



## AFRICAN HERITAGE CONSULTANTS CC

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**(3<sup>rd</sup>) 1<sup>st</sup> Phase**

**Cultural Heritage Resources Impact Assessment for the proposed extension of  
the SAMREC Andalusite Mine at Klipplaatdrift, Krugerspost, Limpopo  
Province, South Africa.**



**March 2015 (Revision of the 2014 and 2011 editions)**

Report compiled by Sidney Miller.

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B.Sc (Eng) Civ. M.(Architecture) Conservation. ASAPA MEMBER NO 087

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## **1. Executive Summary.**

In October 2011 African Heritage Consultants were tasked to undertake a first phase heritage impact assessment for the proposed extension of the Samrec Andalusite mining operations at Krugerspost. At that stage the area of impact of the proposed extension of the mine was indicated as in *figure 01*.

A first site visit was undertaken in early October 2011 in company with Me. Salome Beeslaar of Shangoni Management Services, but during this 1<sup>st</sup> site visit there was not sufficient time available to execute a proper foot-sole investigation.

Even so it was realised that there was sufficient evidence to suspect the presence of a number of Later Iron Age sites in the general area of the property. At the same time a visit was undertaken to a neighbouring farmer, Prof. Steenkamp, an interested and affected party, as the proposed new mine is supposed (by him) to possibly generate visual-, noise- and dust impact on his dwelling. (For the proximity of Prof. Steenkamp's dwelling to the proposed mining area see *figure 02*.)

In his garden and home a very large number of *bored stones*<sup>1</sup> were observed that he indicated was acquired during the clearing of fields surrounding his dwelling for agricultural purposes over a long period of time exceeding two decades

Apparently Later Iron Age engravings that are similar to the renowned Lydenburg petroglyphs to the south also occur on his farm. This is according to information supplied by his children that also reside on the property. These petroglyphs were not visited owing to time restraints, and the fact that they were located more than a kilometer from the proposed mining area.

***Because of the on-site observations during the first visit in October and the planned second visit in November to the site the present author undertook an extended Google Earth investigation to utilise as a point of departure during the second on-site investigation.***

This second site investigation was undertaken on the 17<sup>th</sup> November 2011 with the following present. 1. Mr. Jan Nel of Shangoni. 2. Mr. Gerrit Posthumus and Mr. David Bellicini of Samrec. 3. Mr. Sidney Miller, heritage consultant.

During this visit it was indicated that a new area was defined for the proposed mine (*see figure 03*). Even so it was still found that at least five Later Iron Age sites that was identified in the Google Earth research could be confirmed on the ground were in fact still in existence in varying degrees of preservation. The actual impact of the proposed mine on these sites varies as follow.

**Site 1.** This site appears to have been a typical Later Iron Age *Koni* site. Unfortunately most of this site was destroyed through agricultural clearance of the stone walling and the planting of crops.

**Site 2.** A disturbance in vegetation and one Later Iron Age potsherd in a road is all that indicates the presence of a site. It was also destroyed by agricultural practices and road-making in the past.

**Sites 3, 4 and 5.** These sites are typical Later Iron Age *Koni* sites typical of the area in general. They are located on the very overgrown ridge to the south, west and north of the proposed layout of the mine. These sites will not be impacted on if proposed mining

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<sup>1</sup> One such bored stone was observed during the survey of the site 1 spoil heap as can be seen in figure 13.

objectives are adhered to. If new mining objectives are set by Samrec then mitigation will be necessary for sites 3, 4 and 5.

Owing to restraints on time, the prohibitive nature of the vegetation as well as the established fact that archaeological sites were in fact prohibitive to proposed mining without mitigation, it was agreed between the Samrec officials, the environmental consultants Shangoni, and the present author that second phase studies will be undertaken when it is necessitated within the parameters set out by *Act 25 of 1999*.

It was also further established that much destruction of archaeological evidence had taken place during the agricultural use of the site preceding the present investigation. The fact that the discovery and destruction of the sites/s was not declared by the owner of the property is a separate issue that needs to be investigated by as a separate event to the present application for extension of the existing mining operations of Samrec.

*It is therefore recommended that mining may proceed within the area set out as indicated on the plan in figure 02. For risk assessment see Appendix 1 at the end of the report.*



Report compiled by Sidney Miller.

*B.Sc (Eng) Civ. M.(Architecture) Conservation. ASAPA MEMBER NO 087*

## 2. Contact Details.

### 2.1 Owners Details.

Farms.	Name.	Tel.	E-mail contact.
Portions 13, 14 and 15 of Klipplaatdrift 399 KT.	Samrec (Pty) Ltd – Krugerspost Andalusite Mine.	Xolisa Mvinjelwa 012 643 5880	Xolisa Mvinjelwa <a href="mailto:xolisa.mvinjelwa@samrec.com">xolisa.mvinjelwa@samrec.com</a>

### 2.2 Developers.

**Name of company:** Samrec (Pty) Ltd – Krugerspost Andalusite Mine  
**Postal address:** Box 8118, Centurion, 0046  
**Physical address:** Sanlameerzicht, 259 West Street, Centurion, 0157  
**Contact person:** Xolisa Mvinjelwa  
**Telephone:** 012 643 5880  
**Fax:** 012 643 1966  
**E-mail:** [xolisa.mvinjelwa@samrec.com](mailto:xolisa.mvinjelwa@samrec.com)

### 2.3 Consultants.

#### a. Environment.

**Name of company:** Shangoni Management Services. SERVICES. (Pty) Ltd  
**Postal address:** P.O Box 74726, Lynwood Ridge, 0040.  
**Physical address:** Block C8, Block@Nature, 472 Botterklapper Street, The Willows  
**Contact person:** Jan Nel  
**Telephone:** 012 807 7036  
**Fax:** 0 12 807 1014  
**E-mail:** [jan@shangoni.co.za](mailto:jan@shangoni.co.za)

## b. Heritage

**Name of company:** African Heritage Consultants  
**Postal address:** P.O. Box 652, Magalieskruin, 0150  
**Contact person:** Sidney Miller  
**Telephone:** 082 939 6536  
**E-mail:** [sidneymears@gmail.com](mailto:sidneymears@gmail.com)

## 2.4. Type of Development.

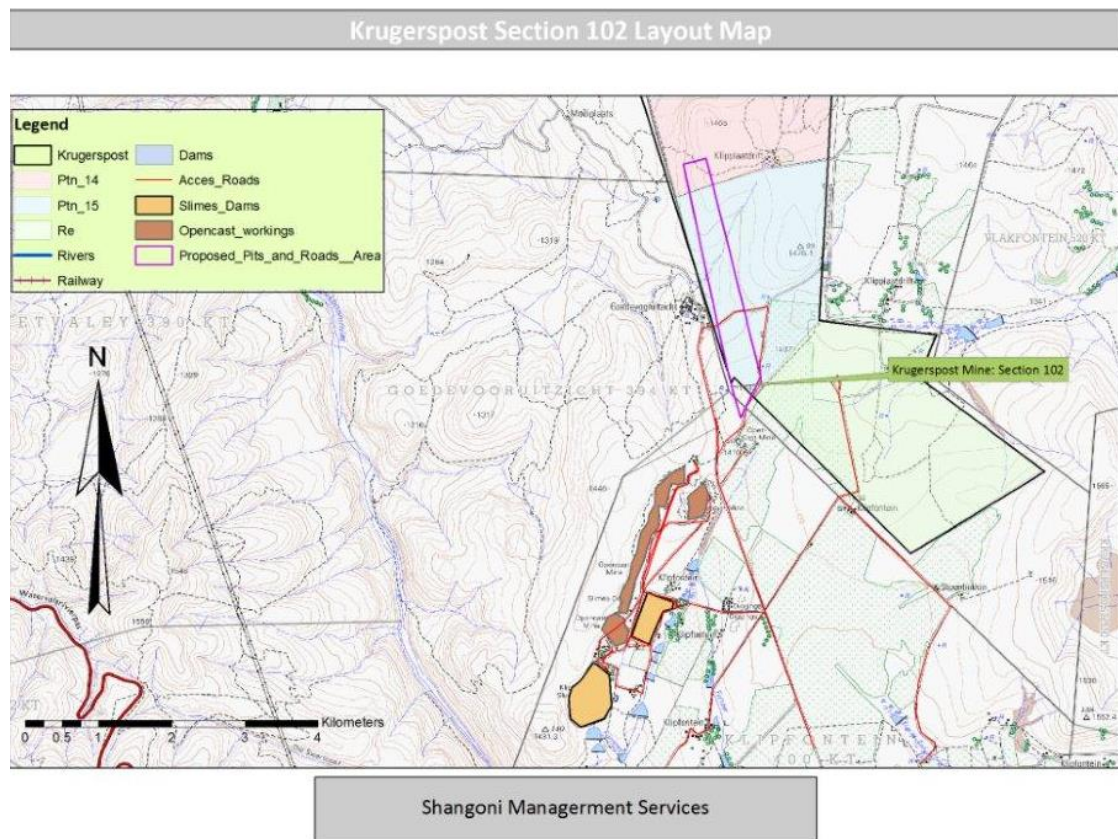
Mining

## 2.5. Zoning of Site.

Agriculture

## 2.6. GPS Coordinates of the site.

For the definition of the final research area see the official site map in *fig. 02* below. The average GPS centre of the site is located at 24° 54' 28, 61" S and 30° 27' 20, 43" E



**Fig. 01.** Above is an image showing the location of the existing Andalusite mine (shaded brown), the slime dams (shaded yellow), dams (shaded blue) and the original proposed area of the extension of the Andalusite mine (outlined in purple.) (Image supplied by Shangoni Management Services, October 2011.)

## 3. 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.

#### **4. 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.

#### **5. Methodology.**

5.1. The site was visited in October 2011 with Shangoni personnel and was transacted by motor vehicle where possible. During this visit evidence were gathered that showed the presence of Later Iron Age activity.

5.2. During this time an affected neighbouring party, and much information regarding archaeological features of the area was pointed out.

5.3. At base in Gauteng an intense Google Earth research revealed more archaeological sites that were located on the ore body and in the vicinity.

5.4. A second visit to the site was undertaken on the 17<sup>th</sup> November 2011 with the following present. Jan Nel [jan@shangoni.co.za](mailto:jan@shangoni.co.za) of Shangoni Management Services, Gerrit Posthumus [gerrit.posthumus@samrec.com](mailto:gerrit.posthumus@samrec.com), and David Bellicini [David.Bellicini@samrec.com](mailto:David.Bellicini@samrec.com) of Samrec and Sidney Miller [sidneymears@gmail.com](mailto:sidneymears@gmail.com), heritage consultant.

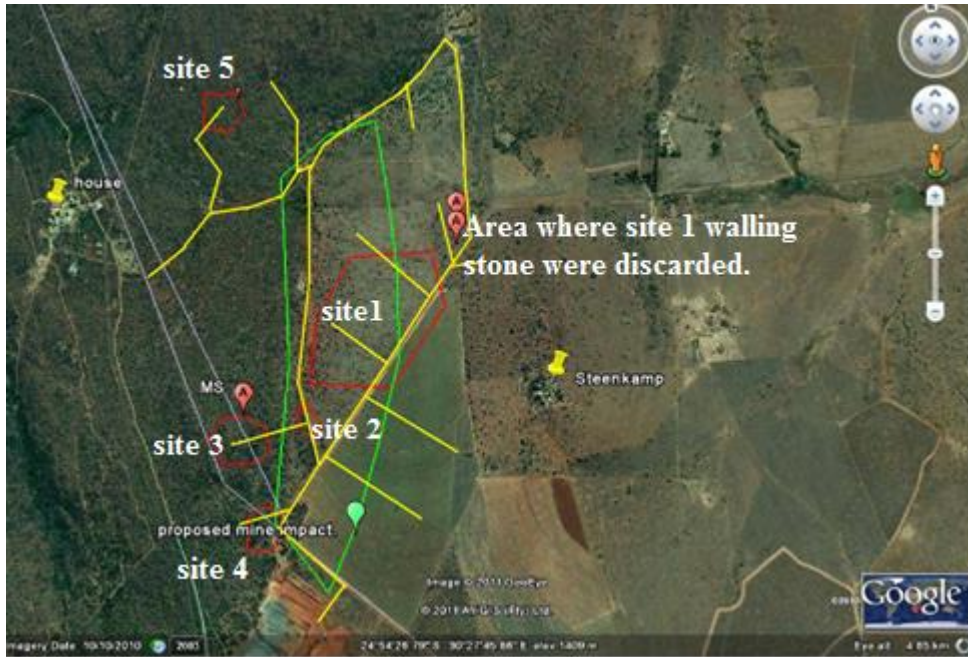
5.5. The previously identified Google Earth images of archaeological sites in the proposed mining area were verified on site by foot-investigation.

5.6. With the use of Google Earth imagery available from 2003 it was also identified that other sites had been destroyed by farming activity.

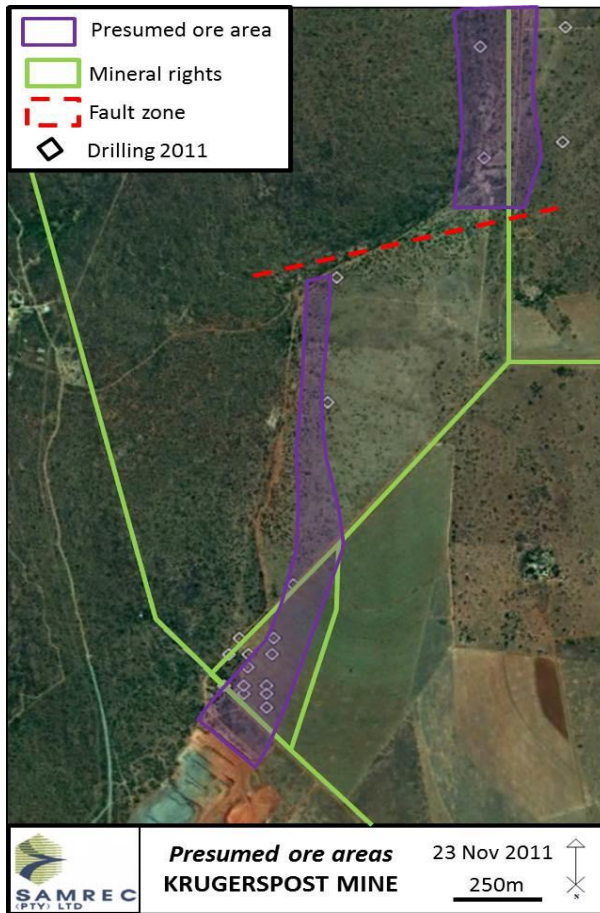
5.7. A research *route record* can be seen in **figure 02** below. As explained above, during the first visit the investigation followed farm roads, while during the second visit the site was investigated on foot.

5.8. On the 23<sup>rd</sup> of November 2011 a revised estimation of the location of the ore body was supplied to the present author. (*See figure 03.*) This places the ore body more to the east of the original location that was used as a base of reference and research during the first field research visit.

5.9. Even if this will be the final impact area, the effect on the sites identified must still first be cleared by second phase work, if so necessitated by direct impact, and comments by the archaeological unit of SAHRA.



**Fig. 02.** Above is an image showing the proposed area of impact (green), the research routes during the two visits (yellow) the five archaeological sites identified with potential impact (red) and the dwelling of Prof. Steenkamp. Surrounding his dwelling one can observe the fields cleared by Steenkamp in the past that was, and still is, used for cultivation. (Google Earth 2011 image with annotations by the author.)



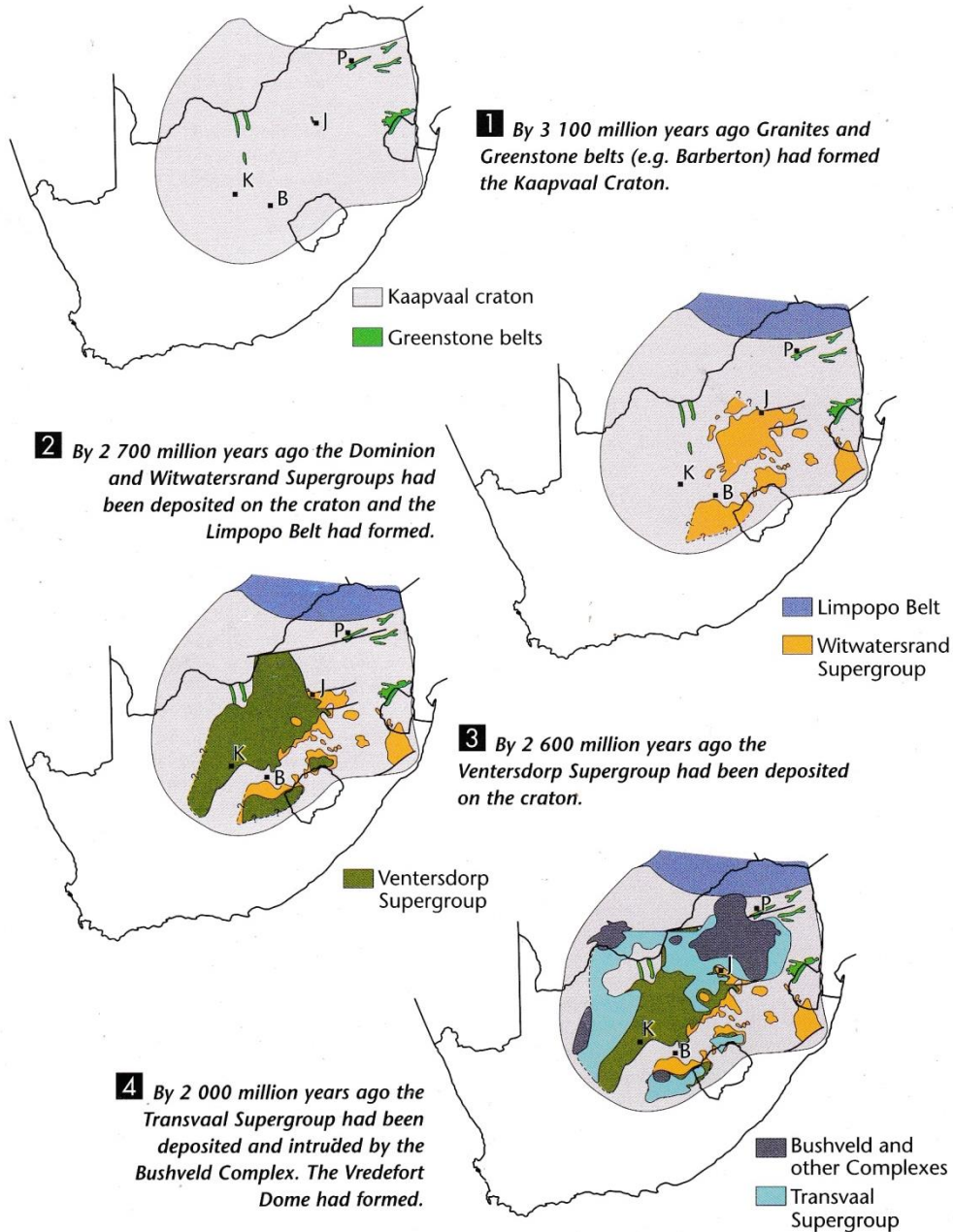
**Fig. 03.** The latest assumed position of the ore body that will be the target of the proposed extension of the Samrec mine at Krugerspost as supplied by the client after two visits by the heritage consultant to the site. (Image supplied by Shangoni Management Services, December 2011.) Irrespective of the exact location of the mine the larger archaeological integrity of the direct vicinity will irrevocably be influenced, and the same mitigation measures apply. For comparison see the assumed position of the Andalusite ore body in fig. 01.

## 6. Environmental Information.

### 6.1. Geology.

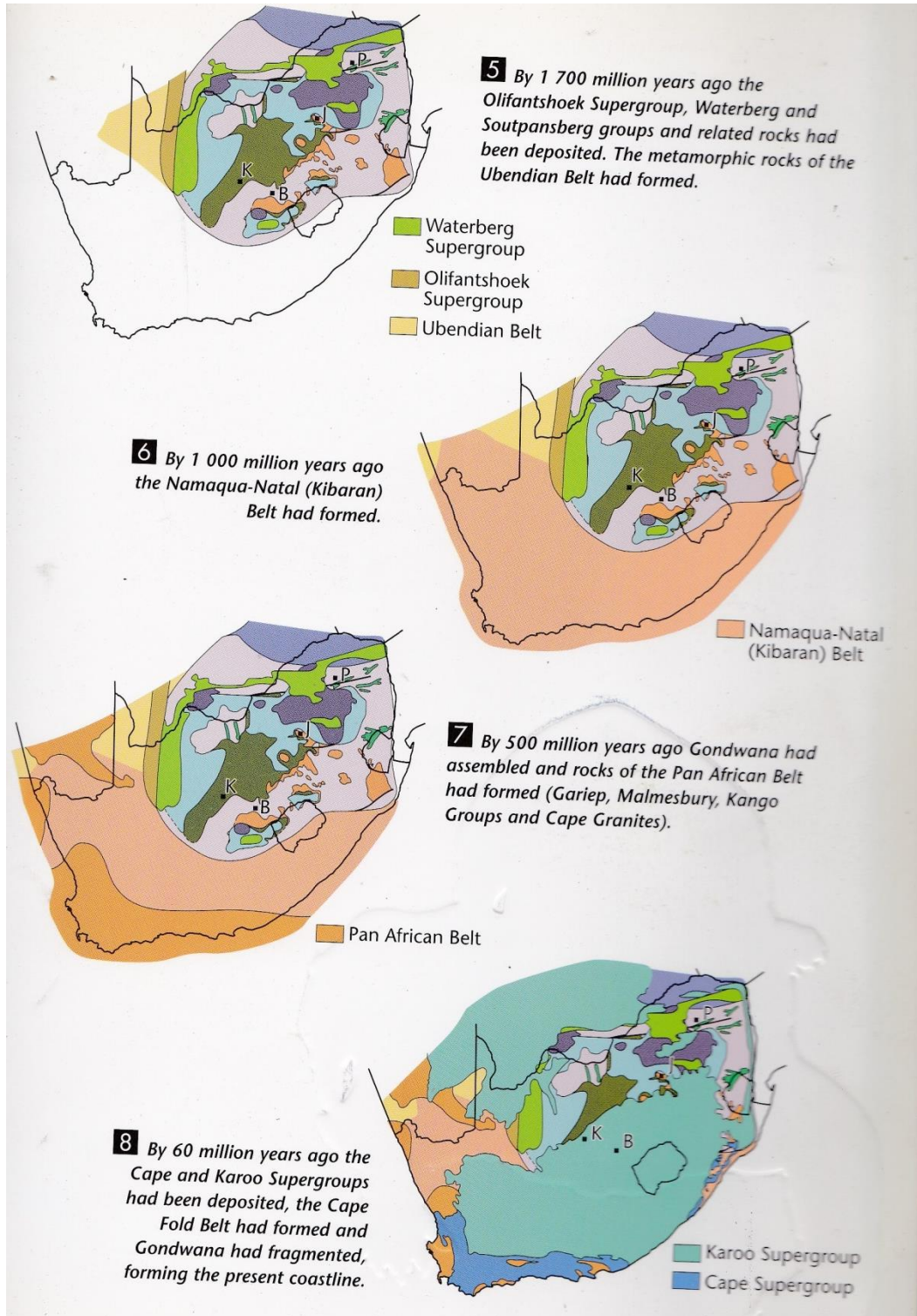
#### THE MAKING OF SOUTH AFRICA

This series of maps illustrates the growth of southern Africa over time. The present extent of the major rock formations is shown, but each was probably more extensive. The coastline of South Africa is shown for reference only – the present coastline only formed 90 million years ago.



**Fig. 04.** Above is a sequence of images showing the development of the geological substructure underlying the research area between 3 100 and 2 000 million years ago. A large segment of the north eastern part of South Africa is still supported by the early Kaapvaal Craton. (McCarthy, T & Rubidge, B, 2005.)





**Fig. 05.** Above is a sequence of images showing the development of the geological substructure underlying the research area between 2 000 and the last 60 million years. The final deposits that are utilised in the Samrec Andalusite mine are very recent (in geological terms) sedimentary deposits. (McCarthy, T & Rubidge, B, 2005.)



Terence McCarthy

**Figure 11.11** Sedimentary deposits such as these exposed by donga erosion near Burgersfort in Mpumalanga reflect major climatic changes in the region over the past 100 000 years. During dry periods, vegetation was sparse, and debris eroded from hillsides collected in valleys to form sand deposits (lighter layers). During wetter periods, soil formed (darker layers), only to be buried when the climate changed. Wet and dry periods lasted for many thousands of years.

**Fig. 06.** Above is an image showing geological substructure in the Burgersfort area directly west of the research area. **McCarthy and Rubidge** states that these sedimentary layers, similar to those which the Samrec Andalusite mine is presently exploiting, were deposited in the last 100 000 years. (**McCarthy, T & Rubidge, B, 2005.**)

## 6.2. Vegetation.

The description of vegetation for heritage purposes is a continuous subject of discussion by environmentalists and others. Two major contributors to this field of expertise are **Acocks** that published in the middle of the 20<sup>th</sup> century and the comprehensive study undertaken by **Mucina and Rutherford** early in the 21<sup>st</sup> century.

For the purposes of this study **Mucina and Rutherford** was sourced, especially **chapter 8** that describes the high-lying areas of grasslands. Although they have undertaken a comprehensive description of modern vegetation species in the general area they still fall back on the earlier definition of **Acocks** on page 408 and 409 in their document.

As this heritage study is not essentially an evaluation of the present vegetation condition of the area under investigation, but rather an evaluation of the vegetation conditions that served pre-historic populations the present author chooses to revert to the **Acocks** descriptions that may capture more accurately the prehistoric conditions.



**Fig. 07.** Above is an image from the *Acocks vegetation Veld Type maps* showing the variation in plant populations in the area surrounding **Krugerspost**. In the above map Acocks identified veld types 8, 61, 18 and 19 while *Mucina and Rutherford* in chapter 8, pages 408 and 409 states that types 19 and 8 are present including type LR 43 as described by *Low and Rebilow* in 1996. (Image from *Acocks 1998*.)

Depending on what source the reader wants to utilise in the context of the present report, it is generally agreed by both sources that veld type 19, generally known as **Sourish Mixed Bushveld** and veld type 8 known as **North Eastern Mountain Grassland** forms the base for vegetation that occurs at present, and would probably have occurred in the recent past.

Whatever the case may be, it is known, that a large population of Later Iron Age Agropastoralists did populate the general area heavily during the last three hundred years as is evident in the hundreds of ruins of stone walled villages that can be seen in the general landscape and can also easily be identified on Google Earth.

Although little is known in the academic archaeological record of the identity of these people, the general term of the **Koni** is used to refer to these settlements. From the general layout of the sites it is thought that their economy were to a large extent based on herding that were made possible by the vegetation and precipitation that was present during those periods.

For those readers interested in the specifics of trees, shrubs and grasses that occurs and had occurred in the region they are referred to the vegetation report that is included in the larger Environmental Impact Assessment compiled by Shangoni Management Services (Pty.) Ltd. or to the two primary sources *Acocks* that published in the middle of the 20<sup>th</sup> century and the comprehensive study undertaken by *Mucina and Rutherford* early in the 21<sup>st</sup> century.

## **7. Archaeological and Historical Background.**

As is commonly known this region of the Limpopo and Mpumalanga Provinces are richly endowed with both archaeological as well as historical resources. To provide a full record of this data may entail many hundreds of pages of information.

So, as for brevity, only the main aspects of the heritage estate of the region will be included below. This large body of information is therefore truncated so as to provide a realistic sounding board for the present investigation for the proposed extension of the Samrec mine on Klipplaatdrift at Krugerspost.

### **7.1. Stone Age.**

#### **7.1.1. The Early Stone Age.**

The Early Stone Age is presented in the general region by two sites. The first and possibly the best known is the *Mokopaan* site situated some 150 kilometres to the west that is in no need of elucidation. The *cave of hearths* as it is also known, contains 18 meters of deposits that shows the presence of *Australopithecus Africanus* in the region over 1,5 million years ago, and a continuous occupation (although interrupted) until historical events some 150 years ago. (Deacon, 1999.)

Secondly the extensive *Chueny Poort* site located some 100 kilometres to the northwest covers an extensive area of approximately 15 kilometres by 3 kilometres that contains one of the most comprehensive stone tool ensembles in Southern Africa. This site is generally known as the *Pietersburg Complex*. (Deacon, 1999.)

*(Regarding the site under investigation no Early Stone Age artefacts or shelters were observed. One may disregard that a significant site from this period will be encountered in the investigation area)*

#### **7.1.2. The Later Stone Age.**

The Later Stone Age is also well represented in the area by the two sites known as *Heuning-nest-krantz* and the *Bushman Rock Shelter*, both situated just to the north of Ohrigstad some 40 kilometres to the north of the site under investigation. The second of the two was extensively excavated by the Dept of Archaeology of the University of Pretoria to a depth of over six meters revealing an occupation of Homo Sapience for a period of 100 000 years. (Deacon, 1999.)

*(Regarding the site under investigation no Later Stone Age artefacts or shelters were observed during the investigation. Prof. Steenkamp though, possesses an illegal collection of a small number of such artefacts, recovered by himself during his clearing of the agricultural fields. There is no evidence of a significant deposit of such artefacts, "in situ" which may constitute a significant "site" on his farm. One may disregard the fact that a significant site from this period will be encountered in the investigation area)*

#### **7.1.3. Later Stone Age Art.**

*(a) Later Stone Age Rock Art (paintings)* has been identified by the previous curator of the Pilgrim's Rest museum Me Christine Van Wyk Rowe in the areas to the east of the area under investigation along the *Blyde River*. These sites though are fragmentary and there apparently does not exist more than about 20 sites in total. (Me Christine Van Wyk Rowe, personal communications during a visit to the region in 1992)

*(b) Later Iron Age Rock Art (engravings)* has been widely studied in the general area by the Wits Rock-Art Unit, especially the site on the farm Boomplaats, and Kudu Ranch some 20

kilometers west of Lydenburg. According to the children of Prof. Steenkamp similar engravings occur on Klipplaatdrift. (*Wits Department of Archaeology, and the Steenkamp children, personal communications during a visit to the site in 2011.*)

*(Regarding the site under investigation no Later Stone Age rock art sites or Later Iron Age engraving sites were identified even though special attention was adhered to in this regard. One may disregard the fact that a significant site from this period will be encountered in the investigation area)*

## **7.2. Iron Age.**

### **7.2.1. The Early Iron Age.**

Of the rarest archaeological remains in Southern Africa is represented from this period that is hedged in time between approximately 300 A.D. and 900 A.D. It represents the first occupation of Agro-pastoralists of Southern Africa that migrated south from the Chad area from 400 B.C. onwards. The earliest of these sites is the well known *Silver Leaves* 300 A.D. site located in the Tzaneen area. (*Phillipson, 2005.*)

The best known in the research area is the *Lydenburg Heads* site that dates to between 600 and 800 A.D. Further to the north-west one may also find the *Klein Africa* and *Happy Rest* sites. These are well described in *Huffman's 2007 Handbook to the Iron Age.*

Recently it was also revealed, through work executed by African Heritage Consultants that many of these sites also exist in the *Sekhukhune* region at Burgersfort to the west of the research area that may link the Early Iron Age sites in KwaZulu Natal with the sites in the Mpumalanga and Limpopo Provinces. (*Personal observation, S.M. Miller, 2009*)

*(Regarding the site under investigation no indications of Early Iron Age remains were identified. One may disregard the fact that a significant site from this period will be encountered in the investigation area)*

### **7.2.2. The Middle Iron Age.**

These sites are associated with the *Mapungubwe Period* that is generally associated with the area north of the Zoutpansberg. There is no evidence of such sites in the area under investigation. (*Van Rooyen, R. (Ed) Frazer, S. (Ed) Tiley, S., 2004*)

*(Regarding the site under investigation no evidence of Middle Iron sites were identified. One may disregard the fact that a significant site from this period will be encountered in the investigation area.)*

### **7.2.3. The Later Iron Age.**

This period and its associated sites are associated with demise of the African-Indian trade after 1500 A.D, and the advent of European influence on the East Coast since the circumnavigation of the Cape of Good Hope by Da Gama and Diaz. (*Axelson, E., 1969.*)

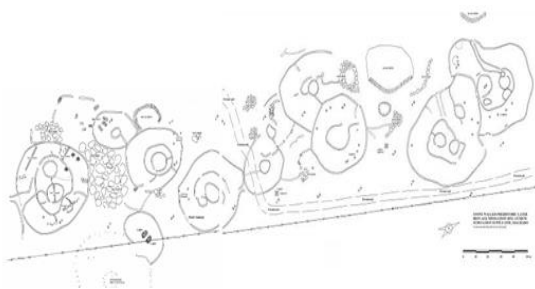
It can also be tentatively linked to the impact of foreign agricultural products from the Americas, especially maize. It also represents the expansion of Agro-pastoralists societies in Southern Africa, and an increase in occupation of land that was possibly to a large extent determined by environmental factors and civil wars.

In the specific research area this period is especially represented by the general occupation of the culture generally known as the *Koni*. Even though literally hundreds of these sites are

evident in the general area from Swaziland in the south to Ohrigstad in the north very little is known of these occupations in the official archaeological data basis.

It may be that the underlying problem of lack of research on these sites is based on the fact that they are monotonously similar in appearance, with a variety of stone-wall configurations defining the sites. There are generally also no artefacts evident, especially pottery that normally defines similarities and differences between cultural affinities. The other problem associated with these sites is the fact that carbon fourteen dating is totally unreliable owing to its *recent* origin.

During a mitigation second phase study close to Machadodorp by Dr Pistorius and the present author a 500 meter long by 200 meter wide site was documented and excavated. Not one potsherd was encountered, no dwelling floors were identified and no midden was found.



**Fig. 08.** *The macro settlement pattern of the stone walled complex on Dalmanutha 367JT also referred to as Site DAL001. This stone walled complex investigated by Pistorius and Miller in 2012 stretches along a distance of five hundred meters along a dolerite reef which was utilized for building material. This is typical of the Later Iron Age sites in the general research area. Not one ceramic shard was encountered on this total site. (Pistorius and Miller, 2012).*

*(Regarding the site under investigation evidence of five similar Later Iron Age sites was identified as described in the report.)*

### **7.3. Historical Period.**

After the decree of the demolishment of slavery in the 1830's world-wide, there was an ex-flux of European farmers from the Cape into the interior of Southern Africa. (*De Kock, 1950.*) These people reached the *Transvaal* after 1836, and *Ohrigstad* and *Lydenburg* became one of the focal points of re-settlement of this group between 1844 and 1848. (*Potgieter, 1959.*) The eventual establishment of the *Zuid Afrikaanse Republiek* that was to be separated from the British Government after the *Zand River Convention* became the basis of a continuous dispute over land occupation between Europeans and locals (*Mönnig, 1978*) that lasted into the modern era. Amongst other land settlements by the Europeans, *Krugerspost* became the possession of the Kruger family that they attempted to turn into a development area after the evacuation of *Ohrigstad*. (*Juta, 1936.*)

*(Regarding the site under investigation no evidence of historical occupation exists on the site.)*

## **8. Images Related to the First Phase Study.**

### **8. 1. First phase Photographic Recordings.**



**Figs. 09 and 10.** (Left). A collection of stone that is suspected to have been previously used for the construction of walls in the cleared area to the west of the Steenkamp dwelling numbered site 1 in this report. (See figure 02). (Photograph S.M. Miller 2011.) (Right). A lower grinding stone in the pile of building material in figure 09, confirming the origin of the building material from a Later Iron Age village. (Photograph S.M. Miller, 2011)



**Figs. 11 and 12.** (Left). A bored stone that was identified in the pile of building material in figure 09, confirming the origin of the building material from a Later Iron Age village (Photograph S.M. Miller, 2011.) (Right). Hammer stone for the breaking of marula pips to remove the kernels identified in the pile of building material in figure 09, confirming the origin of the building material from a Later Iron Age village. (Photograph S.M. Miller, 2011)



**Figs. 13 and 14.** (Left and right). Later Iron Age remains thought to have been part of site 1 and is located in the vicinity where the site 1 material was discarded (See figure 02). (Photograph S.M. Miller, 2011)

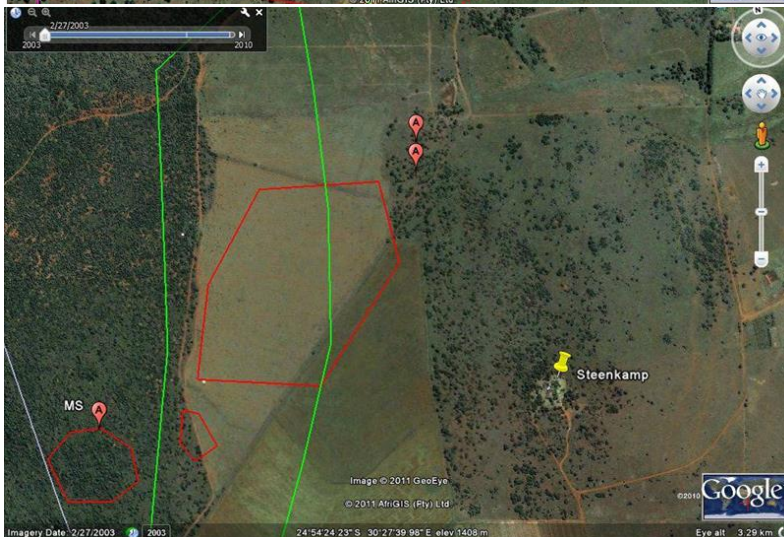


**Figs. 15 and 16. (Left and right).** Remains of a Later Iron Age site to the south and west of the area defined for the proposed mining area. (Site 3.) (Photograph S.M. Miller, 2011)

## 8.2. Google Earth Images Related to the Study.

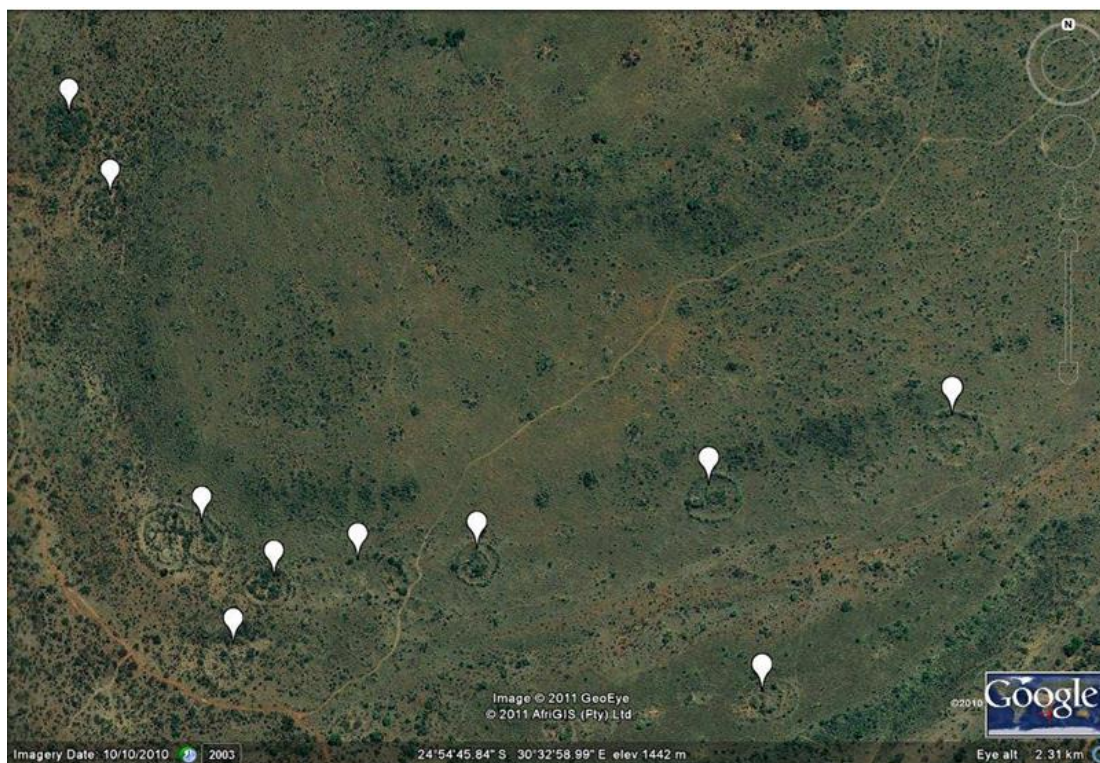


**Fig.17.** A 2010 Image showing supposed stone walled village. This was tested on site, but no walls were found. The circles are in fact pioneer grasses that prefer the chemicals left in the footprints of the stone walls that were cleared for agricultural purposes prior to 2003. (Google Earth image, 2010)



**Fig. 18.** A 2003 Image showing the same field as the one above in 2010. Here one can see the field cleared for agriculture. The material of the stone walls that were removed from this site can be seen in **figs. 09 to 12**. The revival of the footprint of the walls in the form of pioneer grass species (owing to chemicals gathering in the walls) can be seen in **fig. 17**. (Google Earth image 2003)





**Fig.19.** Image showing similar Later Iron Age village some 11 kilometres to the east of site under investigation. There are literary hundreds of these sites located between Ohrigstad and Swaziland. (Google Earth, 2010 with markers by the author.)

### **8.3. Verbal Description of the Sites Identified and Visited.**

Brief descriptions of sites identified both by desktop study as well as by verification during physical foot-sole investigation. (See fig 10 for all the sites described below.)

#### **8.3.1. Site 1.**

This is (was) apparently a Later Iron Age stone walled site. This site was identified during a desktop Google Earth study, and was extensively investigated during the foot-sole investigation. It appears to have been several hundred meters in extent. Although it is situated well inside the delineation of the expected impact of the proposed extension of the Samrec Andalusite mine at Krugerspost, it has already irrevocably been destroyed during the clearing of the site for agricultural purposes during the past two decades.

Associated with site 1, at its north and west, is located a few small stone circles less than 5 meters in extent that appears to be remnants of site 1 not destroyed during the clearing of the site for agricultural purposes. (Figures 13 and 14.)

Associated with site 1 at its north and west is located a pile of rock and three Iron Age artefacts (a lower grinding stone, a bored stone and a hammer stone) that appears to be the dump site of the walling stone removed from site 1 when it was destroyed during the clearing of the site for agricultural purposes. (Figures 10, 11 and 12.)

Field rating according to *SAHRA 2006 and 2007 Guidelines*.

Not applicable.

Statement of significance according to *SAHRA 2006 and 2007 Guidelines*.

Not applicable.

### **8.3.2. Site 2.**

This is (was) apparently a Later Iron Age site. This site was identified during the foot-sole investigation and was identified by vegetation disturbance and the presence of one undecorated potsherd. It appears to have been rather diminutive in extent and may have been part of either site 1 or site 2. Although it is situated well inside the delineation of the expected impact of the proposed extension of the Samrec Andalusite mine at Krugerspost, it has already been irrevocably destroyed during the clearing of the site for agricultural purposes and road making during the past two decades.

Field rating according to *SAHRA 2006 and 2007 Guidelines*.

Not applicable.

Statement of significance according to *SAHRA 2006 and 2007 Guidelines*.

Not applicable.

### **8.3.3. Site 3.**

This is apparently part of the larger Later Iron Age stone walled complexes in the general area of the site. This specific site was identified during the foot-sole investigation. It appears to be less than 60 meters in extent. It lies to the south and west of the proposed delineation of the expected impact of the extension of the Samrec Andalusite mine at Krugerspost.

Field rating according to *SAHRA 2006 and 2007 Guidelines*.

(e). "General" Protection A (Field Rating IV A): this site should be recorded before destruction if project objectives are not adhered to. (Usually Medium significance.)

Statement of significance according to *SAHRA 2006 and 2007 Guidelines*.

- (1) a. Its importance in the pattern of South Africa's history.
- (2) c. Its potential to yield information that will contribute to understanding of south Africa's cultural history.
- (3) g. Its strong association with a particular cultural group.

### **8.3.4. Site 4.**

This is apparently part of the larger Later Iron Age stone walled complexes in the general area of the site. This specific site was identified during the foot-sole investigation. It appears to be less than 30 meters in extent. It lies to the extreme south and to the west of the proposed delineation of the expected impact of the extension of the Samrec Andalusite mine at Krugerspost.

Field rating according to *SAHRA 2006 and 2007 Guidelines*.

(e). "General" Protection A (Field Rating IV A): this site should be recorded before destruction if project objectives are not adhered to. (Usually Medium significance.)

Statement of significance according to *SAHRA 2006 and 2007 Guidelines*.

- (1) a. Its importance in the pattern of South Africa's history.
- (2) c. Its potential to yield information that will contribute to understanding of south Africa's cultural history.
- (3) g. Its strong association with a particular cultural group.

### **8.3.5. Site 5.**

This is apparently part of the larger Later Iron Age stone walled complexes in the general area of the site. This specific site was identified during the foot-sole investigation. It appears to be less than 30 meters in extent. It lies to the north and west of the proposed delineation of the expected impact of the extension of the Samrec Andalusite mine at Krugerspost.

Field rating according to **SAHRA 2006 and 2007 Guidelines**.

(e). “General” Protection A (Field Rating IV A): this site should be recorded before destruction if project objectives are not adhered to. (Usually Medium significance.)

Statement of significance according to **SAHRA 2006 and 2007 Guidelines**.

- (1) a. Its importance in the pattern of South Africa’s history.
- (2) c. Its potential to yield information that will contribute to understanding of south Africa’s cultural history.
- (3) g. Its strong association with a particular cultural group.

## **9. Conclusion.**

The first issue that has to be addressed is the accuracy of the proposed mining plan. The first presentation of the apparent Andalusite ore body that was submitted to the heritage specialist was apparently not correct. Even so it formed the base parameters for the heritage Impact assessment. (*See fig 01*)

A second presentation of the apparent Andalusite ore body that was submitted to the heritage specialist by the mine manager, David Bellicini appears to avoid the heritage sites. Even so the Later Iron Age site will have to be mitigated before the proposed mining may commence if the present mining objectives are not adhered to.

The fact that *stone circles (Site 1)* were identified in *figure 17* on Google Earth and could not be found on site during the foot-sole visit was illuminated by the correct application of the Google Earth technology. The original image (*figure 17*) is dated to 2010. When the 2003 image was acquired the original suspicion that the fields were cleared for agriculture was confirmed, with not a single stone wall in sight. (*Figure 18.*)

The question that confronted the investigator was where did the *stone walling* in the 2010 Google Earth image come from?’

In retrospect the answer is rather straightforward. While the walling was originally in place, the walls acted as collectors for biological material such as vegetation, ash and water. This altered the chemical composition of the soils under the walls. The removal of the stones that formed the walls some time prior to 2003 by the farmer created zones of preference for different pioneer grass species. From the stand of pioneer acacia species on the fields during the foot-sole investigation, it is clear that the fields were not used for quite a long time for agricultural purposes.

It is therefore the re-habitation of a pioneer grass in the *footprints* of the walls that show up in the 2010 Google Earth images that appears to be *stone walls*.

This was then also confirmed on site by the identification of a large collection of rocks northwest of *site 1* that probably constitutes the remains of the original stone walling. Amongst these rocks the investigative team then also identified a lower grinding stone, a bored stone and a hammer stone used for breaking marula pips to extract the kernels. (*Figures 10, 11, and 12*)

## **10. Summary.**

***It was agreed upon by all parties that second phase studies will be undertaken of sites 3, 4 and 5 if mining objectives are not adhered to. Otherwise there are no heritage impediments that inhibit the continuation of the mining application.***

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### **Guidlines**

- SAHRA. Mar. 2006 and edtd May 2007. *Guideline:-* Minimum standards for the Archeological & Paleontological Components of Impact Assessment Reports

Appendix 1.

Cultural heritage risk assessment

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss	Risk rating (before mitigation) <sup>2</sup>	Environmental objective	Degree to which impact can be reversed and the supporting mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)
<b>ENVIRONMENTAL COMPONENT:</b> Archaeological Heritage						
<b>ACTIVITY:</b> Establishment of a mining pit, roads and mine residue disposal.						
<b>PROJECT PHASE APPLICABILITY</b>	<b>Construction</b>	<b>X</b>				
	<b>Operation</b>	<b>X</b>				
	<b>Closure</b>					
<p>Site 1.</p> <p><u>Field rating:</u> (Not applicable as it is already destroyed through agricultural practises.) It requires no further recording before destruction.</p> <p><u>Statement of significance:</u> (not applicable as it is already destroyed through agricultural practises.)</p> <p><u>Impact description:</u> Historical agriculture activities have</p>	No impact	No objective for preservation as site is totally destroyed.	<p><u>Degree to which impact can be reversed:</u> Not applicable</p> <p><u>Mitigation:</u> Mitigation not possible as agricultural activities totally destroyed the site.</p>			No impact

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss	Risk rating (before mitigation) <sup>2</sup>	Environmental objective	Degree to which impact can be reversed and the supporting mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)
<p>destroyed the site in total. New mining activities will have no impact on the site as it does not exist anymore. The building material and artefacts removed from the agricultural site has been stockpiled north east from site The material has no historical value as it has been placed out of context. (See figures 1-4)</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> Not applicable as site has been totally destroyed by agriculture practices.</p>						
<p><b>Site 2:</b></p> <p><u>Field rating:</u> (Not applicable as it is already destroyed through agricultural practises.) It requires no further recording before destruction.</p> <p><u>Statement of significance:</u> (not applicable as it is already destroyed through agricultural practises)</p> <p><u>Impact description:</u> Historical agriculture activities have destroyed the site in total. New mining activities will have no impact on the site as it does not exist anymore. A single</p>	No impact	No objective for preservation as site is totally destroyed.	<p><u>Degree to which impact can be reversed:</u> Not applicable</p> <p><u>Mitigation:</u> Mitigation not possible as agricultural activities totally destroyed the site.</p>			No Impact

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss	Risk rating (before mitigation) <sup>2</sup>	Environmental objective	Degree to which impact can be reversed and the supporting mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)
<p>potshard was found in the road adjacent to the proposed mining area on site 2. No other significant artefacts were found.</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> Not applicable as site has been totally destroyed by agriculture practices.</p>						
<p><b>Site 3:</b></p> <p><u>Field rating:</u> General Protection rating IV A according to the SAHRA Guidelines of Minimum standards for Archaeological and Paleontological Components of Impact Assessment. It should be mitigated before destruction.</p> <p><u>Statement of significance:</u> (According to the SAHRA Guidelines of Minimum standards for Archaeological and Paleontological Components of Impact Assessment.)</p> <p>(1) a. Its importance in the pattern of South Africa's history.</p> <p>(2) c. Its potential to yield information that will contribute to understanding of south Africa's cultural history.</p> <p>(3) g. Its strong association with a particular cultural group.</p>	No impact	Re-assess the potential impact of mining activities on site 3 and 4 once mining has commenced to identify any additional risks requiring mitigation.	<p><u>Degree to which impact can be reversed:</u></p> <p>No impact is expected. Impact can be prevented if objectives are implemented.</p> <p><u>Mitigation:</u></p> <p>1. If the risk assessment indicates potential impact of mining activities on sites 3 and 4 a second phase heritage assessment will be conducted prior to any impact occurring. Based on the outcome of the phase 2 assessment the mitigation measures will be implemented.</p>	Planning phase	Samrec	No impact



Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss	Risk rating (before mitigation) <sup>2</sup>	Environmental objective	Degree to which impact can be reversed and the supporting mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)
<p><u>Impact description:</u> As this site is not within the affected mining area it is foreseen that the mining activities will have no impact on this site. The ore body does not extend to this site and no associated infrastructure or mining activities are planned within the vicinity of this site. This site has not been disturbed by any human activities. The site is severely overgrown with pioneer vegetation inhibiting photography.</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> Not applicable as this site will not be affected by mining activities.</p>						
<p><b>Site 4:</b></p> <p><u>Field rating:</u> General Protection rating IV A according to the SAHRA Guidelines of Minimum standards for Archaeological and Paleontological Components of Impact Assessment. It should be mitigated before destruction.</p> <p><u>Statement of significance:</u> (According to the SAHRA Guidelines of Minimum standards for Archaeological and Paleontological Components of Impact Assessment.)</p>	No Impact	Re-assess the potential impact of mining activities on site 3 and 4 once mining has commenced to identify any additional risks	<p><u>Degree to which impact can be reversed:</u> No impact is expected. Impact can be prevented if objectives is implemented.</p> <p><u>Mitigation:</u> 1. If the risk assessment indicates potential impact of mining activities on sites 3 and 4 a second phase heritage assessment will be conducted prior to</p>	Planning phase	Samrec	No Impact

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss	Risk rating (before mitigation) <sup>2</sup>	Environmental objective	Degree to which impact can be reversed and the supporting mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)
<p>(1) a. Its importance in the pattern of South Africa's history.                      (2) c. Its potential to yield information that will contribute to understanding of south Africa's cultural history.                      (3) g. Its strong association with a particular cultural group.</p> <p><u>Impact description:</u> As this site is not within the affected mining area it is foreseen that the mining activities will have no impact on this site. The ore body does not extend to this site and no associated infrastructure or mining activities are planned within the vicinity of this site. This site has not been disturbed by any human activities. The site is severely overgrown with pioneer vegetation inhibiting photography.</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> Not applicable as this site will not be affected by mining activities.</p>		requiring mitigation.	any impact occurring. Based on the outcome of the phase 2 assessment the mitigation measures will be implemented.			
<p><b>Site 5:</b>  <u>Field rating:</u> General Protection rating IV A according to the SAHRA Guidelines of Minimum standards for Archaeological and Paleontological Components of Impact Assessment. It should be mitigated before destruction.</p>	No Impact	Re-assess the potential impact of mining activities on site 3 and 4 once	<p><u>Degree to which impact can be reversed:</u>                      No impact is expected. Impact can be prevented if objectives are implemented.</p> <p><u>Mitigation:</u></p>			No Impact

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss	Risk rating (before mitigation) <sup>2</sup>	Environmental objective	Degree to which impact can be reversed and the supporting mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)
<p><u>Statement of significance:</u> (According to the SAHRA Guidelines of Minimum standards for Archaeological and Paleontological Components of Impact Assessment.)</p> <p>(1) a. Its importance in the pattern of South Africa’s history.</p> <p>(2) c. Its potential to yield information that will contribute to understanding of south Africa’s cultural history.</p> <p>(3) g. Its strong association with a particular cultural group.</p> <p><u>Impact description:</u> As this site is not within the affected mining area it is foreseen that the mining activities will have no impact on this site. The ore body does not extend to this site and no associated infrastructure or mining activities are planned within the vicinity of this site. This site has not been disturbed by any human activities. The site is severely overgrown with pioneer vegetation inhibiting photography.</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> Not applicable as this site will not be affected by mining activities.</p>		<p>mining has commenced to identify any additional risks requiring mitigation.</p>	<p>If the risk assessment indicates potential impact of mining activities on sites 3 and 4 a second phase heritage assessment will be conducted prior to any impact occurring. Based on the outcome of the phase 2 assessment the mitigation measures will be implemented.</p>	<p>Planning phase</p>	<p>Samrec</p>	

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss	Risk rating (before mitigation) <sup>2</sup>	Environmental objective	Degree to which impact can be reversed and the supporting mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)