Heritage Assessment

HERITAGE UNIT

Rietfontein Underground Mine Project for Transvaal Gold Mining Estate on the farm Spitskop 195 JT, Sabie, Mpumalanga

Version 1.0

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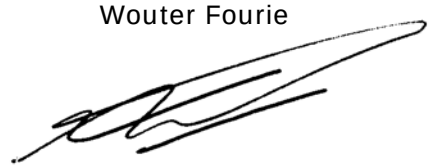
SIGNATURE:  _____

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EXECUTIVE SUMMARY

Professional Grave Solutions Heritage Unit was appointed by GCS (Pty) Ltd to undertake a Phase 1 Heritage Impact Assessment that forms part of the Environmental Management Programme for the Rietfontein Underground Min Project of Transvaal Gold Mining Estates (TGME) on the farm Spitskop 195 JT, Sabie, Mpumalanga.

During the survey no heritage sites were identified within the proposed development areas of the mining project. The following table indicate the envisaged impact by the project on the site.

Mining Phases

Activity Contributing to Impact	Impact	Probability	Extent	Duration	Intensity	Significance Rating	Management Measures
Construction - Upgrading of access routes -Site clearing	Possible damage to undetected heritage sites	1	1	6	4	12 *Moderate to High*	Monitoring of site clearance Implementing management measures as in Section 10
	With management	0	1	1	0	2 *Low*	
General activities during mining phases	Accidental discovery of unidentified heritage features	1	1	6	3	11 *Moderate to High*	Adhering to proposed management guidelines in Section 10
	With management	0	1	1	0	2 *Low*	

Recommended management measures to be implemented for the minimisation of possible envisaged impacts. Refer to Section 9 and 10 for recommended management procedures to minimise the possible impacts on undiscovered heritage resources within the project area.

General

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

If the management measures are implemented there are from a heritage perspective no reasons for the project not to commence.

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1. INTRODUCTION

Professional Grave Solutions Heritage Unit was appointed by GCS (Pty) Ltd to undertake a Phase 1 Heritage Impact Assessment that forms part of the Environmental Management Programme for the Rietfontein Underground Min Project of Transvaal Gold Mining Estates (TGME) on the farm Spitskop 195 JT, Sabie, Mpumalanga.

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

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

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

This report must also be submitted to SAHRA's provincial office for scrutiny.

2. APPROACH AND METHODOLOGY

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

2.1. PROJECT DESCRIPTION

It is the intention of TGME to re-open the Old Rietfontein Mine, which is located 3.2km to the west of the town of Sabie in Mpumalanga by means of underground mining techniques. It is TGME's intention to mine for gold ore, however, there is a potential that silver ore, copper ore and stone aggregate (gravel) will also be mined.

The historical Rietfontein Mine was mined via an adit in the period 1910 - 1915 and again in 1934 - 1945. Extensive drilling has been undertaken and has resulted in a

defined mineral resource being identified. TGME plans to mine the reserve through a new spiral decline located on the farm Spitskop 195 JT and to gain access to the underground resources located on Spitskop 195 JT, Rietfontein 193 JT, Waterval 168 JT and Maliveld Vallei 192 JT.

MINING METHOD

An old Rietfontein adit, which served as one of the main mine entrances pre-1946 is still open, but is situated directly below a housing settlement known as Vanaxe Estates, a subsidiary of TGME. The historic adit entrances are located on sloping ground in close proximity to watercourses. This limits the available spaces in terms of the surface infrastructure. For this reason a new entrance to the mine has been purposed away from habitation and watercourses where disturbances are likely.

SURFACE INFRASTRUCTURE

Diesel Genset

The Rietfontein Underground Mine will make use of a diesel genset providing power for the entire operation for the first 24 months of operation. Thereafter (after 2012), it is planned to make use of power supplied by the national operator, Eskom.

Water Holding Tank

Water will be pumped from the nearby stream into a 3 x 10 000 (a total of 30,000 litres) holding tank on the bank area. Water shall be gravity fed (assisted by a small 15kW pump) into the mine for drilling and water jetting operations.

Diesel Bowser

A 5 000 litre diesel bowser will be installed on site for supplying diesel for the generator and the LHD's. The storage facility will typically have a spill bund wall constructed around it to prevent contamination from spills as is required by the Environmental Code of Practice and EMP.

Workshop Facilities

Workshop facilities for the servicing and maintenance of LHD's will be provided on site. Technicians from the manufacturer are readily available and do come out to site for scheduled major maintenance and major repair work. Underground workshops shall be provided for in an area, which would be developed for that purpose with sufficient space for the overhauling of motors, drills and other mining related equipment.

Administration Facilities

Administration facilities will be provided for on the bank area. Communication with the mine will be by conventional land line or by a mini cellular telephone mast as installed at Frankfort. The equipment at Frankfort can be dismantled and erected elsewhere as required.

Additional Facilities

Toilet facilities will typically be provided by rented portable toilets. Rudimentary change house facilities, a lamphouse for charging of caplamps and storing of self rescuers, and surface stores will be erected. Workers will be bussed from the mine to a communal drop off point on the outskirts of Sabie. No housing will provided for by TGME.

The management team of TGME will be situated at the existing TGME offices. Senior staff will be accommodated in existing lodges and houses already owned by TGME whereas the workers and other staff will be accommodated in the local townships.

On–site infrastructure will consist of a workshop area with temporary offices and workshops, usually shipping containers or wooden huts. A refuelling station is situated at the current plant, but lubrication facilities for the machines will be accommodated in the workshop area next to the pit. Portable toilets will be provided and drinking water will be supplied via a water tanker that will refill a stationary tank on site. A crusher will also form part of the infrastructure, but whether it will be a fixed unit or a mobile crusher is still under investigation.

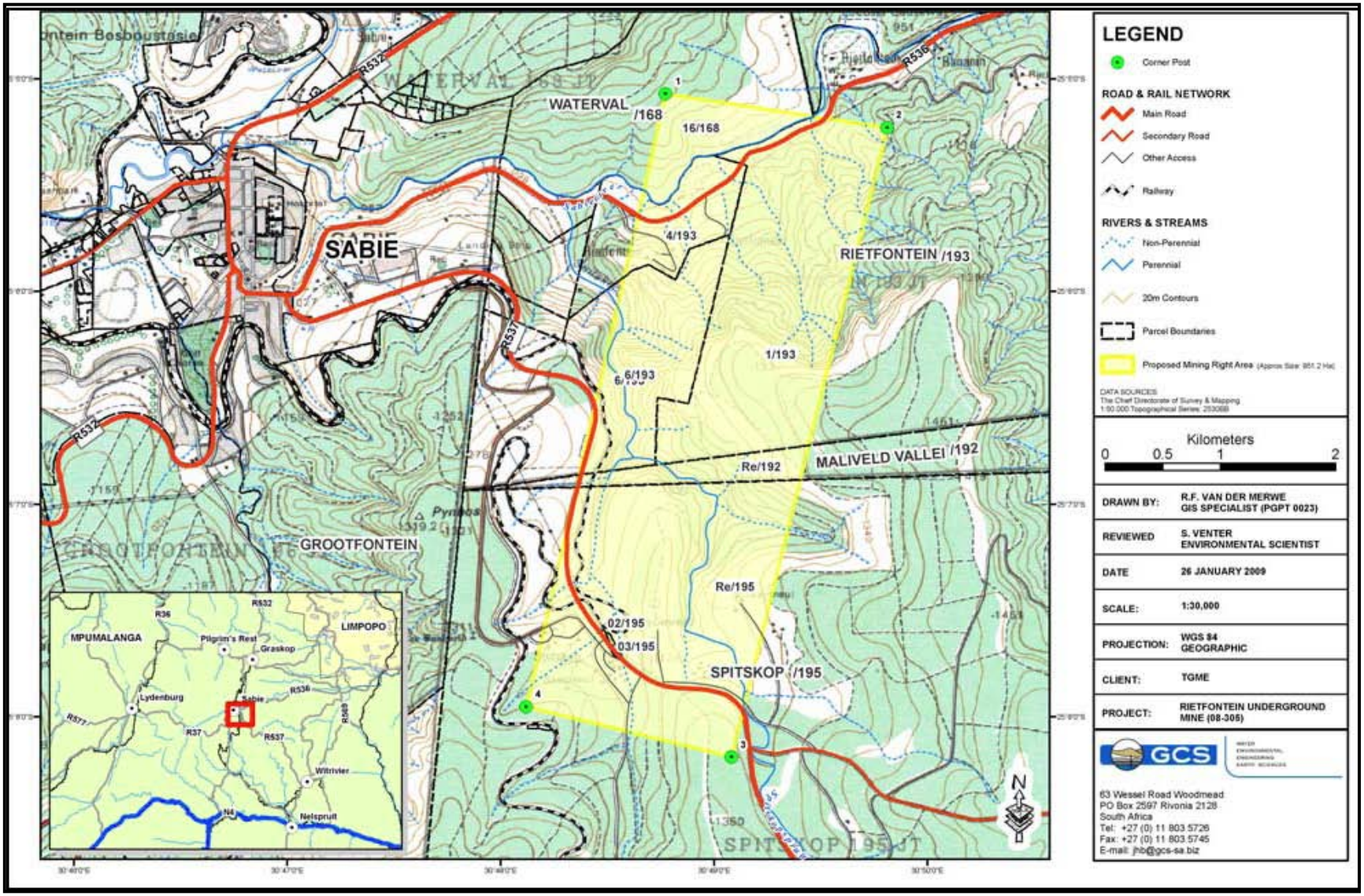

Figure 1 – Locality Map

2.2 PHYSICAL SURVEYING

Due to the nature of cultural remains, the majority that occur below surface, a physical walk through of the study area was conducted. The total area of impact comprised an area of approximately 30ha in total of the total mining rights area. The study area was surveyed over a period of one day, by means of vehicle and extensive surveys on foot by PGS.

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

3. LEGISLATIVE REQUIREMENTS AND TERMINOLOGY

3.1 Legislation

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

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

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

i. National Environmental Management Act (NEMA) Act 107 of 1998
    a. Basic Environmental Assessment (BEA) – Section (23)(2)(d)
    b. Environmental Scoping Report (ESR) – Section (29)(1)(d)
    c. Environmental Impacts Assessment (EIA) – Section (32)(2)(d)
    d. Environmental Management Plan (EMP) – Section (34)(b)
ii. National Heritage Resources Act (NHRA) Act 25 of 1999
    a. Protection of Heritage resources – Sections 34 to 36; and
    b. Heritage Resources Management – Section 38
iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
    a. Section 39(3)

iv. Development Facilitation Act (DFA) Act 67 of 1995

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

3.2 Abbreviations and Terminology

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

Archaeological resources

This includes:

i. material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;

ii. rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;

iii. wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act,

and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;

iv. features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

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

Development

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

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

Heritage resources

This means any place or object of cultural significance

4. ASSESSMENT CRITERIA

This chapter describes the evaluation criteria used for the sites listed below.
The significance of archaeological sites was based on four main criteria:

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

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:
A - No further action necessary;

B - Mapping of the site and controlled sampling required;
C - Preserve site, or extensive data collection and mapping of the site; and
D - Preserve site

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

4.1 IMPACT

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

4.1.1 Nature and existing mitigation

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

4.2 EVALUATION

4.2.1 Site Significance

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

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

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

4.2.2 Impact Rating

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

Table 1: Probability

Category	Rating	Description
Definite	3	More than 90 percent sure of a particular factor of the likelihood of that impact occurring
Probable	2	70 to 89 percent sure of a particular factor of the likelihood of that impact occurring
Possible	1	41 to 69 percent sure of a particular factor of the likelihood of that impact occurring
Improbable	0	Less than 40 percent sure of a particular factor of the likelihood of that impact occurring

Table 2: Extent

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

Table 3: Duration

Category	Rating	Description
Very short-term	1	Less than 1 year
Short-term	2	1 to 5 years
Medium-term	3	5 to 10 years
Long-term	4	10 to 15 years
Very long-term	5	Greater than 15 years
Permanent	6	Permanent

Table 4: Intensity

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

Table 5: Significance Rating

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

5. BACKGROUND OF AREA

5.1 ARCHAEOLOGICAL BACKGROUND

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

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

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

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

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

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

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

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

5.2 HISTORICAL BACKGROUND

5.2.1 History of area

The historic timeframe intermingles with the later parts of the Stone and Iron Age, and can loosely be regarded as times when written and oral recounts of incidents became available.

The town of Sabie originated in 1895. The well-known hunter H.T.Glynn, who had brought a farm on the upper reaches of the river, was entertaining friends on a picnic at the waterfall. During a target match after the picnic, bullets chipped the rock and revealed indications of gold.

The gold was discovered on the Spitskop, which is situated 10 kilometres south east of Sabie. There is not much that remains to remind one that this was once a very busy

mining town, as most signs have now been covered by vast plantations of pine and blue gum trees, which stretch for miles in all directions. These are said to be some of the largest man-made forests on our planet, which date back more than a hundred years to 1903. The supply of Pit props for the various mines had virtually stripped the slopes around Sabie of all the indigenous trees, and thus the need for the man -made forests arose.

From 1881 established companies, the most notable being Transvaal Gold Mining Estates, Ltd. (TGME) and Messrs. Glynn's Lydenburg Ltd., took over the mines and converted from alluvial mining to reef mining. Small operators also continued mining and even after the First World War (1914-1918) a number of small mines were still operating in the district (Eskom, 2003).

Shortage of electrical power in the dry season at Sabie seriously restricted normal mining operations, since the mines could not be pumped dry. Any further development was also hampered by the absence of an adequate and reliable power supply. One of the large mining companies owned a small hydro-electric station at the foot of the Sabie Falls, which supplied power to its own mines and others according to a priority allocation laid down by the Department of Mines and Industries. However, the total power available was inadequate to meet the requirements of all the mines and the smaller properties could not afford to provide their own power. Furthermore, power production had to be concentrated to be produced economically (Eskom, 2003).

While the Sabie River scheme was being revised, it was found to be necessary to install a small hydro-electric plant on the Malieveld Spruit to prevent flooding of the mines during the winter season. This power plant was erected in collaboration with Glynn's Lydenburg Ltd. and started production on 1 December 1925. When the Sabie River Gorge scheme was completed in 1927, the Malieveld Spruit plant was closed. Initially it was considered to use the plant as a stand-by, but it was dismantled after the closure (Eskom, 2003)

Figure 2 - Malieveld Power Station (circa, 1925) (Eskom, 2003)

The historical Rietfontein Mine was exploited from the early 1900's up until closure in 1946.

Spitskop Plantation

Spitskop plantation is situated in the central area of the escarpment region of the Mpumalanga province. The northern boundary of the plantation lies approximately 4 km from Sabie town. In total the plantation is 4491ha in size.

6. SITES OF SIGNIFICANCE

The survey concentrated on the area indicated as the bank area on topographical sheet 2530BB. The area is characterised by pine plantations and fairly dense undergrowth that impeded visibility during the survey. The area demarcated for the underground mine bank area is approximately 30 hectares with an access road from the Sabie-Whiteriver road to the site also surveyed.

During this survey no sites of heritage significance where found within the impacted bank area (Surface Impact area) of the mining rights application area.

Figure 3 – Access road from tar

Figure 4 – Access road along tar road

Figure 5 – View of access road from bank area towards tar road

Figure 6 – General view of study area

Figure 7 – Dense vegetation in certain areas of study area

Figure 8 – View of study area in plantation

7. ASSUMPTIONS AND LIMITATIONS

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

Survey conditions were seriously hampered by excessive vegetation growth that made surveying of certain areas difficult.

8. LEGAL AND POLICY REQUIREMENTS

8.1 General principles

In areas where there has not yet been a systematic survey to identify conservation worthy places, a permit is required to alter or demolish any structure older than 60 years. This will apply until a survey has been done and identified heritage resources are formally protected.

Archaeological and palaeontological sites, materials, and meteorites are the source of our understanding of the evolution of the earth, life on earth and the history of people. In the new legislation, permits are required to damage, destroy, alter, or disturb them. People who already possess material are required to register it.

The management of heritage resources are integrated with environmental resources and this means that before development takes place heritage resources are assessed and, if necessary, rescued.

In addition to the formal protection of culturally significant graves, all graves, which are older than 60 years and are not in a cemetery (such as ancestral graves in rural areas), are protected. The legislation protects the interests of communities that have interest in the graves: they may be consulted before any disturbance takes place.

The graves of victims of conflict and those associated with the liberation struggle will be identified, cared for, protected and memorials erected in their honour.
Anyone who intends to undertake a development must notify the heritage resource authority and if there is reason to believe that heritage resources will be affected, an impact assessment report must be compiled at the developer's cost. Thus developers will be able to proceed without uncertainty about whether work will have to be stopped if a heritage resource is discovered.

According to the National Heritage Act (Act 25 of 1999 section 32) it is stated that:
An object or collection of objects, or a type of object or a list of objects, whether specific or generic, that is part of the national estate and the export of which SAHRA deems it necessary to control, may be declared a heritage object, including –

- objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, meteorites and rare geological specimens;
- visual art objects;
- military objects;
- numismatic objects;
- objects of cultural and historical significance;
- objects to which oral traditions are attached and which are associated with living heritage;
- objects of scientific or technological interest;
- books, records, documents, photographic positives and negatives, graphic material, film or video or sound recordings, excluding those that are public records as defined in section 1 (xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996), or in a provincial law pertaining to records or archives; and
- any other prescribed category.

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

8.1 Graves and cemeteries

Graves younger than 60 years fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the Office of the relevant Provincial Premier. This function is usually delegated to the

Provincial MEC for Local Government and Planning, or in some cases the MEC for Housing and Welfare. Authorisation for exhumation and reinterment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. In order to handle and transport human remains the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

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

9. ASSESSMENT AND RECOMMENDATIONS

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

During the survey no heritage sites were identified within the proposed development areas of the mining project. The following table indicate the envisaged impact by the project on the possible heritage sites that could be found in the area.

Mining Phases

Activity Contributing to Impact	Impact	Probability	Extent	Duration	Intensity	Significance Rating	Management Measures
Construction - Upgrading of access routes -Site clearing	Possible damage to undetected heritage sites	1	1	6	4	12 *Moderate to High*	Monitoring of site clearance Implementing management measures as in Section 10
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Recommended management measures to be implemented for the minimisation of possible envisaged impacts. Refer to Section 9 and 10 for recommended management procedures to minimise the possible impacts on undiscovered heritage resources within the project area.

General

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

If the management measures are implemented there are from a heritage perspective no reasons for the project not to commence.

10. MANAGEMENT GUIDELINES AND PROCEDURES

Management Guidelines

1. The National Heritage Resources Act (Act 25 of 1999) states that, any person who intends to undertake a development categorised as-

   (a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

   (b) the construction of a bridge or similar structure exceeding 50m in length;

   (c) any development or other activity which will change the character of a site-

   (i) exceeding 5 000 m^2 in extent; or

   (ii) involving three or more existing erven or subdivisions thereof; or

   (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

   (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

   (d) the re-zoning of a site exceeding 10 000 m^2 in extent; or

   (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

   In the event that an area previously not included in an archaeological or cultural resources survey, is to be disturbed, the South African Heritage Resources

Agency (SAHRA) needs to be contacted. An enquiry must be lodged with them into the necessity for a Heritage Impact Assessment.

2. In the event that a further heritage assessment is required it is advisable to utilise a qualified heritage practitioner preferably registered with the Cultural Resources Management Section (CRM) of the Association of Southern African Professional Archaeologists (ASAPA).

   This survey and evaluation must include:

   (a) The identification and mapping of all heritage resources in the area affected;

   (b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6 (2) or prescribed under section 7 of the National Cultural Resources Act;

   (c) an assessment of the impact of the development on such heritage resources;

   (d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;

   (e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;

   (f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and

   (g) plans for mitigation of any adverse effects during and after the completion of the proposed development.

3. It is advisable that an information section on cultural resources be included in the SHEQ training given to contractors involved in surface earthmoving activities. These sections must include basic information on:

   a. Heritage;

   b. Graves;

   c. Archaeological finds; and

   d. Historical Structures;

   This module must be tailor made to include all possible finds that could be expected in that area of construction.

4. In the event that a possible find is discovered during construction, all activities must be halted in the area of the discovery and a qualified archaeologist contacted.

5. The archaeologist needs to evaluate the finds on site and make recommendations towards possible mitigation measures.

6. If mitigation is necessary, an application for a rescue permit must be lodged with SAHRA.

7. After mitigation an application must be lodged with SAHRA for a destruction permit. This application must be supported by the mitigation report generated during the rescue excavation. Only after the permit is issued may such a site be destroyed.
8. If during the initial survey sites of cultural significance is discovered, it will be necessary to develop a management plan for the preservation, documentation or destruction of such site. Such a program must include a *watching brief*, timeframe and agreed upon schedule of actions between the company and the archaeologist.
9. In the event that human remain are uncovered or previously unknown graves are discovered a qualified archaeologist needs to be contacted and an evaluation of the finds made.
10. If the remains are to be exhumed and relocated, the relocation procedures as accepted by SAHRA needs to followed. This includes an extensive social consultation process.

The definition of an archaeological watching brief is a formal program of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.

The purpose of a watching brief is:

- To allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works
- To provide an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the watching brief itself are not sufficient to support treatment to a satisfactory and proper standard.
- A watching brief is not intended to reduce the requirement for excavation or preservation of known or inferred deposits, and it is intended to guide, not replace, any requirement for contingent excavation or preservation of possible deposits.
- The objective of a watching brief is to establish and make available information about the archaeological resource existing on a site.

Professional Grave Solutions – Heritage Unit can be contacted on the way forward in this regard.

10.1 ROLES AND RESPONSIBILITIES

ROLE	RESPONSIBILITY	IMPLEMENTATION
A responsible specialist needs to be allocated and should sit in at all relevant meetings, especially when changes in design are discussed, and liaise with SAHRA	The client	Archaeologist and a competent archaeology supportive team
If chance finds and/or graves or burial grounds are identified during construction or operational phases, a specialist must be contacted in due course for evaluation.	The client	Archaeologist and a competent archaeology supportive team
Comply with defined national and local cultural heritage regulations on management plans for identified sites;	The client	Environmental Consultancy and the Archaeologist
Consult the managers, local communities and other key stakeholders on mitigation of archaeological sites;	The client	Environmental Consultancy and the Archaeologist
Implement additional programs, as appropriate, to promote the safeguarding of our cultural heritage. (i.e. integrate the archaeological components into employee induction course)	The client	Environmental Consultancy and the Archaeologist,
If required, conservation or relocation of burial grounds and/or graves according to the applicable regulations and legislation	The client	Archaeologist, and/or competent authority for relocation services
Ensure that recommendations made in the Heritage Report are adhered by	The client	The client

Provision of services and activities related to the management and monitoring of significant archaeological sites	The client	Environmental Consultancy and the Archaeologist
After the specialist/archaeologist has been appointed, comprehensive feedback reports should be submitted to relevant authorities during each phase of development.	Client and Archaeologist	Archaeologist

10.2 IMPACT MANAGEMENT

10.2.1 Pre-construction phase

Based on the findings of the Heritage Report, all stakeholders and key personnel should undergo an archaeological induction course during this phase. Induction courses generally form part of the employees' (miners') overall training and the archaeological component can easily be integrated into these training sessions. Two courses should be organised – one aimed more at managers and supervisors, highlighting the value of this exercise and the appropriate communication channels that should be followed after chance finds, and the second targeting the actual workers and getting them to recognize artefacts, features and significant sites. This needs to be supervised by a qualified archaeologist. This course should be reinforced by posters reminding operators of the possibility of finding archaeological sites.

10.2.2 Construction phase

The project will encompass a range of activities during the construction phase, including ground clearance, establishment of mining area and small scale infrastructure development associated with the bank mining area, such as ablution facilities or small offices. Construction activities related to the mine encompass the total destruction of the land surface and subsequent to that, all cultural and natural relics located in the directly affected area will be lost.

It is possible that cultural material will be exposed during operations and feasibly may be recoverable, but this is the high-cost front of the operation, and so any delays should be minimised. Development surrounding infrastructure and construction of facilities result in significant disturbance, but construction trenches do offer a window into the past and it may be possible to rescue some of these data and materials. It is also possible that

substantial alterations are implemented during this phase of the project and these must be catered for. Temporary infrastructure are often changed or added to the subsequent history of the project. In general these are low impact developments as they are superficial, resulting in little alteration of the land surface, but still need to be catered for.

During the construction phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. A responsible archaeologist must be appointed for this commission. This person does not have to be a permanent employee, but needs to sit in at relevant meetings, for example when changes in design are discussed, and notify SAHRA of these changes. The archaeologist would inspect the site and any development recurrently, with more frequent visits to the actual workface and operational areas. In addition, feedback reports can be submitted by the archaeologist to the client and SAHRA to ensure effective monitoring. This archaeological monitoring and feedback strategy should be incorporated into the Environmental Management Plan (EMP) of the mine. Should an archaeological site or cultural material be discovered during construction (or operation), such as burials or grave sites, the project needs to be able to call on a qualified expert to make an expert decision on what is required and if necessary to carry out emergency recovery. SAHRA would need to be informed and may give advice on procedure. The developers therefore should have some sort of contingency plans so that operations could move temporarily elsewhere while the material and data are recovered. The project thus needs to have an archaeologist available to do such work.

The purpose of an archaeological monitoring programme is to provide general information to the developer with regards to management recommendations and cost estimates for the archaeological component, a specialist sub-section of the Environmental Impact Assessment (EIA) process, for the project.

Such a monitoring programme is planned for observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land where there is a possibility that archaeological deposit may be disturbed or destroyed. Its main purpose is:

- To allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works

- To provide an opportunity, if needed, for the monitoring archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the monitoring programme itself are not sufficient to support treatment to a satisfactory and proper standard.
- A monitoring programme is not intended to reduce the requirement for excavation or preservation of known or inferred deposits, and it is intended to guide, not replace, any requirement for contingent excavation or preservation of possible deposits.

In essence, the objective of a monitoring programme is to establish and make available information about the archaeological resource existing on a site.

10.2.3 Operational phase

Once the mining project is up and running, the urgency to identify, document and assess archaeological and heritage resources in the bank area area declines, but does not cease. Undocumented sites are still protected by law as no permit would have been issued for their destruction. Apart from any significant changes in operation design, which call for the inclusion of an archaeologist in decision making and notification of SAHRA, there is the accumulated impact of a project on the land surface, and this could result in erosion exposing further sites. Periodic monitoring by an archaeologist and awareness promotion therefore remain tasks. The client and the archaeologist would need to draw up a schedule for this.

10.2.4 Decommissioning and closure phase

During the decommissioning and closure phase of the project, no new areas are expected to be disturbed and/or impacted. Subsequently, no additional sites of archaeological and heritage significance are expected to be impacted on during decommissioning. Furthermore, the majority of sites of archaeological and heritage significance (cultural and natural) would have been recorded and/or assessed in preceding phases. During the decommissioning and closure phase, it may be recommended that the appointed archaeologist review management procedures and ensure that effective measures were implemented. A comprehensive feedback report should be submitted by the archaeologist to the client, and SAHRA.

11. LIST OF PREPARES

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11.3 ELECTRONIC INFORMATION SOURCES

GOOGLE EARTH 'Satellite image Pilgrim's Rest'
< http://www.googleearth.com

ANNEXURE A:

Study area


R537
Jock of the Bushveld
Malieveld