Cultural Heritage Assessment

ASSESSMENT OF AREA 2 OF THE BURNSTONE GOLD MINE PROJECT, BALFOUR, MPUMALANGA

Prepared For

Knight Piésold Consulting

By

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KNOWLEDGEMENT OF RECEIPT

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Executive summary

Site name and location: Burnstone Gold Mining Area 2, Balfour, Mpumalanga

Provincial district: Balfour, Mpumalanga.

Developer: Southgold Exploration (Pty) Ltd

Consultant: Wits Heritage Contracts Unit. University of the Witwatersrand, School of Geography, Archaeology and Environmental Studies, Private Bag 3, P.O Wits 2050,Tel: +27 82 373 8491. E –mail jaco.heritage@gmail.com.

Date of field work: 26 November 2008 and on the 21 May 2009

Date of Report: 19 June 2009

Findings of the Assessment: Eight sites of heritage significance were identified during the survey of the footprint of the proposed raw water dam alternatives; Area 2 decline shaft; and ventilation shafts. Although none of these documented sites falls within the footprint of the study areas some impact on these sites can be expected during the course of the development. If the recommendations as made in section 5 of this report are adhered to there are from a Heritage point of view no reasons why the project can not commence.

General

Low ground visibility is present on parts of the sites due to high vegetation growth and the possibility of the occurrence of unmarked graves and subsurface finds can not be excluded. If during construction any possible finds are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find.

Disclaimer: *Although all possible care is taken to identify all sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. Wits Heritage Contracts Unit and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.*

submission by Wits Heritage Contracts Unit and on condition that the Client pays to Wits Heritage Contracts Unit the full price for the work as agreed, shall be entitled to use for its own benefit and for the specified project only:

- The results of the project;
- The technology described in any report
- Recommendations delivered to the Client

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1. INTRODUCTION

Wits Heritage Contracts Unit was contracted by Knight Piésold to conduct a Archaeological Impact Assessment focusing, but not limited to Archaeological resources for the alternatives for the proposed raw water dam alternatives; decline shaft; and vent shafts for the Burnstone Gold mining project. The project area is located approximately 90 km southeast from Johannesburg, just east of Balfour, Mpumalanga Province. The report forms part of the EIA for the proposed project.

The aim of the study is to identify all heritage sites, document, and assess their importance within Local, Provincial and national context. To assess the impact of the proposed project on non renewable heritage resources and to submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required 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).

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

During the survey, eight cultural heritage sites of significance were identified. General site conditions and features on sites 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 provincial office for peer review.

1.2 TERMS OF REFERENCE

Conduct brief desktop study to:

Review available literature, previous heritage studies and other relevant information sources. Gather data and compile a background history of the area. Identify all known and recorded archaeological and cultural sites; and determine whether the area is renowned for any cultural and heritage resources, such as Stone Age sites, Iron Age sites, informal graveyards or historical homesteads.

Conduct a field study to:

Consult with locals (where possible) to gather information on oral history, local history, possible informal graves, cemeteries, and other areas of cultural significance. Systematically survey the proposed footprint of the raw water dam alternatives; decline shaft; and the vent shafts to locate, identify record, photograph and describe sites of archaeological, historical or cultural interest; and record GPS points of significant areas identified. Determine the levels of significance of the various types of heritage resources recorded in the project area;

Reporting

Identify the anticipated impacts, as well as cumulative impacts, of the operational units of the proposed project activity on the identified heritage resources for all 3 phases of the project, i.e. construction, operation and decommissioning phases. Consider alternatives should any significant sites be impacted adversely by the proposed project. Ensure that all requirements of the local South African Heritage Resources Agency (SAHRA) are met. 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).

1.3 Nature of the development

This phase of the Burnstone gold mining project, include five alternatives for tailings dams and the location of two air vents.

1.4 Description of study area

The project area is located approximately 90 km southeast from Johannesburg, just east of Balfour, Mpumalanga Province. The study area falls within the Grassland Biome and is characterised by maize fields and pasture grass, and is thus extensively disturbed. These activities would also have impacted negatively on any visible evidence of heritage resources. Refer to main EIA report for geographical, environmental and demographic issues.

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 Physical Surveying

Due to the nature of cultural remains, the majority that occurs below surface, a physical walk through of the study area was conducted. Wits Heritage Contract Unit was appointed to conduct a survey of the foot print of the proposed locations of five raw water dam alternatives; decline shaft; and two air vents. The study area was surveyed over a period of two days, by means of vehicle and extensive surveys on foot in the company of Dr. Ute Schwaibold.

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 digital photographs were taken at all the sites.

2.2 Consultation

Mr. Joe Camacha resides on the farm Dagbreek next to one of the proposed locations of a air vent. He indicated that the house is probably in the region of 60 years old and he confirmed the location of a grave yard next to the residential dwelling. Due to the fact that the site will not be impacted upon by the present project, the location of these sites must be noted and kept in mind in when the mine expands.

3. BASELINE ASSESSMENT

3.1 Abbreviations

ASAPA: Association of South African Professional Archaeologists	*BPEO:* Best Practicable Environmental Option
CRM: Cultural Resource Management	*DEA&DP:* Department of Environmental Affairs and Development Planning
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	*IDP:* Integrated Development Plan
LSA: Late Stone Age	*LIA:* Late Iron Age
MSA: Middle Stone Age	*MIA:* Middle Iron Age
NEMA: National Environmental Management Act	*NHR Act:* National Heritage Resources Act
PHRA: Provincial Heritage Resources Agency	*PSSA:* Palaeontological Society of South Africa
ROD: Record of Decision	*SACLAP:* South African Council for the Landscape Architect Profession
SAHRA: South African Heritage Resources Agency	*SAIA:* South African Institute of Architects
SAPI: South African Planning Institute	*SDF:* Spatial Development Framework

3.2 Definitions

Archaeological resources:

This includes 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;

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;

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;

Military:

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:

•construction, alteration, demolition, removal or change in use of a place or a structure at a place;

• carrying out any works on or over or under a place;

•subdivision or consolidation of land comprising a place, including the structures or airspace of a place;

• constructing or putting up for display signs or hoardings;

•any change to the natural or existing condition or topography

of land;

• any removal or destruction of trees, or removal or vegetation

or topsoil

Heritage resources:

This means any place or object of cultural significance

Stakeholders:

A subgroup of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. The term includes the proponent, authorities and all interested and affected parties.

3.3. ARCHAEOLOGICAL LEGISLATION AND BEST PRACTICE

Phase 1 Archaeological Impact Assessments or Heritage Impact Assessments are a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of a heritage specialist input is to:

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources;
- Make recommendations for the appropriate heritage management of these impacts.

The AIA or HIA, as a specialist sub-section of the Environmental Impact Assessment [EIA] is required under the National Heritage Resources Act NHRA of 1999 (Act 25 of 1999)., Section 38(1), Section 38(8) the National Environmental Management Act (NEMA) and the Mineral and Petroleum Resources Development Act (MPRDA).

The AIA should be submitted, as part of the EIA, BAR or Environmental Management Plan [EMP], to the PHRA if established in the province or to SAHRA. SAHRA will be ultimately responsible for the professional evaluation of Phase 1 AIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 AIA reports and required additional development information, as per the EIA, BAR / EMP, to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 AIA reports authored by professional archaeologists, accredited with ASAPA. Minimum accreditation requirements

include an Honours degree in archaeology or related discipline and 3 years post-university CRM experience (field supervisor level).

Minimum standards for reports, site documentation and descriptions are set by the Association of Southern African Professional Archaeologists [ASAPA] in collaboration with SAHRA. ASAPA is a legal body, based in South Africa, representing professional archaeology in the Southern African Development Community [SADC] region. ASAPA is primarily involved in the overseeing of archaeological ethical practice and standards. Membership is based on proposal and secondment by other professional members.

Phase 1 AIA's are primarily concerned with the location and identification of sites situated within a proposed development area. Identified sites should be assessed according to their significance. Relevant conservation or Phase2 mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Conservation or Phase 2 mitigation recommendations, as approved by SAHRA, are to be used as guidance in the developer's decision making process:

Phase 2 archaeological projects are primarily based on salvage / mitigation excavations preceding development destruction or impact on a site. Phase 2 excavations should be done under a permit issued by SAHRA to the appointed archaeologist. Permit conditions are prescribed by SAHRA and include as a minimum report back strategies to SAHRA and submission of excavated material at a accredited repository.

In the event of a site conservation option being preferred by the developer a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as minimum requirement.

After mitigation is conducted on a site, a destruction permit must be applied for from SAHRA before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36. 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.

Human remains that are less than 60 years old are protected 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).

3.4. ASSESSMENT CRITERIA

3.4.1 Evaluation of Heritage sites

This chapter describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following criteria were used to establish site significance:

- The unique nature of a site
- The integrity of the archaeological deposit
- The wider historic, archaeological and geographic context of the site
- The location of the site in relation to other similar sites or features
- The depth of the archaeological deposit (when it can be determined or is known)
- The preservation condition of the site
- Uniqueness of the site and
- Potential to answer present research questions.

3.4.2 Heritage Site Significance and Mitigation Measures

Site significance classification standards prescribed by the SAHRA (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. The recommended mitigation needed as prescribed below should be read in conjunction with section 5 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 B (GP.B)	-	Medium Significance	Recording before destruction
Generally Protected C (GP.C)	-	Low Significance	Destruction

3.5. Archaeological Context of study area

The historical background and timeframe of the study area can be divided into the Stone Age, Iron Age and Historical timeframe. These can be divided as follows:

Stone Age

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

Early 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 – 25 000 yrs before present. This period is first associated with archaic *Homo sapiens* and later *Homo sapiens sapiens.* Material culture includes stone tools with prepared platforms and stone tools attached to handles.

Late Stone Age: The period from ± 25 000-yrs before present to the period of contact with either Iron Age farmers or European colonists. This period is associated with *Homo sapiens.* Material culture from this period includes: microlithic stone tools; ostrich eggshell beads and rock art.

Iron Age

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.

No evidence for any Early Iron Age sites has been found so far on the Highveld whilst Late Iron Age stone walled sites do occur on the Highveld where numerous pre-*difaqane* and *difaqane* wars took place during the last quarter of the 18th century and during the first three

decades of the 19th century. These wars led to the displacement of large numbers of Sotho-Tswana clans on the Highveld where Mzilikazi's Ndebele caused chaos and havoc. How ever, before the Sotho-Tswana were in the area the Nguni speaking Fokeng moved north across the Vaal into the Balfour, Suikerbosrand area. They most probably moved into these areas because climatic conditions in the Free State were too severe (Huffman 2007).

Several large Late Iron Age settlement complexes occur in this region especially around Heidelberg and the Suikerbosrand area. Late Iron Age settlements is characterised by extensive dry stonewalls dating from the mid 17th century. The stone building tradition that these indigenous groups established many decades before the first colonial settlers arrived, may have influenced the colonial farmers to utilize these same resources as building material for the first farmsteads which arose on the Highveld.

Historic Timeframe

17th Century to present AD (1600 – 2000)

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 Burnstone project area is located to the south - east of the towns of Heidelberg and Balfour and to the north-west of Greylingstad. As these towns are located closest to the Burnstone Project the origins and development of these towns therefore needs closer scrutiny in order to contextualise the Burnstone Project Area. Heidelberg was established in 1866 and Balfour, then known as McHattiesburg in 1898. These three towns were linked via railway line. Several historic actions during the Boerwar occurred in the area.

Between February and September of 1900 as part of the British offensive Lt.genl Buller marched through Greylingstad towards Heidelberg. A Black concentration camp was located at the Greylingstad railway station (Suid Randmyn) and just to the north east of Heidelberg a confrontation occurred between Boer forces and the British. On the 18th of February 1902 B Hammilton attacked P. Viljoen known as the battle of Klippan.

During July 1901 a blockhouse fortification was erected along the Greylingstad – Heidelberg railway line amongst others. During the 19th century three missionary stations were commissioned around Heidelberg. They consisted of the Wesleyan missionary company who established the Heidelberg Mission and the Berlin mission company who established the Heidelberg and Woyenthin missionary stations (Bergh 1998). In Novemebr 1837 Gert

Maritz established a laager next to the Suikerbosrandriver so that he could join in the so called second punitive expedition against Mzilikazi. Maritz was ill and could not take part in the expedition consisting of 200 men on horseback (Meintjies 1973).

Indigenous architecture

Vernacular architecture characterises the Highveld. In this architecture sand stone and ferricrete was used to build farmsteads and dwellings in urban as well as in rural areas. A historical stone vernacular architecture also occurred in the Karoo and in the eastern parts of the Free State Province of South Africa.

One of the major differences in the vernacular stone architecture in the Eastern Highveld and in the eastern Free State Province and in the Karoo is the use of a wider variety of stone types in the Eastern Highveld. In the Karoo and in the eastern Free State Province only sandstone was used as building material. The origins of a vernacular stone architecture in the south-eastern Highveld can be attributed to the ecological characteristics of the region. The stone built tradition that was set by Late Iron Age communities over large parts of the country from as early as AD1600 and the influence that was brought by European immigrants to the Highveld during the late 18th and early 19th centuries also contributed to this.

The fusion of ecological, traditional, new ideas (influences) and logic can thus explain the use of stone as building material on the Eastern Highveld. The ecological character of the Highveld favoured the use of stone as building material as this region is generally devoid of any natural trees which could be used for timber in the construction of dwellings, outbuildings, cattle enclosures as well as other structures that would generally require the use of timber.

The scarcity of wood also prevented the manufacturing of baked (clay) bricks and sun-dried bricks were of a lower quality than those baked on a stack. The wood that was available was generally used for cooking. The need for timber in buildings on the Eastern Highveld therefore required that timber had to be imported from the Bushveld and from east of the escarpment into this region.

The Highveld was farmed by farmers from Scottish, Irish, Dutch, German and Scandinavian descends. The colonials brought knowledge of stone masonry from Europe, this compensated for the lack of firewood to bake clay bricks. Rock types like sandstone,

ferricrete ('ouklip') granite, shale and slate were preferred in the Southern districts of Mpumalanga (Naude 2000; Pistorius 2006)

Archaeological Database

The Wits archaeological database and other repositories show several known heritage sites in the area. The most notable is the well researched Suikerbosrand area that is located to the west of Heidelberg that consists of approximately 794 Late Iron Age sites. Other CRM projects in the area identified scatters of Middle Stone Age artefacts, cemeteries, Voortrekker and Boer War sites. A Boer war site consisting of stone walling erected to protect the Fortuna railway station occurs on the farm Rietfontein 304 JR. A Voortrekker site consisting of the remnants of the Maritz laager dating to 1837 occur on the farm Blinkpoort 396 IR. However none of these sites occur within the project area.

Archival Maps

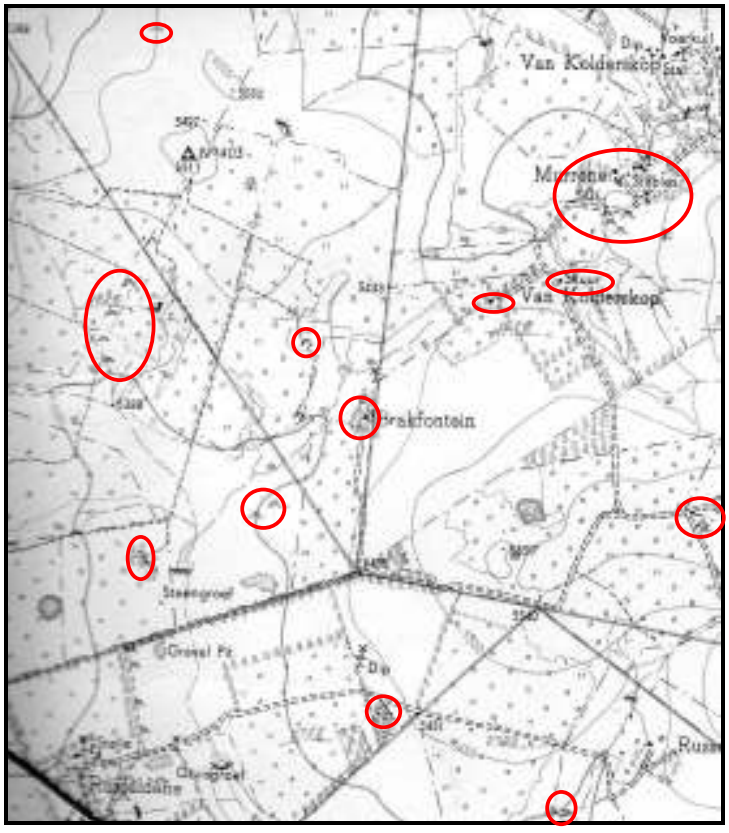

Figure 1: *The depicted map represents an enlarged section of the 2628 DA 1:50 000 topographical Map. The map was surveyed by the Trigonometrical Survey Office in 1946*

The map shows the core area where the proposed raw water dam alternatives, decline shaft, and ventilation shafts are proposed. Several features are marked in red on the map consisting mostly of farm labourer dwellings and farm houses that is older than 60 years.

3.5.1 Probability of occurrence of sites

From the above information it is clear that a medium -high possibility of the occurrence of cultural heritage sites could be expected in the study area.

A. PALAEONTOLOGICAL LANDSCAPE

CONTEXT

Fossil remains. Such resources are typically found in specific geographical areas, e.g. the Karoo and are embedded in ancient rock and limestone/calcrete formations. Exposed by road cuttings and quarry excavation: *Low Probability*

B. ARCHAEOLOGICAL LANDSCAPE

CONTEXT

NOTE: *Archaeology is the study of human material and remains (by definition) and is not restricted in any formal way as being below the ground surface*.

Archaeological remains dating to the following periods can be expected with in the study area:

Stone Age finds

- ESA: Low - *Medium Probability*
- MSA: *High Probability*
- LSA: *Medium Probability*
- LSA –Herder: *Low Probability*

Iron Age Finds

- EIA: *Low Probability*
- MIA: *Low Probability*
- LIA: *High Probability*

Historical finds

- Historical period: *High Probability*
- *Historical dumps*: *Medium Probability*
- *Structural remains*: *High Probability*

Military Finds

- *Battle and military sites*: *Medium Probability*

Burial/Cemeteries

- *Burials over 100 years*: *Medium Probability*
- *Burials younger than 60 years: High Probability*

Subsurface excavations including ground levelling, landscaping, and foundation preparation can expose any number of these.

3.6. SITES OF SIGNIFICANCE

A list with coordinates of the sites is provided in Annexure A in relation to the surveyed areas. The recommended mitigation needed as prescribed below should be read in conjunction with section 5 of this report.

3.6.1 Site 1

This is the location of an informal African cemetery. The site is located on the edge of a maize field next to the fence. The site used to be fenced, a fact that probably ensured the protection of the site. The site is overgrown but it is estimated that the cemetery contains approximately 50 graves. The graves are aligned east to west and the grave dressings consist mostly of rock, although some have modern granite headstones. Inscribed headstones represent amongst others Majola and Tlaleng families.

Heritage Significance

FIELD RATING	*GRADE*	*SIGNIFICANCE*	*RECOMMENDED MITIGATION*
Generally Protected A (GP.A)	-	High - Medium Significance	Mitigation before destruction

SIGNIFICANCE OF IMPACTS

If the cemetery is destroyed, the consequences would be huge: the impact would be severe, irreversible, permanent, and of national concern. If, on the other hand, the cemetery was fenced and access allowed, then there would be no impact at all.

Potential impact	**Project Activity**	**Significance before mitigation**							**Significance after mitigation**						
		M	**R**	**D**	**S**	**P**	**TOTAL**	**SP**	**M**	**R**	**D**	**S**	**P**	**TOTAL**	**SP**
Pre-Construction Phase															
Destruction of cemetery	Site clearing activities	5	5	5	1	3	48	M	0	0	0	0	0	0	none

Construction Phase															
Destruction of cemetery	Site clearing activities	5	5	5	1	3	48	**M**	0	0	0	0	0	0	**none**
Operational Phase															
Destruction of cemetery	Ventilation shaft	*0*	*5*	5	1	1	11	**V L**	0	0	0	0	0	0	**none**

Figure 2: Cemetery on edge of agricultural field

Figure 3: Granite headstone on grave

3.6.2 Site 2

A Large African cemetery is located next to an existing access road to the proposed air vent shaft, some of the graves are located in the road reserve. The site is highly overgrown and a positive estimation of the amount of graves is not possible, however no less than 80 graves are present. Some headstones contain the inscriptions of the Nhlapo family amongst others. The graves are aligned east to west and consist mostly of stone grave dressings.

Heritage Significance

FIELD RATING	*GRADE*	*SIGNIFICANCE*	*RECOMMENDED MITIGATION*
Generally Protected A (GP.A)	-	High - Medium Significance	Mitigation before destruction

SIGNIFICANCE OF IMPACTS

If the cemetery is destroyed, the consequences would be huge: the impact would be severe, irreversible, permanent, and of national concern. If, on the other hand, the cemetery was fenced and access allowed, then there would be no impact at all.

Potential impact	**Project Activity**	**Significance before mitigation**							**Significance after mitigation**						
		M	**R**	**D**	**S**	**P**	**TOTAL**	**SP**	**M**	**R**	**D**	**S**	**P**	**TOTAL**	**SP**
Pre-Construction Phase															
Destruction of cemetery	Site clearing activities	5	5	5	1	3	48	M	0	0	0	0	0	0	none
Construction Phase															
Destruction of cemetery	Site clearing	5	5	5	1	3	48	**M**	0	0	0	0	0	0	**none**

Potential impact	Project Activity	Significance before mitigation							Significance after mitigation						
		M	R	D	S	P	TOTAL	SP	M	R	D	S	P	TOTAL	SP
	activities														
Operational Phase															
Destruction of cemetery	Access route	*0*	*5*	5	1	1	11	**VL**	0	0	0	0	0	0	**none**

Figure 4: Overgrown Cemetery

3.6.3 Site 3

The site is located in close proximity to a proposed raw water dam (dam 1). The site consists of rectangular dry stone wall foundations that are no higher than 40cm. The rectangular structure measures approximately 8 x 12 meters with the entrance on the eastern side of the structure and is marked by two monoliths of which one has fallen over. The site is interpreted as a cattle kraal.

Heritage Significance

FIELD RATING	*GRADE*	*SIGNIFICANCE*	*RECOMMENDED MITIGATION*
Generally Protected B (GP.B)	-	Low - Medium Significance	Recording before destruction

SIGNIFICANCE OF IMPACTS

If the site is destroyed, the consequences would be moderate: the impact would be severe, irreversible, permanent, and of local concern. If, on the other hand, the site was fenced to protect the site during construction, then there would be no impact at all.

Potential impact	**Project Activity**	**Significance before mitigation**							**Significance after mitigation**						
		M	**R**	**D**	**S**	**P**	**TOTAL**	**SP**	**M**	**R**	**D**	**S**	**P**	**TOTAL**	**SP**
Pre-Construction Phase															
Destruction of Site	Site clearing activities	5	5	5	1	3	48	M	0	0	0	0	0	0	none
Construction Phase															
Destruction of	Site clearing activities	5	5	5	1	3	48	**M**	0	0	0	0	0	0	**none**

Potential impact	Project Activity	Significance before mitigation							Significance after mitigation						
		M	R	D	S	P	TOTAL	SP	M	R	D	S	P	TOTAL	SP
Site															
Operational Phase															
Destruction of Site	Dam 1	5	5	5	1	3	48	**M**	0	0	0	0	0	0	**none**

Figure 5: Rectangular stone structure

3.6.4 Site 4

This is the location of an informal African cemetery. The site is located next to a dirt road on a small hill. The site is not fenced and is highly overgrown making it impossible to estimate the amount of graves. The graves are aligned east to west and the grave dressings consist mostly of rock, although some have cement headstones. Inscribed headstones represent amongst others a Tshabalala family member who passed away in 1946.

Heritage Significance

FIELD RATING	***GRADE***	***SIGNIFICANCE***	***RECOMMENDED MITIGATION***
Generally Protected A (GP.A)	-	High - Medium Significance	Mitigation before destruction

SIGNIFICANCE OF IMPACTS

If the cemetery is destroyed, the consequences would be huge: the impact would be severe, irreversible, permanent, and of national concern. If, on the other hand, the cemetery was fenced and access allowed, then there would be no impact at all.

Potential impact	**Project Activity**	**Significance before mitigation**							**Significance after mitigation**						
		M	**R**	**D**	**S**	**P**	**TOTAL**	**SP**	**M**	**R**	**D**	**S**	**P**	**TOTAL**	**SP**
Pre-Construction Phase															
Destruction of cemetery	Site clearing activities	5	5	5	1	3	48	M	0	0	0	0	0	0	none
Construction Phase															
Destruction of cemetery	Site clearing activities	5	5	5	1	3	48	**M**	0	0	0	0	0	0	**none**

Operational Phase															
Destruction of cemetery	Access route	*0*	*5*	5	1	1	11	**VL**	0	0	0	0	0	0	**none**

Figure 6: Overgrown cemetery

3.6.5 Site 5

The site consists of rectangular dry stone wall foundations that are no higher than 40cm. The rectangular structure measures approximately 11 x 11 meters with the entrance on the eastern side of the structure and is marked by two upright standing monoliths. The site has the same characteristics as site 3 and is probably linked. The site is interpreted as a cattle kraal.

Heritage Significance

FIELD RATING	***GRADE***	***SIGNIFICANCE***	***RECOMMENDED MITIGATION***
Generally Protected B (GP.B)	-	Low - Medium Significance	Recording before destruction

SIGNIFICANCE OF IMPACTS

If the site is destroyed, the consequences would be moderate: the impact would be severe, irreversible, permanent, and of local concern. If, on the other hand, the site was fenced to protect the site during construction, then there would be no impact at all.

Potential impact	**Project Activity**	**Significance before mitigation**							**Significance after mitigation**						
		M	**R**	**D**	**S**	**P**	**TOTAL**	**SP**	**M**	**R**	**D**	**S**	**P**	**TOTAL**	**SP**
Pre-Construction Phase															
Destruction of Site	Site clearing activities	5	5	5	1	3	48	M	0	0	0	0	0	0	none
Construction Phase															
Destruction of Site	Site clearing activities	5	5	5	1	3	48	**M**	0	0	0	0	0	0	**none**

Potential impact	Project Activity	Significance before mitigation							Significance after mitigation						
		M	R	D	S	P	TOTAL	SP	M	R	D	S	P	TOTAL	SP
Operational Phase															
Destruction of Site	Dam 1	*5*	*5*	5	1	3	48	**M**	0	0	0	0	0	0	**none**

Figure 7: Upright monoliths marking entrance to structure

3.6.6 Site 6

The site consists of several well preserved rectangular dry stone wall structures. Some of these structures are interpreted as cattle kraals while some have added extensions for smaller livestock. Others can be interpreted as possible residential dwellings. The site is located on a small hill in close proximity to a proposed raw water dam (dam 2). Further upslope more sites can be expected.

Heritage Significance

FIELD RATING	***GRADE***	***SIGNIFICANCE***	***RECOMMENDED MITIGATION***
Generally Protected B (GP.B)	-	Low - Medium Significance	Recording before destruction

SIGNIFICANCE OF IMPACTS

If the site is destroyed, the consequences would be moderate: the impact would be severe, irreversible, permanent, and of local concern. If, on the other hand, the site was fenced to protect the site during construction, then there would be no impact at all.

Potential impact	**Project Activity**	**Significance before mitigation**							**Significance after mitigation**						
		M	**R**	**D**	**S**	**P**	**TOTAL**	**SP**	**M**	**R**	**D**	**S**	**P**	**TOTAL**	**SP**
Pre-Construction Phase															
Destruction of Site	Site clearing activities	5	5	5	1	3	48	M	0	0	0	0	0	0	none
Construction Phase															
Destruction of Site	Site clearing activities	5	5	5	1	3	48	**M**	0	0	0	0	0	0	**none**

Potential impact	Project Activity	Significance before mitigation							Significance after mitigation						
		M	R	D	S	P	TOTAL	SP	M	R	D	S	P	TOTAL	SP
Operational Phase															
Destruction of Site	Dam 2	5	5	5	1	3	48	**M**	0	0	0	0	0	0	**none**

Figure 8: Rectangular stone walling

3.6.7 Site 7

This is the location of an informal African cemetery. The site is located next to the farm fence and a drainage line. The graves are aligned east to west and the grave dressings consist mostly of rock, although some have cement and sandstone headstones. Inscribed headstones represent amongst others a Khumalo family member who passed away in 1958.

Heritage Significance

FIELD RATING	*GRADE*	*SIGNIFICANCE*	*RECOMMENDED MITIGATION*
Generally Protected A (GP.A)	-	High - Medium Significance	Mitigation before destruction

SIGNIFICANCE OF IMPACTS

If the cemetery is destroyed, the consequences would be huge: the impact would be severe, irreversible, permanent, and of national concern. If, on the other hand, the cemetery was fenced and access allowed, then there would be no impact at all.

Potential impact	**Project Activity**	**Significance before mitigation**							**Significance after mitigation**						
		M	**R**	**D**	**S**	**P**	**TOTAL**	**SP**	**M**	**R**	**D**	**S**	**P**	**TOTAL**	**SP**
Pre-Construction Phase															
Destruction of cemetery	Site clearing activities	5	5	5	1	3	48	M	0	0	0	0	0	0	none
Construction Phase															
Destruction of cemetery	Site clearing activities	5	5	5	1	3	48	**M**	0	0	0	0	0	0	**none**

Operational Phase															
Destruction of cemetery	Access route	*0*	*5*	5	1	1	11	**VL**	0	0	0	0	0	0	**none**

Figure 9: Granite Headstone

3.6.8 Site 8

The site consists of the foundations of the demolished rectangular stone wall foundations of a farm labourer dwelling. Some bricks scattered over the site contain the inscriptions “REX ZUURFONTEIN”. Associated with the site is an ash midden containing bone, glass and metal. The site is probably linked to site 7.

Heritage Significance

FIELD RATING	***GRADE***	***SIGNIFICANCE***	***RECOMMENDED MITIGATION***
Generally Protected A (GP.A)	-	Low Significance	Destruction

SIGNIFICANCE OF IMPACTS

If the site is destroyed, the consequences would be low: the impact would be severe, irreversible, permanent, and of local concern. If, on the other hand, the site was fenced to protect the site during construction, then there would be no impact at all.

Potential impact	**Project Activity**	**Significance before mitigation**							**Significance after mitigation**						
		M	**R**	**D**	**S**	**P**	**TOTAL**	**SP**	**M**	**R**	**D**	**S**	**P**	**TOTAL**	**SP**
Pre-Construction Phase															
Destruction of Site	Site clearing activities	5	5	5	1	3	48	M	0	0	0	0	0	0	none
Construction Phase															
Destruction of Site	Site clearing activities	5	5	5	1	3	48	**M**	0	0	0	0	0	0	**none**

Potential impact	Project Activity	Significance before mitigation							Significance after mitigation						
		M	R	D	S	P	TOTAL	SP	M	R	D	S	P	TOTAL	SP
Operational Phase															
Destruction of Site	Dam 5	*5*	*5*	5	1	3	48	**M**	0	0	0	0	0	0	**none**

Figure 10: General Site conditions

3.7. ASSUMPTIONS AND LIMITATIONS

Due to the nature of cultural remains that occur, in most cases, below surface, the possibility remains that some cultural remains may not have been discovered during the survey. Low ground visibility is present on site due to exceptional high vegetation growth and the possibility of the occurrence of unmarked graves can not be excluded. Although Wits Heritage Contracts unit surveyed the area as thorough as possible, it is incumbent upon the developer to inform the relevant heritage agency should further cultural remains be unearthed or laid open during the process of development.

.4. POTENTIAL IMPACTS

Pre-Construction phase:

It is assumed that the pre-construction phase involves the removal of topsoil and vegetation as well as the establishment of road infrastructure needed for the construction phase. These activities can have a negative and irreversible impact on all of the recorded heritage sites. Impacts include destruction or partial destruction of non renewable heritage resources.

Construction Phase

During this phase the impacts and effects are similar in nature but more extensive than the pre-construction phase. These activities can have a negative and irreversible impact on all of the recorded heritage sites. Impacts include destruction or partial destruction of non renewable heritage resources.

Operation Phase:

If the heritage recourses are responsibly managed during the pre-construction and construction phases of the project little further impact is envisaged for the recorded heritage resources. However expansion of the mine must be planned to protect and preserve known sites.

.5. RECOMMENDATIONS

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

Sites 1, 2, 4 and 7:

The best option and first prize would be the preservation of the cemeteries *in situ*. If the cemeteries were to be preserved, it will have to be fenced of and provided with a gate for access by family members. A buffer zone of at least 10 meters will have to be kept around the graves as to facilitate the protection of the site during development.

Sites 3, 5, 6 and 8

If possible none of the documented sites must be destructed, however if this is not an option the following recommendations are applicable for the following sites.

Site 3, 5 and 8: The documentation of these sites as recorded in this assessment will suffice and no further action is necessary for these sites.

Site 6: If this site is impacted upon by the proposed development it is recommended that the site be documented in the form of scaled plan sketches after which a destruction permit must be applied for from SAHRA.

It is further recommended that access routes etc. must be surveyed before development commences as this was not part of the present scope and will have an effect on the documented resources.

6. CONCLUSIONS

Eight sites of heritage significance were identified during the survey of the footprint of the proposed raw water dam alternatives, decline shaft, and ventilation shafts. Some impact on these sites can be expected during the course of the development. If the recommendations as made in section 5 of this report are adhered to there are from a Heritage point of view no reasons why the project can not commence.

General

Low ground visibility is present on parts of the sites due to high vegetation growth and the possibility of the occurrence of unmarked graves and subsurface finds can not be excluded. If during construction any possible finds are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find.

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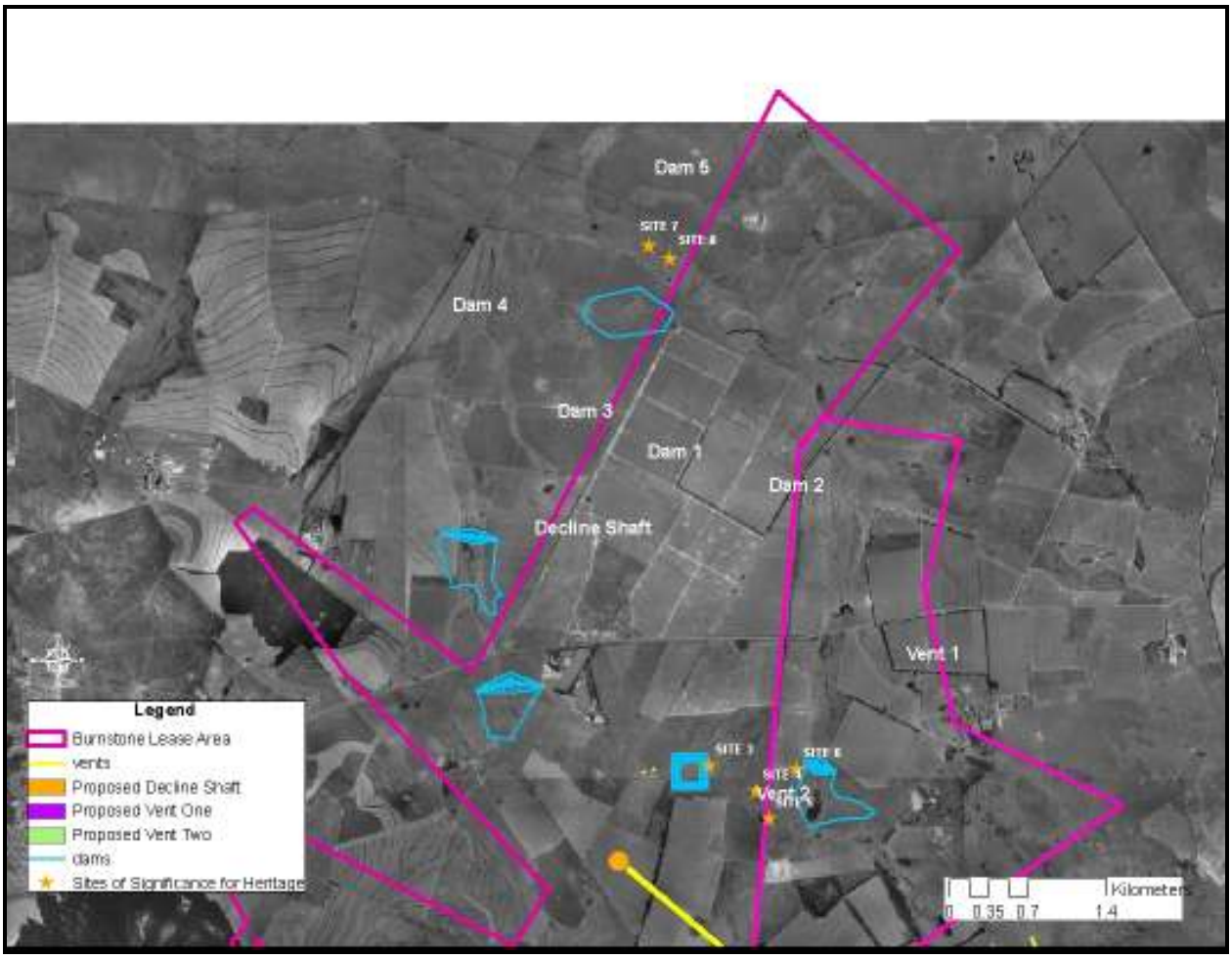
ANNEXURE A:
Locality Map
&
Site Co-ordinates

Site Number	Type of Site	Co-ordinates
Site1	Cemetery	S26.693940 E028.683018
Site 2	Cemetery	S26.681370 E028.666513
Site 3	Historical/Recent	S26.652555 E028.678768
Site 4	Cemetery	S26.654575 E028.682993
Site 5	Historical/Recent	S26.656838 E028.684098
Site 6	Historical/Recent	S26.652890 E028.686625
Site 7	Cemetery	S26.610682 E028.673476
Site 8	Historical/Recent	S26.611758 E028.675324


Dam 5
SITE 7
SITE 8
Dam 4
Dam 3
Dam 1
Dam 2
Decline Shaft
Vent 1
SITE 3
SITE 6
SITE 4
Vent 2
Legend
Burnstone Lease Area
vents
Proposed Decline Shaft
Proposed Vent One
Proposed Vent Two
dams
Sites of Significance for Heritage
Kilometers
0 0.35 0.7 1.4