains.

8.1 Graves and cemeteries

Graves younger than 60 years fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the Office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning or in some cases the MEC for Housing and Welfare. Authorisation for exhumation and reinterment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. In order to handle and transport human remains the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act) as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the South African Heritage Resource Agency (SAHRA). The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery administrated by a local authority will also require the same authorisation as set out for graves younger than 60 years over and above SAHRA authorisation. If the grave is not situated inside a formal cemetery but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws set by the cemetery authority must be adhered to.

9. ASSESSMENT AND RECOMMENDATIONS

*A locality map is provided in **Annexure A***

No heritage sites were identified within the mining application area. A single cemetery consisting of 15 graves were identified some 60 metres to the east of the eastern boundary of the mining application area. No impact is envisaged on this site.

If at any stage the mining application area is extended and the cemetery is included in the application area, the cemetery needs to be fenced and a buffer of 20 meters be left around the site and adequate access be provided for the family to visit the graves if mining is to progress in the direction of the cemetery.

General

If during mining any possible finds are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find.

10. LIST OF PREPARES

Wouter Fourie, BA (Hon) Archaeology (UP)

11. REFERENCES

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**ANNEXURE A:
Study area
and heritage sites**

