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**1st PHASE
CULTURAL HERITAGE IMPACT ASESSEMENT
FOR THE FARMS
DONKERPOORT 448 KQ, RANDSTEPHNE 455 KQ AND WATERVAL 443
KQ, THABAZIMBI, LIMPOPO PROVINCE.**



REPORT PREPARED BY

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Originally dated JUNE 2011, edited FEBRUARY 2014 and supplied with Appendix MAY 2014

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1. CONTACT DETAILS.

1.1. OWNERS DETAILS¹

FARMS	NAME	TEL	E-MAIL
DONKERPOORT 448 KQ REMAINING EXTENT	Aquila Steel (S Africa) (Proprietary) (Limited)	(011) 463 1340	jvanbreda@aquilaresources.co.za
RANDSTEPHNE 455 KQ REMAINING EXTENT			
WATERVAL 443 KQ			

<p>1.2. DEVELOPERS. AQUILA RESOURCES, Aquila Steel (S Africa) (Proprietary) (Limited) c/o Lood and Platina Strs, Thabazimbi, 0380 South Africa CONTACT PERSON 1. Johan Van Deventer Telephone (27)14 772 3337 Fax (27)86 644 1367 E-mail jvandeventer@aquilaresources.com.au CONTACT PERSON 2. Jacques Bronkhorst E-mail jacques@aquilasteel.co.za</p> <p>1.3. CONSULTANTS a. Environment SHANGONI MANAGEMENT SERVICES. Pty Ltd. CONTACT PERSON. Lee-Anne Meiring Telephone (27) 12 807 7036 Fax (27) 12 807 1014 e-mail leeanne@shangoni.co.za</p>	<p>b. Heritage AFRICAN HERITAGE CONSULTANTS CONTACT PERSON. Sidney Miller Telephone (27)82 939 6536. Fax e-mail sidneymears@gmail.com</p> <p>1.4. TYPE OF DEVELOPMENT Mining</p> <p>1.5. ZONING OF SITE Farming</p> <p>1.6. DESCRIPTION OF FARM/S See figure below</p> <p>1.7. GPS COORDINATES See table below</p>
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2. GPS COORDINATES OF THE HERITAGE SITES.

GPS coordinates of sites identified.			
Description of site		Degrees south	Degrees east
Site 1.	PERREIRA GRAVE.	24° 37' 03. 10"	27° 36' 22. 40"
Site 2.	GATKOP CAVE.	24° 37' 04. 60"	27° 39' 08. 40"
Site 3a.	RANDSTEPHNE HOMESTEAD.	24° 35' 51. 90"	27° 40' 17. 80"
Site 3b.	LABOURERS CEMETRY.	24° 35' 53. 80"	27° 40' 36. 30"
Site 4a	CATTLE ENCLOSURE 1	24° 37' 10. 10"	27° 36' 29. 80"
Site 4b	CATTLE ENCLOSURE 2	24° 37' 14. 10"	27° 37' 13. 50"
Site 4c	CATTLE ENCLOSURE 3	24° 36' 52. 00"	27° 39' 00. 90"
Site 4d	CATTLE ENCLOSURE (4?)	24° 35' 43. 20"	27° 39' 01. 50"
Site 4e	CATTLE ENCLOSURE (5?)	24° 35' 48. 10"	27° 39' 24. 60"
Site 4f	PRE COLONIAL MINE 1	24° 35' 28. 40"	27° 39' 46. 80"
Site 4g	PRE COLONIAL MINE (?)	24° 34' 58. 83"	27° 39' 17. 10"
Site 4h	PRE COLONIAL MINE (?)	24° 34' 53. 44"	27° 39' 41. 60"
Site 4i a	LIVING ENCLOSURE.	24° 35' 02. 84"	27° 40' 04. 62"
Site 4i b	LIVING ENCLOSURE.	24° 34' 59. 43"	27° 40' 03. 51"
Site 4j	SMELTING SITE.	24° 35' 06. 10"	27° 40' 04. 97"
Site 4k	LIVING ENCLOSURE.	24° 35' 25. 60"	27° 39' 43. 82"
Site 4l	LIVING ENCLOSURE.	24° 37' 08. 60"	27° 36' 54. 50"
Site 5	BRIDGES.	24° 37' 10. 03"	27° 36' 24. 85"

¹ For information regarding land owners, contact Shangoni as detailed above.

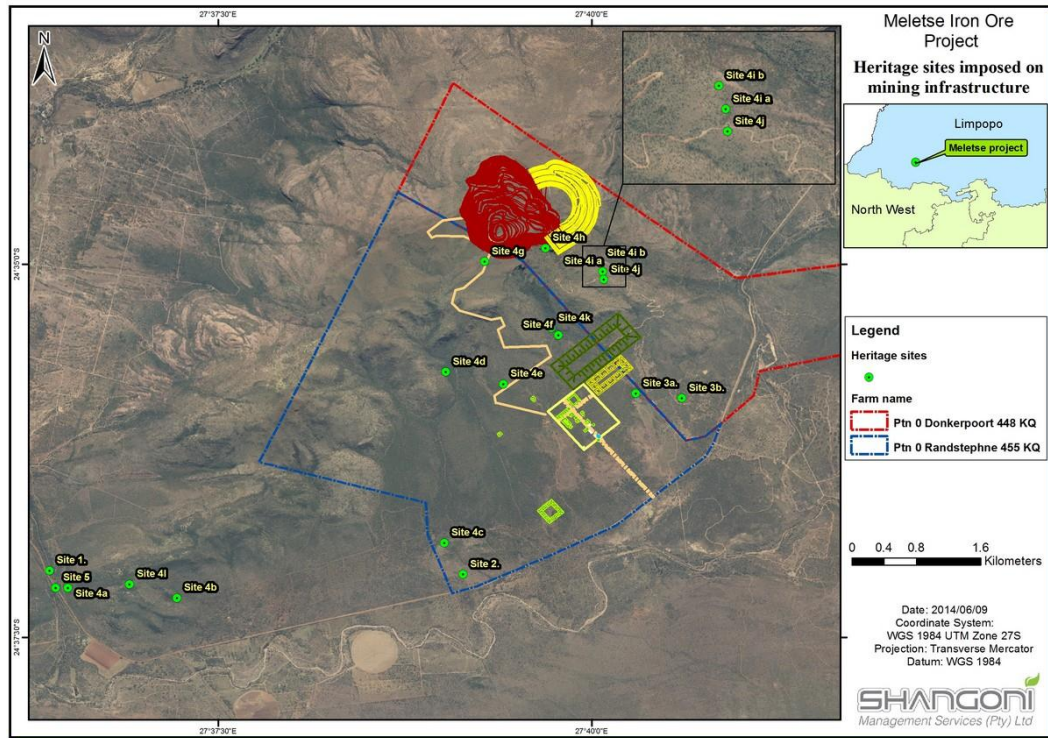


Fig.1. Heritage sites identified during 2011 survey. (Google Earth and Shangoni annotations)

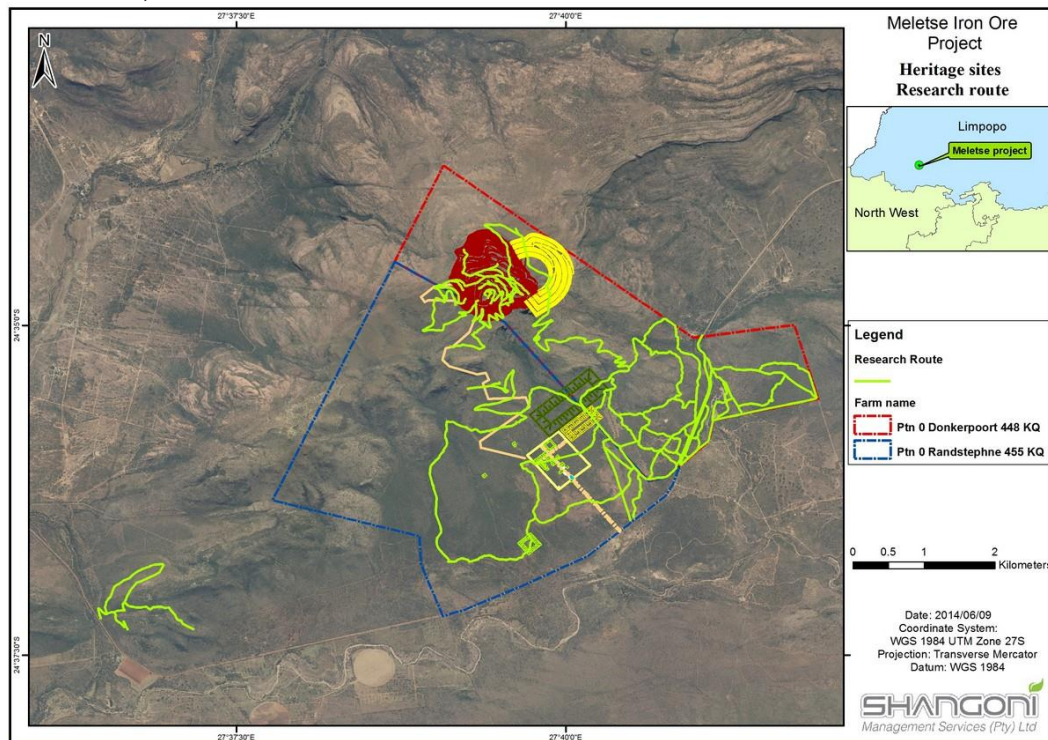


Fig.2. (See figures 3 and 4.) Heritage investigation route is presented in lime green lines that were used for the heritage investigation. As the geography of the site presents a serious vertical challenge both for normal human settlement, as well as for investigation for heritage sites, the exploration roads were utilised to access normal levels for human activity. The heritage investigation also used all the information retrieved by the geologists during their survey of the mountain. (Google Earth image, S.M. Miller track record and Shangoni annotations)

3. EXECUTIVE SUMMARY for JUNE 2011 ADDENDUM for FEBRUARY 2014, and ADDENDUM May 2014

3.1. JUNE 2011. ²

Site 1. The grave of one J.H.T.O. PERREIRA is located on the banks of the Sondagsrivier close to the bridge. *(The site is of high significance, and should be treated accordingly.)*

Site 2. The second site is a dolomite cave that is still regularly visited for religious purposes. *(The site should be seen to be of very high significance and treated accordingly. No demolition can be considered.)*

Site 3a. The third site is the original Randstephne homestead. *(This building is of high significance and should be treated as such. No demolition can be considered.)*

Site 3b. Closely associated with this homestead is the graveyard and former dwellings of the farm labourers that (one must assume), was the workforce associated with the dwelling on Randstephne. *(The ruins of the dwellings will not benefit with any further attention and need not to be protected.) (The graves are of high significance and should be treated as such. Relocation is advised.)*

Site 4. This group of sites appears to be all related to the early nineteenth century Iron Age period³ and has been treated as a collective. These include 'mines' (3?), 'smelting sites' (1), 'animal enclosures' (4?) and 'living areas' (2?). *(Although the sites are individually of low significance, the collective is worthy of research. Only if such research is completed may demolition be considered).*

Site 5. The weir and bridge over the Sondagsrivier, possibly dating to circa 1940 and 1960. *(The structures are of medium significance and, if possible, demolition should be avoided.)*

3.2. RECOMMENDATION (June 2011)

It is suggested that second phase work is undertaken on all the sites save the Pereira grave. This is recommended so that where necessary application may be made for sites that will directly be influenced by the proposed mining activity.

The information otherwise gathered on sites not to be impacted upon will be included in the heritage management plan required by the environmental Act. This management plan will be included in the normal Environmental Auditing process.



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² For full analysis of the significance of the sites, the past and proposed impact on the sites and the mitigation processes that are possible see APPENDIX at end of report.

³ Generally when societies are not under stress they tend to live on lower lying areas on relative flat terrain close to permanent water. When people, like in this instance, live several hundred meters above 'normal' levels of occupation it is an indicator of a serious threat to life and community

3.3. FEBRUARY 2014. ADDENDUM TO EXECUTIVE SUMMARY OF 2011.

During the intermittent period three important issues came to light that, although identified in the assay, needed further attention.

3.3.1. The Gatkop Cave.

It became apparent that the Gatkop cave site appears to be of high value to local, provincial and even national spiritual practitioners, generally known as SANGOMAS. The author visited the site on the 25th of February 2014 with Mr. Jacques Bronkhorst, and re-interviewed Mr. Thomas Mothloki the curator of the site. He indicated that although the site was officially closed by Aquila, spiritual practitioners were still visiting the site in large numbers. *(To deal with this apparent stale-mate it is recommended that Professor Chris Van Vuuren, well renowned anthropologist from UNISA, is appointed to investigate the matter and evaluate the seriousness of the situation. The importance of the mountain names MELETSE, MAKAPANE AND GATKOP should also be investigated by Professor van Vuuren as this may hold the key to the social ancestral importance of the area)*

3.3.2. The modern labourers' graves associated with the Randstephne dwelling.

The author visited the site on the 25th of February 2014 with Mr. Jacques Bronkhorst, and re-interviewed Mr. Thomas Mothloki that has been living in the area for over seventy years. He was unable (or reluctant) to disclose their identities, but was clear in stating that descendants of the deceased still visit the burials on an annual base to take care of the graves. *(To deal with this apparent stale-mate it is recommended that professional archaeologists that specialise in relocation are appointed to investigate the matter and evaluate the seriousness of the situation. Possible contenders' information were supplied to Shangani to follow-up this matter.)*

3.3.3. The mine pit three alternatives for the overburden dump sites and the plant infrastructure area.

The author visited the Aquila site-office in Thabazimbi on the 25th of February and interviewed Mr. Jacques Bronkhorst the acting operations manager regarding this issue. It became clear that sites 4g, 4h, 4j, 4(i)a and 4(i)b will adversely be impacted upon while 4d, 4k, 4f, 4e 3a and 3b only marginally. *(All of these sites will need to be submitted to second phase investigation and demolition permits applied for).*

Although the other sites will be sufficiently safe from of any present proposed mining impact, they still lie inside the boundaries of the prospecting licence and therefore stay the responsibility of Aquila. *(These sites will also have to be documented and placed in the heritage management plan as described by the environmental Act. The heritage management plan will include all the known and surviving heritage sites and will form of the normal environmental audit process.)*



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3.4. MAY 2014. 2nd ADDENDUM TO EXECUTIVE SUMMARY OF 2011.

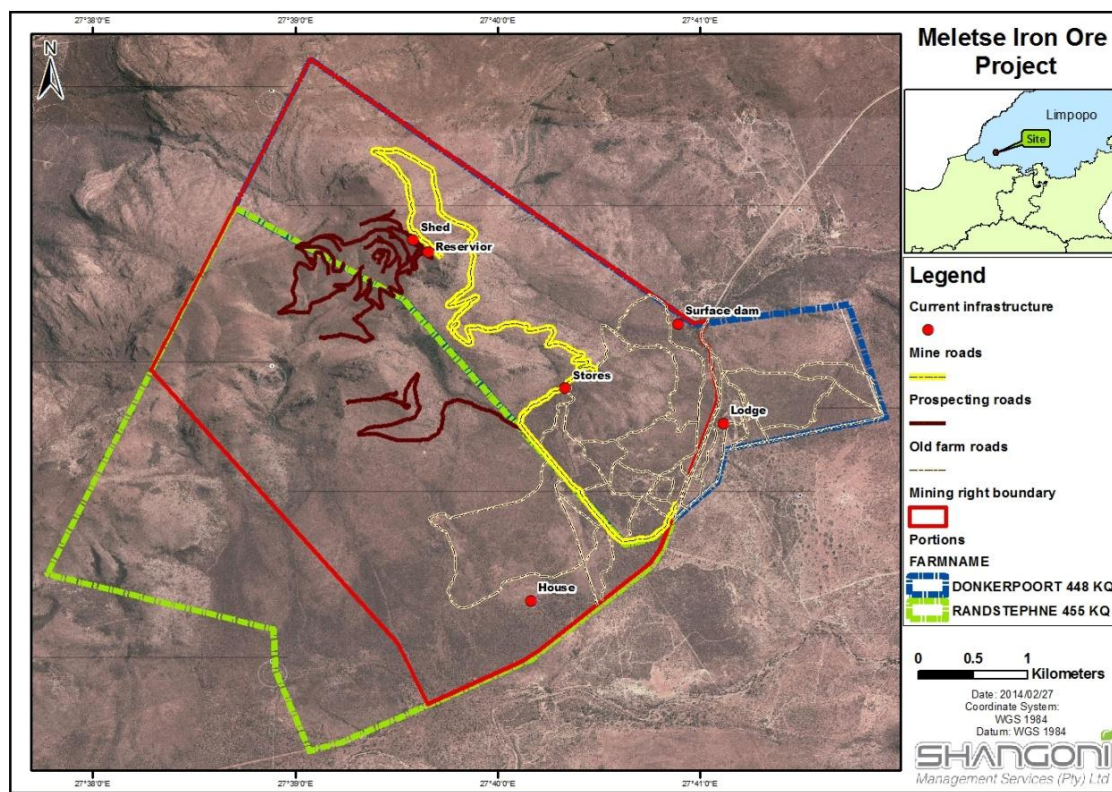


Fig.2a. Current infrastructure. (Shangoni, May 2014)

3.4.1. A request was received from Shangoni in May 2014 to align the 2011 report and its first addendum with,

- (3.4.1.1) the road-making and exploration completed on the proposed mining area,
- (3.4.1.2) the proposed mining pit, dumping sites and other relevant activities and
- (3.4.1.3) a clear analysis of the significance, threats and mitigation possibilities of the impact of the mine on heritage sites identified.

3.4.2. The following is the results that accommodate their request.

3.4.2.1 Impact up to present

- (3.4.2.1.1.) In 2011 it was already established that the exploration road had passed closely between sites 4i and 4j. It is possible that the smelting site, site 4j had been impacted upon, but as no research was done, the extent of impact is not known.
- (3.4.2.1.2) Since 2011 site 2 was officially closed for visitation and this caused severe stress between the “community” of traditional healers and Aquila steel management.

3.4.2.2 Impact of proposed mine pit, dumping sites and other mining infrastructure and activities.

- (3.4.2.2.1) Site 1. No impact.
- (3.4.2.1.2) Site 2. High impact. Situation between Traditional healers and Aquila to be mitigated if possible.
- (3.4.2.2.3) Site 3a. High impact. Homestead to be used as offices but plans to be approved by the **Limpopo Heritage Authorities**
- (3.4.2.1.4) Site 3b. High impact. Graves to be relocated by PGS Consult and the appropriate families and heritage authorities.
- (3.4.2.2.5) Site(s) 4. High impact. 4g, 4h, 4j, 4(i)a and 4(i)b will irreversibly be impacted upon while 4 a, 4d, 4k, 4f, 4e marginally. *(All of these sites will need to be*

submitted to second phase investigation. Demolition permits must be applied for (if deemed necessary) after the studies are completed.)

(3.4.2.1.6) Site 5. High impact. If a new road-bridge are to be constructed this bridge and weir must be mitigated in an appropriate manner.

3.4.2.3 Analysis of the significance, threats and mitigation possibilities of the impact of the mine on heritage sites identified.

(3.4.2.3.1) See appendix at end of this report.



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4. DEFINITIONS

The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

5. PROTECTED SITES IN TERMS OF THE NATIONAL HERITAGE ACT, Act. NO. 25 OF 1999

The following are the most important sites and objects protected by the National Heritage Act:

- a. Structures or parts of structures older than 60 years
- b. Archaeological sites and objects
- c. Palaeontological sites
- d. Meteorites
- e. Ship wrecks
- f. Burial grounds
- g. Graves of victims of conflict
- h. Public monuments and memorials
- i. Structures, places and objects protected through the publication of notices in the Gazette and Provincial Gazette
- j. Any other places or object which are considered to be of interest or of historical or cultural significance
- k. Geological sites of scientific or cultural importance
- l. Sites of significance relating to the history of slavery in South Africa
- m. Objects to which oral traditions are attached
- n. Sites of cultural significance or other value to a community or pattern of South African history

6. METHODOLOGY.

6.1. JUNE 2011.

All relevant maps and documents on the sites were studied.

Amongst others, Tiaan Van Den Berg, Sello Motaung, Elias Matlou, Jeremiah Mvula and Thomas Mothloki were interviewed owing to their local knowledge and job assignments at the proposed mine. Tiaan was born and lived in the general Thabazimbi area for nearly thirty years while Thomas Mothloki lived most of his seventy four years on Randstephne. Elias and his family lived on Waterval since he was born over thirty years ago. Sello and Jeremiah have been working with the assaying geologists since work started at the proposed mining site, and had traversed much of the proposed mining site during this period.

Information regarding archaeological sites found by the assaying geologists were also utilized in the survey and included in the report. Of these that could be reached during this assessment all were correctly identified by the geologists, and therefore three of the sites that was difficult to reach on foot were assumed to be correctly identified. Special attention was given to identify places of spiritual importance in the landscape, including graves and places of worship.

It must be noted that the assessment was undertaken at the end of autumn when the vegetation, especially the grasses, were at its highest stand. The site is also especially geo-physically challenging, as the height difference between the highest (1860 meters a. s. l.⁴), and lowest points (1000 m a. s. l.⁵) of the site, is in the region of seven hundred meters.

Furthermore, the present investigator has been working in the general area for the past five years and has accumulated significant local knowledge regarding the local archaeology, including the 14 000 ha of land belonging to the present KUMBA mine,⁶ located directly to the west of the property presently under investigation.

Finally, if any heritage remains are exposed during the course of exploration, road building or mining, then such discoveries should be reported to the Limpopo Heritage Resources Agency.

6.2. FEBRUARY 2014.

All relevant maps and documents, including the brief and mandate by the client, on the sites were studied. Mr. Jacques Bronkhorst and Thomas Mothloki were interviewed on the 25th of February, owing to their local knowledge and job assignments at the proposed mine. Mr. Jacques Bronkhorst has been associated with the exploratory phase as a geologist and is at present the acting manager at Thabazimbi for Aquila. Thomas Mothloki lived most of his seventy plus years on Randstephne.

6.3. MAY 2014.

A table was prepared, in the format requested by Shangoni, so as to showcase the threats, impacts and mitigation possibilities of the past and proposed impact of Meletse mine on the heritage estate of the areas under investigation. It is attached to this report as an appendix.

⁴ Above sea level.

⁵ Above sea level.

⁶ The old ISCOR,



Figs. 3 and 4. (Left). This is the typical landscape in which mine is to be located. (**Photograph S.M. Miller 2011**). **(Right.)** Prospecting and drilling are underway on the mountain. This shows that roads and exploration areas was established before the heritage study was undertaken. (**Photograph S.M. Miller 2011**)

7. ENVIRONMENT AND HISTORICAL BACKGROUND.

7.1. COMMENTS ON THE ENVIRONMENT AND THE HISTORICAL BACKGROUND) (June 2011 with some alterations May 2014)

The site is located in the warm Waterberg Bushveld where several different veldt types intersect (See *Mucina & Rutherford, 2006*) and converse. From writers such as Moffat and others it is understood that in the nineteenth century the region was harsh to live in, especially during summers, and under the constant threat of malaria, and the tsetse fly. Game abounded here in the past, and the vegetation yielded sufficient sources for gatherers, and then more.

It appears then to have been a place that both attracted and repelled the settlement of people through time. But the region had another aspect to consider, namely its minerals. These have been exploited since early times, and throughout time to the present day, where especially iron is one of the most treasured resources.

For the South African Iron Age peoples, that has apparently been active in the region since the eighth century A.D. , the iron was used for the manufacturing of implements and weapons that assisted them in farming, hunting, war and as bridal procurement. It also formed part of an intertribal tax system.

Because of the above it is generally known that Stone Age people, as well as Iron Age people utilized the region throughout the centuries before white hunters exterminated the buffalo that

carried the dreaded tsetse fly. Changes in climate, to a large extent, eliminated the occurrence of malaria.

The Stone Age in the region is represented through a sprinkling of stone artefacts throughout the area, and fixed sites such as Mokopaan that represents nearly the full range of the ‘Homo specie’s’ development. In the general Waterberg region, the Stone Age is furthermore represented by a large number of shelters that acted as semi-permanent dwellings for the more recent Stone Age peoples and also retains rock-art, which formed part of their religious lives.

Similarly the early black farmers are well represented from 600 A.D. to 1800 A.D.⁷ Even that being said, it generally appears that, even during that period the area has been sparsely populated. One may attribute this to the climate (summer) and environmental (malaria and tsetse fly) conditions of the area.

The same were true for the later settlement of European Farmers. In the late nineteenth century the area was used as a winter hunting ground by people of all walks of life, even including Paul Kruger, President of the then Z.A.R.⁸ It was only with the advent of the ‘discovery’ of the massive iron ore body of Thabazimbi in the 1920’s that farms were first “permanently” occupied by European settlers. The large scale iron ore mining today only commenced in the mid nineteen thirties, with the workforce of one mine manager, Mr Jordan and approximately 20 black labourers.

7.2. THE GEOLOGY AND FLORA OF THE REGION.

7.2.1. THE GEOLOGY OF THE REGION.



Fig. 05. This is an early aerial image acquired from **KUMBA’S Thabazimbi environmental office** showing the geological nature of the study area. This image shows the up-liftment of sedimentary layers owing to the down-pressure created by the magmatic outflow of the lavas of the system known as the **Igneous Bushveld Complex**.

⁷ See Millers report to **KUMBA MINE**, 2011.

⁸ **Zuid Afrikaanse Republiek**.

The geological history of most places on Terra Firma is as complex as the path of leaf blown by the wind. What we do know about the creation of Earth is that there was a continuation of processes stretching over a period of 3 500 million years from the ‘formation of the earth’, as a singular body of magma, until to today.

In the first place the cooling of the crust of the earth created the ancient ‘continents’ that consisted of ‘Atlantica’, ‘Arctica’ and ‘Ur’⁹. Approximately 3000 million years ago, the basic structure that is known as the Kaapvaal Craton formed the western extremity of Ur. Keeping in mind that these early continents were also adrift as a crust on the earth’s liquid interior one cannot accurately confirm what the supposed Kaapvaal Craton’s original orientation was regarding the sun. Over the next 300 million years the Kaapvaal Craton apparently fused with the ‘Zimbabwe’ Craton forming the Limpopo Belt of metamorphic rocks, and by 1 800 years ago a collision between these two formed the Ubendian Belt of metamorphic rocks along their common boundaries.

During this period of time the Dominion and Witwatersrand Super groups had been deposited on the original Craton (Approximately 2 700 million years ago, and by 2 600 million years ago the Ventersdorp Super groups had again been deposited. By 2 000 years ago the Transvaal Super group had already come into existence and the mega impact crater of Vredefort had manifested. Within the next 300 million years the Olifantshoek Super group had formed, the Waterberg and Zoutpansberg related rocks had been deposited.¹⁰ By 1 000 million years ago the super continent ‘Rodinia’ had fused from a conglomerate of smaller continents, only to break up again by 700 million years ago. The re-assembly of the ‘Rodinia’ fragments gave rise to ‘Pangea’ that existed between 600 and 300 million years ago.¹¹ In this time multi-celled organisms started the ‘race of life’ ending where we are today. Between 600 million years ago and 180 million years ago the ‘earth’ existed as a composition of the modern continents and this structure is known as ‘Gondwanaland’¹². This geological matrix then deposited a wide range of minerals in the Thabazimbi region, especially at least four different iron ore deposits of major importance to the South African economy.

⁹ *McCarthy, T, 2005. Page 148.*

¹⁰ *McCarthy, T, 2005. Page 334.*

¹¹ *McCarthy, T, 2005. Page 148.*

¹² *McCarthy, T, 2005. Pages 102, 111, 143 and 121-122 as well as 124-125.*

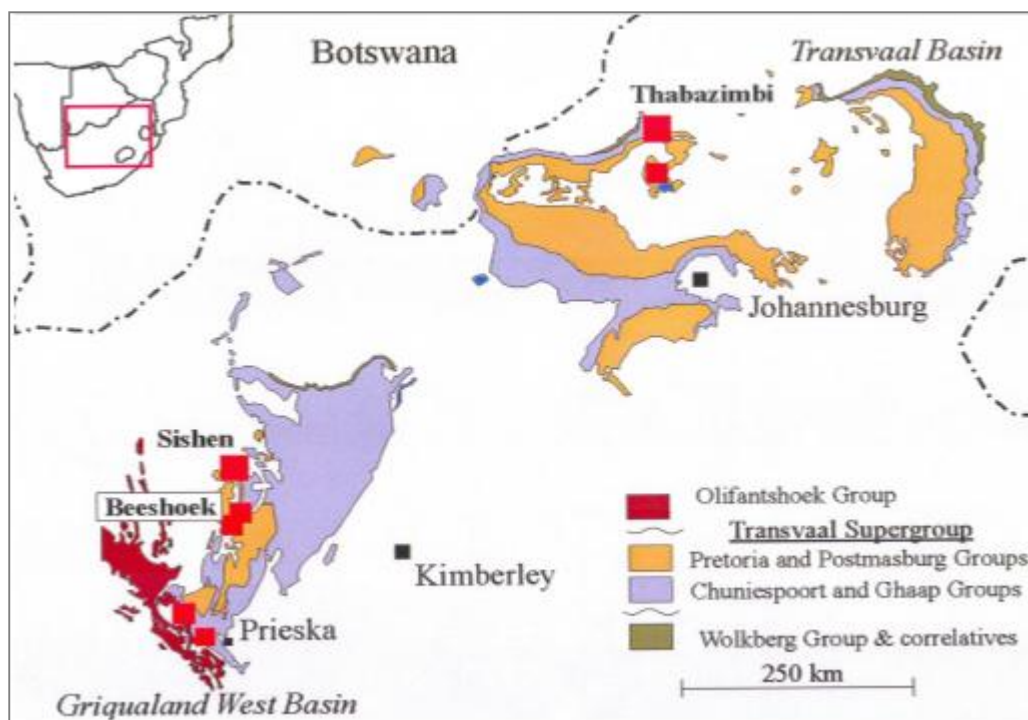


Fig. 06. Map of the geological matrix that underpins the geology of Thabazimbi. (McCarthy, 2005).

7.2.2. THE VEGETATION OF THE REGION. (Altered MAY 2014)¹³

Regional Vegetation Description¹⁴

The study site corresponds to the Savannah Biome and more particularly to the Central Bushveld Bioregion as defined by Mucina & Rutherford (2006). In addition, the natural vegetation on the study area comprehends two regional vegetation types: (a) Dwaalboom Thornveld and (b) Waterberg Mountain Bushveld (Mucina & Rutherford, 2006) (Figure 3).

7.2.2.1. Dwaalboom Thornveld: This vegetation type is restricted to the flats north of the Dwarsberge and ridges associated with the Crocodile River. However, it is centred near the Dwaalboom area but also extends eastward and north of Pilanesberg to Northam. The floristic and structural attributes of Dwaalboom Thornveld is fairly homogenous and consists of low to medium high microphyllous bushveld that is dominated by taxa of the genus *Acacia*. The herbaceous layer is dominated by graminoid taxa as opposed to forb species.

¹³ Miller S.M. 2014

¹⁴ Supplied by Shangoni February 2014

Dwaalboom Thornveld		
Grassy Layer	Forb Layer	Woody Layer
<i>Aristida bipartita</i> , <i>Bothriochloa insculpta</i> , <i>Digitaria eriantha</i> , <i>Ischaemum afrum</i> , <i>Panicum maximum</i>	Non-succulents: <i>Chamaecrista mimosoides</i> , <i>Hibiscus pusillus</i> , <i>Tragia meyeriana</i> Succulents: <i>Kalanchoe rotundifolia</i> , <i>Talinum cafferum</i> Climber: <i>Rhynchosia minima</i> Herbs: <i>Heliotropium ciliatum</i> , <i>Kohautia caespitosa</i> , <i>Nidorella hottentotica</i> .	Tall Trees: <i>Acacia erioloba</i> Small trees: <i>Acacia erubescens</i> , <i>A. nilotica</i> , <i>A. tortilis</i> subsp. <i>heteracantha</i> , <i>A. fleckii</i> , <i>A. mellifera</i> subsp. <i>detinens</i> , <i>Combretum imberbe</i> , <i>Searsia (=Rhus) lancea</i> , <i>Ziziphus mucronata</i> Tall shrubs: <i>Acacia hebeclada</i> subsp. <i>hebeclada</i> , <i>Combretum hereroense</i> , <i>Euclea undulata</i> , <i>Grewia flava</i> , <i>Tarchonanthus camphoratus</i> Low shrubs: <i>Acacia tenuispina</i> , <i>Abutilon austro-africanum</i> , <i>Aptosimum elongatum</i> , <i>Hirpicium bechuanense</i> , <i>Pavonia burchellii</i> , <i>Solanum delagoense</i>
Waterberg Mountain Bushveld		
Grassy Layer	Forb Layer	Woody Layer
<i>Loudetia simplex</i> , <i>Schizacharium sanguineum</i> , <i>Trachypogon spicatus</i> , <i>Enneapogon scoparius</i> , <i>Digitaria eriantha</i> , <i>Setaria sphacelata</i> , <i>Themeda triandra</i> .	Herbs: <i>Chamaecrista mimosoides</i> , <i>Hibiscus meyeri</i> subsp. <i>transvaalensis</i> , <i>Xerophyta retinervis</i> . Geophyte herbs: <i>Hypoxis rigidula</i> , <i>Haemanthus humilis</i> . Suffrutices: <i>Parinari capensis</i> subsp. <i>capensis</i> , <i>Dichapetalum cymosum</i>	Tall trees: <i>Acacia robusta</i> Small trees: <i>Acacia caffra</i> , <i>Burkea africana</i> , <i>Combretum apiculatum</i> , <i>Croton gratissimus</i> , <i>Faurea saligna</i> , <i>Heteropyxis natalensis</i> , <i>Ochna pulchra</i> , <i>Albizia tanganyicensis</i> , <i>Combretum molle</i> , <i>Englerophytum magalismontanum</i> , <i>Ochna pretoriensis</i> , <i>Terminalia sericea</i> . Tall shrubs: <i>Diplorhynchus condylocarpon</i> , <i>Dichrostachys cinerea</i> , <i>Euclea crispa</i> , <i>Olea capensis</i> subsp. <i>enervis</i> , <i>Strychnos pungens</i> . Low shrubs: <i>Barleria affinis</i> , <i>Felicia muricata</i> Woody climber: <i>Rhoicissus revoilii</i>

Table 1: A list of the characteristic plant species for each stratum (e.g. grass, forb & woody layer) representing Dwaalboom Thornveld and Waterberg Mountain Bushveld (**Mucina & Rutherford, 2006**).

However, fine-scale phytosociological differences do occur and is driven by the clay content of the soil. For example, *Acacia tortilis* and *A. nilotica* tend to dominate soils with a clay content of 21 % or less, while the vegetation appears stunted (<1 m) and sparse on soils containing more than 55 % clay. The latter is dominated by *A. tenuispina*. On the other hand, *Acacia erubescens* dominates sandy soils.

This unit is not threatened since more than 6 % is formally conserved within the Madikwe Game Reserve. Nearly 14 % of this woodland type is transformed by cultivation and bush encroachment due to overgrazing by cattle.

7.2.2.2. Waterberg Mountain Bushveld: This vegetation type is restricted to the Waterberg Mountains and includes a number of outlier hills and ridges such as the Vlieëpoortberge and Boshofsberge near Thabazimbi. The floristic composition is complex and varies from *Faurea saligna* – *Protea caffra* bushveld on the high slopes, grading into mixed *Diplorhynchus condylocarpon* woodland on the mid and foot slopes to *Burkea africana* – *Terminalia sericea* savannah on the low-lying valleys and areas of deep sand.

This unit is not threatened since more than 9 % is formally conserved within the Marakele National Park and Moepel Nature Reserve. More than 3 % of this woodland type is transformed by cultivation.

Table 1 summarises a list of plant species characteristic of the Dwaalboom Thornveld and the Waterberg Mountain Bushveld.

7.2.3. THE ARCHAEOLOGICAL BACKGROUND OF THE REGION.

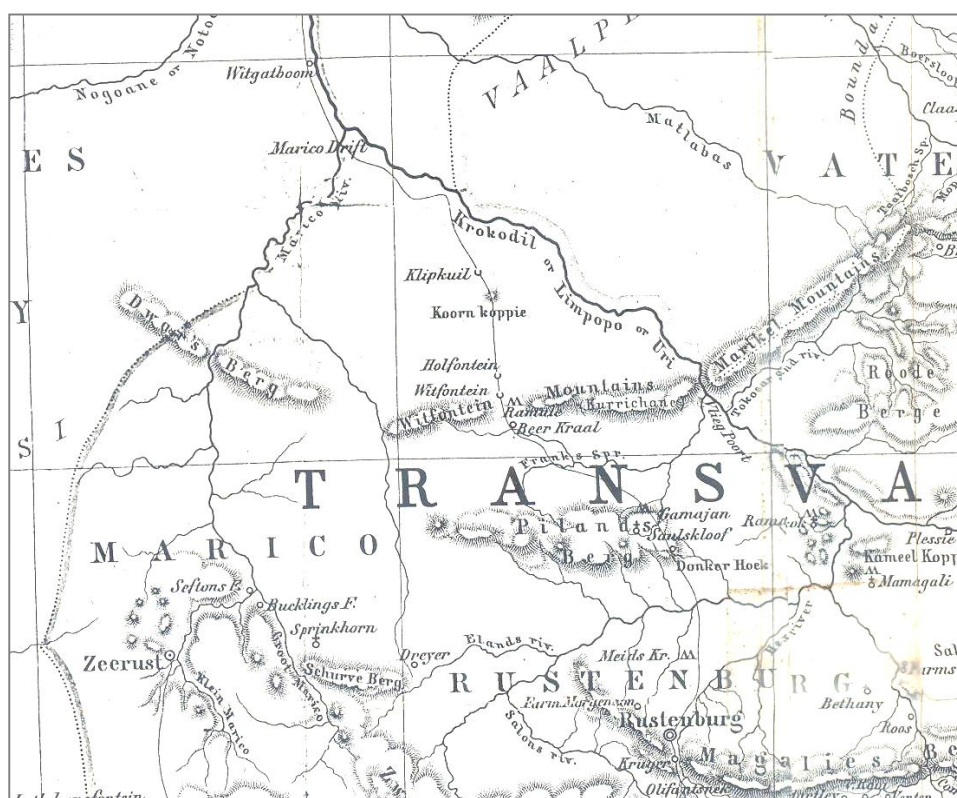


Fig. 08. Jeppe's 1899 Map of the region surrounding the study area.¹⁵

7.2.3.1. THE STONE AGE

The term "Stone Age" covers a period from approximately 2 million years ago to relatively close to the present. It is firmly connected to the concept of the evolution of mankind and is applied to the world as a whole. Over the past 80 years the Archaeological and Palaeontological scientific advances that has been made, have illuminated both the physical change in humans, as well as humanity's technological and cultural advance over time.

Present people generally view themselves as highly "advanced" and "civilized", and having mysteriously come to the present point 'ready-made' through celestial intervention. . Archaeologists, on the other hand, have clearly proven the links between the first tentative steps taken by early Hominines several millions of years ago to a few flakes struck from a pebble to form stone hand-axes, to make fire at will, to manufacture complicated stone flake tools, to the use of metals. From then onwards human chemical knowledge, and the ability to manipulate these elements, snow-balled to a point where humanity now has world-wide virtual communication, space travel and the ability to self annihilation with a variety of weapons.

In Africa, and specific Southern Africa, most of this evidence is ensconced in its landscapes, Since the development from *Australopithecus Afarensis* through *Australopithecus Africanus* to *Homo Erectus*, to *Homo Habilis*, to *Neanderthalensis* (In Europe) to *Homo Sapience* from three and a half million years ago to approximately 120 000 years ago. Over this period the brain capacity of these ancestors enlarged from 400 cc¹ to over 1200 cc, and the ability to use "brain power" is clearly reflected in the range and complicity of stone tools that they left behind in the landscape.

¹⁵ Note that in 1899 there was still only one road through the region connecting Rustenburg with Botswana.

The cultural relics of these human ancestors are then also protected under the National Heritage Act, Act 25 of 1999, and include all their physical remains, their stone tools, their art and ceremonies, and their habitations, it either being caves, shelters or open air campsites.

Because of the wealth of relics that is preserved in the veldt from these relatives, we have a special problem to deal with when considering its protection and conservation in the case of assessment during Environmental Impact Assessments.

On the other hand, owing to the long periods of time involved it is difficult to find Stone Age sites that can in fact be labelled as 'SITES'. A few, or even large numbers of stone age tools scattered in the veldt, or in erosion areas are always out of 'context' and is valuable only as 'artefacts' itself. To be considered as a 'site' tools and other remains must be deposited in layers over time, and such layers must have had sufficient protection against erosion over time. An exceptional example of such a site in the region is the Mokopaan World Heritage Site, but a large range of smaller rock shelters in the Waterberg to the north and east of Thabazimbi also bear witness to the presence of Stone Age People, especially over the last 30000 years.

7.2.3.2. THE IRON AGE.

In archaeology general terms such as 'Stone Age', 'Iron Age' and 'Historical Period' are used to delineate certain time periods in our history. They are not intended to specifically define time, but rather a period in which certain cultural aspects of people's lives dominated their specific world views and lifestyle. For instance, during the eighteenth century there were Stone Age people ("San" or "Bushmen") living contemporary with a number of South African "tribes" (Iron Age people) as well as with European people (Historical Period). Similarly Asian trade goods (Historical period) have been reaching central Southern Africa from around 600 A.D. In archaeological terms this period is known as the Early Iron Age.

Similarly the circumnavigation of the southern tip of Africa by the Portuguese at the end of the fifteenth century, and their impact on the East Coast of Africa influences the period known as the Later Iron Age. Just to add to the general confusion that these terms sometimes generate, in Europe and Asia there are also periods known as 'Stone Age' and 'Iron Age', but with an added 'Bronze Age' that have no relation with African conditions.



Fig. 09. *In his Diary Gros wrote; '... Makaties¹⁶ iron founder, Iron Mountain, low country east of Spelonken. The ore which is gathered in the vicinity is smelted twice in a furnace of common clay, charcoal being used. Three chinks in the sides, and a blower at each, supply the oxygen by means of a skin bag held in each hand and worked alternately up and down with great rapidity, the bags being filled in the upward motion by relaxing the opening held in the hand. On being removed from the furnace the incandescent mass is beaten hard and fast between stones, and taken to the village, where it is manufactured into utensils, which becomes currency. (Picture by Gros in 1885.)*

In South Africa archaeologists use the term 'Iron Age' loosely for the period spanning the Christian calendar of the last 2 000 years. These 2000 years are then again divided into three basic periods, namely Early, Middle and Later Iron Age. This is to distinguish between pre-

¹⁶ *Makaties, is a miss-spelling of Makatees, an old Afrikaans nick-name for Tsonga/Shangaan people. This smelting oven is then also the one situated at 'Vuu' south of the modern-day. The name 'Vuu' is a reference to the noise emitted by the smelting oven when the billows were worked.*

Asian trade influence (~000 AD to ~700 AD), Asian trade influence (~700 AD to ~1500 AD) and European influence after 1500.

Although other culture groups also inhabit or utilise the Southern African landscapes during this time, the term 'Iron Age' implies that the people that is described by this term are in fact black Agro-Pastoralists, migrants from Central Africa, and smelters of metals such as Iron, Gold, Copper and Tin. These people then all belong to basically a singular language group termed 'Bantu' by some academics. They are also distinguished from other groups in the region by their shared 'Ancestral' belief system, their architecture and ceramics. The occupation sites of these peoples can be identified by the remains of their unique architecture of circular homes, arranged in number of ways that involve their livestock, to form 'villages'. Middens that often form on these sites from discarded ash and broken ceramics also contain a collection of debris from their lifestyle, which is normally unique to Southern Africa.

Early Iron Age peoples were relatively modestly represented in the Southern African landscape owing to their low population and recent arrival. Their sites are marked by an unique ceramic tradition and the absence of material cultural remains pertaining to people from outside of the region, i.e. Asia or Europe. As far as known these people did not use stone in the demarcation of their villages or the building of their homes. The best known example of such people living in the study area is the *Diamand* site investigated by Jan Aukema in the 1980's. Tom Huffman from wits also uncovered similar remains to the west of Thabazimbi, at the Rhino Mine while the present author, in collaboration with the Kumba Environmental office also identified Early Iron Age remains on the Ben Alberts Reserve.

The Middle Iron Age period people are identified by the change in ceramic tradition and the presence of Asian trade goods. In some groups cattle start to play a lesser role in their social life. The use of stone in building practises come into play towards the middle of this period, as well as the formation of 'States' that compose large numbers of people. The only known sites of this period in the region of the study area are the Kirstenbosch site excavated by UNISA and the un-researched site on the Marekele Game Reserve.

The Later Iron Age groups are normally identified by the presence of European artefacts, the presence of maize, and the unique settlement patterns of specific cultural groups such as Sotho/Tswana, Nguni or Venda. Individual ceramics patterns are also important at this time, as well as the utilisation of artefacts derived from wood. These sites occur all over the general region of the site under excavation. They appear to represent a rather struggling population but very little research has been done. The tin mine site at Rooiberg excavated first by Mason and later again by Hall and several sites on the Ben Alberts Reserve are a few examples of the later Iron Age in the Region.

In all of the above evolvement of the Southern African Agro-Pastoralists, the role of the environment has to be taken into consideration. Most of these peoples were primarily depended on grains for survival, and livestock to a lesser degree. Hunting and gathering still played a major role to feed the groups in general throughout the 2000 years. Similarly, the export of trade goods such as gold, ivory and slaves altered the well being of different groups in different ways.

Ultimately though the one important thing that linked all of these peoples were the continued smelting of iron that supplied their tools and weapons. With the advent of large quantities of European iron, from the time of the occupation of the Cape by Dutch Settlers the end of the 'Iron' Age in Southern Africa was due. When Britain recalled the practise of slavery in the 1830's, there was a rapid colonisation of Southern Africa by White settlers. By 1885 the smelting of iron had become redundant, and one of the last smelting procedures that took place in Limpopo was documented by the well known Gros, as illustrated above in *Figure 09*.

With the above in mind, and the knowledge of the old people of Southern Africa, its vegetation, animals and geology, one would have expected that the masses of iron ore available at what is now called Thabazimbi would have been an extremely valuable resource for them. On the contrary then, from what evidence has been found on KUMBA property, and the present research area, there appears to have been a marked 'underutilization' of one of the largest iron ore deposits in the world by people from this period. What prevented the early inhabitants of the region not to be more persistent in the 'quest for iron' around Thabazimbi?

Was it environmental factors or social practises that regulated the manufacture of iron artefacts? We clearly see people from the Early period, and the Later period living and working iron (?) at Thabazimbi, but there are no clear indications of influence from the Middle period as far as our present knowledge goes. With the wealth associated with this period, and the expansion of the population, one would have expected at least some interest by the so called 'Mapungubwe' peoples in the Iron of Thabazimbi.

8. THE PICTORIAL DOCUMENTATION OF THE HERITAGE SITES

8.1. JUNE 2011

SITE 1. PERREIRA GRAVE.



Figs. 10 and 11. This gravestone claims that one J.H. (TO) Perriera, Kruitmaker from 1881 ZAR, was murdered here in 1901. (Photographs S.M. Miller 2011)

SITE 2. GATKOP CAVE.



Figs. 12 and 13. These notices proclaim the rights of visitors to the site, and conditions that visitors must comply to, to visit the site. Note that the site is also protected by the Limpopo Environmental Act, Act 7 of 2003. (Photographs S.M. Miller 2011)



Figs. 14 and 15. Left. A fairly ancient notice erected by the Magistrate of 'Warmbad' (now Bela Bela) warns of the presence of 'grotkoors', an illness resulting from inhalation of miasma from bat guano. Right. The entrance to Gatkop shelter is fairly reminiscent to that of the original Sterkfontein Cave Entrance and should therefore seriously be considered as a potential breccia bearing site. (Photographs S.M. Miller 2011)



Figs. 16 and 17. *Left.* In front of the cave there is evidence of the continuous use of the site as a psychological point of access to the world of ancestral worship. In the view of the researcher this is one of the most vigorously utilised sites observed by him where the issue of 'creation myths' are concerned. **Right.** Four of the informants, Elias, Tiaan, Sello and Jeremiah are here captured in front of the shelter. Thomas Mothloki, the informal curator does not appear in the photograph. (Photographs S.M. Miller 2011)

SITE 3a. RANDSTEPHNE HOMESTEAD.



Fig. 18. The south western Cape Dutch Gable of the 1920's period farmhouse. (Photograph S.M. Miller 2011)

Fig. 19. This plaque proclaims that the building is presently well cared for by its proprietor. It is also a reminder that no demolition by neglect will be tolerated if the property is turned over to the mining company. It is rather hoped that the same care and use of the building will be applied

in the future. (Photograph S.M. Miller 2011)



***Figs 20 and 21.** Detail of the Randstephne homestead's northern elevation and the front staircase. (Photographs S.M. Miller 2011)*

SITE 3b. LABOURERS' CEMETRY.



***Fig. 22.** Detail of the Randstephne labourer's cemetery. From the crosses we know that these people had been Christianized and are therefore modern people. (Photograph S.M. Miller 2011)*



Fig. 23. Detail of a grave in the Randstephne labourers cemetery. According to the care taken of the graves and the offerings left on the graves such as this modern cup they are still a place of remembrance. (Photograph S.M. Miller 2011)

SITE 4a. CATTLE ENCLOSURE 1.



Fig. 24. This is a part of the wall of the cattle enclosure at this site. It has a diameter of approximately 10 meters. Although apparently isolated it is part of the greater use of land by people under stress where they retain their cattle at the base of their mountain retreat so as to avoid climbing the mountain every day. (Photograph S.M. Miller 2011)

SITE 4b. CATTLE ENCLOSURE 2.



Fig. 25. This is a part of the wall of the cattle enclosure at this site. It has a diameter of approximately 10 meters. Although apparently isolated it is part of the greater use of land by people under stress where they retain their cattle at the base of their mountain retreat so as to avoid climbing the mountain every day. It is a fair copy of the enclosure at site 4a but is located at the other side of the mountain. (Photograph S.M. Miller 2011)

SITE 4c. CATTLE ENCLOSURE 3.



Fig. 26. This is a part of the wall of the enclosure at this site. It has a diameter of 10 meters. Although isolated it is part of the greater use of land by people under stress where they retain their cattle at the base of their mountain retreat so as to avoid climbing the mountain every day. It is a fair copy of the enclosure at site 4a and 4b but is located a fair distance to the east. This may be associated with a different settlement. (Photograph S.M. Miller 2011)



Fig. 27. A small stone structure associates with the animal enclosure at this site. Although it appears to be a 'grave' it is not thought to be one. This is based on the fact that this type of marking of a grave only started after Christianisation of black people in South Africa. (Photograph S.M. Miller 2011)

SITE 4d. CATTLE ENCLOSURE (4 ?).



Fig. 28. The geologists indicated that the remains of a stone structure occur in this area. Whether the above photograph represents the same site remains to be verified. (Photograph S.M. Miller 2011)

SITE 4e. CATTLE ENCLOSURE (5 ?).



Fig. 29. This is a 'new' site. Owing to the vegetation this site has to be re-examined. (Photograph S.M. Miller 2011)

SITE 4f. PRE COLONIAL MINE 1.



Fig. 30. This is a site that appears to have been an area that was exploited for ore during the pre-colonial period. (Photograph S.M. Miller 2011)



Fig. 31. This configuration of stones are often associated with initiation sites. It is located adjacent to the mine mentioned above. (Photographs S.M. Miller 2011)

SITE 4g. PRE COLONIAL MINE (2 ?)

This site was pointed out by the geologists but was not visited on this occasion.

SITE 4h. PRE COLONIAL MINE (3 ?) .

This site was pointed out by the geologists but was not visited on this occasion.

SITE 4(i) a. LIVING ENCLOSURE.



Fig. 32. These walls are most probably linked to those at site 4(i) b. It is possibly a small stone walled village associated with the nearby smelting activity. (Photographs S.M. Miller 2011)

SITE 4(i) b. LIVING ENCLOSURE.



Fig. 33. These walls are most probably linked to those at site 4(i) a. It is possibly a small stone walled village associated with the nearby smelting activity. (Photographs S.M. Miller 2011)

SITE 4j. SMELTING SITE.



Fig. 34. Slag and pieces of tuyere from the smelting site. (Photographs S.M. Miller 2011)

SITE 4k. LIVING ENCLOSURE.

This site was pointed out by the geologists but was not visited on this occasion

SITE 4I. LIVING ENCLOSURE. (A number of enclosures visible on Google Earth at this point indicate the existence of a large Iron Age village. Owing to its position it will possibly be one of the conflict period sites of the early 1800's.) *This site was pointed out by the geologists but was not visited on this occasion.*

SITE 5. BRIDGES.



Fig. 35. The bridge and its older predecessor, a weir, in this same area should be protected if new roads are considered. (Photograph S.M. Miller 2011)

8.2. DOCUMENTATION FEBRUARY 2014

SITE 2. GATKOP CAVE.

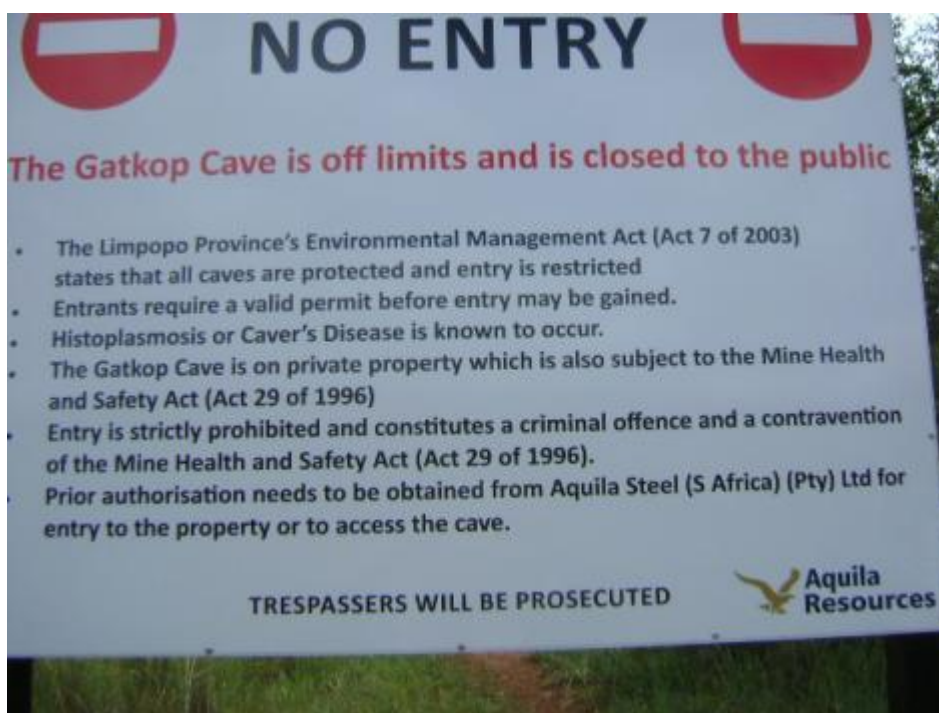


Fig. 36. The original signage at the entrance to the cave site has been replaced by this sign preventing entrance to the site. This disregard of traditional religious practices is possibly part of the present problem regarding the relationship between the sangomas and Aquila steel. (Photograph S.M. Miller 2011)



Figs. 37 and 38. Although the site is officially declared to be closed, manipulation of the gate locks still allow unauthorised access to the site. On the right can be seen fresh debris deposited at the garbage can at the entrance gate. This indicates the continued use of the cave by person/s unknown, regardless of the promulgation of the signboard. (Photographs S.M. Miller 2011)



Fig. 39. Mr. Thomas Mothloki employee of Sandspruit Ranch (Pty Ltd) and his wife in front of their modest dwelling adjacent to Gatkop Cave. As he was living in the vicinity for his whole life of seventy seven years it is obvious that he is well conversers in the heritage issues that surround the cave. (Photograph S.M. Miller 2011)

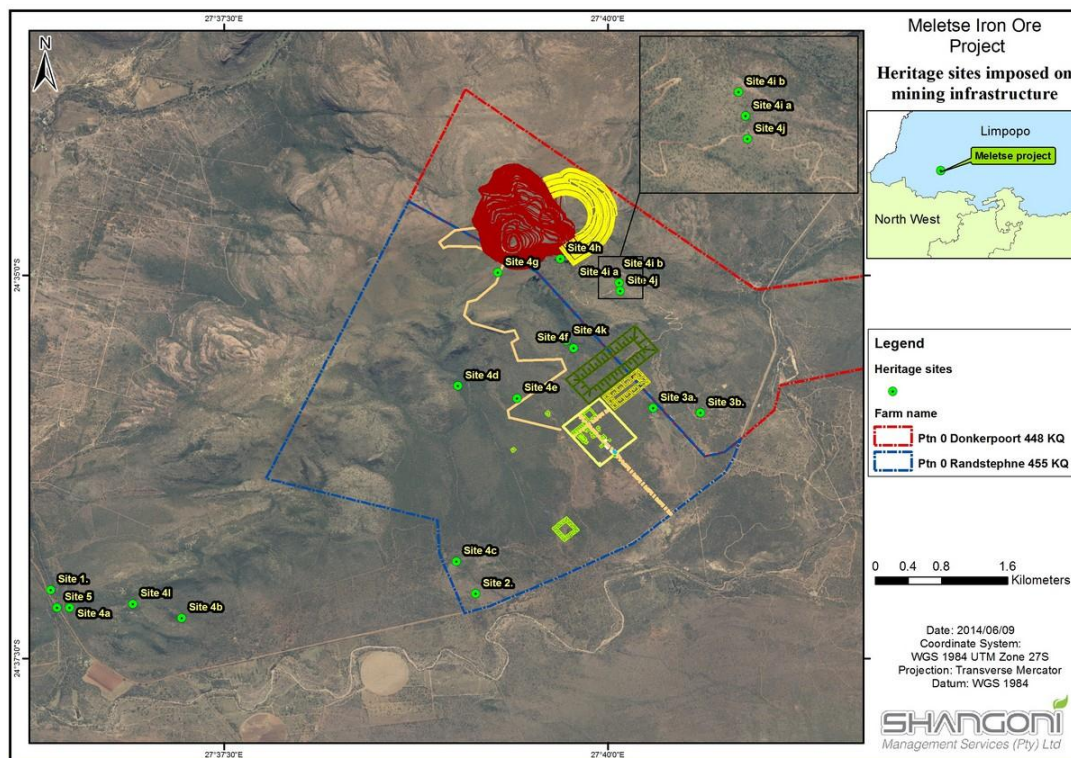


Fig. 40. Location of heritage sites in the vicinity of the mining infrastructure. (Aquila, February 2014)

9. SUMMARY AND CONCLUSIONS, BOTH 2011 AND 2014

9.1. SUMMARY (JUNE 2011)

Features from some of the historical periods mentioned above were located during the assessment, including a site of high religious context for ancestral worshippers from the region.

Site 1. The grave of one J.H.T.O. PERREIRA is located on the banks of the Sondagsrivier close to the bridge. On the 1: 50 000 map 2427DA SANDRIVIERSPOORT the abbreviation ‘R’ represents a watering point (possibly an old ‘drif’ and ‘uitspanning’¹⁷) on the ‘old road’. The inscriptions on his headstone gives the following information:- born in 1881 being a ‘Burger’¹⁸ of the Z.A.R., occupation as ‘KRUITMAKER’¹⁹ and cause of death as ‘VERMOOR’ IN 1901. This is a rather interesting issue from the second South African War²⁰, as it is one of the few links to that period of the history in Thabazimbi.

The site should be seen to be of high significance, and treated accordingly.

Site 2. The second site is a dolomite cave that is still regularly visited for religious purposes. It is well defined by a sturdy game fence and is under supervision of one Thomas Mothloki²¹. This site must be treated with utmost care from a cultural point of view.

¹⁷ Out –span. Place for animal drawn carriages to stop for rest and refreshment.

¹⁸ Citizen. Although this surname is of Portuguese origin, and not typical of ‘White Pioneers’ The influence of Portuguese traders on the old ZAR originated as early as 1845

¹⁹ Possibly freely translated as armourer, or ‘one that fabricates ammunition’.

²⁰ Better known as the second Anglo Boer War.

²¹ He is employed by Sandspruit Ranch Pty Ltd.

Secondly it is a dolomite cave, opening to daylight, and from the outside appears to be of significant size. IT THEREFOR MAY CONTAIN BRECCIA SIMILAR TO THAT FOUND AT THE MOKOPAAN CAVE KNOWN AS THE CAVE OF HEARTHS.²²

It is advised that a palaeontologist is asked to investigate this cave's potential

The site should be seen to be of high significance and treated accordingly. No demolition can be considered.

Site 3a. The third site is the original Randstephne homestead. It contains classical 'South African Edwardian' features in the flanked front veranda where both flanking rooms support Cape Dutch Gables. This building is one of few remaining in the region from this period as few were originally built, and of those most were lost in the processes of 'upgrading and modernization'.

A second phase recording is advised, and a 'preservation' plan must be put in place. This building and farmyard may be developed into site offices and/or accommodation for key personnel on the mine. SAHRA regulations must be adhered to.

This building is of high significance and should be treated as such. No demolition can be considered.

Site 3b. Closely associated with this homestead is the graveyard and former dwellings of the farm labourers that (one must assume), was the workforce of the dwelling on Randstephne. Owing to the physical nature of these dwellings they have long since disappeared, but the graves remain, and are obviously still tended to from time to time by relations.

The dwellings will not benefit with any further attention and need not to be protected.

The 13 (?) graves on the other hand are also protected under other laws apart from the National Heritage Act. These may be left in situ, and visiting rights may be negotiated with relations. Alternatively they may be exhumed and reburied in a formal burial site. The second alternative is advised, as the water reservoir and associated mining works close to the cemetery may create tension between the mine and the relatives of the deceased.

The graves are of high significance and should be treated as such. Relocation is advised.

Site 4. The rest of the sites are all related to the early nineteenth century Iron Age period²³ and has been treated as a collective. These include 'mines' (3?), 'smelting sites' (1), 'animal enclosures' (4?) and 'living areas' (2?). The 'group' is assumed to date from the stressful civil war period known as the Mfecane, or Defecane dating to the period of Mzilikazi, the renegade Zulu General that ruled most of the central and south 'Transvaal' circa 1800 to 1845.

The sites are individually not rare, or of outstanding quality, they are not deemed to be particularly worthy of preservation on their own. But, the information that can be retrieved from these sites as a collective is of special importance, as it has not yet been done so in the past by archaeologists in the region.

²² Although not presently a 'proclaimed site, under the National Heritage Act, Act 25 of 1999, this Act provides a blanket protection until otherwise proven. It at present legally protected under the Limpopo Environmental Act, Act no 7 of 2003.

²³ Generally when societies are not under stress they tend to live on lower lying areas on relative flat terrain close to permanent water. When people, like in this instance, live several hundred meters above 'normal' levels of occupation it is an indicator of a serious threat to life and community

It is suggested that a full second phase study is undertaken to record and possibly date the sites through the carbon fourteen dating process. After such recording it will be possible to acquire demolition permits for the individual sites.

Although the sites are individually of low significance, the collective is worthy of research. Only if such research is completed may demolition be considered.

Site 5. The last subjects are the weir and bridge over the Sondagsrivier, possibly dating to circa 1940 and 1960. Owing to ‘progress’ South Africa is fast losing these type of structures that had in fact opened the ‘frontiers for ‘development’

Although the two structures are individually of low significance, the collective is worthy elevating them to medium significance.

They have been included in this study for the possible event of the need of a new road to transport the iron ore.

The structures are of medium significance and, if possible, demolition should be avoided.

9.2. CONCLUSION (June 2011)

It is suggested that second phase work is undertaken on all the sites save the Pereira grave. Owing to the complexity of the archaeology, as well as the present position in the ‘start- up’ of the mine, it is suggested to set up a meeting to discuss possible mitigation solution, bearing in mind the national importance of the proposed iron ore mine.

9.3. SUMMARY (FEBRUARY 2014 AND MAY 2014)

The site under investigation has been subjected to exploration for minerals for several years, the focus being on iron ore. In 2011 AFRICAN HERITAGE CONSULTANTS were appointed to do a preliminary heritage assay to assist all concerned to be aware of important heritage sites during exploration work. This exploration work has now to a large extent been completed and the original assay report is now updated to a full scale first phase heritage report. During the intermittent period three important issues came to light that although identified in the assay now need further attention.

9.3.1. The Gatkop Cave.

9.3.1.1. It became apparent that the Gatkop cave site appears to be of high value to local, provincial and even national spiritual practitioners, generally known as SANGOMAS. This was officially brought to the attention of the environmental consultants in an e-mail from Mr. Fred Stow of the Meletse Game Ranch located due south of the site under investigation.

9.3.1. 2. The author visited the site on the 25th of February 2014 with Mr. Jacques Bronkhorst, and re-interviewed Mr. Thomas Mothloki the curator of the site. He indicated that although the site was officially closed by Aquila, spiritual practitioners were still visiting the site in large numbers. He either did not know the people, or rather did not want to disclose their identities, that utilise the site. He did give the contact number of a Mr Tshenye (072 157 1676, a family member of the local “teacher” referred to as “Yvonne”. The continued use of the site was then also affirmed by Mr Jacques Bronkhorst, the acting exploration manager in Thabazimbi that has to deal with delicate problem on-site.

9.3.1.3. *To deal with this apparent stale-mate it is recommended that Professor Chris Van Vuuren, renowned anthropologist from UNISA, is appointed to investigate the matter and evaluate the seriousness of the situation.*

9.3.2. The modern labourers' graves associated with the Randstephne dwelling.

9.3.2.1. The author was requested to investigate the identity of the people buried at site 3b in the report. This was to appraise the possibility of relocation of the burials for their protection during the proposed development stage.

9.3.2.2. The author visited the site on the 25th of February 2014 with Mr. Jacques Bronkhorst, and re-interviewed Mr. Thomas Mothloki that has been living in the area for over seventy years. He was unable (or reluctant) to disclose their identities, but was clear in stating that descendants of the deceased still visit the burials on an annual base to take care of the graves.

9.3.2.3. To deal with this apparent stale-mate it is recommended that professional archaeologists that specialise in relocation are appointed to investigate the matter and evaluate the seriousness of the situation. Possible contenders' information were supplied to Shangoni to follow-up this matter.

9.3.3. The mine pit three alternatives for the overburden dump sites and the plant infrastructure area.

9.3.3.1. The author was requested to investigate the impact of the actual mine and its operational footprint on the identified heritage sites and what the required actions are to be undertaken to safeguard the sites.

9.3.3.2. The author visited the Aquila site-office in Thabazimbi on the 25th of February and interviewed Mr. Jacques Bronkhorst the acting operations manager regarding this issue.

9.3.3.3. Mr Bronkhorst supplied three alternative options of the proposed footprint. It became apparent that the positions of the overburden dump were the only alternatives that were to be considered.

9.3.3.4. It became clear that sites 4g, 4h, 4j, 4(i)a and 4(i)b will adversely be impacted upon, 4d, 4k, 4f, 4e 3a and 3b marginally.

9.3.3.5. Although the other sites will be sufficiently safe from of any present proposed mining impact, they still lie inside the boundaries of the prospecting licence and therefore stay the responsibility of Aquila. These sites will also have to be documented and placed in the heritage management plan as described by the environmental Act.

9.3.3.6. The heritage management plan will include all the known and surviving heritage sites and will form of the normal environmental audit process.

9.3.3.7. To arrive at the acquisition of relevant demolition permits and the establishment of an appropriate heritage management plan it is suggested that appropriate consultants are appointed to deal with this timeously.

10. FIELD RATING

No.	description	Rating according to minimum standards may 07
1	PERREIRA GRAVE.	c. Local. This site is of field Rating/Grade IIIA significance. It should be retained as a heritage register site (high significance) and so mitigation as part of the development is not advised.
2	GATKOP CAVE.	a. Provincial. This site is of field Rating/Grade II significance and should be nominated as such. The issue of religious activities by traditional healers is a serious contentious issue that, even after mitigation, will continue to impact on the viability of the proposed mine
3a	RANDSTEPHNE HOMESTEAD.	c. Local. This site is of field Rating/Grade IIIA significance. It should be retained as a heritage register site (High significance) and so mitigation as part of the development is not advised.

3b	LABOURERS CEMETRY.	d. Local. This site is of field Rating/Grade IIIB significance. It could be mitigated and (part) be retained as a heritage register site (High significance)
4a	CATTLE ENCLOSURE 1.	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
4b	CATTLE ENCLOSURE 2.	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
4c	CATTLE ENCLOSURE. 3.	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
4d	CATTLE ENCLOSURE. (4 ?)	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
4e	CATTLE ENCLOSURE. (5 ?)	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
4f	PRE COLONIAL MINE 1.	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
4g	PRE COLONIAL MINE. (2 ?)	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
4h	PRE COLONIAL MINE. (3 ?)	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
4(i) a	LIVING ENCLOSURE	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
4(i) b	LIVING ENCLOSURE	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
4j	SMELTING SITE.	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
4k	LIVING ENCLOSURE. (?)	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
4l	EARLY 19 TH CENTURY VILLAGE.	“General protection” A (Field Rating IV A): this site should be mitigated before destruction.
5	BRIDGES	d. Local. This site is of field Rating/Grade IIIB significance. It could be mitigated and (part) be retained as a heritage register site (High significance)

11. STATEMENT OF SIGNIFICANCE.

No.	description	Rating according to minimum standards may 2007
1	PERREIRA GRAVE.	a. Its importance in the community, or patterns of South African history. g. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.
2	GATKOP CAVE.	a. Its importance in the community, or patterns of South African history. b. Its possession of uncommon, rare or endangered aspects of South Africa’s natural or cultural heritage. c. Its importance in demonstrating the principal characteristics of a particular class of South Africa’s natural or cultural places or objects. 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.
3a	RANDSTEPHNE HOMESTEAD.	a. Its importance in the community, or patterns of South African history. g. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.
3b	LABOURERS CEMETRY.	a. Its importance in the community, or patterns of South African history. g. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.
4a	CATTLE ENCLOSURE 1.	
4b	CATTLE ENCLOSURE 2.	
4c	CATTLE ENCLOSURE. 3.	
4d	CATTLE ENCLOSURE. (4 ?)	
4e	CATTLE ENCLOSURE. (5 ?)	

4f	PRE COLONIAL MINE 1.	<p>a. Its importance in the community, or patterns of South African history.</p> <p>c. Its potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage.</p> <p>g. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.</p>
4g	PRE COLONIAL MINE. (2 ?)	
4h	PRE COLONIAL MINE. (3 ?)	
4(i)a	LIVING ENCLOSURE	
4(i)b	LIVING ENCLOSURE	
4j	SMELTING SITE.	
4k	LIVING ENCLOSURE. (?)	
4l	EARLY 19TH CENTURY VILLAGE.	
5	BRIDGES	<p>a. Its importance in the community, or patterns of South African history.</p> <p>c. Its potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage.</p>

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APPENDIX

Table 2. Influence of activities undertaken by Aquila steel at Meletse mine, prior to the heritage consultant’s visit to the site in 2011, on the identified heritage sites. These activities include prospecting roads constructed, disturbances for prospecting activities, blasting activities as well as temporary water supply for prospection and related activities. (See Fig. 2a page 7).					
<i>Heritage site number.</i>	<i>Significance of impact.</i>	<i>Degree to which impact can be reversed.</i>	<i>Degree to which impact may cause irreplaceable loss.</i>	<i>Cumulative Impact.</i>	<i>Mitigation possibility.</i>
<i>(Described in the 2011 first phase heritage impact assessment)</i>	<i>(See SAHRA evaluation page 34 of this report.)</i>	<i>(If such impact did occur.)</i>	<i>(If such impact did occur.)</i>	<i>(In combination with other related sites.)</i>	<i>(If impact did occur.)</i>
Site 1. (Fig 10) Pereira grave.	None	Not applicable	Not applicable	Not applicable	Not applicable
Site 2. Gatkop Cave. (Fig. 12)	The “official closure” of the site has created tension between the traditional healer community and Aquila steel, and the impact is of high significance	Negotiation is underway with convenor Prof. Van Vuuren to bring parties to the table. There is a significant degree of possibility to negotiate a solution to the impact.	This item has high probability to lead to irreplaceable loss if negotiators do not agree on a solution.	With social issues) as well as the “bat population” this site may lead to the most important mitigation problem regarding heritage sites.	Preliminary indications from the Van Vuuren report shows that mitigation may be possible if all parties can be satisfied.
Site 3a. Randstephne homestead. (Fig. 18)	At present the site is neglected and in the process of “demolition by neglect”.	Use for the site must be determined. Impact can be reversed	If this situation is not addressed Aquila will be accountable under act 25 of 1999.	Not applicable	This site must be submitted to a second phase study.
Site 3b. Labourer’s cemetery. (Fig. 22)	At present the site is neglected and in the process of “demolition by neglect”.	PGS Consult, are to identify families and possibility of relocation of graves.	If this situation is not addressed Aquila will be accountable under act 25 of 1999.	Retention of graves in-situ may initiated community demands and other social issues	Intervention as suggested by PGS Consult may reverse the situation.
Site 4a. L. I .A. Cattle enclosure. (Fig. 24)	None	Not applicable	Not applicable	Not applicable	Not applicable
Site 4b. L. I .5A. Cattle enclosure.(Fig. 25).	None	Not applicable	Not applicable	Not applicable	Not applicable
Site 4c. L. I .A. Cattle enclosure. (Fig. 26)	None	Not applicable	Not applicable	Not applicable	Not applicable

Site 4d. L. I .A. Cattle enclosure. (Fig. 28)	None	Not applicable	Not applicable	Not applicable	Not applicable
Site 4e. L. I .A. Cattle enclosure. (Fig. 29)	None	Not applicable	Not applicable	Not applicable	Not applicable
Site 4f. L. I .A. Mine 1 (?) (Fig. 30)	None	Not applicable	Not applicable	Not applicable	Not applicable
Site 4g. L. I .A. Mine 2 (?) <i>no figure</i>	None	Not applicable	Not applicable	Not applicable	Not applicable
Site 4h. L. I .A. Mine 3 (?) <i>no figure</i>	None	Not applicable	Not applicable	Not applicable	Not applicable
Site 4i (a). L. I A. dwellings. (Fig. 32)	Prospecting road passes through or near site	Second Phase study must be initiated	Situation must be evaluated	Site is grouped with all “site 4” sites and is important as a group of Later Iron Age sites.	This site must be submitted to a second phase study.
Site 4 i (b). L. I A. dwellings. (Fig. 33)	Prospecting road passes through or near site	Second Phase study must be initiated	Situation must be evaluated	Site is grouped with all “site 4” sites and is important as a group of Later Iron Age sites.	This site must be submitted to a second phase study.
Site 4j. L. I A. Smelting site. (Fig. 34)	Prospecting road passes through or near site	Second Phase study must be initiated	Situation must be evaluated	Site is grouped with all “site 4” sites and is important as a group of Later Iron Age sites.	This site must be submitted to a second phase study.
Site 4k. L. I A. dwellings. (<i>no images</i>)	None	Not applicable	Not applicable	Not applicable	Not applicable
Site 4l. L. I A. dwellings. (<i>no images</i>)	Prospection road passes through or near site. (Impact not available at present)	Second Phase study must be initiated	Situation must be evaluated	Site is grouped with all “site 4” sites and is important as a group of Later Iron Age sites.	This site must be submitted to a second phase study.
Site 5. Bridge and Weir. (Fig. 35)	None	Not applicable	Not applicable	Not applicable	Not applicable

Table 3. Influence of proposed activities to be undertaken by Aquila steel at Meletse mine on the 2011 identified heritage sites. These activities include the establishment of a mining pit, dumping areas and structures such as a beneficiation complex and associated structures as well as other impacted areas. (See Fig. 41 page 28).

<i>Heritage site number.</i>	<i>Significance of impact.</i>	<i>Degree to which impact can be reversed.</i>	<i>Degree to which impact may cause irreplaceable loss.</i>	<i>Cumulative Impact.</i>	<i>Mitigation possibility.</i>
<i>(As described in the 2011 report, pages 29 to 33)</i>	<i>(See SAHRA evaluation page 34 of this report.)</i>	<i>(If such impact is indicated to affect the heritage estate of Meletse mine)</i>	<i>(If such impact is indicated to affect the heritage estate of Meletse mine)</i>	<i>(In combination with other related sites.)</i>	<i>(If impact did occur.)</i>
Site 1. (Fig 10) Pereira grave.	Possible future upgrading of the road may necessitate a new bridge. And relocation of grave	Second Phase study must be initiated. (PGS Consult may be activated with labourers graves study)	Not applicable	Not applicable	Possible. (PGS Consult may be activated with labourers graves study)
Site 2. Gatkop Cave. (Fig. 12)	Tension was created between traditional healer practitioners and Aquila steel.	Negotiation is underway with convenor Prof van Vuuren bring parties to the table	This item has high probability to lead to irreplaceable loss	Together with envisioned social issues (community resistance) as well as the “bat population” this site may lead to the most important mitigation problem regarding heritage sites.	Preliminary indications from the Van Vuuren report shows that mitigation may be possible if all parties can be satisfied.
Site 3a. Randstephne homestead. (Fig. 18)	At present the site is neglected and in the process of “demolition by neglect”.	Use for the site must be determined.	If this situation is not addressed Aquila will be accountable under act 25 of 1999.	Not applicable	This site must be submitted to a second phase study.
Site 3b. Labourer’s cemetery. (Fig. 22)	At present the site is neglected and in the process of “demolition by neglect”.	Negotiation is underway with convenor, PGS Consult to identify families and relocation of graves.	If this situation is not addressed Aquila will be accountable under act 25 of 1999, as well as other applicable Act/s .	Together with the cave issues community resistance may be created.	Intervention as suggested by PGS Consult may reverse the situation.

Site 4a. L. I .A. Cattle enclosure. (Fig. 24)	Low	Reasonably possible	Low	All "site 4" sites are individually of low significance, but are cumulatively of value to capture LIA information	These sites must be submitted to a second phase study
Site 4b. L. I .5A. Cattle enclosure.(Fig. 25).	Low	Reasonably possible	Low		
Site 4c. L. I .A. Cattle enclosure. (Fig. 26)	Low	Reasonably possible	Low		
Site 4d. L. I .A. Cattle enclosure. (Fig. 28)	Low	Reasonably possible	Low		
Site 4e. L. I .A. Cattle enclosure. (Fig. 29)	Low	Reasonably possible	Low		
Site 4f. L. I .A. Mine 1 (?) (Fig. 30)	Low	Reasonably possible	Low		
Site 4g. L. I .A. Mine 2 (?) no figure	Low	Reasonably possible	Low		
Site 4h. L. I .A. Mine 3 (?) no figure	Low	Reasonably possible	Low		
Site 4i (a). L. I A. dwellings. (Fig. 32)	Prospection road passes through or near site	Second Phase study must be initiated	Situation must be evaluated		
Site 4 i (b). L. I A. dwellings. (Fig. 33)					
Site 4j. L. I A. Smelting site. (Fig. 34)					
Site 4k. L. I A. dwellings. (no images)	Low	Reasonably possible	Low		
Site 4l. L. I A. dwellings. (no images)	Prospection road passes through site.	Second Phase study must be initiated	Situation must be evaluated		
Site 5. Bridge and Weir. (Fig. 35)	Upgrading of the road may necessitate a new bridge.	Second Phase study must be initiated	Applicable	Not applicable	Possible