Xstrata Alloys

HERITAGE ASSESSMENT

Rietvlei Silica Mine on portions of the farm Rietvlei 271 JQ, Rustenburg, North West Province

Version 1

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EXECUTIVE SUMMARY

As we know from legislation the surveying, capturing and management of heritage resources is an integral part of the greater management plan laid down for any major development or historic existing operation. With the proclamation of the National Heritage Resources Act 1999 (Act 25 of 1999), this process has been lain down clearly. This legislation aims to under pin the existing legislation, which only addresses this issue at a glance, and gives guidance to developers and existing industries to the management of their Heritage Resources.

This document forms part of the Environmental Management Program for the mining activities of Rietvlei Silica Mine on the farm Rietvlei 271 JQ, Rustenburg, North West Province

The following outline the findings of the report:

During the survey two sites were found within foot print of the mining area. The recommendations for further mitigation is as follows

MHC001

In the event of destruction:
It is recommended that the blockhouse and associated structures be documented mapped and where possible original surfaces opened up during mapping.

If to be preserved:
It is recommended that the structure be documented, the original surfaces be opened up and the structure be secured by sandbagging to protect the structure from blasting activities and erosion.

MHC002
It is recommended that the site be monitored by a qualified archaeologist during construction to identify possible cultural remains subsurface.

General

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.

A heritage resources management plan must be developed for managing the heritage resources in the study area during construction and operation of the development. This includes

- ***basic training for construction staff on possible finds,***
- ***action steps for mitigation measures, surface collections, excavations and***
- ***communication routes to follow in the case of a discovery.***

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EXECUTIVE SUMMARY

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1. INTRODUCTION

MATAKOMA-ARM Heritage Contracts Unit was contracted by Xstrata Alloys to conduct a Heritage Assessment for the mining activities of their existing Rietvlei Silica Mine on the farm Rietvlei 271 JQ, Rustenburg, North West Province.

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.

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.

During the survey, two sites of archaeological 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 scrutiny.

1.1 PROJECT DESCRIPTION

The project consists of an existing silica mine on a portion of the farm Rietvlei 271 JQ. The mine has been in existence for a number of years. It is currently mining as section of the Magliesberg mountain range to the north of Magatasnek, the access route that links Rustenburg and Swartruggens via the N4 highway.

The total area of the mine measures nearly 260 ha.

This study forms part of the upgrade of the Environmental Management Program for Xtsrata's Rietvlei Silica Mine

Refer to *Figure 1* for a layout map of the mining activities.

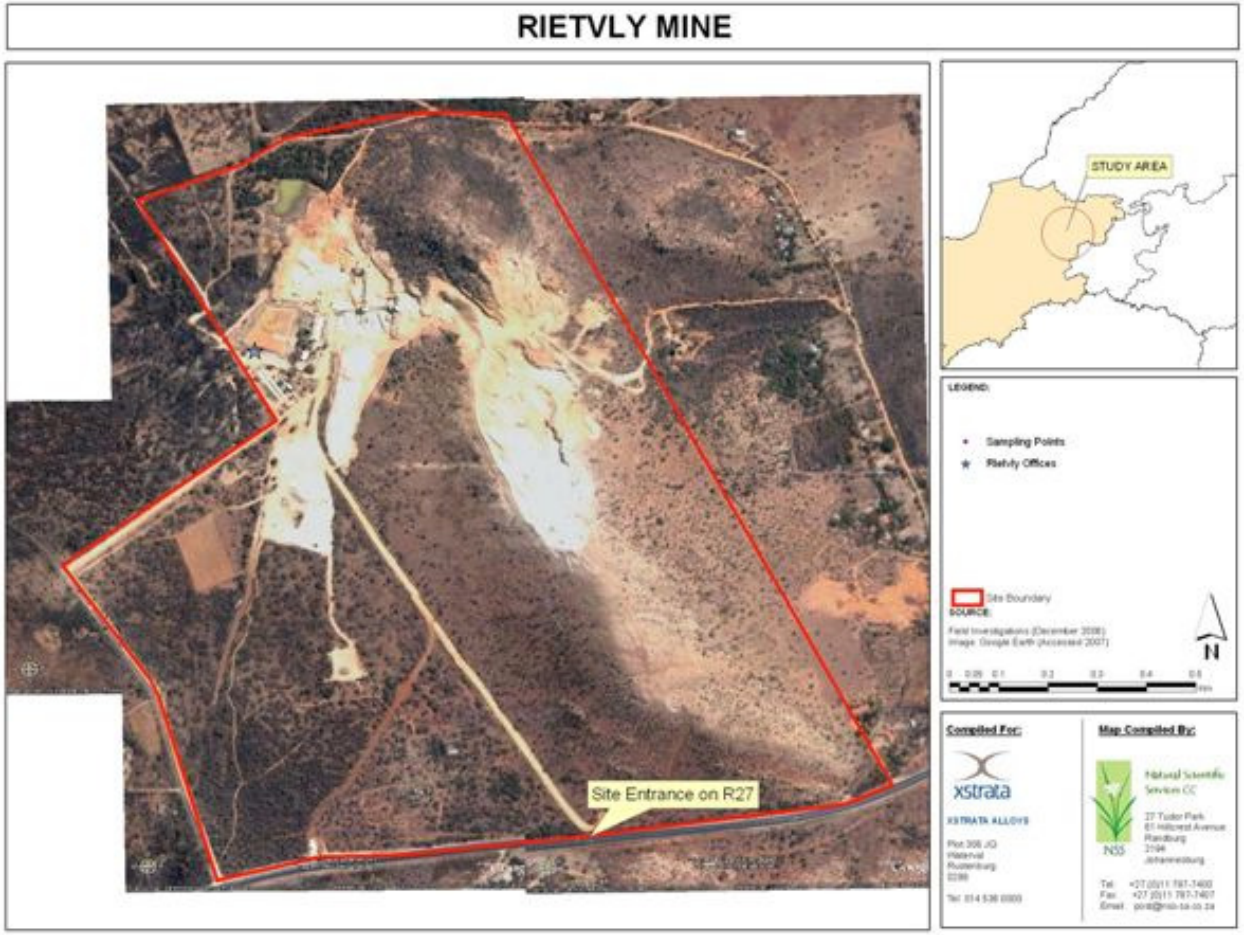

Figure 1: Layout Map of Rietvlei Silica Mine

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 occur below surface, a physical walk through of the development area was conducted. The study area was surveyed over three days, by means of vehicle and extensive surveys on foot.

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.

The areas surveyed were those directly impacted on by the proposed development. The proposed nature reserve was not surveyed as it will not be impacted on and existing roads will be utilised for access.

3. WORKING WITH LEGISLATION

It is very important that cultural resources be evaluated according to the National Heritage Recourse Act. In accordance with the Act, we have found the following:

These sites are classified as important based on evaluation of the National Heritage Recourses Act 1999 (Act No 25 of 1999) section 3 (3).
A place or object is to be considered part of the national estate if it has cultural significance or other special value because of-

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

(Refer to Section 9 of this document for assessment)

These sites should be managed through using the National Heritage Recourses Act 1999 (Act No 25 of 1999) sections 4,5 and 6 and sections 39-47.

This document forms part of the Environmental Management program upgrade conducted for the mine’s activities.

Please refer to Section 9 for Management Guidelines.

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 B (GP.B)	-	Medium Significance	Recording before destruction
Generally Protected C (GP.C)	-	Low Significance	Destruction

4.2.2 Impact Rating

VERY HIGH

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

Example: The loss of a species would be viewed by informed society as being of VERY HIGH significance.

Example: The establishment of a large amount of infrastructure in a rural area, which previously had very few

services, would be regarded by the affected parties as resulting in benefits with a VERY HIGH significance.

HIGH

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

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

Example: The change to soil conditions will impact the natural system, and the impact on affected parties (in this case people growing crops on the soil) would be HIGH.

MODERATE

These impacts will usually result in medium- to long-term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are real but not substantial.

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

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

LOW

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

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

Example: The increased earning potential of people employed as a result of a development would only result in benefits of LOW significance to people who live some distance away.

NO SIGNIFICANCE
There are no primary or secondary effects at all that are important to scientists or the public.
Example: A change to the geology of a particular formation may be regarded as severe from a geological perspective, but is of NO significance in the overall context.

4.2.3 Certainty

DEFINITE: More than 90% sure of a particular fact. Substantial supportive data exist to verify the assessment.
PROBABLE: Over 70% sure of a particular fact, or of the likelihood of impact occurring.
POSSIBLE: Only over 40% sure of a particular fact or of the likelihood of an impact occurring.
UNSURE: Less than 40% sure of a particular fact or likelihood of an impact occurring.

4.2.4 Duration

SHORT TERM: 0 to 5 years
MEDIUM: 6 to 20 years
LONG TERM: more than 20 years
DEMOLISHED: site will be demolished or is already demolished

Example
Evaluation

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Mitigation
Negative	Moderate	Grade GP.B	Possible	Short term	B

5. HISTORICAL BACKGROUND OF AREA

As heritage surveys deal with the locating of heritage resources in a prescribed cartographic landscape, the study of archival and historical data, and especially cartographic material, can represent a very valuable supporting tool in finding and identifying such heritage resources.

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

5.1 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.

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.

5.2 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.

The farms Modewill, Selonskraal and Shylock have extensive known archaeological stonewalled settlements associated with the Bakwena Bamodimosana chiefdoms.

The largest of these settlements is Molokwane, occupied by the Bakwena Bamodimosana tribe between 1650 and 1770. It covers an area of approximately 4 km². The site is seen as having national significance and graded as Level 1.

5.2.1 ETHNOGRAPHY OF AREA

Tswana

The Tswana chiefdoms form part of the larger group of Sotho peoples, while the Sotho group itself is one of the three great sub-divisions of the Bantuspeaking peoples situated north of the Nguni. In addition to the Batswana or 'Western Sotho', the Sotho group includes the Basotho of Lesotho and the Orange Free State, to whom the term 'Sotho' has come to be more specifically and almost exclusively applied. This group sometimes also is referred to as the 'Southern Sotho'. The third group comprises the Bapedi who have been generally referred to as the 'Northern Sotho.

These different Sotho groups that together may be more conveniently described as 'Sotho-Tswana' at the very earliest stage of their history shared a number of linguistic and cultural characteristics that distinguished them from other Bantu-speakers of southern Africa.

These are features such as totemism, a pre-emptive right of men to marry their maternal cousins, and an architectural style characterised by a round hut with a conical thatch roof supported by wooden pillars on the outside. Other minor distinguishing features included their dress of skin cloaks or dikobo and breech-cloths, a variety of Moloko –type pottery and a predilection for dense and close settlements, as well as a tradition of large-scale building in stone.

Four groups are of importance in the study area. These are the Fokeng, Tlokwa, Thlako and Kgatla. This area surrounding the study area was always seen as a contentious area between the Fokeng and Tlokwa.

Bafokeng

The Bafokeng-Bakwena may be considered to be the most numerous and influential remainder of the large and important branch of the Sotho/Tswana people who flowed through what is today Botswana and southwards into the Western Transvaal.

According to Bafokeng oral traditions, the land in the Transvaal that they regarded as their traditional land from about 1700 extended to the Selons River in the west, Sterkstroom in the east, the Magaliesberg in the south, and at least up to the Elands River in the north (Bergh, 2005).

Mzilikazi

Mzilikazi was born in 1795 to Mashobane, chief of the Northern Khumalo clan in Zululand. On the death of Chief Mashobane, who had been murdered by Zwide, Mzilikazi was duly installed as chief of the Northern Khumalo clan. But, after Dingiswayo's death, instead of siding with Zwide, in exchange for the protection of his people, Mzilikazi swore allegiance to Shaka, who had risen to power as a commander of Dingiswayo's army and had usurped the Zulu chieftainship and taken over the Mthethwa confederacy after Dingiswayo's death, (Howcroft,undated).

Proving himself a fearless warrior, Mzilikazi soon became one of Shaka's advisers. Shaka's trust, however, was misplaced. Mzilikazi dreamed of being a potentate himself. Dissatisfied with a life of subservience, he plotted to free himself and his people from Shaka's influence. In June 1822, Shaka sent Mzilikazi's regiments to attack the Sotho chief Ranisi (Somnisi). They pounced on the Sotho chief's defenceless rabble and drove away their herds. Defying Shaka, Mzilikazi refused to give up the spoils of battle and in June 1822, he bolted with his followers, (Howcroft,undated).

The Matabele

Moving north and north-west, as he pillaged and slaughtered, Mzilikazi rounded up the strong men and women, turning the men into army recruits and the women into concubines for his warriors, his possessions increasing with his power and prestige, and his followers numbering, in due course, more Sotho youths than Zulu. Having cleared for himself a wide area, in about 1822-23 Mzilikazi temporarily joined forces with Nxaba, a chieftain of the Nguni-speaking Ndzundza Ndebele community who lived in the Middelburg area. Here, he built the royal kraal ekuPhumuleni (Place of Rest). By then, the size of the Khumalo clan was swollen by other Nguni-speakers who had settled in the area.

During the early years of their migrations Sotho-speakers of the highveld called Nguni-speakers 'maTebele', a name they used for all people who came from the coast, whereas the Nguni-speakers called themselves Ndebele. After the arrival of Mzilikazi on the highveld, the name Matabele became especially attached to his fearful hordes, and historians later wrote of this period referring to the Matabele wars. While living among the Ndzundza, Mzilikazi subjugated the old baPedi kingdom of Chief Thulare, killing five of his nine sons, but one son, Sekwati, fled north to the Soutpansberg Mountains, where his people were able to repulse Mzilikazi's attacks.

Mzilikazi settled for a while along the Vaal River until Korana cattle raiders became a threat. In the winter of 1827, Mzilikazi decided to move northwards. The Matabele army swept through the Magaliesberg via Kommandonek near the present Hartbeespoort Dam. Mzilikazi established temporary settlements near present-day Rustenburg, then launched into action against the baKwena, roasting some alive, clubbing most to death, and piling the infants onto mounds of brushwood, which were set ablaze. After falling on the Kwena at Silkaatsnek the Matabele turned on the Po who were easily overwhelmed. Kgatla Chief Pilane fled to the hills that now bear his name. Mzilikazi ruthlessly, massacred the remaining Tswana groups in the area. Using the Magaliesberg as his centre, Mzilikazi expanded his kingdom, which by then

stretched from the Vaal River in the south to the confluence of the Crocodile and Limpopo Rivers.

Between 1827 and 1832, Mzilikazi built himself three military strongholds. The largest was Kungwini, situated at the foot of the Wonderboom Mountains on the Apies River, just north of present day Pretoria. Another was Dinaneni, north of the Hartbeespoort Dam, while the third was Hlahlandlela in the territory of the Fokeng near Rustenburg. By 1829, the total Matabele population numbered about 70,000, consisting of the Matabele elite and a vast number who had been enslaved. Most of the Tswana settlements were desolate, (Carruthers, 1990).

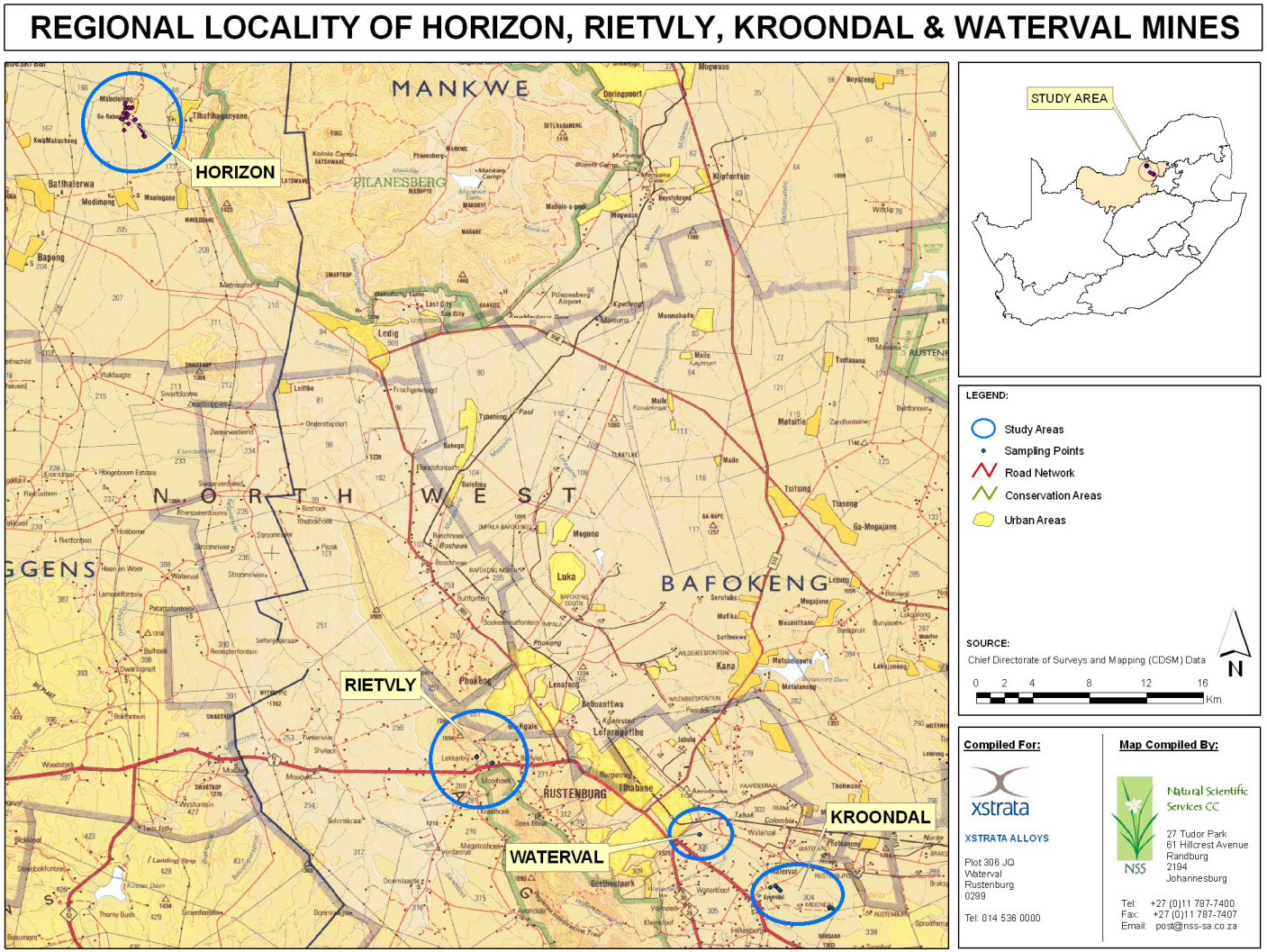

Figure 2: Regional Setting

5.3 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.

South African War
From July 1900 numerous skirmishes and engagements took place in the region of Magatasnek between British and Boer forces. These include:

22nd July 1900 Skirmish, Selons River, Rustenburg
23rd July 1900 Skirmish, Koster River, South African Republic
16th August 1900 Skirmishes, Magatonek
30th September 1901 Battle of Moedwil, Selons River , Zeerust/Rustenburg, Transvaal

6. SITES OF SIGNIFICANCE

6.1 2527CA-MHC001

Description of Site: ***Site Number***			
Map reference	***Topo-sheet number***	***Number of Map in report***	
	2527CA	***Annexure B***	
GPS coordinates: *Indicate Model and datum - WGS 84*	X	Y	
Garmin 38, WGS 84	-25.7048268	+31.0375947	
Site Data	***Description***		
Type of site *(e.g. open scatter; shell midden, cave /shelter);*	The site consists of the remains of a Rice-type block house dating from the South African War. Associated with the blockhouse foundation is a small stone structure possibly a sangar (small fortification) utilised as machinegun placements.		
Site categories *(e.g. Earlier Stone Age, Late Iron Age);*	Archaeological - Historic		

Context *(i.e. primary or secondary);*	Primary
Cultural affinities, approximate age and significant features of the site;	The remains indicate the existence of a Rice-type blockhouse on the site. Along with spent MarkII Cordite cartridges, with the Royal laboratories headstamp and uniform buttons with 'Smith&Wright LMTd, Birm' insignia, this site is indicate to date to the South African War of 1899 to 1902.
Estimation or measurement of the extent *(maximum dimensions) and orientation of the site(s);*	50x50m
Depth and stratification of the site *(where shovel test permits have been given), both in the text and through photographs of the sections;*	None visible
Possible sources of information about past environments, such as stalactites/ stalagmites, flowstone, dassie middens, peat or organic rich deposits.	None
Photographs and diagrams *(Figure numbers)*	

Figure 3: Photo of blockhouse foundation

Figure 4: Photo of sangar

	 Figure 5: Picture of Rice type blockhouse  Figure 6: Picture of know sangar
Statement of Significance *(Heritage Value)*	The site is of medium to high significance.
Field Rating *(Recommended grading or field significance)* of the site:	Generally protected (GP.B)
Impact Evaluation *of development on site*	Impact on site is seen as medium to high negative, through possible destruction of site. As one of the original blockhouses has been destroyed during earlier mining operations – the impact on this site through destruction is seen as high.
Recommendations *including:*	***In the event of destruction:*** It is recommended that the blockhouse and associated structures be documented mapped and where possible original surfaces opened up during mapping. ***If to be preserved:***

	It is recommended that the structure be documented, the original surfaces be opened up and the structure be secured by sandbagging to protect the structure from blasting activities and erosion.				
Summary					
Field Rating	**Impact**	**Impact Significance**	**Certainty**	**Duration**	**Mitigation**
Grade GP.B	Negative	High	Negative	Permanent	C

6.2 2527CA-MHC002

Description of Site: ***Site Number***			
Map reference	***Topo-sheet number***	***Number of Map in report***	
	2527CA	***Annexure B***	
GPS coordinates: *Indicate Model and datum - WGS 84*	X	Y	
Garmin 38, WGS 84	-25.7044137	+31.0357654	
Site Data	***Description***		
Type of site *(e.g. open scatter; shell midden, cave /shelter);*	The site is characterised by a large scatter of potsherds, exposed during grading activities.		
Site categories *(e.g. Earlier Stone Age, Late Iron Age);*	Iron Age		
Context *(i.e. primary or secondary);*	Secondary		
Cultural affinities, approximate age and significant features of the site;	Pottery indicate Late Iron Age Moloko sequence		
Estimation or measurement of the extent *(maximum dimensions) of the site(s);*	Site is approximately 30m x 30m		
Depth and stratification of the site *(where shovel test permits have been given), both in the text and through photographs of the sections;*	None visible		
Possible sources of information about past environments, such as stalactites/ stalagmites, flowstone, dassie middens, peat or organic rich deposits.	None		

Photographs and diagrams *(Figure numbers)*	 Figure 7 – General Site photo  Figure 8 – Decorated pottery
Statement of Significance *(Heritage Value)*	The site is of **low** heritage significance
Field Rating *(Recommended grading or field significance)* of the site:	Generally protected (GP.B)

Impact Evaluation *of development on site*	Impact on site is seen as low negative				
Recommendations *including:*	It is recommended that the site be monitored by a qualified archaeologist during construction to identify possible cultural remains subsurface.				
Summary					
Field Rating	**Impact**	**Impact Significance**	**Certainty**	**Duration**	**Mitigation**
Grade GP.B	Negative	Low	Possible	Long term	A

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. Although MATAKOMA-ARM 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.

8. LEGAL AND POLICY REQUIREMENTS

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.

9. ASSESSMENT AND RECOMMENDATIONS

A map of Heritage Sites is provided in ***Annexure A***

A summary of the recommendations for the sites identified:

During the survey two sites were found within foot print of the mining area. The recommendations for further mitigation is as follows

MHC001

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It is recommended that the blockhouse and associated structures be documented mapped and where possible original surfaces opened up during mapping.

If to be preserved:
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sandbagging to protect the structure from blasting activities and erosion.

MHC002
It is recommended that the site be monitored by a qualified archaeologist during construction to identify possible cultural remains subsurface.

General

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.

A heritage resources management plan must be developed for managing the heritage resources in the study area during construction and operation of the development. This includes

- ***basic training for construction staff on possible finds,***
- ***action steps for mitigation measures, surface collections, excavations and***
- ***communication routes to follow in the case of a discovery.***

10. LIST OF PREPARES

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11. REFERENCES

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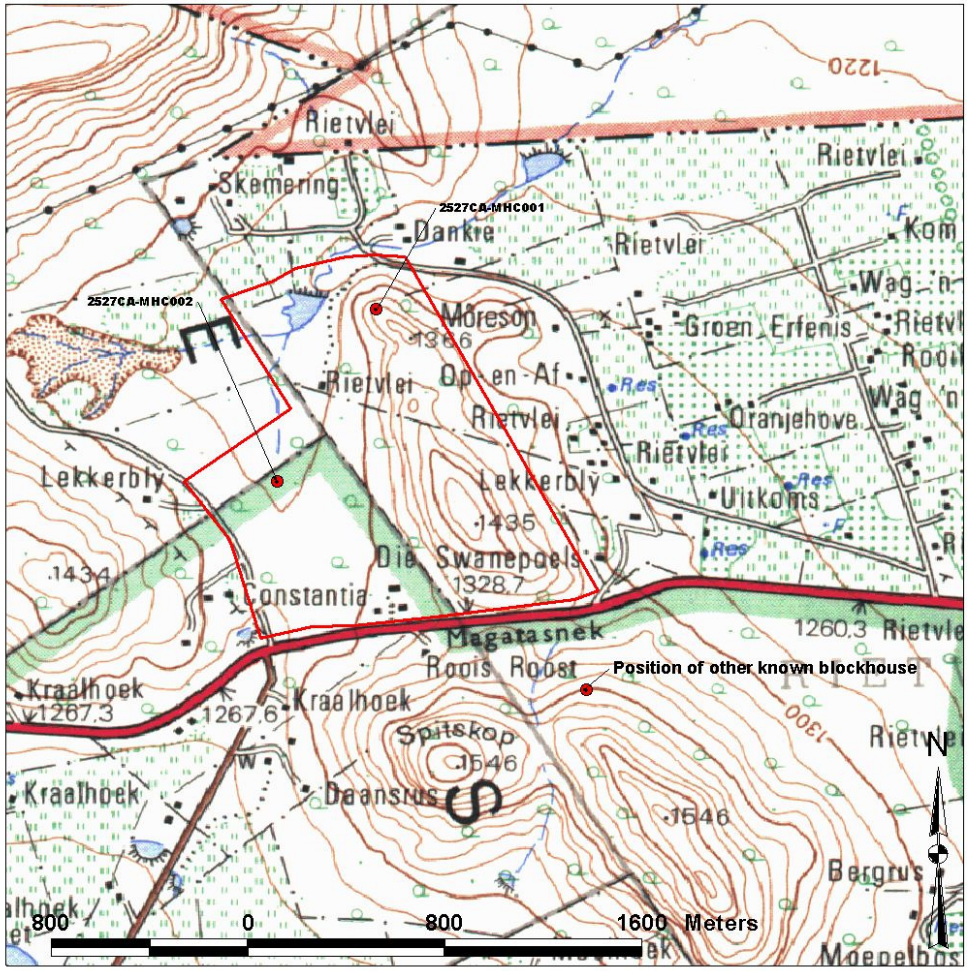
ANNEXURE A: Site Maps

Rietvlei Mine Heritage Sites



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