GEM science
(No. 2002/007510/23)

Heritage Impact Assessment for

Mining Right Application on the farm

Welstand 55 IS

Ref. No. MP 30/5/1/2/2/499 MR

Prepared for:
Xivono Mining (Pty) Ltd

Date:
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Authors: Louisa Hutten & Marko Hutten

Prepared by GEM Science cc

t: +27 12 348 7760 | f: +27 86 685 7920 | e: info@gemscience.co.za | w: www.gemscience.co.za | PO Box 32748, Glenstantia, 0010

Executive summary

Xivono Mining (Pty) Ltd is in the process of applying for a mining license to extract coal on the farm Welstand 55 IS close to the town Kriel, Mpumalanga. GEM-Science CC was contracted to review the area and conduct the environmental impact assessment on their behalf. This heritage impact assessment forms part of the total impact assessment of the proposed mining activities.

The heritage assessment was conducted on the 8th and 9th of June 2011. The team consisted of an archaeological field expert and assistant. The aim of the survey was to determine the extent of cultural heritage within the boundaries of the area to be affected by the proposed mining activities.

Various sites of heritage significance were identified during the survey. Sites that were identified ranged from informal cemeteries and farmhouses and its associated structures to an old rubbish pit and an old sandstone built shed. These sites are all from the historical period and the significance of these sites vary from those sites with no significance, to those sites with a high significance, for example the cemeteries.

The proposed mining activities are based on extracting coal by making use of an open cast method. Mining activities will last for 22 years and the total lifespan of the mine will be 30 years. The result of this will be a large scale destruction of the identified heritage sites.

It is recommended that if mining in this area is approved and mining operations are to commence, that large scale social consulting should take place. Family members and the local community must become involved in the identification and decision making regarding individual graves and cemeteries in order to plan the mitigation process if the mining process do commence.

Disclosure

GEM-Science acts as an independent consultant in the Heritage Impact Assessment. All possible care was taken to identify all sites of cultural and archaeological importance during the investigation of the study areas. It is possible that hidden or sub-surface sites could be overlooked during the study. Neither GEM-Science nor its staff will be held liable for such oversights or for costs incurred as a result of such oversights.

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1 Background information on the project

1.1 Introduction

GEM-Science CC, an independent consultant, was contracted by Xivono Mining (Pty) LTD to conduct an Environmental Impact Assessment (EIA) and public participation process for the proposed mining activities on the farm Welstand 55 IS. This Heritage Impact Assessment forms part of the EIA produced for the client.

Xivono Mining (Pty) Ltd is in the process of applying for a mining license to extract coal on the farm Welstand 55 IS. This Heritage Impact Assessment was conducted to determine the extent of the heritage within the boundaries of the proposed mining area and how the proposed activities would impact on the heritage.

Mitigation methods and recommendations could be made as a result of the information gathered from the Mine Works Programme (MWP), field survey and desktop study.

1.2 Aim of the study

- To fulfill in the requirements of the South African Heritage Resources Act (Act nr. 25 of 1999) Section 38.
- To identify and describe sites of archaeological importance that would be affected by proposed development activities.
- To identify and describe sites of cultural heritage that would be affected by proposed development activities.
- To identify and describe the impacts of development activities on the identified sites.
- To evaluate the impacts of development activities on identified sites.
- To make recommendations regarding the conservation of identified sites.
- To recommend mitigation on the affected identified sites.
- To identify and propose management measures.

1.3 Overview of proposed mining activity

The Welstand Colliery mine plan comprises multiple open pit sections with possible later expansion into an underground section (a later amendment will be lodged for the underground workings). Life of Mine is 30 years (22 Years – active production).

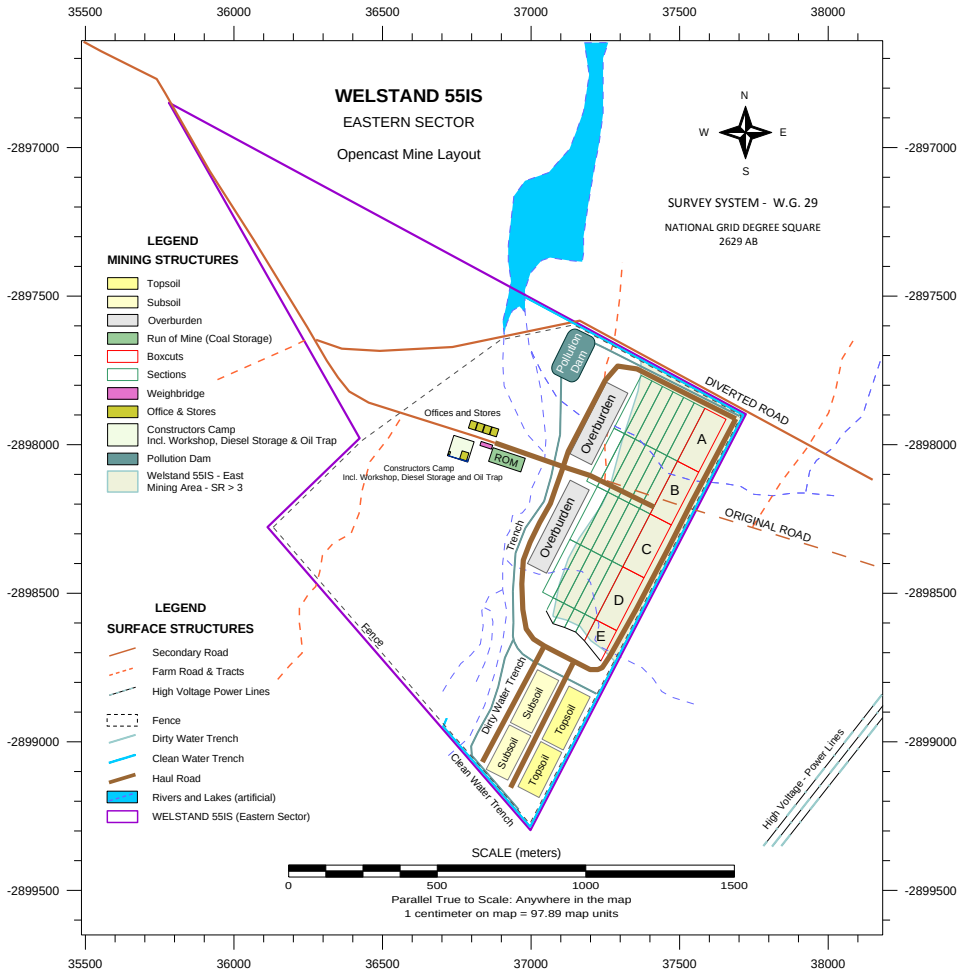

Figure 1. Welstand Colliery mine layout (eastern section)

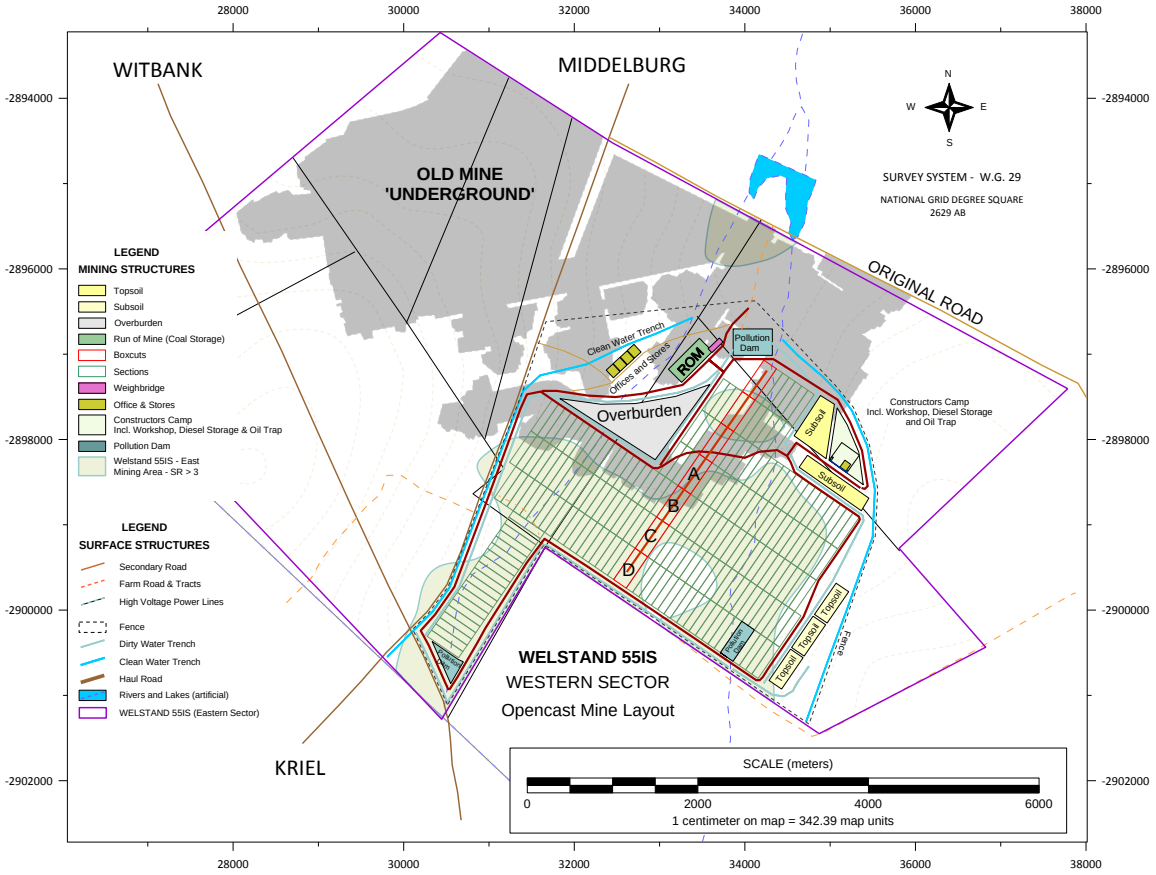

Figure 2. Welstand Colliery mine layout (western section)

1.4 Environmental Approvals and Permits required for mining operations

According to South African Legislation, several permits/authorizations are required for the approval of the proposed mining activities to take place at the site. The Environmental Impact Assessment and Environmental Management Programme will elaborate on the requirements for these approvals, by giving the necessary recommendations for compliance. These permits/authorizations and the relevant authorities are listed in Table 1.

Table 1. Relevant permits/authorizations and relevant

Relevant Legislation
Minerals and Petroleum Resource Development Act, Act 28 of 2002
GNR 386 in Government Gazette No 28753 of 21 April 2006. Activity No 1 (c)
GNR 386 in Government Gazette No 28753 of 21 April 2006. Activity No 1 (n)

GNR 386 in Government Gazette No 28753 of 21 April 2006. Activity No 1 (s)
GNR 386 in Government Gazette No 28753 of 21 April 2006. Activity No 7
GNR 386 in Government Gazette No 28753 of 21 April 2006. Activity No 15
GNR 386 in Government Gazette No 28753 of 21 April 2006. Activity No 25
GNR 387 in Government Gazette No 28753 of 21 April 2006. Activity No 1 (c)
GNR 387 in Government Gazette No 28753 of 21 April 2006. Activity No 1 (g)
GNR 387 in Government Gazette No 28753 of 21 April 2006. Activity No 1 (p)
National Water Act, Act 36 of 1998, Section 21 (g)

1.5 Developer's, consultant's and owner's name and contact details

Project Name	Welstand Colliery	
Mining Right Applicant	Xivono Mining (Pty) LTD	
Contact Person	Mr R. Siweya	
Contact Details	Telephone number:	+27 11 484 6005
	Fax number:	086 551 7811
	Postal address:	P.O. Box 90 349 Bertsham Johannesburg South Africa 2013

Consultant	GEM-Science CC P O Box 32748 Glenstantia, 0010 Tel: 012 348 7760 Fax: 086 684 0141

1.6 Legislative requirements

The legislation, National Heritage Resources Act (Act No. 25 of 1999, section 35) requires that all objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance are protected. This includes, the protection of all the heritage components such as archaeology, shipwrecks, battlefields, graves and structures over 60 years, living heritage, and the collection of oral histories, historical settlements, landscapes, geological sites, paleontological sites and objects (SAHRA 2006).

The developer should take into consideration that the following legislation should be adhered to:

National Environmental Management Act (NEMA) Act 107 of 1998

National Heritage Resources Act (NHRA) Act 25 of 1999

Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002

Development Facilitation Act (DFA) Act 67 of 1995

Sections referring directly to the identification, evaluation and assessment of cultural heritage resources in each Act are the following.

National Environmental Management Act (NEMA) Act 107 of 1998

Basic Environmental Assessment (BEA) – Section (23) (2) (d)

Environmental Scoping Report (ESR) – Section (29) (1) (d)

Environmental Impacts Assessment (EIA) – Section (32) (2) (d)

Environmental Management Plan (EMP) – Section (34) (b)

National Heritage Resources Act (NHRA) Act 25 of 1999

Protection of Heritage resources – Sections 34 to 36; and

Heritage Resources Management – Section 38

Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002

Section 39(3)

Development Facilitation Act (DFA) Act 67 of 1995

The GNR.1 of 7 January 2000: Regulations and rules in terms of the Development Facilitation Act, 1995. Section 31

2 BACKGOUND TO THE ARCHAEOLOGICAL HISTORY

2.1 Terminology

The following terminology is used when referring to cultural, historic and archaeological heritage:

Stone Age: The Stone Age began with the appearance of early humans. The Stone Age people were hunter-gatherers. Stone tools and rock art are found throughout South Africa. The Stone Age can be divided into the Early Stone Age (ESA) (2 000 000 – 150 000 Before Present); the Middle Stone Age (MSA) (150 000 – 30 000 BP) and the Late Stone Age (LSA) (30 000 until ca. AD 200).

Iron Age: This period covers the last 2000 years. Farming communities moved down from the eastern parts of Africa into the southern parts of Africa. These people settled permanently, practised agriculture and had domesticated animals. They introduced metal and mining to Southern Africa.

Historical period: This period falls into the last 300 years with the arrival of white settlers on the continent. These settlers moved into the interior of southern Africa to among other settle, farm and mine.

A Heritage Impact Assessment (HIA) is not limited to artefacts, historical buildings and graves; it is far more encompassing and includes intangible and invisible resources such as places, oral traditions and rituals. A heritage resource can be described as any place or object of cultural significance i.e. aesthetic, architectural, historic, scientific, social, spiritual, linguistic or technological value or significance.

2.2 Literature review

Various San rock art have been identified in the Carolina, Badplaas and Chrissiesmeer area, especially along rivers and rocky outcrops (Bergh 1998). This can be because of the easy access to water sources in the area. Mason (1962) refers to a number of settlements during the Prehistory of the Transvaal, whilst Maggs (1979) also comments on the Iron Age of the southern Highveld. In Bergh (1998) and Malan & Van Niekerk (1955) there is a referral to a Late Stone Age site Groenvlei close to Carolina. This site is one of a few in the area that dates to the past 2500 years and is associated with pottery and micro-lithic tools of the Late Stone Age hunters and herders (Korsman & Van der Ryst). Some Late Iron Age sites are found in the Kriel, Hendrina, Badplaas area and north east of Carolina and towards the south west area close to Chrissiesmeer (Van der Ryst 1998; Teichert 2011).

A number of Anglo Boer War skirmishes occurred in the greater area; however there is no mention of specific skirmishes of battles taking place in the proposed mining application area.

2.3 Reference used

A number of HIA's have been conducted in the southern part of Mpumalanga; the SAHRA database (2009) was used to find these assessments.

3 Description of the property of affected environment

3.1 Location of surveyed area

The proposed Welstand Colliery is situated approximately 14 km to the north-east of the town Kriel, 41 km south of Witbank (along the R547 or R544).

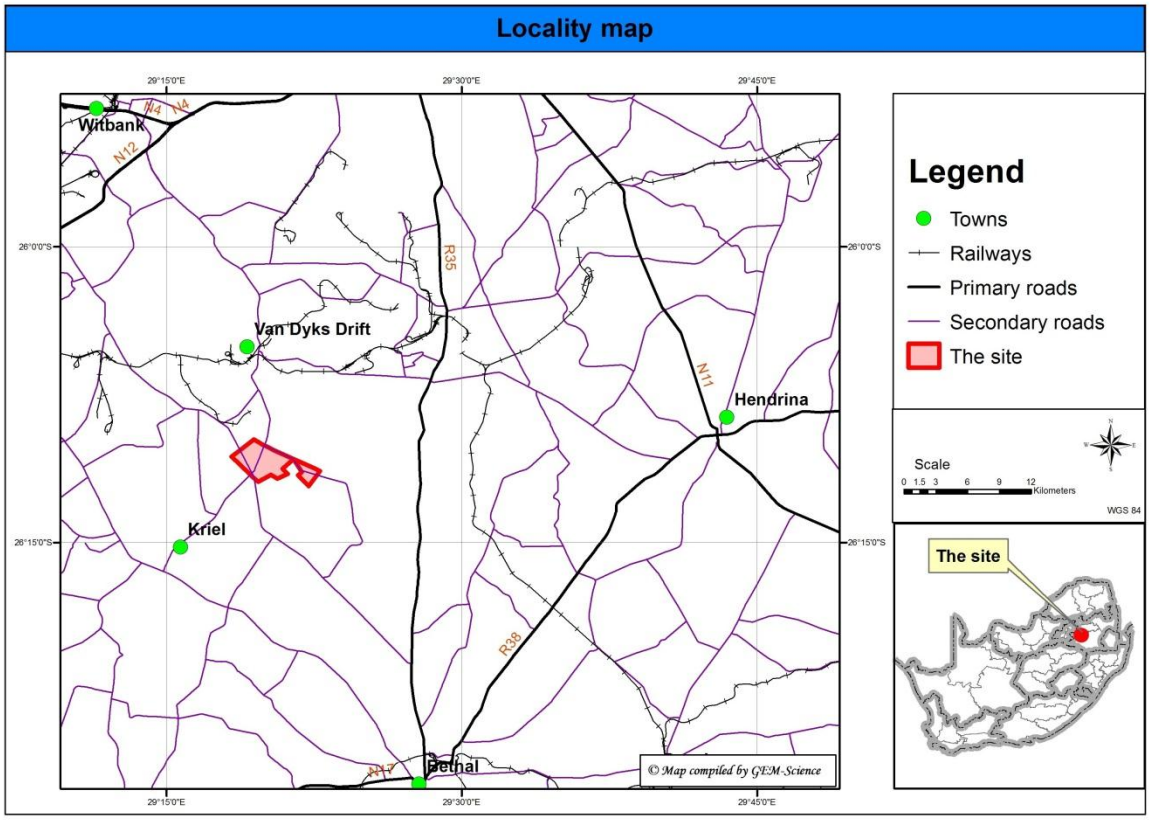

Figure 3. Location of the proposed mining right area

The farm Welstand 55 IS is located under Emalahleni Municipality in the Kriel district. Two regional roads, the R547 and R544, transect the north-western portions of the proposed mining right application area.

The proposed area for the mining operation is primarily utilized for agricultural activities such as maize production and grazing. The remaining area comprises of grassland, wetlands and small ridges/outcrops. The proposed mining site falls within the Grassland Biome and are classified as Eastern Highveld Grassland according to Mucina & Rutherford (2006).

There are farm roads and housing structures found on the site. Various primary and secondary roads, telephone lines and power lines cut through the site.

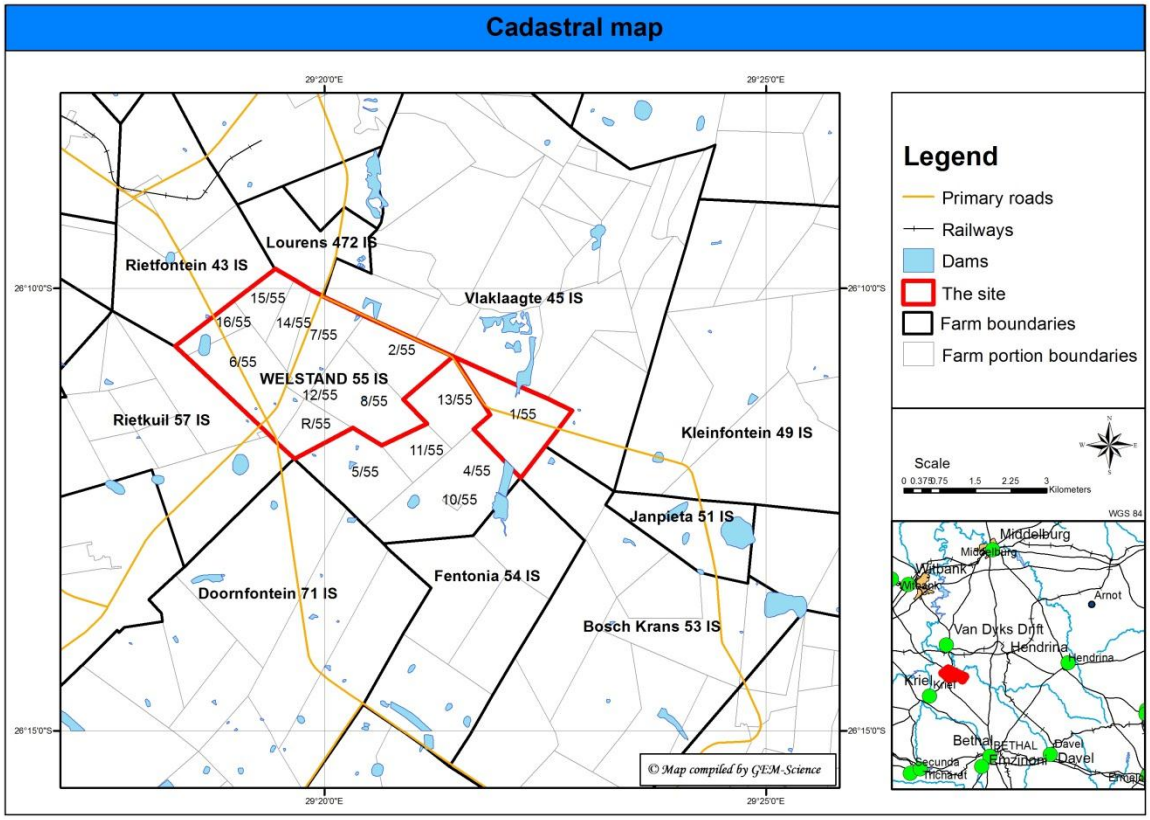

Figure 4. Cadastral map of the proposed mining area

3.2 Methodology

After the necessary permissions were obtained, a heritage assessment was conducted on the 8th and 9th of June 2011. The team consisted of an archaeological field expert and assistant. The aim of the survey was to determine the extent of archaeological and cultural heritage within the boundaries of the area to be affected by the proposed mining activities.

The team was initially guided to sites of heritage importance by Mr. Nico Swart, the current landowner. Other sites were pointed out by Mr. Tony Mahlangu, the son of Elias Mahlangu who is the areas traditional leader or headman. Tony is also the Speaker of the Traditional Leadership at the local municipality at Kriel. Mr. Zoon Mahlangu and Mr. Moses Masina and other farm labourers joined the investigating team and were very helpful in assisting and

pointing out various graves. The majority of the surveyed area is covered by open ploughed agricultural land; the survey was therefore conducted on foot and by vehicle.

A GPS was used during the survey process to log all the relevant sites and finds. Photographs of all the relevant sites were taken. No sampling was done during the survey. The sites were plotted using a Global Positioning System (GPS) (Garmin E-Trek Legend) and numbered accordingly.

Inclement weather and muddy roads initially impacted on the accessibility of the study area. The survey was therefore interrupted to be concluded the next day. Once the survey commenced no physical or other impediments had an impact on the survey. Data was acquired by using different databases, journal articles, HIA reports, interviews, maps and aerial photographs.

4 Significance and Recommended Rating

This section deals with the significance and recommended rating of heritage sites. The following criteria were used to determine the significance of heritage sites.

- The unique nature of a site
- The amount/depth of the archaeological deposit and the range of features (stone walls, activity areas etc.)
- The wider historic, archaeological and geographic context of the site
- The preservation condition and integrity of the site
- The potential to answer present research questions

4.1 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.

Low or No Significance:

The constraint is absent, but in instances where present, poses a negligible significance on the proposed development in terms of heritage concerns.

Moderate Significance:

The constraint is present and poses a notable but not major significance on the proposed development in terms of heritage concerns. If the constraint cannot be avoided, appropriate mitigation measures must be implemented to minimize the significance.

High Significance:

The constraint is present and poses a high significance on the proposed development in terms of heritage concerns. It is recommended that the constraint be avoided or appropriate mitigation measures must be implemented to minimize the significance.

4.2 Field Ratings

The following field ratings were used describing the significant archaeological heritage value of each site in term of the legislation NHRA, section 3 (3).

Table 2. Field rating

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	Mitigation (Part of site

		Significance	should be retained)
Generally Protected A (GP.A)	Grade 4A	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	Grade 4B	Medium Significance	Recording before destruction
Generally Protected C (GP.C)	Grade 4C	Low Significance	Destruction

4.3 Impact rating

Very High

These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or cultural) environment, and usually result in severe or very severe effects, or beneficial or very beneficial effects.

Example: The loss of a species would be viewed by informed society as being of *Very High* significance.

Example: The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with a *Very High* significance.

High

These impacts will usually result in long term effects on the social and /or natural environment. Impacts rated as *High* will need to be considered by society as constituting an important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.

Example: The loss of a diverse vegetation type, which is fairly common elsewhere, would have a significance rating of *High* over the long term, as the area could be rehabilitated.

Example: The change to soil conditions will impact the natural system, and the impact on affected parties (e.g. farmers) would be high.

Moderate

These impacts will usually result in medium- to long-term effects on the social and/or natural environment. Impacts rated as *Moderate* will need to be considered by the public or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are real, but not substantial.

Example: The loss of a sparse, open vegetation type of low diversity may be regarded as *Moderately* significant.

Example: The provision of a clinic in a rural area would result in a benefit of *Moderate significance.*

Low

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as *Low* will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.

Example: The temporary changes in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels.

Example: The increased earning potential of people employed as a result of a development would only result in benefits of *Low* significance to people living some distance away.

No Significance

There are no primary or secondary effects at all that are important to scientists or the public.

Example: A change to the geology of a certain formation may be regarded as severe from a geological perspective, but is of *No Significance* in the overall context.

4.4 Certainty of Prediction

DEFINITE: More than 90% sure of a particular fact. Substantial supportive data exist to verify the assessment.

PROBABLE: Over 70% sure of a particular fact, or of the likelihood of an impact occurring.

POSSIBLE: Only over 40% sure of a particular fact, or of the likelihood of an impact occurring.

UNSURE: Less than 40% sure of a particular fact, or of the likelihood of an impact occurring.

4.5 Duration of impact

SHORT TERM: 0 – 5 years

MEDIUM: 6 – 20 years

LONG TERM: more than 20 years

DEMOLISHED: site will be demolished or is already demolished

4.6 Mitigation measures

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be classified 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 required; and

D – Preserve site

5 Description of sites identified, artefacts, other finds and features and burials grounds and graves

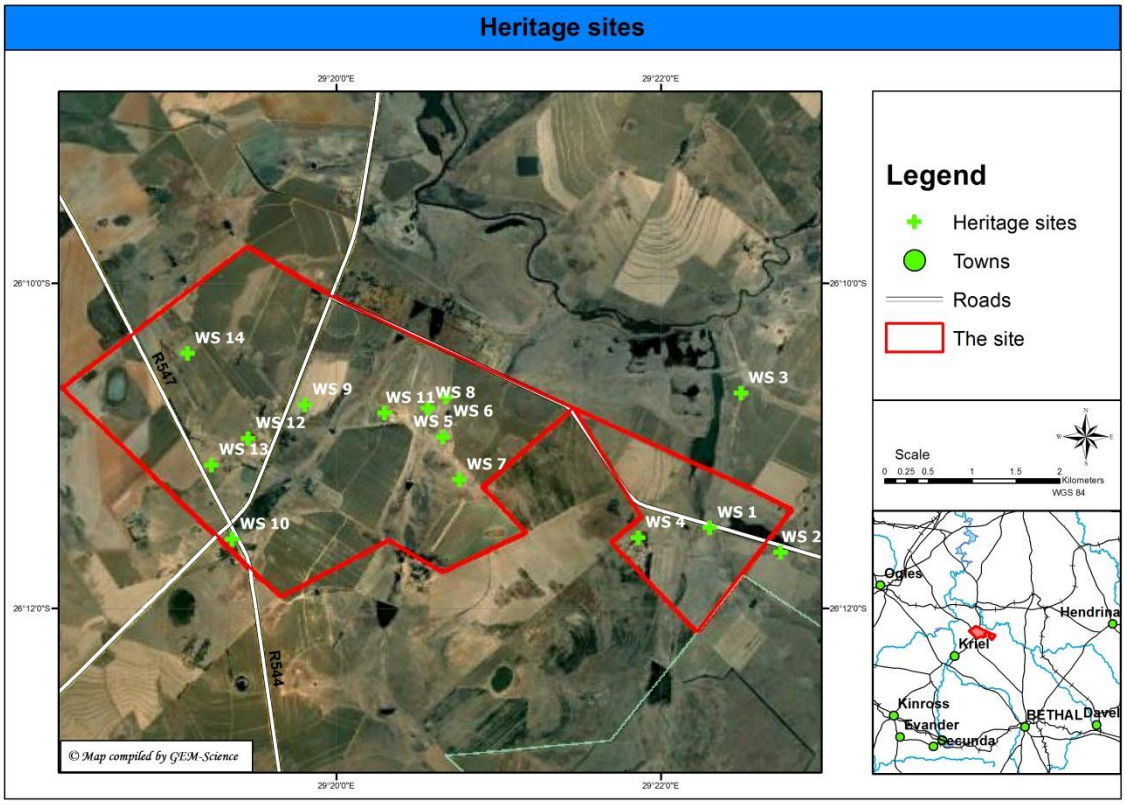

Figure 5. Locality of archaeological sites identified

5.1 Site WS 1

A small, informal cemetery with approximately 33 graves was identified here. The graves were placed along a fence and on the southern side of a gravel road. They were situated between the road and a ploughed field. The graves were placed in two unequal lines next to each other and 31 of them were orientated from north to south and only two graves were orientated from west to east. Two of the graves had rectangular shaped cement outlines as dressings with cement headstones. Some of the graves only had cemented headstones with informal mounds of packed rocks and soil as dressings. Some of these headstones were inscribed with names and dates which indicated that the burials occurred over an extended time from the 1960's up to recent times. The rest of the graves had informal dressings which consisted of elongated oval shaped mounds of packed rocks and soil. Only a few of the graves were recently cleared from vegetation, but the rest of them were overgrown with

dense grasses and vegetation. The dense vegetation made the identification of the exact number of graves difficult and the number of graves was estimated to be 33.

These graves belonged to the Mahlangu family. A relative, Mr. Tony Mahlangu, pointed out the graves to the investigating team. Tony is the son of Elias Mahlangu who is the area's traditional leader or headman. Tony is also the Speaker of the Traditional Leadership at the local municipality at Kriel.

Site size: Approximately 30m x 10m.

Field Rating: Generally Protected A (4A)

Heritage Significance: High Significance

Impact: Very High

Certainty: Definite

Duration: Demolished

Mitigation: C – Preserve site, or data collection and mapping required

Figure 6. Site WS 1 A small informal cemetery

Figure 7. Site WS 1 A small informal cemetery

Figure 8. Site WS 1 A small informal cemetery

Figure 9. Site WS 1 A grave in the small informal cemetery

5.2 Site WS 2

Another informal cemetery with 17 graves was identified at this location. The cemetery was fenced and was also situated on the southern side of a gravel road. The cemetery was situated outside of the proposed mining area. The graves were placed in five unequal lines next to each other and all were orientated from west to east. Seven of the graves had formal granite and cement dressings and headstones and six more graves had brick and cement dressings and headstones. The rest of the graves had informal mounds of rock and soil as dressings. The cemetery seemed to be well maintained as the grass cover on the graves was only from the last season.

These graves also belonged to the Mahlangu family. They expressed their willingness for the graves to be relocated, but would like to have all the graves of the family in that area to be relocated together.

Site size: Approximately 25m x 25m.

Field Rating: Generally Protected A (4A)

Heritage Significance: High Significance

Impact: Very High

Certainty: Definite

Duration: Demolished

Mitigation: C – Preserve site, or data collection and mapping required

Figure 10. Site WS 2 A fenced small informal cemetery

Figure 11. Site WS 2 Graves in the small informal cemetery

5.3 Site WS 3

Another informal cemetery with 25 graves was identified at this location. The cemetery was situated on the edge of a ploughed field. The cemetery was also situated outside of the proposed mining area. The graves were placed in four unequal lines next to each other and

all were orientated from west to east. One grave had formal granite and cement dressing and headstone and another eleven more graves had brick and cement dressings and headstones. The rest of the graves had informal mounds of rock and soil as dressings. The cemetery seemed to be recently maintained as the grass cover on the graves was in the process of being removed.

These graves also belonged to the Mahlangu family. They expressed their willingness for the graves to be relocated, but would like to have all the graves of the family in that area to be relocated together.

Site size: Approximately 20m x 30m.

Field Rating: Generally Protected A (4A)

Heritage Significance: High Significance

Impact: Very High

Certainty: Definite

Duration: Demolished

Mitigation: C – Preserve site, or data collection and mapping required

Figure 12. Site WS 3 A small informal cemetery

Figure 13. Site WS 3 A small informal cemetery

5.4 Site WS 4

An old sandstone built shed was identified at this location. The shed was situated at the entrance gate to a newly developed mining area. The shed measured approximately 12m x 8m and had a corrugated iron pitched roof. Parts of the shed were constructed with dressed sandstone blocks and cement and another part of the shed was constructed with cement

bricks. A section of this cement brick wall was clad with sandstone slabs. The word 'moray' was inscribed on one of these slabs. The shed had a large double door on the southern side and had no windows. A corrugated iron roof was attached to the western side of the structure.

Site size: Approximately 20m x 10m.

Field Rating:	Generally Protected B (4B)
Heritage Significance:	Medium Significance
Impact:	Very High
Certainty:	Definite
Duration:	Demolished
Mitigation:	B – Mapping of the site and controlled sampling required

Figure 14. Site WS 4 An old sandstone built shed

Figure 15. Site WS 4 An old sandstone built shed

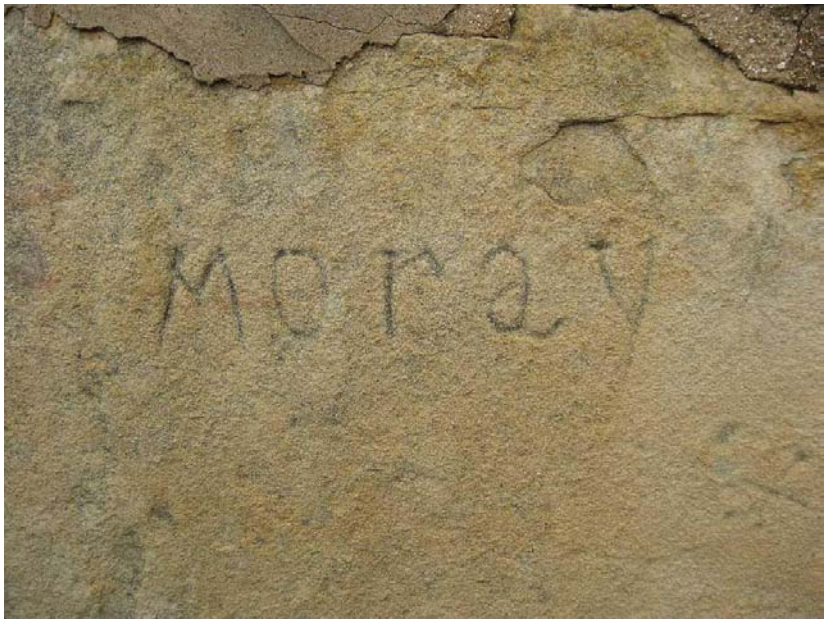

Figure 16. Site WS 4 The word "Moray" engraved on the wall of an old sandstone built shed

Figure 17. Site WS 4 An old sandstone built shed showing different building material

5.5 Site WS 5

A cluster of three graves was identified at this location. The graves were situated in an open field and were crudely fenced off. Two of the graves had formal granite and cement dressings and headstones and were placed next to each other. A third grave with a brick and cement dressing and headstone was placed in front of the two formal graves. All three graves were orientated from west to east and all three of them were also damaged to various extents. The graves dated to the 1920's and an informant, Mr. Zoon Mahlangu, said that the relevant family was not known. The graves were not maintained and were overgrown with grass and other vegetation.

Site size: Approximately 10m x 6m.

Field Rating: Generally Protected A (4A)

Heritage Significance: High Significance

Impact: Very High

Certainty: Definite

Duration: Demolished

Mitigation: C – Preserve site, or data collection and mapping required

Figure 18. Site WS 5 A cluster of three graves

Figure 19. Site WS 5 A cluster of three graves

5.6 Site WS 6

An old rubbish pit was identified at this location. The pit was brick-built and was an elongated oval shaped structure which measured approximately 15m in length and 4m wide. The pit was approximately 2,5m deep and had a brick wall which was approximately 1,2m high from the ground surface. According to an informant, Mr. Zoon Mahlangu, the pit was constructed to deal with domestic and other rubbish from the old farm. Rubbish was burnt in the pit. The pit could be associated with an old farmhouse (site WS 8) which was situated approximately 400m further to the south.

Site size: Approximately 20m x 5m.

Field Rating:	Low Significance
Heritage Significance:	Low Significance
Impact:	Very High
Certainty:	Definite
Duration:	Demolished
Mitigation:	A – No further action necessary

Figure 20. Site WS 6 An old rubbish pit

Figure 21. Site WS 6 An old rubbish pit

5.7 Site WS 7

Another informal cemetery with 27 graves was identified at this location. The cemetery was not fenced and was situated in an open field. The graves were placed in 4 unequal lines next to each other and all the graves except for one were orientated from west to east. One grave had formal granite and cement dressing and headstone which were damaged. This

grave was orientated from north to south. Six more graves had brick and cement dressings and headstones and the rest of the graves had informal mounds of rock and soil as dressings. The cemetery was not maintained and the graves were overgrown with grass and other vegetation.

Site size: Approximately 25m x 25m.

Field Rating: Generally Protected A (4A)

Heritage Significance: High Significance

Impact: Very High

Certainty: Definite

Duration: Demolished

Mitigation: C – Preserve site, or data collection and mapping required

Figure 22. Site WS 7 A small informal cemetery

Figure 23. Site WS 7 A grave in the small informal cemetery

Figure 24. Site WS 7 Graves in the small informal cemetery

5.8 Site WS 8

An old farm house and its associated structures were identified at this location. The farm house was in a neglected state, but was still occupied by Mr. Zoon Mahlangu and his extended family. The house was brick-built and was plastered and painted. It had metal

framed windows and a corrugated iron pitched roof. Plumbing and electricity systems were added later on to the house and indicated the existence of this house before running water and electricity were part of everyday life. Mr. Zoon Mahlangu, who was about 70 years old and grew up on this farm, also indicated that the house was there when he was born. A dilapidated shed and kraal were situated approximately 100m to the east of the house.

Site size: Approximately 50m x 50m.

Field Rating:	Generally Protected B (4B)
Heritage Significance:	Medium Significance
Impact:	Very High
Certainty:	Definite
Duration:	Demolished
Mitigation:	B – Mapping of the site and controlled sampling required

Figure 25. Site WS 8 An old farmhouse and associated structures

Figure 26. Site WS 8 Associated structures with the old farm house

Figure 27. Site WS 8 An old farm house

5.9 Site WS 9

A large informal cemetery with 100+ graves was identified at this location. The cemetery was not fenced was situated in the middle of a ploughed field. Some of the graves were orientated from north to south, but the majority of the graves were orientated from west to east. Some of the graves had formal granite and cement dressings and headstones and some of the graves had cemented dressings or only cement headstones. A large number of graves also had informal mounds of packed rocks and soil as dressings. A number of graves were cleared from grass and other vegetation recently, but most of the graves were not maintained and were overgrown with grass. The cemetery was used by the local farm workers from the surrounding farms.

Site size: Approximately 80m x 40m.

Field Rating: Generally Protected A (4A)

Heritage Significance: High Significance

Impact: Very High

Certainty: Definite

Duration: Demolished

Mitigation: C – Preserve site, or data collection and mapping required

Figure 28. Site WS 9 A large informal cemetery

Figure 29. Site WS 9 A grave with formal dressing in a large informal cemetery

Figure 30. Site WS 9 Graves in the large informal cemetery

5.10 Site WS 10

Another large informal cemetery with 100+ graves was identified at this location. The cemetery was not fenced and was situated on the south-western corner of the junction of the R544 and R547. Some of the graves were orientated from north to south, but the

majority of the graves were orientated from west to east. Some of the graves had formal granite and cement dressings and headstones and some of the graves had cemented dressings or only cement headstones. A large number of graves also had informal mounds of packed rocks and soil as dressings. Most of the graves were cleared from grass and other vegetation recently, and it seemed as if the cemetery and graves were maintained frequently. This cemetery was also used by the local farm workers from the surrounding farms.

Site size: Approximately 100m x 50m.

Field Rating: Generally Protected A (4A)

Heritage Significance: High Significance

Impact: Very High

Certainty: Definite

Duration: Demolished

Mitigation: C – Preserve site, or data collection and mapping required

Figure 31. Site WS 10 A large informal cemetery

Figure 32. Site WS 10 Graves in the large informal cemetery

Figure 33. Site WS 10 Graves with packed rocks in large informal cemetery

Figure 34. Site WS 10 Graves with formal granite dressing in large informal cemetery

5.11 Site WS 11

An old farm house and its associated structures were identified at this location. The farm house was occupied until recently, but was empty now and was being maintained by some farm workers who were still staying in the adjacent farm labourer quarters. The house was

brick-built and was plastered and painted. It had metal framed windows and had a corrugated iron pitched roof. It was not possible to determine the age of the structure, but the use of cement and bricks in the construction, the presence of internal plumbing and electricity systems indicated the relative recent origins of this structure.

An old sandstone-built shed was situated at the entrance gate to the farm house. The shed had a corrugated iron pitched roof and wooden framed windows. It also had a large entrance with corrugated iron doors. A section of the structure was dry-built with dressed sandstone and in other sections cement was used. A later addition with bricks and cement was added on to the western side of the original shed.

The farm labourer quarters, a large shed and a small administration/office building were more recent additions to the farm house complex.

Site size: Approximately 150m x 80m.

Field Rating:	Generally Protected B (4B)
Heritage Significance:	Medium Significance
Impact:	Very High
Certainty:	Definite
Duration:	Demolished
Mitigation:	B – Mapping of the site and controlled sampling required

Figure 35. Site WS 11 An old farm house and associated structures

Figure 36. Site WS 11 An old sandstone built shed associated with the old farm house

Figure 37. Site WS 11 An old sandstone built shed associated with old farm house

Figure 38. Site WS 11 Farm labourers quarters associated with old farm house

Figure 39. Site WS 11 A large shed associated with old farm house

Figure 40. Site WS 11 Administration office associated with old farm house

5.12 Site WS 12

A small family cemetery with 42 graves was identified at this location. The cemetery was fenced and was situated approximately 400m to the north of the farm stead. Most of the graves belonged to the Swart family. Mr. Nico Swart, the current landowner, pointed out

the cemetery to the investigating team. The graves were placed in five unequal lines and all of them were orientated from west to east. Most of the graves had formal granite and cement dressings and headstones, but 15 of the graves had informal oval shaped mounds of packed rock and soil as dressings. The cemetery was used by the Swart family (and others) throughout the previous century (1907 – 1982). The graves and cemetery were well maintained and according to Mr. Swart were cleared of vegetation annually.

Site size: Approximately 30m x 30m.

Field Rating: Generally Protected A (4A)

Heritage Significance: High Significance

Impact: Very High

Certainty: Definite

Duration: Demolished

Mitigation: C – Preserve site, or data collection and mapping required

Figure 41. Site WS 12 A small family cemetery

Figure 42. Site WS 12 Graves with packed mounds of rock in small family cemetery

Figure 43. Site WS 12 A small family cemetery

Figure 44. Site WS 12 Graves in the small family cemetery

5.13 Site WS 13

A small, informal cemetery with nine graves was identified here. Five of the graves were placed next to each other along a line of trees next to the entrance road to the farm. The other four graves were placed next to a fence and next to each other in front of the first five graves. The first five graves were orientated from west to east and two of these graves had brick and cement dressings and headstones. The other three graves had informal mounds of packed rock and soil as dressing. The last four graves were orientated from north to south and they also had informal mounds of packed rock and soil as dressings. These were all older graves and belonged to the families of the farm workers. These families later started to use the cemetery identified at site WS 9 to bury their deceased. The graves were well maintained.

Site size: Approximately 20m x 10m.

Field Rating: Generally Protected A (4A)

Heritage Significance: High Significance

Impact: Very High

Certainty: Definite

Duration: Demolished

Mitigation: C – Preserve site, or data collection and mapping required

Figure 45. Site WS 13 A small informal cemetery

Figure 46. Site WS 13 Graves in the small informal cemetery

Figure 47. Site WS 13 Graves in the small informal cemetery

5.14 Site WS 14

A small, informal cemetery with an unknown number of graves was identified at this location. The cemetery was not fenced and was situated in the middle of a ploughed field. The cemetery was overgrown with grass and dense vegetation which made identification of the graves nearly impossible. The cemetery was pointed out by an informant, Mr. Moses Masina, who was working on this farm for over thirty years. The graves were also damaged by the burrowing activities of porcupines which dug huge burrows and not only disturbed the surface dressings of the graves, but most probably disturbed the remains as well. These burrows and the resulted mounds of disturbed soil scattered around made the identification of the graves difficult. The area indicated by Mr. Masina containing the graves measured approximately 30m x 30m. Mr. Masina also mentioned that the graves and the relevant families were not known. This cemetery and graves were disturbed and damaged and not maintained.

Site size: Approximately 30m x 30m.

Field Rating: Generally Protected A (4A)

Heritage Significance: High Significance

Impact: Very High

Certainty: Definite

Duration: Demolished

Mitigation: C – Preserve site, or data collection and mapping required

Figure 48. Site WS 14 A small informal cemetery showing the burrowing activities of porcupines

Figure 49. Site WS 14 Porcupine burrows in the small informal cemetery

6 Recommendations

The following steps and measures are recommended regarding the investigated area:

6.1 Cemeteries, graves and burials (Site WS 1, Site WS 5, Site WS 7, Site WS 9, Site WS 10, Site WS 12, Site WS 13 and Site WS 14)

The identified graves fell within the area intended for development, and the developer should take note of the location and recommendations regarding these graves.

Graves older than 60 years (or presumed older) and not in a municipal graveyard are protected in terms of the National Heritage Act (No. 25 of 1999). Human remains (graves) younger than 60 years may only be handled by a registered undertaker or institution declared under the Human Tissues Act.

The developer is required to follow the process described in the legislation (section 36 and its associated regulations) if he wants to develop in an area where there are graves older than 60 years.

If the developer decides to plan the development around the graves and leave them undisturbed, adequate arrangements should be made to protect the graves from the impact of the development. These should include the following:

It is important to understand that the identified graves could have significant heritage value to the relevant families (if identified) and should therefore be preserved.

It is recommended that the identified graves should be clearly marked with danger tape during the entire duration of the project and especially during earth-moving/bush clearing activities and a 10m - 20m buffer zone must be allowed around the graves.

It is advisable to fence the graves to prevent future mistakes.

The relevant families should be identified (if possible) and should be informed about the proposed activities which could possibly affect their graves.

The proposed earth-moving/bush clearing activities should be altered and should be planned around these graves in order to protect them from any damage or other negative impacts.

Bush clearing crews should be made aware of the graves in order that the graves will not be damaged during the earth-moving activities.

The planning team should ensure that access to the graves is not limited in any way. A small management plan should be set up to ensure the future safety, access and maintenance of the graves next to the proposed development.

If the above recommendations cannot be adhered to, further steps and measures should be taken to move the graves and relocate them to one of the official graveyards in the area. This should only be done as last resort if no other options deem to be possible. The following process is then required:

A process of consultation with the affected families and communities, if identified, should then be initiated to start the relocation of the graves.

Various applications to various Departments should be put into motion to obtain the necessary permissions and permits to perform the relocation of the graves. These applications and permits are required by law.

Only after all the required permissions and permits have been obtained, can the relocation of the graves continue as performed by professionals.

It is important for the developer to take note that a large number of these graves belonged to the Mahlangu family. They expressed their willingness for the graves to be relocated, but would like to have <u>all</u> the graves of the family in that area to be relocated together.

6.2 Cemeteries, graves and burials (Site WS 2, Site WS 3)

The identified graves fall outside the area intended for development, and the developer should take note of the location and recommendations regarding these graves.

Graves older than 60 years (or presumed older) and not in a municipal graveyard are protected in terms of the National Heritage Act (No. 25 of 1999). Human remains (graves) younger than 60 years may only be handled by a registered undertaker or institution declared under the Human Tissues Act.

The developer is required to follow the process described in the legislation (section 36 and its associated regulations) if he wants to develop in an area where there are graves older than 60 years.

If the developer decides to plan the development around the graves and leave them undisturbed, adequate arrangements should be made to protect the graves from the impact of the development. These should include the following:

- It is important to understand that the identified graves could have significant heritage value to the relevant families (if identified) and should therefore be preserved.

- It is recommended that the identified graves should be clearly marked with danger tape during the entire duration of the project and especially during earth-moving/bush clearing activities and a 10m - 20m buffer zone must be allowed around the graves.

- It is advisable to fence the graves to prevent future mistakes.

- The relevant families should be identified (if possible) and should be informed about the proposed activities which could possibly affect their graves.

- The proposed earth-moving/bush clearing activities should be altered and should be planned around these graves in order to protect them from any damage or other negative impacts.

- Bush clearing crews should be made aware of the graves in order that the graves will not be damaged during the earth-moving activities.

- The planning team should ensure that access to the graves is not limited in any way. A small management plan should be set up to ensure the future safety, access and maintenance of the graves next to the proposed development.

If the above recommendations cannot be adhered to, further steps and measures should be taken to move the graves and relocate them to one of the official graveyards in the area. This should only be done as last resort if no other options deem to be possible. The following process is then required:

- A process of consultation with the affected families and communities, if identified, should then be initiated to start the relocation of the graves.

- Various applications to various Departments should be put into motion to obtain the necessary permissions and permits to perform the relocation of the graves. These applications and permits are required by law.

- Only after all the required permissions and permits have been obtained, can the relocation of the graves continue as performed by professionals.

It is important for the developer to take note that a large number of these graves belonged to the Mahlangu family. They expressed their willingness for the graves to be relocated, but would like to have <u>all</u> the graves of the family in that area to be relocated together.

6.3 Farmhouses and associated structures, buildings and other structures. (Site WS 4, Site WS 6, Site WS 8 and Site WS 11)

It is presently not certain how old these buildings are. If the specific site is older than 60 years it falls under the protection of the National Heritage Resources Act. All structures older than 60 years are protected by Section 34(1) of National Heritage Resources Act and may not be demolished or altered without a permit from the relevant heritage authority. Should the building be younger than 60 years, no heritage legislation applies.

The sites must be assessed by an architectural historian. Provisionally, it can be stated that although there is a chance for the sites WS 4 and WS 8 to be older than 60 years, its condition is reasonably poor. The condition of site WS 11, the farmhouse and associated buildings, is relatively good and the buildings are still being maintained.

In terms of the criteria contained in the National Heritage Resources Act (25 of 1999), the site's significance grading was based on its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage.

Should the decision be made for the mining development footprint to be placed within a 250m buffer area around the site, the following mitigation measures would be required:

The site must be assessed by an architectural historian and any recommendations made should be adhered to. It must be noted here that there is a chance for the heritage specialist to conclude that the site is younger than 60 years and as a result does not have any significance.

Should the identified structure proof to be younger than 60 years and are therefore not protected under Section 34(1) of the National Heritage Resources Act (Act no. 25 of 1999). No further work or any other mitigation measures are required as these structures have little or no heritage value and significance.

Should the identified structure proof to be 60 years and older and is therefore protected under Section 34(1) of the National Heritage Resources Act (Act no. 25 of 1999): "No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority."

A permit for the destruction and/or alteration of the structure is required. A report and detailed documentation of the structure would need to accompany the application for such a permit. It is therefore recommended that a specialist, an architectural historian (or similar qualified person), should document the structure and compile relevant reports during a second phase of investigation.

The compiled reports and documentations should accompany any applications for destruction and/or alteration of the structure. The heritage specialist and/or architectural historian can assist the developer in the application of such a permit.

6.4 Loss of as yet unidentified archaeological and cultural heritage

Chance find procedures should be developed prior to construction and should be implemented in the event that chance finds are discovered during construction or operations.

Chance find procedures should include the following:

Employees and contractors should be notified that archaeological sites might be exposed during the mining activities.

Should any heritage artefacts and sites be exposed during excavation, work in the area where the artefacts and sites were discovered shall cease immediately and the relevant authorities shall be notified as soon as possible.

All discoveries shall be reported immediately to a museum, preferably one at which an archaeologist is available, so that an investigation and evaluation of the finds can be made. Acting on advice from these specialists, the relevant authorities will determine the necessary actions to be taken.

Under no circumstances shall any artefacts and sites be removed, destroyed or interfered with by anyone on the site.

Contractors and workers shall be advised of the penalties associated with the unlawful removal and destruction of cultural, historical, archaeological or paleontological artefacts and sites, as set out in NHRA (Act 25 of 1999), Section 51(1).

7 Summary of findings

Table 3. Summary of findings

Identified sites	Field rating	Heritage Significance	Impact	Certainty	Duration	Mitigation Measures
Small informal cemeteries (Sites: WS 1, WS 7, WS 12, WS 13, WS 14), large informal cemeteries (Sites: WS 9,	Generally protected A (4A)	High significance	Very high	Definite	Demolished	C – Preserve site, or data collection and mapping required. The identified graves fall within the area intended for development, and the developer should take note of the location and recommendations regarding these graves. Graves older than 60 years (or presumed older) and not in a municipal graveyard are

WS 10), cluster of graves (Site 5)						protected in terms of the National Heritage Act (No. 25 of 1999). Human remains (graves) younger than 60 years may only be handled by a registered undertaker or institution declared under the Human Tissues Act. The developer is required to follow the process described in the legislation (section 36 and its associated regulations) if he wants to develop in an area where there are graves older than 60 years. If the developer decides to plan the development around the graves and leave them undisturbed, adequate arrangements should be made to protect the graves from the impact of the development. These should include the following: ▪ It is important to understand that the identified graves could have significant heritage value to the relevant families (if identified) and should therefore be preserved. ▪ It is recommended that the identified graves should be clearly marked with danger tape during the entire duration of the project and especially during earth-moving/bush clearing activities and a 10m - 20m buffer zone must be allowed around the graves. ▪ It is advisable to fence the graves to prevent future mistakes. ▪ The relevant families should be identified (if possible) and should be informed about the proposed activities which could possibly affect their graves. ▪ The proposed earth-moving/bush clearing activities should be altered and should be planned around these graves in order to protect them from any damage or other negative impacts. ▪ Bush clearing crews should be made aware of the graves in order that the graves will not be damaged during the earth-moving activities. ▪ The planning team should ensure that access to the graves is not limited in any way.

						A small management plan should be set up to ensure the future safety, access and maintenance of the graves next to the proposed development. If the above recommendations cannot be adhered to, further steps and measures should be taken to move the graves and relocate them to one of the official graveyards in the area. This should only be done as last resort if no other options deem to be possible. The following process is then required: ▪ A process of consultation with the affected families and communities, if identified, should then be initiated to start the relocation of the graves. ▪ Various applications to various Departments should be put into motion to obtain the necessary permissions and permits to perform the relocation of the graves. These applications and permits are required by law. Only after all the required permissions and permits have been obtained, can the relocation of the graves continue as performed by professionals.
Small informal cemeteries (Sites: WS 2, WS 3)	Generally protected A (4A)	High significance	Very high	Definite	Demolished	C – Preserve site, or data collection and mapping required. The identified graves fall within the area intended for development, and the developer should take note of the location and recommendations regarding these graves. Graves older than 60 years (or presumed older) and not in a municipal graveyard are protected in terms of the National Heritage Act (No. 25 of 1999). Human remains (graves) younger than 60 years may only be handled by a registered undertaker or institution declared under the Human Tissues Act. The developer is required to follow the

						process described in the legislation (section 36 and its associated regulations) if he wants to develop in an area where there are graves older than 60 years. If the developer decides to plan the development around the graves and leave them undisturbed, adequate arrangements should be made to protect the graves from the impact of the development. These should include the following: ▪ It is important to understand that the identified graves could have significant heritage value to the relevant families (if identified) and should therefore be preserved. ▪ It is recommended that the identified graves should be clearly marked with danger tape during the entire duration of the project and especially during earth-moving/bush clearing activities and a 10m - 20m buffer zone must be allowed around the graves. ▪ It is advisable to fence the graves to prevent future mistakes. ▪ The relevant families should be identified (if possible) and should be informed about the proposed activities which could possibly affect their graves. ▪ The proposed earth-moving/bush clearing activities should be altered and should be planned around these graves in order to protect them from any damage or other negative impacts. ▪ Bush clearing crews should be made aware of the graves in order that the graves will not be damaged during the earth-moving activities. ▪ The planning team should ensure that access to the graves is not limited in any way. A small management plan should be set up to ensure the future safety, access and maintenance of the graves next to the proposed development. If the above recommendations cannot be adhered to, further steps and measures should be taken to move the graves and

						relocate them to one of the official graveyards in the area. This should only be done as last resort if no other options deem to be possible. The following process is then required: ▪ A process of consultation with the affected families and communities, if identified, should then be initiated to start the relocation of the graves. ▪ Various applications to various Departments should be put into motion to obtain the necessary permissions and permits to perform the relocation of the graves. These applications and permits are required by law. Only after all the required permissions and permits have been obtained, can the relocation of the graves continue as performed by professionals.
An old sandstone built shed (Site WS 4), an old farmhouse and associated structures (Sites: WS 8, WS 11),	Generally protected B (4B)	Medium significance	Very High	Definite	Demolished	B – Mapping of the site and controlled sampling required. The identified sites fall within the proposed development area and the developer should therefore take note of the following mitigation measures. It is presently not certain how old these building are. If the specific site is older than 60 years it falls under the protection of the National Heritage Resources Act. All structures older than 60 years are protected by Section 34(1) of National Heritage Resources Act and may not be demolished or altered without a permit from the relevant heritage authority. Should the building be younger than 60 years, no heritage legislation applies. The site must be assessed by an architectural historian. Provisionally, it can be stated that although there is a chance for the site to be older than 60 years, its condition is reasonably poor. In terms of the criteria contained in the National Heritage Resources Act (25 of 1999),

						the site's significance grading was based on its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage. Should the decision be made for the mining development footprint to be placed within a 250m buffer area around the site, the following mitigation measures would be required: The site must be assessed by an architectural historian and any recommendations made should be adhered to. It must be noted here that there is a chance for the heritage specialist to conclude that the site is younger than 60 years and as a result does not have any significance. Should the identified structure proof to be younger than 60 years and are therefore not protected under Section 34(1) of the National Heritage Resources Act (Act no. 25 of 1999). No further work or any other mitigation measures are required as these structures have little or no heritage value and significance. Should the identified structure proof to be 60 years and older and is therefore protected under Section 34(1) of the National Heritage Resources Act (Act no. 25 of 1999): "No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority." A permit for the destruction and/or alteration of the structure is required. A report and detailed documentation of the structure would need to accompany the application for such a permit. It is therefore recommended that a specialist, an architectural historian (or similar qualified person), should document the structure and compile relevant reports during a second phase of investigation.

						The compiled reports and documentations should accompany any applications for destruction and/or alteration of the structure. The heritage specialist and/or architectural historian can assist the developer in the application of such a permit.
An old rubbish pit (Site WS 6)	No significance	No significance	No significance	Definite	Demolished	A – No further action required
Loss of as yet unidentified archaeologic al and cultural heritage						Chance find procedures should be developed prior to construction and should be implemented in the event that chance finds are discovered during construction or operations. Chance find procedures should include the following: Employees and contractors should be notified that archaeological sites might be exposed during the mining activities. Should any heritage artefacts and sites be exposed during excavation, work in the area where the artefacts and sites were discovered shall cease immediately and the relevant authorities shall be notified as soon as possible. All discoveries shall be reported immediately to a museum, preferably one at which an archaeologist is available, so that an investigation and evaluation of the finds can be made. Acting on advice from these specialists, the relevant authorities will determine the necessary actions to be taken. Under no circumstances shall any artefacts and sites be removed, destroyed or interfered with by anyone on the site. Contractors and workers shall be advised of the penalties associated with the unlawful removal and destruction of cultural, historical, archaeological or paleontological artefacts and sites, as set out in NHRA (Act 25 of 1999), Section 51(1).

8 Conclusion

The heritage survey intended to locate, identify, evaluate and document sites, objects and structures of heritage, cultural and archaeological importance found within the proposed development area. The study intended to assess to what extent the proposed development would impact on the identified sites.

A number of sites dating to the historic period have been identified that would be impacted on by the proposed development.

The identified sites will all be impacted on by the proposed mining activities, but legislation requires mitigation measures to be implemented. The impacts on the sites will be permanent and destructive due to the nature of the proposed activities.

It is recommended that the proposed development can continue in the area, on condition of the acceptance and implementation of the recommendations and mitigation measures for each identified site before development takes place.

The developer should keep in mind that archaeological sites and graves might be exposed during the mining activities. If anything is noticed during the development, work in that area should be stopped and the occurrence should immediately be reported to the necessary authorities or to a heritage consultant. Further investigation should then commence.

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