BASIC ASSESSMENT FOR THE PROPOSED UPDATED ELDERS UNDERGROUND PROJECTS, MPUMALANGA PROVINCE: HERITAGE SITES

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Report No: 2012/JvS/058
Status: Draft
Revision No: 0
Date: December 2012

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Declaration:

I, J.A. van Schalkwyk, declare that I do not have any financial or personal interest in the proposed development, nor its developers or any of their subsidiaries, apart from the provision of heritage assessment and management services.

J A van Schalkwyk (D Litt et Phil)
Heritage Consultant
December 2012

EXECUTIVE SUMMARY

BASIC ASSESSMENT FOR THE PROPOSED UPDATED ELDERS UNDERGROUND PROJECTS, MPUMALANGA PROVINCE: HERITAGE SITES

SRK has been requested by Anglo American Thermal Coal (AATC) to submit a proposal for the development of an updated EMPR and associated documentation for the Elders Underground Projects (including a WULA, Waste License and NEMA listed activities application in terms of MPRDA and NEMA).

The project will produce both Eskom and export quality coal from the No. 2 and 4 coal seams. At this stage, it is planned for the coal to be taken to a tip adjacent to the underground mine shaft and transported via an overland conveyor to an existing washing plant at Goedehoop Mine.

In accordance with Section 38 of the NHRA, an independent heritage consultant was therefore appointed by **SRK Consulting** the lead Independent Environmental Practitioner for the project to conduct a basic assessment to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to develop the mining activities.

The cultural landscape qualities of the study area essentially consist of a rural area in which the human occupation is made up of a largely of a colonial (farmer) and urban component.

A variety of sites of cultural significance were identified. These include

- Cemeteries which are considered to have high significance on a local level;
- Various farmsteads and homesteads which are considered to have medium significance on a regional level.

Fortunately, none of these features would be impacted on by the proposed underground mining activities as well as the development of the required infrastructure. Therefore, from a heritage point of view we recommend that the proposed development can continue, on condition of acceptance of the following recommendation:

- If archaeological sites or graves are exposed during construction work, it should 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
December 2012

TECHNICAL SUMMARY

Property details	
Province	Mpumalanga
Magisterial district	Bethal
District municipality	Gert Sibande
Topo-cadastral map	2629AB, 2629AD, 2629BA, 2629BC
Closest town	Bethal
Farm name	Schurvekop 227IS, Geluk 226IS, Halfgewonnen 190IS, Middelkraal 50IS, Vlakkuilen 76IS, Elandsfontein 147IS, Legdaar 78IS

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

Development	
Description	Development of underground coal mining activities, as well as infrastructural development
Project name	Elders Underground Project

Land use	
Previous land use	Farming
Current land use	Farming

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GLOSSARY OF TERMS AND ABBREVIATIONS

TERMS

Study area: Refers to the entire study area as indicated by the client in the accompanying Fig. 1 & 2.

Stone Age: The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

Early Stone Age	2 000 000 - 150 000 Before Present (BP)
Middle Stone Age	150 000 - 30 000 BP
Late Stone Age	30 000 - until c. AD 200

Iron Age: Period covering the last 1800 years, when new people brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and they herded cattle as well as sheep and goats. 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
Late Iron Age	AD 1300 - AD 1830

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

ABBREVIATIONS

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

BASIC ASSESSMENT FOR THE PROPOSED UPDATED ELDERS UNDERGROUND PROJECTS, MPUMALANGA PROVINCE: HERITAGE SITES

1. INTRODUCTION

SRK has been requested by Anglo American Thermal Coal (AATC) to submit a proposal for the development of an updated EMPR and associated documentation for the Elders Underground Projects (including a WULA, Waste License and NEMA listed activities application in terms of MPRDA and NEMA).

Environmental and social baseline studies were completed for the project area between 2002 and 2006, and a draft Scoping Report and draft Environmental Impact Assessment Report were compiled in 2007. A public consultation process was undertaken, however, no formal submissions to government authorities were made at the time. The scope of the project during these studies assumed that both open cast and underground mining methods would be employed and the specialist studies were commissioned on this basis.

However, the scope has now changed. AATC is proposing to develop the Elders coal reserves using only underground mining methods (underground board and pillar operation). Mining activities will be conducted underneath the flood plains of the Viskuile, Vlakkuile and Olifants Rivers, owing to the sensitivity of the Viskuile wetland. The project will be located on portions of four farms, located about 30 km north of Bethal, Mpumalanga.

The project will produce both Eskom and export quality coal from the No. 2 and 4 coal seams. At this stage, it is planned for the coal to be taken to a tip adjacent to the underground mine shaft and transported via an overland conveyor to an existing washing plant at Goedehoop Mine.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. According to Section 27(18) of the National Heritage Resources Act (NHRA), Act 25 of 1999, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site.

In accordance with Section 38 of the NHRA, an independent heritage consultant was therefore appointed by **SRK Consulting** the lead Independent Environmental Practitioner for the project to conduct a basic assessment to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to develop the mining activities.

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

2. TERMS OF REFERENCE

2.1 **Scope of work**

The aim of this basic assessment, broadly speaking, is to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is

planned to develop the Elders mining activities and the overland conveyor to the existing washing plant at Goedehoop Mine.

This report does not deal with development projects outside of or even adjacent to the study area as is presented in Section 5 of this report. The same holds true for heritage sites, except in a generalised sense where it is used to create an overview of the heritage potential in the larger region.

The scope of work for this study consisted of:

- Conducting of a desk-top investigation of the area, in which available literature, reports, databases and maps were studied;
- A visit to the proposed development area.

The objectives were to

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

2.2 **Limitations**

The investigation has been influenced by the following factors:

- The unpredictability of archaeological remains occurring below the surface.

2.3 **Assumptions**

- It is assumed that the Social Impact Assessment and Public Participation Process might also result in the identification of sites, features and objects, including sites of intangible heritage potential in the development area and that these then will also have to be considered in the selection of the preferred routes.
- It is assumed that a Visual Impact Assessment will be done by suitably qualified specialists to determine the impact of the development on any identified heritage sites.
- It is assumed that a Paleontological Review will be done by a suitably qualified specialist.

3. HERITAGE RESOURCES

3.1 **The National Estate**

The NHRA (No. 25 of 1999) defines the heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations that must be considered part of the national estate to include:

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, including-
    - ancestral graves;
    - royal graves and graves of traditional leaders;
    - graves of victims of conflict;
    - graves of individuals designated by the Minister by notice in the Gazette;
    - historical graves and cemeteries; and
    - other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- sites of significance relating to the history of slavery in South Africa;
- movable objects, including-
    - objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
    - objects to which oral traditions are attached or which are associated with living heritage;
    - ethnographic art and objects;
    - military objects;
    - objects of decorative or fine art;
    - objects of scientific or technological interest; and
    - books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

3.2 **Cultural significance**

In the NHRA, Section 2 (vi), it is stated that ‘‘cultural significance’’ means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This is determined in relation to a site or feature’s uniqueness, condition of preservation and research potential.

According to Section 3(3) of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of

- its importance in the community, or pattern of South Africa's history;
- its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- sites of significance relating to the history of slavery in South Africa.

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

4. STUDY APPROACH AND METHODOLOGY

4.1 **Extent of the Study**

This survey and impact assessment covers the area as presented in Section 5 and as illustrated in Figures 1 and 2.

4.2 **Methodology**

4.2.1 *Preliminary investigation*

4.2.1.1 Survey of the literature
A survey of the relevant literature was conducted with the aim of reviewing the previous research done and determining the potential of the area. In this regard, various anthropological, archaeological, historical sources and heritage impact assessment reports were consulted (Berg 1998; Cloete 2000; Delius 2007; Pelser, Van Schalkwyk, Teichert & Masiteng 2007; Praagh 1906; Van Schalkwyk 2000, 2002, 2003, 2006).

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

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

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

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

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

4.2.2 *Field survey*

The area that had to be investigated was identified by **SRK Consulting** by means of maps. The survey was done by accessing the site by means of existing public roads as well as farm tracks. Information was also obtained from local landowners and labourers.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1 **Site location and description**

The project is located about 30 km north of Bethal, Mpumalanga, and straddle the R35 running between Bethal and Middelburg to the north (Fig 1).

The area surveyed was determined by the proposed development as indicated in Fig. 2 and involve the following farms: Schurvekop 227IS, Geluk 226IS, Halfgewonnen 190IS, Middelkraal 50IS, Vlakkuilen 76IS, Elandsfontein 147IS, Legdaar 78IS. A conveyor route, taking the coal to the washing plant at Goedehoop Mine, will cross the farms Kleinfontein 49IS and Schoon-Vlei 52IS. For more information, please see the Technical Summary presented above (p. iii).

The topography of the area can be described as undulating hills, bisected by a number of smaller rivers. A few large pans occur in the study area.

The geology of the area consists of arenite, with some granite and rhyolite intrusions as outcrops.

The original vegetation of the area is classified as Highveld Grassland. Large sections are used for agricultural activities – ploughing and grazing – which changed the original vegetation drastically. Ploughing might also have had a detrimental effect on any heritage resources that might have occurred here in the past.

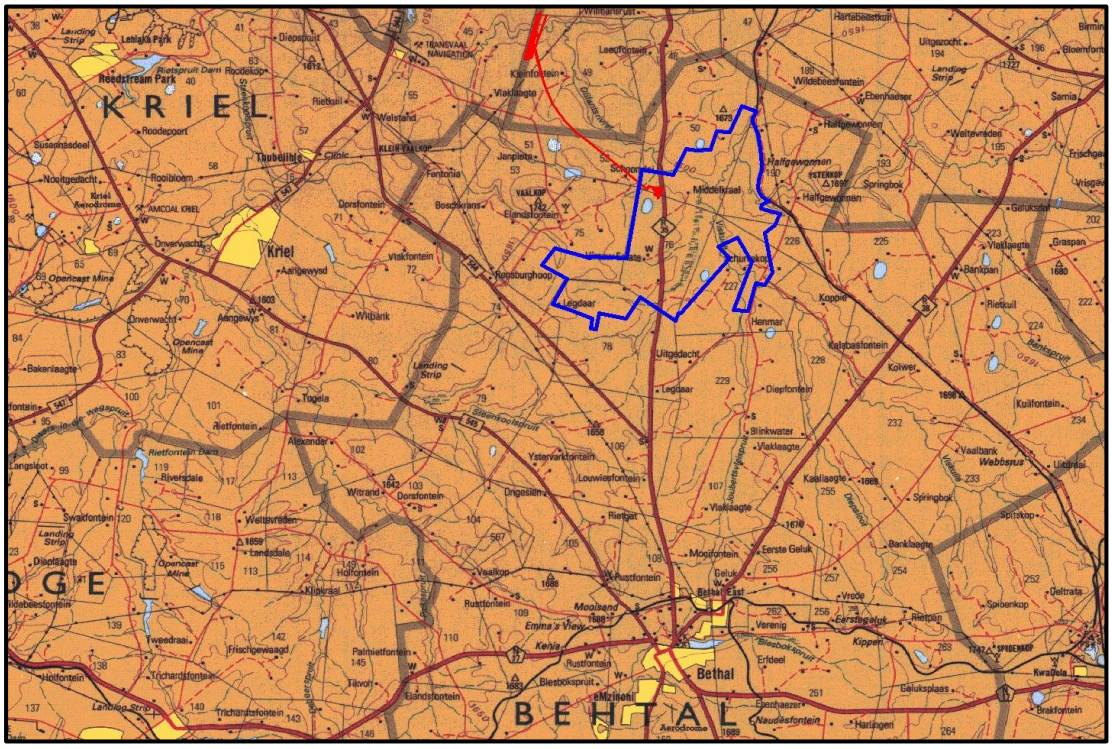

Fig. 1. Location of the study area (outlined in green) in regional context.
(Maps 2628: Chief Surveyor-General)

5.2 **Project Description**

Anglo American Thermal Coal (AATC) is proposing to develop the Elders coal reserves using only underground mining methods (underground board and pillar operation). Mining activities will be conducted underneath the flood plains of the Viskuile, Vlakkuile and Olifants Rivers, owing to the sensitivity of the Viskuile wetland. The project will be located on portions of four farms, located about 30 km north of Bethal, Mpumalanga (Fig. 2).

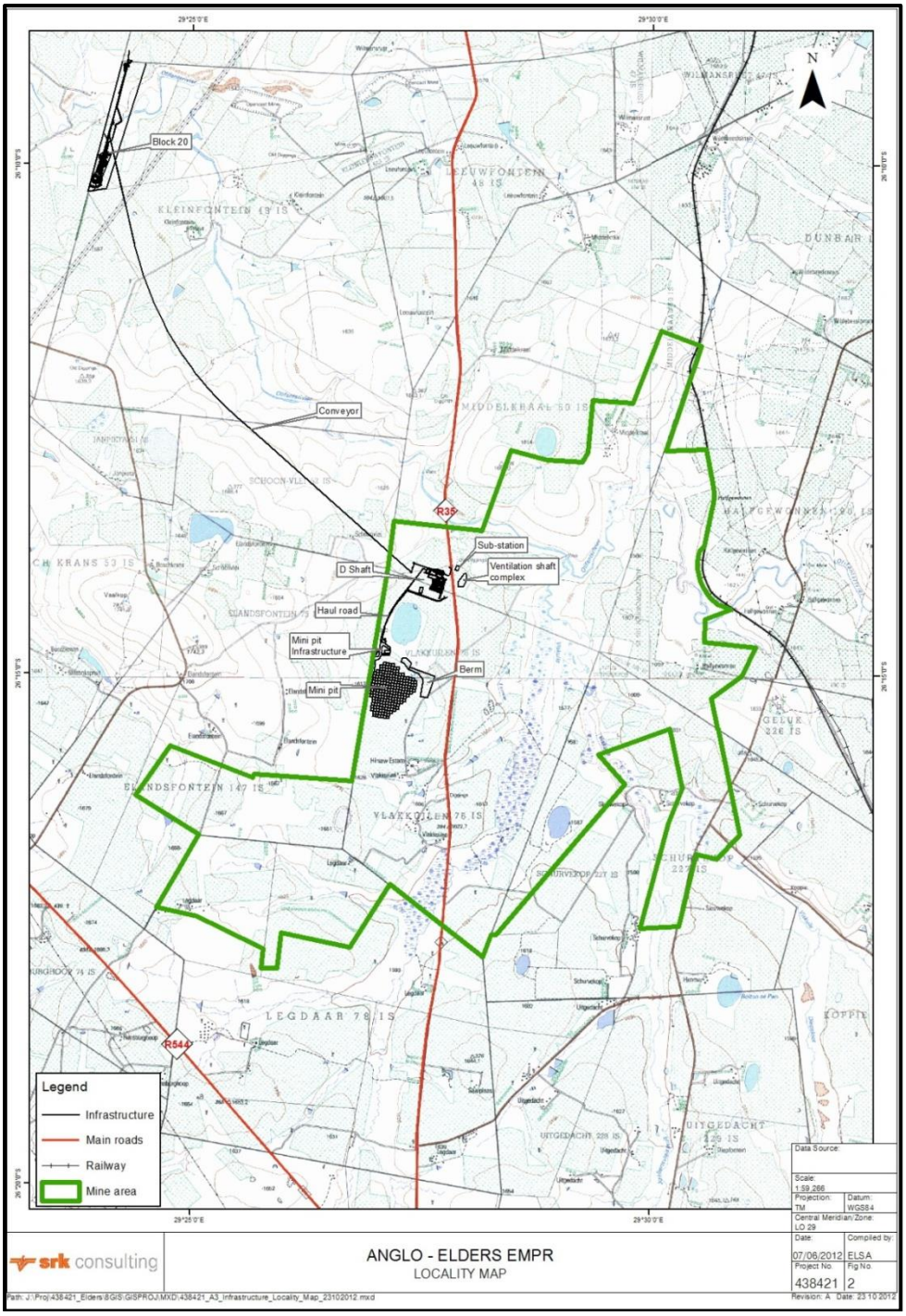

Fig. 2. Layout of the proposed development.

The project will produce both Eskom and export quality coal from the No. 2 and 4 coal seams. At this stage, it is planned for the coal to be taken to a tip adjacent to the underground mine shaft and transported via an overland conveyor to an existing washing plant at Goedehoop Mine.

5.2 **Regional overview**

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 1 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 urban one which include a number of surrounding towns.

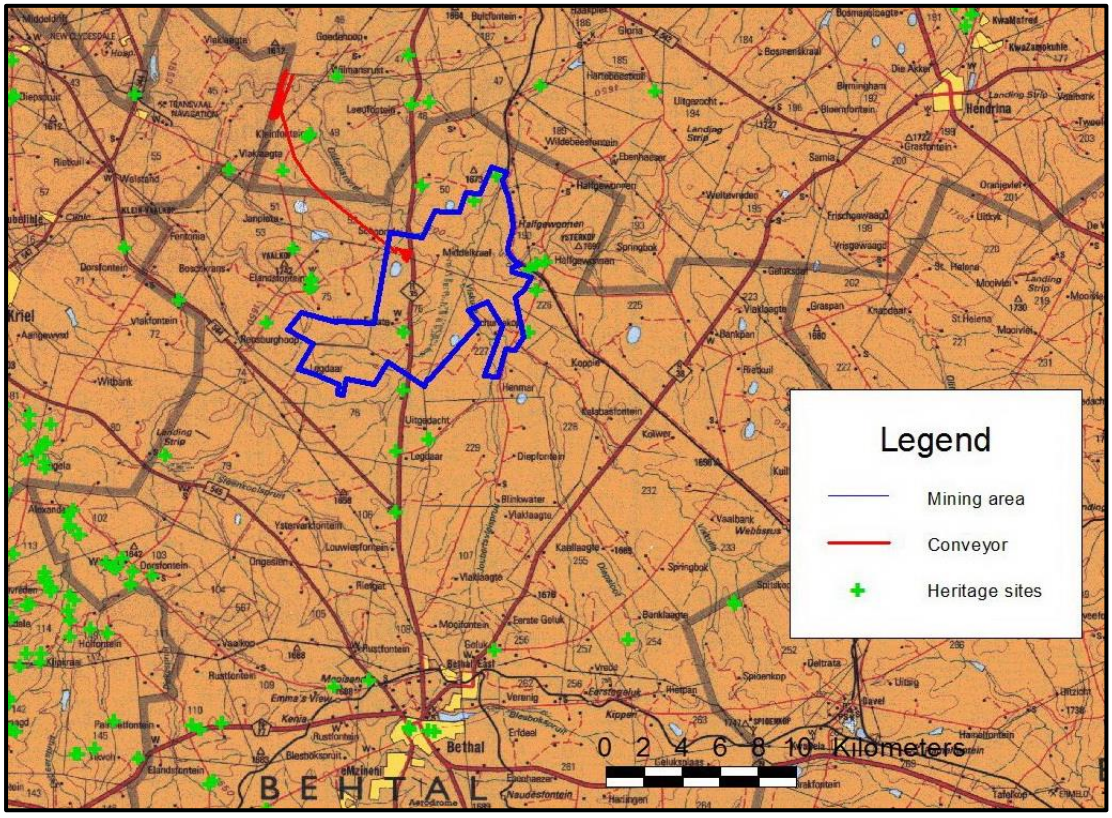

Fig. 3. Map of the larger region, showing the location of known heritage sites.
(Map 2628: Chief Surveyor-General)

Stone and Iron Age

Very little habitation of the highveld area took place during Stone Age times. Tools dating to the Early Stone Age period are mostly found in the vicinity of larger watercourses, e.g. the Vaal River, or in sheltered areas such as the Magaliesberg. During Middle Stone Age (MSA) times (c. 150 000 – 30 000 BP), people became more mobile, occupying areas formerly avoided. The MSA is a technological stage characterized by flakes and flake-blades with faceted platforms, produced from prepared cores, as distinct from the core tool-based ESA technology. Open sites were still preferred near watercourses.

Late Stone Age (LSA) people had even more advanced technology than the MSA people and therefore succeeded in occupying even more diverse habitats. Some sites are known to occur in the region. These are small rock shelters found in the sandstone cliffs near rivers and are located to the east and north of the study area. Some of these even contain rock paintings (Van Schalkwyk 2003). The region surrounding Chrissiesmeer, to the east of the study area, is well-known for the fact that some San people occupied it up to historic times.

The low density of occupation of the study region during Stone Age times can probably be attributed to the cold winters that are common in the region, as well as the lack of suitable rock shelters that could be used for staying in.

Iron Age

Iron Age people started to settle in southern Africa c. AD 300, with one of the oldest known sites at Broederstroom south of Hartebeespoort Dam dating to AD 470. Having only had cereals (sorghum, millet) that need summer rainfall, Early Iron Age (EIA) people did not move outside this rainfall zone, and neither did they occupy the central interior highveld area. 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 (Huffman 2007).

The occupation of the larger geographical area (including the study area) did not start much before the 1500s. By the 16th century things changed, with the climate becoming warmer and wetter, creating condition that allowed Late Iron Age (LIA) farmers to occupy areas previously unsuitable, for example the treeless plains of the Free State and the Mpumalanga highveld.

This wet period came to a sudden end sometime between 1800 and 1820 by a major drought lasting 3 to 5 years. The drought must have caused an agricultural collapse on a large, subcontinent scale.

This was also a period of great military tension. Military pressure from Zululand spilled onto the highveld by at least 1821. Various marauding groups of displaced Sotho-Tswana moved across the plateau in the 1820s. Mzilikazi raided the plateau extensively between 1825 and 1837. The Boers trekked into this area in the 1830s. And throughout this time settled communities of Tswana people also attacked each other.

As a result of this troubled period, Sotho-Tswana people concentrated into large towns for defensive purposes. Because of the lack of trees they built their settlements in stone. These stone-walled villages were almost always located near cultivatable soil and a source of water. Such sites are known to occur near Kriel (e.g. Pelser et al 2006) and to the south (Taylor 1979).

- Archaeological sites

Very few, if any stone tools are known to occur in the region. Those that have been found mostly date to the Middle Stone Age as well as to the Later Stone Age and include typical

points, blades and rectangular flakes. However, all these objects were found on the surface and are therefore out of their original context. As result, they are viewed to have low significance.

Iron Age sites dating to the Late Iron Age abound in the study area. These are linked to Tswana occupation of the area and date in all probability to the period from 1600 and later. They are all stonewalled and each site probably made up one individual settlement unit. Some such are known to occur to the west and north of the study region.

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

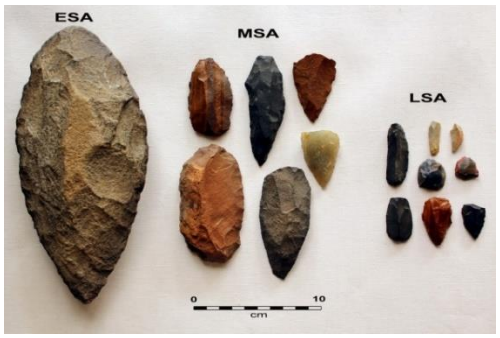

Fig. 4. Typical Late Iron Age site in the region.
The stone tools in the picture to the right are not from the region and are only used to illustrate the difference between Early (left), Middle (middle) and Later Stone Age (right) technology.

Historic period

White settlers moved into the area during the first half of the 19th century. They were largely self-sufficient, basing their survival on cattle/sheep farming and hunting. Few towns were established and it remained an undeveloped area until the discovered of coal and later gold. The establishment of the NZASM railway line in the 1880s, linking Pretoria with Lourenço Marques (Maputo) and the world at large, brought much infra-structural and administrative development to the area.

During the Anglo Boer War, an intense battle took place on the farm Wilmansrust, a few kilometres north of the study area (Cloete 2000). The soldiers killed in action were later exhumed and reburied in Bethal.

As a result of the scorched earth policy of the British, most farmsteads in the area were destroyed. Those identified therefore dates to after the Anglo Boer War.

The town Bethal was established in 1880 on the farm Blesbokspruit and is named after the wives of the two original farm owners: Eliza**beth** de Plooy and **Al**ida Naude. Over the years the town has played an important role in the farming community and with the development of coal mining activities it has expanded proportionally. According to current information, it has a few buildings that enjoy heritage protection (i.e. are older than 60 years), including churches, the old magistrate building, a few houses and a number of public monuments (Praagh 1906; Raper 2004).

- Farmsteads and homesteads

Farmsteads are complex features in the landscape, being made up of different yet interconnected elements. Typically these consist of a main house, gardens, outbuildings, sheds and barns, with some distance from that labourer housing and various cemeteries. In addition roads and tracks, stock pens and wind mills complete the setup. An impact on one element therefore impacts on the whole.

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

Fig. 5. Examples of farmsteads and farm labourer homesteads in the region.

- Cemeteries

Apart from the formal cemeteries that occur in municipal areas (towns or villages), a number of these, some quite informal, i.e. without fencing, is expected to occur sporadically all over, but probably in the vicinity of the various farmsteads. Many might also have been forgotten, making it very difficult to trace the descendants in a case where the graves are to be relocated.

Most of these cemeteries, irrespective of the fact that they are for land owner or farm labourers (with a few exceptions where they were integrated), are family orientated. They therefore serve as important ‘documents’ linking people directly by name to land.

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

Fig. 6. Typical farm cemeteries.

- Infrastructure and industrial heritage

In many cases this aspect of heritage is left out of surveys, largely due to the fact that it is taken for granted. However, the land and its resources could not be accessed and exploited without the development of features such as roads, bridges, railway lines, electricity lines and telephone lines, as well as industries that exploit locally available resources.

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

Fig. 7. Old coal mine in the region.

- Urban environment

The regional urban environment is complex, not only reflecting the history of the country by a separation of black and white communities from each other, but also the importance of the economic history of the local region.

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

Fig. 8. Various urban settings.

5.3 **Identified sites**

Based on the above sources and the field visit, the following heritage sites, features and objects were identified in the proposed development area:

5.3.1 *Stone Age*

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

5.3 2 *Iron Age*

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

5.3.3 *Historic period*

The following sites, features or objects of cultural significance dating to the historic period were identified in the study area.

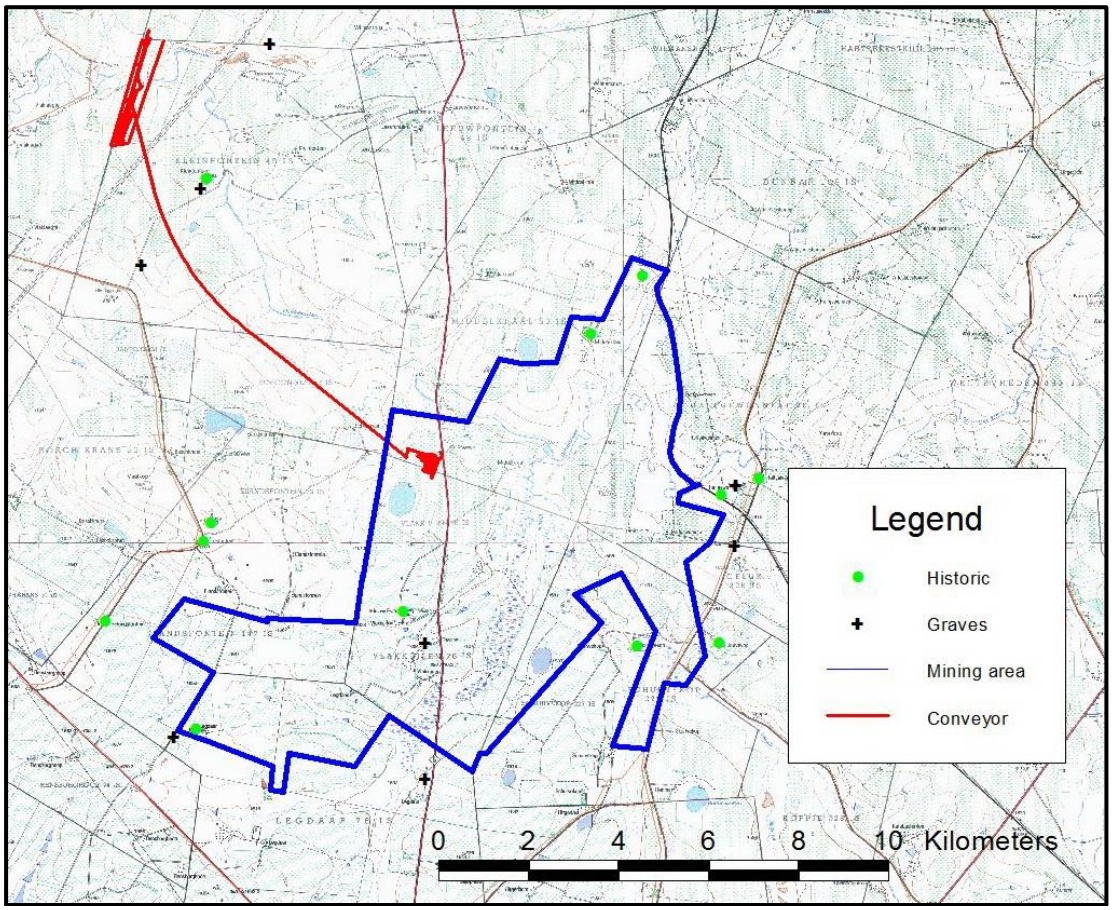

Fig. 9. Map showing the study area and identified heritage sites.
(Map 2629AB, AD, BA, BC: Chief Surveyor-General)

- Farmsteads

Location		S 26.26525 S 26.27834 S 26.28774 S 26.27098	E 29.45604 E 29.45917 E 29.41460 E 29.50238
Description			
A number of farmsteads have been identified to occur inside the study area. Many of the buildings and features date to different time periods being not older than 30 to 40 years and it is mostly the farming support structures such as cattle kraals and sheds that are older.			
Significance	Medium on a regional level – Grade III		
Mitigation			
Although these features are located inside the Elders mining area, they would not be impacted on by the underground mining activities or the development of the infrastructure. No further action is required for any of these sites.			

Fig. 10. Views of different farmstead.

- Homesteads

A number of farm labourer homesteads have been identified in the study area.

Location		S 26.26745 S 26.27417 S 26.27077	E 29.45937 E 29.45671 E 29.46199
Description			
A number of farm labourer homesteads have been identified in the study area. As can be expected, the various structures and features date to different time periods and show an eclectic mix of traditional as well as modern styles and materials used in their construction.			
Significance	Low on a regional level – Grade III		
Mitigation			
Although these features are located inside the Elders mining area, they would not be impacted on by the underground mining activities or the development of the infrastructure. No further action is required for any of these sites.			

Fig. 11. Views of the homesteads.

- Cemeteries

The two cemeteries/burial places were identified contain graves of former farm labourers and their families.

Location		S 26.27056	E 29.46056

		S 26.28933	E 29.41015
Description			
Informal cemeteries and burial places were identified. One, which had probably more than 100 graves and a second consisting of only a few graves.			
Significance	High on a local level – Grade III		
Mitigation			
Although these features are located inside the Elders mining area, they would not be impacted on by the underground mining activities or the development of the infrastructure. No further action is required for any of these sites. No further action is required for any of these sites.			

Fig. 12. Informal cemeteries.

6. SITE SIGNIFICANCE AND ASSESSMENT

6.1 **Heritage assessment criteria and grading**

The NHRA stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act:

- **Grade I**: Heritage resources with qualities so exceptional that they are of special national significance;
- **Grade II**: Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and
- **Grade III**: Other heritage resources worthy of conservation on a local authority level.

The occurrence of sites with a Grade I significance will demand that the development activities be drastically altered in order to retain these sites in their original state. For Grade II and Grade III sites, the applicability of mitigation measures would allow the development activities to continue.

6.2 **Statement of significance**

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

the sites currently known or which are expected to occur in the study area are evaluated to have a grading as identified in the table below.

Table 2. Summary of identified heritage resources in the study area.

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

6.3 **Impact assessment**

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

- There are a number of sites, features and objects of cultural significance that occur inside the study area, but fortunately none of them would be impacted on by the proposed development. These are
    - Informal contemporary cemeteries/burial places;
    - Elements of various farmsteads dating to the recent past.

7. RECOMMENDED 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.

7.1 **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 mining 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).

7.2 **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.

8. CONCLUSIONS

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

The cultural landscape qualities of the study area essentially consist of a rural area in which the human occupation is made up of a largely of a colonial (farmer) and urban component.

A variety of sites of cultural significance were identified. These include

- Cemeteries which are considered to have high significance on a local level;

- Various farmsteads and homesteads which are considered to have medium significance on a regional level.

Fortunately, none of these features would be impacted on by the proposed underground mining activities as well as the development of the required infrastructure. Therefore, from a heritage point of view we recommend that the proposed development can continue, on condition of acceptance of the following recommendation:

- If archaeological sites or graves are exposed during construction work, it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

9. REFERENCES

9.1 **Data bases**

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9.2 **Literature**

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9.3 **Maps and aerial photographs**

1: 50 000 Topocadastral maps
Google Earth

APPENDIX 1: CONVENTIONS USED TO ASSESS THE SIGNIFICANCE OF HERITAGE RESOURCES

Significance

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

APPENDIX 2. RELEVANT LEGISLATION

All archaeological and palaeontological sites, and meteorites are protected by the National Heritage Resources Act (Act no 25 of 1999) as stated in Section 35:

(1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA.

(2) Subject to the provisions of subsection (8)(a), all archaeological objects, palaeontological material and meteorites are the property of the State. The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collection policy acceptable to the heritage resources authority and may in so doing establish such terms and conditions as it sees fit for the conservation of such objects.

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

(4) No person may, without a permit issued by the responsible heritage resources authority-

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

In terms of cemeteries and graves the following (Section 36):

(1) Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit.

(2) SAHRA must identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with the grave referred to in subsection (1), and must maintain such memorials.

(3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority-

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.