



Heritage Assessment

Xstrata Coal Tselentis Colliery

*Goedverwachting Project
Goedverwachting 80 IT, District
Breyten, Mpumalanga Province*

Version 1

PGS Heritage &
Grave Relocation
Consultants

(Registration No: 2003/008940/07)

Bergarend St 906, Waverley, Pretoria, 0186

PO Box 32542, Totiusdal, 0134 South Africa

TEL: +27 12 332 5305,

FAX: 0866 580199

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ACKNOWLEDGEMENT OF RECEIPT

CLIENT: Xstrata Coal: Mpumalanga Complex

CONTACT PERSON: Mashudu Gangazhe, Environmental Co-ordinator, Xstrata Coal:
Mpumalanga Complex, Tel: 017 861 8012, Fax: 017 861 3394/086
511 3106, Cell: 082 432 1006

LEADING CONSULTANT: PGS Heritage & Grave Relocation Consultants

CONTACT PERSON: Wouter Fourie

SIGNATURE:

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EXECUTIVE SUMMARY

PGS Heritage & Grave Relocation Consultants was appointed by the Xstrata Coal Tselentis Colliery to undertake a Phase 2 Heritage Assessment that forms part of the Environmental Impact Assessment and Environmental Management Plan for the Goedverwaching Project on the farm Goedverwaching 80 IT, Breyten, Mpumalanga.

During the survey 8 sites of heritage significance were identified. None of the sites fall within the mining impact area. However all, except GV001, fall within the mining safety buffer of 500 metres. The indirect impact due to relocation of the families inside the buffer zone on heritage structures is noted in the mitigation aspects below.

GV001

The homestead with its out building is located just outside the 500m safety buffer zone of the mining impact area.

In the event that the site will need to be destructed, if mining activities where to move to the immediate area the following actions need to be taken:

1. The site layout as well as structure layout of each individual entity needs to be documented through layout sketches and photographic recoding methods
2. This report needs to be submitted with an application for destruction under Section 34 of the NHRA to the Mpumalanga Provincial Heritage Authority (PHRA-M);
3. As soon as the necessary permit is issued by PHRA-M the structures can be demolished.

GV002 and GV004

The homesteads and graves fall within the 500m safety buffer from the boundary of the mining impact.

In the event that the mining activity requires the relocation of the family, a discussion process needs to be started with regards to the possibility of relocating the graves to a suitable location. This consultation will require the services of a company acquainted with the process of relocation of people affected by mining activity and the possible relocation of the family's graves needs to be included in the Relocation Action Plan (RAP) for this community.

As soon as a decision is made with the family the protection of the graves need to be done through either in situ management or relocation of the graves.

GV003 and GV005

The homestead fall within the 500m safety buffer from the boundary of the mining impact.

In the event that the mining activity requires the relocation of the family, a discussion process needs to be started with regards to the possibility of relocating the families. This consultation will require the services of a company acquainted with the process of relocation of people affected by mining activity that will be done by means of an approved Relocation Action Plan (RAP) for this community.

GV007 and GV008

Although the graves fall within the 500m safety buffer from the boundary of the mining impact it is not foreseen that the mining activity will extend in future to the area of the graves. It is however recommended that the site be fenced for protection during the live time of mining activities.

General

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

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ANNEXURE

ANNEXURE A: Legislation, Terminology and Assessment Criteria

ANNEXURE B: Heritage Sites

1. INTRODUCTION

PGS Heritage & Grave Relocation Consultants was appointed by the Xstrata Coal Tselentis Colliery to undertake a Phase 2 Heritage Assessment that forms part of the Environmental Impact Assessment and Environmental Management Plan for the Goedverwaching Project on the farm Goedverwaching 80 IT, Breyten, Mpumalanga.

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

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

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

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

2. PROJECT DESCRIPTION

2.1 Location

The Goedverwaching is located on the farm Goedverwaching 80 IT approximately 11 kilometres to the northeast of the mining town of Breyten in the Mpumalanga Province of South Africa.

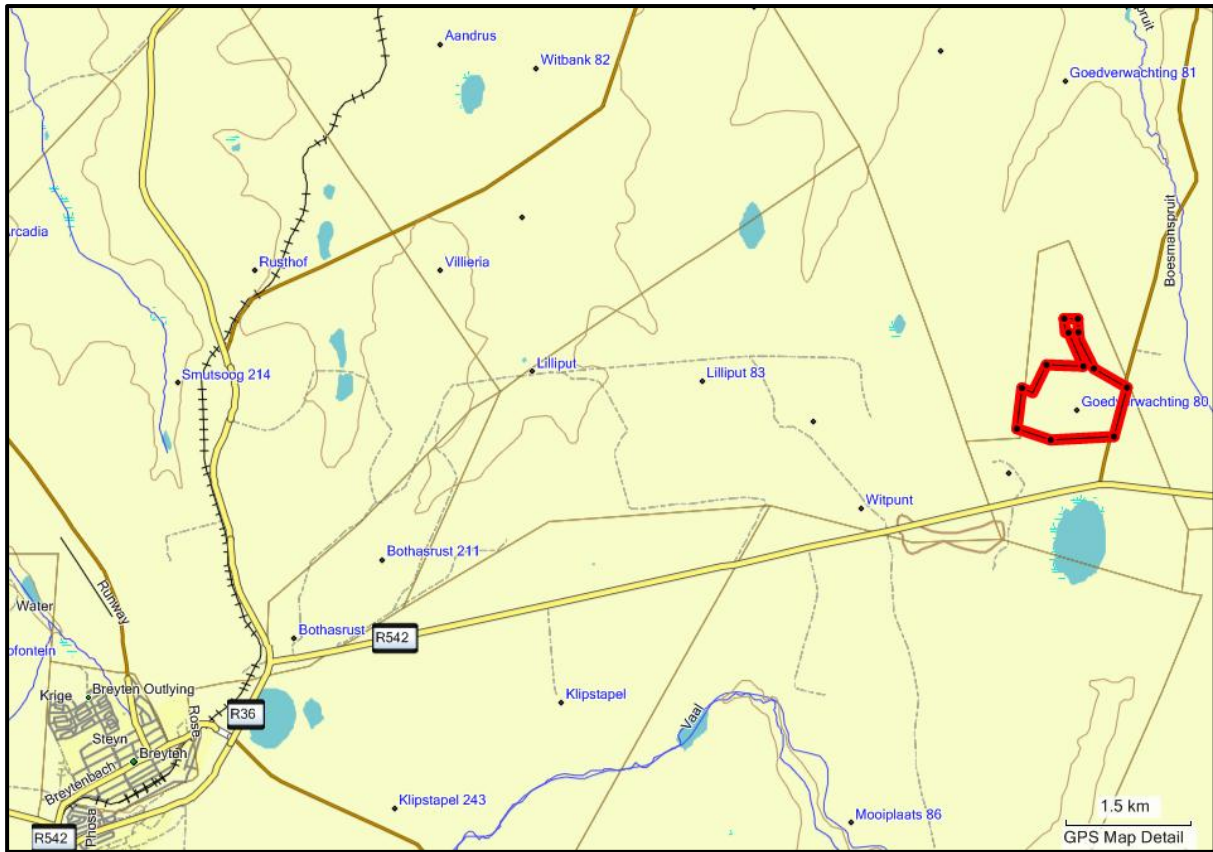


Figure 1 – Locality Map

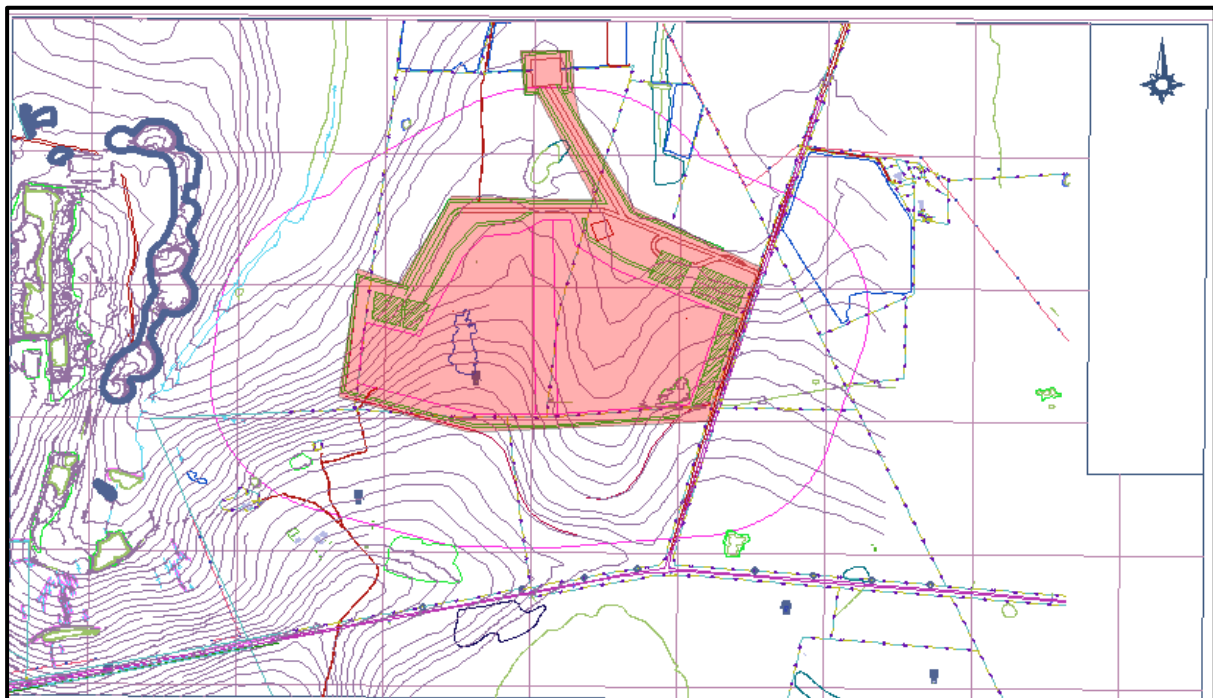


Figure 2 – Mining project layout – red area indicating direct impact area

2.2 Methodology

This report have been compiled by PGS for the Goedverwachting project on the farm Goedverwachting 80 IT, including applicable maps, tables and figures, as stipulated in the NHRA (no 25 of 1999), the NEMA (no 107 of 1998) and the MPRDA (28 of 2002). The process consisted of three steps:

- Step I – Literature Review: This step was aimed at gathering information relating to known archaeological and heritage resources within and surrounding the proposed development area, which included a desktop study and literature reviews of project information.
- Step II – Physical Survey: A physical survey was conducted on foot through the proposed project area by qualified archaeologists (20 October 2010), aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.
- Step III – The final step involved the recording and documentation of relevant archaeological and heritage resources, as well as the assessment of resources in terms of the archaeological impact assessment criteria (Annexure A) and report writing, as well as mapping and constructive recommendations

2.3 Physical Surveying

The study area for the proposed project covers approximately 290 hectares with a buffer area around the impact area also surveyed. Due to the nature of cultural remains, with the majority of artefacts occurring below surface, an intensive foot-survey that covered the study area was conducted. A controlled-exclusive surface survey was conducted over a period of 2 days, by means of vehicle and extensive surveys on foot by an archaeologist of PGS.

Aerial photographs and 1:50 000 maps of the area were consulted and literature on the area were studied before undertaking the survey. The purpose of this was to identify topographical areas of possible historic and pre-historic activity. All sites discovered both inside and bordering the proposed development areas were plotted on 1:50 000 maps and

their GPS co-ordinates noted. In addition digital photographs were used to document all the sites.

3. LEGISLATIVE REQUIREMENTS

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

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

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

- i. National Environmental Management Act (NEMA) Act 107 of 1998
 - a. Basic Environmental Assessment (BEA) – Section (23)(2)(d)
 - b. Environmental Scoping Report (ESR) – Section (29)(1)(d)
 - c. Environmental Impacts Assessment (EIA) – Section (32)(2)(d)
 - d. Environmental Management Plan (EMP) – Section (34)(b)
- ii. National Heritage Resources Act (NHRA) Act 25 of 1999
 - a. Protection of Heritage resources – Sections 34 to 36; and
 - b. Heritage Resources Management – Section 38
- iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
 - a. Section 39(3)
- iv. Development Facilitation Act (DFA) Act 67 of 1995
 - a. The GNR.1 of 7 January 2000: Regulations and rules in terms of the Development Facilitation Act, 1995. Section 31.

4. BACKGROUND OF AREA

4.1 Early history of the farm Goedverwachting

The farm Goedverwachting 81 IT, 221 on the Magisterial District Map Ermelo-Carolina 1906, is located on the road between towns of Chrissiesmeer to the east and Breyten to the west of the farm. It is divided into three sections by three tributaries that cut across the farm from

the north, with the road to Chrissiesmeer cutting through the southern end of the farm, including the study area; a portion of the farm (**Figure 3**).

Research methods used: Desktop and Archival Research

A desktop research of the farm, using the Google search engine, was conducted and it did not yield any fruitful results. This was followed by archival search of the farm, Goedverwachting 81-IT at the National Archive in Pretoria. The search first focused in finding Major Jackson series maps of the area/region because of the detail information they give. However, no Jackson series of the nearby districts could be found. A map search of the farm was focused around the town of Chrissiesmeer, Breyten, and Carolina and Ermelo District because of the close proximity to the farm, Goedverwachting. Two maps were retrieved from the archives search engine and obtained: the Imperial Map of South Africa, Ermelo 1st edition, compiled by the Field Intelligence April 1900 (**Figure 4**) and the Magisterial District Map, Ermelo-Carolina, compiled in the Surveyor General's office in Pretoria, October 1906 (**Figure 5**).

Both these maps showed the road that cuts through Goedverwachting on its southern end; however, none of them showed any form of structure (s) on the farm (s). They both showed two farms by the name Goedverwachting: Goedverwachting 221 (the study area) and Goedverwachting 194 (north-east of the study) (**Figure 4**). Absence of structures (e.g. farm house and windmills) on these two maps does not mean absence of structures in the farm because they did not show any structures in all the farms drawn onto them; they both lacked detailed information that maps such as the Jackson series often contain.



Figure 3 – Imperial Map of South Africa, Ermelo 1st edition, compiled by the Field Intelligence April 1900

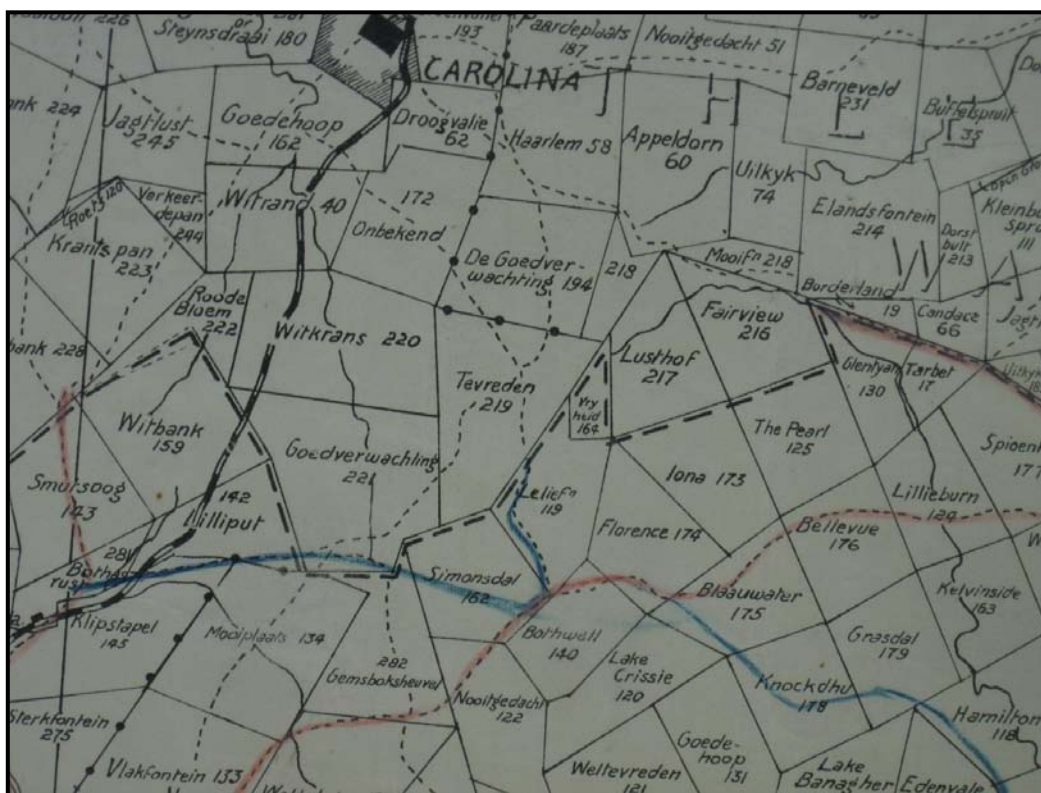


Figure 4 – Magisterial District Map, Ermelo-Carolina, compiled in the Surveyor General's office in Pretoria, October 1906

In terms of documentation and historical literature, forty files with reference to Carolina and Ermelo were found and in them some contain links to farm Goedverwachting and the Grobler's (Ermelo District) and Goedverwachting and C. L. Prinsloo (Ermelo District). Among the material viewed are the Transvaal Agricultural records; records of Agricultural Department Veterinary Division (No. VM 10 and VM 24) on animal disease that took place in 1908. The VM 10 documents made reference to Mr C. L. Prinsloo and the farm 194

Further information retrieved were those of Ex-Burger Fund; a fund which was set up after the South African war of 1902-03 to compensate the Boer farmers who had lost property and other belongings during the war (**Figure 5**).

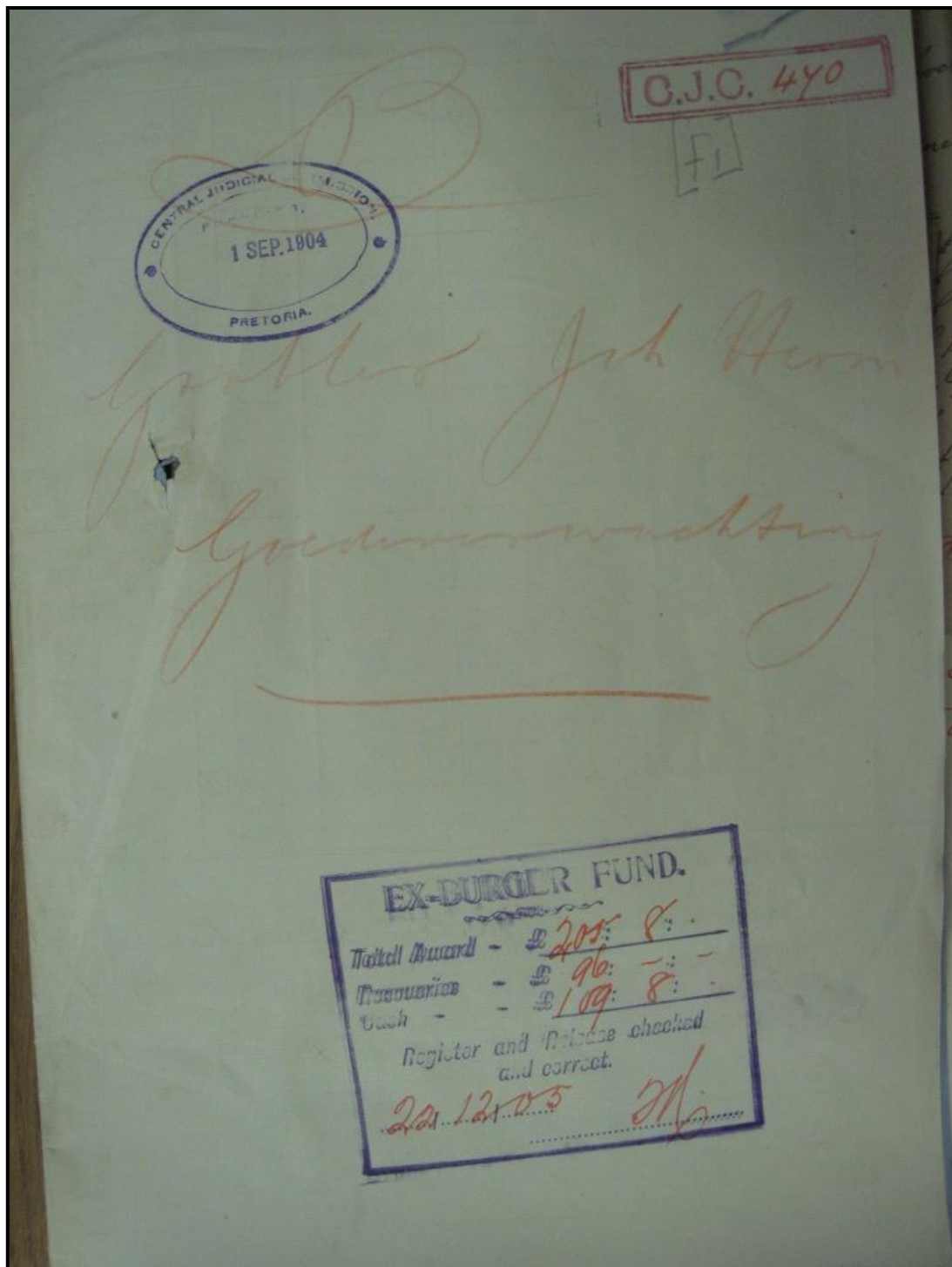


Figure 5 - Cover page of the application by J. H. Grobler of Goedverwaching for compensation for the loss of property to the Ex-Burger Fund

Among the Grobler's who occupied the farm Goedverwaching 221 and who applied for compensation to the Ex-Burger Fund is: Jan, Hendrik Grobler on the 10th September 1904. His claim was of stock (i.e. sheep, cattle, horse) and assets such as, a saddle and Cape

Cart. No mention or reference is made to the built environment and landscape features on the farm such as the farm house, sheds, mills etc)

The other Grobler claimant to the Ex-Burger Fund who also resided in farm Goedverwachting 221 is Johannes H, Grobler in the same year as the other Grobler. He claim included: stock, stuff such as food bags, and asset like cart/wagon. Again no mention or reference is made to destruction of built environment and landscape features in the farm.

Different South African university search engines were also used, through the Google search engine, in the research; the University of Cape Town library search retrieved information on the British Concentration Camps of the South African war in Carolina District and farm Goedverwachting. In this database two references are made about the farm Goedverwachting; one is on the Grobler family

(http://www.lib.uct.ac.za/mss/bccd/Farm/23835/Goedverwachten_Goedverwachting/

05/11/2010) and the other makes reference to the van Ransburg's and farm Goedverwachting

(<http://www.lib.uct.ac.za/mss/bccd/Farm/3271/Goedverwachting/05/11/2010>).

This serves as a confirmation for the existence of the Grobler's on the farm Goedverwachting and the South African war (1902). However, these links do not provide a detail information on which of the Goedverwachting farms did the van Ransburg occupy.

Published material

Published material were reviewed; is Erick Rosenthal's book on legend stories of South Africa, *The Hinges Creaked* (chapter XXII). This chapter tells the story of highwaymen's loot and the hidden treasures in farm Goedverwachting. This story also confirms the ownership of the farm by the Grobler family who were the owners of the farm. In summary the story goes as follows:

In late 1935 ploughing was proceeding on the farm "Goedverwachting" near the village of Lake Chrissie in the Eastern Transvaal. As he led the oxen across the furrows a native boy caught sight of something that shone in the sand. He stooped and picked up two golden sovereigns. Great chatter arose in the kvas that evening, and all the other workers were out before dawn. Not until the new year, however, were they rewarded. At the beginning of March, 1936, two umfaans [umfaans...abafana] walked across the same ploughed field and again saw gold – four sovereigns, which they excitedly brought to their father. Great was the

excitement and out from the kraal hurried three old men to look for more money. As they turned over the furrows, they came upon a mass of glittering coin. How much there was nobody knew, for the finders, through lack of education, were unable to count what they had picked up. The news could not be kept secret long, and soon came to the ears of the two brothers who owned the farm, W. and G. J. Grobler. They demanded the gold and reluctantly the five natives gave up 38 Kruger sovereigns 16 half-crowns belonging to the reigns of Queen Victoria and Edward the rest remained in their position and was never found" (1951 111).

The story does not end there; when one reads the rest of the story it becomes more interesting on how the coins ended up in farm Goedverwachting. The coins came from the October 1912 robbery of the last mail coaches plying in the Transvaal. It was held up by a gang of robbers held up one of the last mail coaches plying in the Transvaal carrying boxes of coin for the National Bank of South Africa (now Barclay's Bank) from Mbabane to Breyten, the railhead, where it was to be transshipped to the Johannesburg train. It is suggested that when the choach passed Lake Chrissie, east of the farm Goedverwachting, -figures - native and European -appeared out of the dark. The driver was overpowered and the gang took off a pair of large boxes. One contained £2,500 in gold, plus £100 in silver, while the other had eight bags of the National Bank, which held £50 in silver. Knowing that a hue-and-cry was inevitable, the robbers decided to hide their swag until the uproar subsided. Only 250 yards from the scene of the robbery lived Koos Olifant, who belonged to the gang. Near his hut the treasure was buried. To trace the highwaymen was no easy matter, and it was not until the eve of World War I that Koos Olifant was identified. (The other highwaymen were never caught and themselves appear to have lost track of the swag.) Koos was tried before the late Sir Arthur Weir Mason in September, 1914, and sentenced to 2 years' imprisonment with hard labour. He served his term, however, without giving away where the treasure was hidden.

The only other person who knew the secret was his father-in-law. Koos came out of jail in 1917 to find that during his imprisonment the old man had moved the money from its original cache and brought it to the farm "Goedverwagting." Unfortunately for him the father-in-law entirely lost his sight soon after and then died. Thus Koos was unable to discover where the money lay hidden. He took work with the Groblers and tried digging in several different places, but without success, and finally disappeared. All the gold recovered by the police was handed back to the bank, but plenty remained in the hands of the farm natives on "Goedverwachting" (1951:112).

In conclusion, the farm Goedverwachting 81 IT (221 old map number) can be positively proclaimed to have belonged to the Grobler family. This becomes true when one reviews and assesses archival records of the farm including the legend book on some of South African historical robberies and treasure search. The Groblers seem to have established themselves in the farm over the years. Even though there were no historical maps showing built environment and landscape features in the farm such as the farm house, sheds, windmills etc one can confidently argue that there is a high possibility of finding these features in the farm.

The town of Breyten

The town of Breyten was established on the farm Bothasrust by its owner and well-known farmer and businessman Nicholas Jacobus Breytenbach. It was established during December 1905 at the same time that the railway line between Springs and Breyten was completed. Although the town was only laid out during December 1905, stands were quickly sold and within a month the town had two hotels, several shops, a post and telegraph station as well as a railway station. Churches and schools were later constructed on a commonage granted by N.J. Breytenbach (Praagh, 1906).

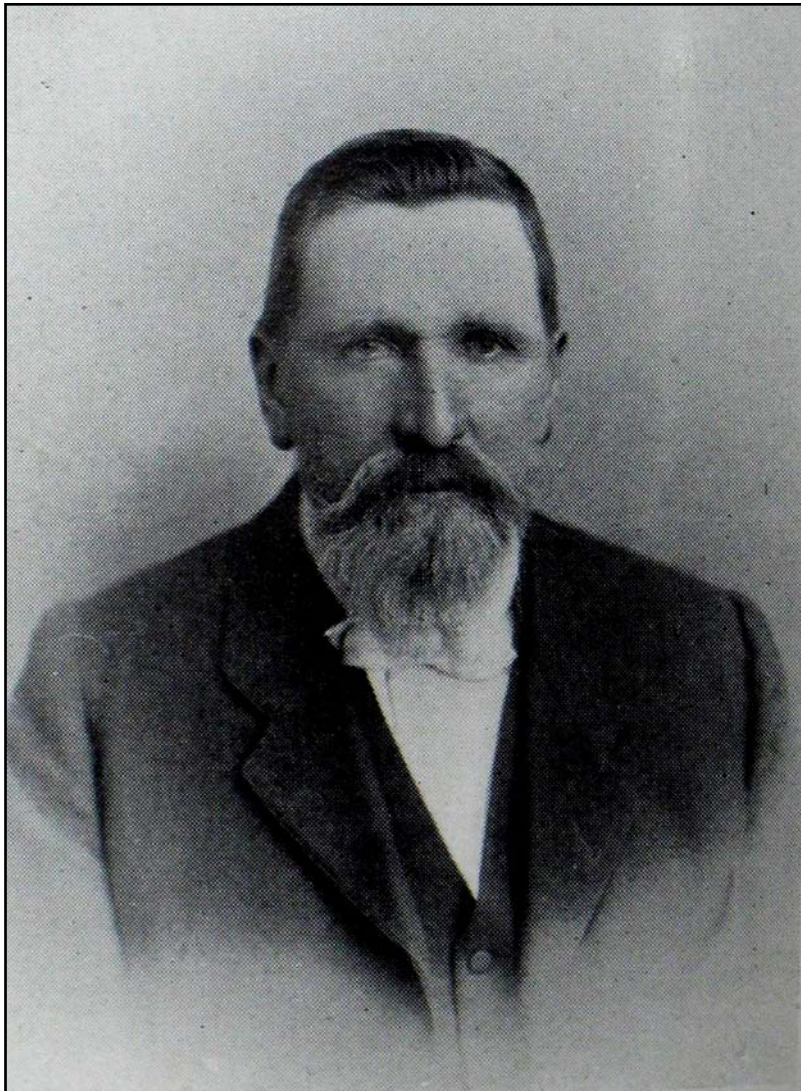


Figure 6 - *Nicholas Jacobus Breytenbach, the founder of Breyten (Praagh, 1906:380)*

4.2 Historical and archaeological significance

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

Geologically, Mpumalanga encompasses some of the richest heritage in the world and is considered the ultimate destination for scientists interested in the ancient operations and activities of a youthful Earth during the millennia 3 500 000 BC. South Africa's oldest known

rocks are exposed in the Barberton mountain chains that run from Elukwatini and Tjakastad to Komatipoort along the Swaziland border.

Mpumalanga coals formed in vast swamps from decomposing forests during a 100 million year period between 200 and 300 million years ago. During this era, Africa was still attached to South America, India and Antarctica as part of the super-continent, Gondwana. Primitive plants, such as the famous *Glossopteris* flora, had colonised the entire southern hemisphere, and mammal-like reptiles and later dinosaurs roamed across the landscape of Mpumalanga. Fossils of these animals are found in abundance and are commonly displayed in local and national museums. Approximately 250 million years ago, global mass extinction struck the planet and more than 90 per cent of biodiversity across the world was destroyed at species level within less than 70 000 years. Scientists studying this catastrophic event recorded in the Karoo rocks of Mpumalanga and beyond, have shown that it was related to extreme changes in climate.

The environment is continually being influenced by natural changes and various anthropic developments such as established farms, towns and cities in regional surroundings. The closest town to the proposed mining area is Breyten, a small town surrounded by maize, sheep and cattle farming communities, which is also becoming renowned for its apple farming. The town is situated at the foot of Klipstapel, the highest point on the watershed between the westward flowing Vaal River system and the eastward flowing Olifants and Komati River systems. Bothasrus, the original farm on which the town is built, was given to Lukas Potgieter as compensation for losing a leg during the first Boer War. He later sold the farm to field-cornet Nicolaas Breytenbach, who formed the village in his own name. The Chrissiesmeer area is located towards the east of the proposed project area, which is also known as a place of lakes and legends. It is reported that ancient San communities were the first inhabitants of the region, including the Tlou-tle, who adapted to conditions by living on rafts in the larger lakes. During the 1860s, European settlers founded a town here and named it after President Andries Pretorius's daughter Christina, a friend of an early pioneer family.

In the 1880s, the town became an important stopover to and from Barberton; however, other towns surpassed Chrissiesmeer in economic development. Subsequently, the town retained its pristine appeal, and is now one of the most significant eco-tourist destinations in the country.

Due to its rich geological resources, historical value, continuous agricultural practices and sources of water in the regional proximity of the project area, there is a medium-high probability that remnants of significant faunal, floral and human resources may be present in the proposed project area (e.g. graves, burial sites, fossils, palaeontological phenomena and/or archaeological artefacts). Previous studies indicated that significant sites have been found in the Carolina district of Mpumalanga (Fourie & Van der Walt, 2005), which is in regional proximity to the proposed project site. Although surface disturbed by farming activities and mining operations already exists, the possibility of discovering significant archaeological and heritage resources remains.

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

Stone Age

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

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

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

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

Iron Age

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

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

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

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

5. HERITAGE SITES

The area is situated on topographical maps 2630AC. The area is currently well grazed with rolling undulating grass lands covering most of the mining impact area.

During the survey Fifteen (15) heritage sites where identified in total.

5.1 GV001

GPS: S26.27172 E30.10135

The site consists of an extended farmstead with main house with outbuildings and dairy. All of the structure have been seriously vandalised since the previous heritage assessment in 2007 (Compare Figures 7 and 8).

Local families confirmed that the owner Mr Hans Grobler moved away at least 5 years ago. Mr. Grobler can be linked directly with the Groblers as mentioned in the archival research.

Main House

The main house consist of a 4 original rooms build with sandstone blocks and inner walls constructed with sun-baked mud bricks plastered with a mud/cement mix.

Secondary additions consist of a kitchen added to the original house to the western façade of the house. This addition was completed with the same sandstone block as utilised in the original structure.

The back of the house shows indication of an addition and change to a shed with sandstone blocks at the back of the original house. Internal walls were constructed with fire clay bricks with an additional bathroom and toilet constructed right at the back of the house. On the outside of the bathroom the remains of a wood burning water heater is still visible.



Figure 7 – Photo taken in 2007 (Nzumbululo Heritage Solutions)



Figure 8 – Photo taken in 2010 – destruction of the house evident



Figure 9 – Main House addition of kitchen



Figure 10 – Wood burning water heater



Figure 11 – Fired clay bricks indicating additions and reparation works



Figure 12 – Sun –baked bricks above lintel



Figure 13 – Mud and cement plaster on in side of original structure

Outbuildings and Dairy

The rest of the outbuildings consist of the remains of sheds, store rooms and the remains of a large steelshed still present in the 2007 survey.

The larger ruins to the west of the main house are constructed of stone found in the area. The layout is that consistent with a historic dairy, with a main cattle pen, milking area and release/holding area.



Figure 14 – Entrance to milking area



Figure 15 – Central kraal for holding cows

Site size: Approximately 500m x 500m.

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Extent
-	Low	GP.A	Probable	Short term	Limited

Mitigation:

The homestead with its out building is located just outside the 500m safety buffer zone of the mining impact area.

In the event that the site will need to be destructed, if mining activities where to move to the immediate area the following actions need to be taken:

1. The site layout as well as structure layout of each individual entity needs to be documented through layout sketches and photographic recoding methods
2. This report needs to be submitted with an application for destruction under Section 34 of the NHRA to the Mpumalanga Provincial Heritage Authority (PHRA-M);
3. As soon as the necessary permit is issued by PHRA-M the structures can be demolished.

5.2 GV002

GPS: S26.26967 E30.10170

The site is that of the homestead of Nthombizodwa Kholwane. The homestead consists of four separate pole and daub homes. (**Figure 16**)

Inside the homestead fence, two children's graves (**GV002-1**) were pointed out by Ms Kholwane. She indicated that the two graves date from 2000 and 2007.

Site size: Approximately 50m x 50m.



Figure 16 – Homestead with position of graves indicated

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Extent
-	Medium	GP.A	Probable	Short term	Limited

Mitigation:

The homestead and graves fall within the 500m safety buffer from the boundary of the mining impact.

In the event that the mining activity requires the relocation of the family, a discussion process needs to be started with regards to the possibility of relocating the graves to a suitable location. This consultation will require the services of a company acquainted with the process of relocation of people affected by mining activity and the possible relocation of the family's graves needs to be included in the Relocation Action Plan (RAP) for this community.

As soon as a decision is made with the family the protection of the graves need to be done through either in situ management or relocation of the graves.

5.3 GV003

GPS: S26.26882 E30.10160

The site is that of a homestead that consists of two separate pole and daub homes. (**Figure 17**)

Site size: Approximately 50m x 50m.



Figure 17 – Homestead with pole and daub structure

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Extent
-	Low	GP.C	Probable	Short term	Limited

Mitigation:

The homestead fall within the 500m safety buffer from the boundary of the mining impact.

In the event that the mining activity requires the relocation of the family, a discussion process needs to be started with regards to the possibility of relocating the families. This

consultation will require the services of a company acquainted with the process of relocation of people affected by mining activity that will be done by means of an approved Relocation Action Plan (RAP) for this community.

5.4 GV004

GPS: **GV004** S26.26886 E30.10200
GV004-1 S26.26851 E30.10209

The site is that of the homestead of Maria Lubisi. The homestead consists of one pole and daub home. (**Figure 18**)

To the north of the structure, two children's graves (**GV004-1**) were pointed out by Ms Lubisi..

Site size: Approximately 10m x 10m.



Figure 18 – Homestead with position of graves indicated

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Extent
-	Medium	GP.A	Probable	Short term	Limited

Mitigation:

The homestead and graves fall within the 500m safety buffer from the boundary of the mining impact.

In the event that the mining activity requires the relocation of the family, a discussion process needs to be started with regards to the possibility of relocating the graves to a suitable location. This consultation will require the services of a company acquainted with the process of relocation of people affected by mining activity and the possible relocation of the family's graves needs to be included in the Relocation Action Plan (RAP) for this community.

As soon as a decision is made with the family the protection of the graves need to be done through either in situ management or relocation of the graves.

5.5 GV005

GPS: S26.27052 E30.09943

The site is that of a homestead that consists of four separate pole and daub homes (**Figure 19**). Ms Maria Khubeka has been living in this homestead since 1958.

Site size: Approximately 50m x 50m.



Figure 19 – Homestead with pole and daub structures

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Extent
-	Low	GP.C	Probable	Short term	Limited

Mitigation:

The homestead falls just outside the 500m safety buffer from the boundary of the mining impact.

In the event that the mining activity requires the relocation of the family, a discussion process needs to be started with regards to the possibility of relocating the families. This consultation will require the services of a company acquainted with the process of relocation of people affected by mining activity that will be done by means of an approved Relocation Action Plan (RAP) for this community.

5.6 GV006

GPS: S26.26926 E30.09925

The site consist of a stone build square kraal situated on the side of a small draining line that creates a natural drinking pool for the livestock (**Figure 20**). Ms Maria Khubeka has been living in this homestead since 1958.

Site size: Approximately 50m x 50m.



Figure 20 – Square stone wall of kraal

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Extent
-	Low	GP.C	Possible	Short term	Limited

Mitigation:

Although the site falls within the 500m safety buffer it is unlikely that the mining activity will affect this historical stock kraal. No further mitigation required.

5.7 GV007

GPS: S26.26827 E30.10002

The site consists of approximately 39 graves arranged in four rows running north to south (**Figure 21**). All the graves are aligned east west and stone packed. A few are marked with painted steel markers. Most of the graves area associated with the Lubisi family, of which most date between 1977 to 1997.

Site size: Approximately 40m x 40m.



Figure 21 – View of cemetery

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Extent
-	Medium	GP.A	Possible	Short term	Limited

Mitigation:

Although the graves fall within the 500m safety buffer from the boundary of the mining impact it is not foreseen that the mining activity will extend in future to the area of the graves. It is however recommended that the site be fenced for protection during the live time of mining activities.

5.8 GV008

GPS: S26.25849 E30.10606

The site consists of one possible grave. The stones of the structure is aligned east (**Figure 22**). The alignment and placement indicates a possible grave.

Site size: Approximately 10m x 10m.



Figure 22 – Stone structure – possible grave

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Extent
-	Medium	GP.A	Possible	Short term	Limited

Mitigation:

Although the graves fall within the 500m safety buffer from the boundary of the mining impact it is not foreseen that the mining activity will extend in future to the area of the graves.

It is however recommended that the site be fenced for protection during the live time of mining activities.

6. ASSUMPTIONS AND LIMITATIONS

Not subtracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and the current dense vegetation cover. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted. Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist had been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the foregoing discussion the long history of occupation of the region by black farmer communities has also been pointed out. In the event that any graves or burial places are located during the development the procedures and requirements pertaining to graves and burials will apply as set out below.

7. ASSESSMENT AND RECOMMENDATIONS

*A heritage map is provided in **Annexure B***

During the survey 8 sites of heritage significance were identified. None of the sites fall within the mining impact area. However all, except GV001, fall within the mining safety buffer of 500 metres. The indirect impact due to relocation of the families inside the buffer zone on heritage structures is noted in the mitigation aspects below.

GV001

The homestead with its out building is located just outside the 500m safety buffer zone of the mining impact area.

In the event that the site will need to be destructed, if mining activities where to move to the immediate area the following actions need to be taken:

4. The site layout as well as structure layout of each individual entity needs to be documented through layout sketches and photographic recoding methods

5. This report needs to be submitted with an application for destruction under Section 34 of the NHRA to the Mpumalanga Provincial Heritage Authority (PHRA-M);
6. As soon as the necessary permit is issued by PHRA-M the structures can be demolished.

GV002 and GV004

The homesteads and graves fall within the 500m safety buffer from the boundary of the mining impact.

In the event that the mining activity requires the relocation of the family, a discussion process needs to be started with regards to the possibility of relocating the graves to a suitable location. This consultation will require the services of a company acquainted with the process of relocation of people affected by mining activity and the possible relocation of the family's graves needs to be included in the Relocation Action Plan (RAP) for this community.

As soon as a decision is made with the family the protection of the graves need to be done through either in situ management or relocation of the graves.

GV003 and GV005

The homestead fall within the 500m safety buffer from the boundary of the mining impact.

In the event that the mining activity requires the relocation of the family, a discussion process needs to be started with regards to the possibility of relocating the families. This consultation will require the services of a company acquainted with the process of relocation of people affected by mining activity that will be done by means of an approved Relocation Action Plan (RAP) for this community.

GV007 and GV008

Although the graves fall within the 500m safety buffer from the boundary of the mining impact it is not foreseen that the mining activity will extend in future to the area of the graves. It is however recommended that the site be fenced for protection during the live time of mining activities.

General

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

8. MANAGEMENT GUIDELINES AND PROCEDURES

8.1 Management Guidelines

1. The National Heritage Resources Act (Act 25 of 1999) states that, any person who intends to undertake a development categorised as-
 - (a) the construction of a road, wall, transmission line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
 - (b) the construction of a bridge or similar structure exceeding 50m in length;
 - (c) any development or other activity which will change the character of a site-
 - (i) exceeding 5 000 m² in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
 - (d) the re-zoning of a site exceeding 10 000 m² in extent; or
 - (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

In the event that an area previously not included in an archaeological or cultural resources survey is to be disturbed, the South African Heritage Resources Agency (SAHRA) needs to be contacted. An enquiry must be lodged with them into the necessity for a Heritage Impact Assessment.

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

This survey and evaluation must include:

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

- (b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6 (2) or prescribed under section 7 of the National Cultural Resources Act;
 - (c) An assessment of the impact of the development on such heritage resources;
 - (d) An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
 - (e) The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
 - (f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
 - (g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.
3. It is advisable that an information section on cultural resources be included in the SHEQ training given to contractors involved in surface earthmoving activities. These sections must include basic information on:
- a. Heritage;
 - b. Graves;
 - c. Archaeological finds; and
 - d. Historical Structures.
- This module must be tailor made to include all possible finds that could be expected in that area of construction.
4. In the event that a possible find is discovered during construction, all activities must be halted in the area of the discovery and a qualified archaeologist contacted.
5. The archaeologist needs to evaluate the finds on site and make recommendations towards possible mitigation measures.
6. If mitigation is necessary, an application for a rescue permit must be lodged with SAHRA.
7. After mitigation an application must be lodged with SAHRA for a destruction permit. This application must be supported by the mitigation report generated during the rescue excavation. Only after the permit is issued may such a site be destroyed.
8. If during further surveys sites of cultural significance is discovered, it will be necessary to develop a management plan for the preservation, documentation or destruction of such a site. Such a program must include a *watching brief*, timeframe and agreed upon schedule of actions between the company and the archaeologist.

9. In the event that human remains are uncovered or previously unknown graves are discovered a qualified archaeologist needs to be contacted and an evaluation of the finds made.
10. If the remains are to be exhumed and relocated, the relocation procedures as accepted by SAHRA needs to be followed. This includes an extensive social consultation process.

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

The purpose of a watching brief is:

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

PGS Heritage Solutions can be contacted on the way forward in this regard.

Table 3: Roles and responsibilities of archaeological and heritage management

ROLE	RESPONSIBILITY	IMPLEMENTATION
A responsible specialist needs to be allocated and should sit in at all relevant meetings, especially when changes in design are discussed, and liaise with SAHRA.	The client	Archaeologist and a competent archaeology supportive team

If chance finds and/or graves or burial grounds are identified during construction or operational phases, a specialist must be contacted in due course for evaluation.	The client	Archaeologist and a competent archaeology supportive team
Comply with defined national and local cultural heritage regulations on management plans for identified sites.	The client	Environmental Consultancy and the Archaeologist
Consult the managers, local communities and other key stakeholders on mitigation of archaeological sites.	The client	Environmental Consultancy and the Archaeologist
Implement additional programs, as appropriate, to promote the safeguarding of our cultural heritage. (i.e. integrate the archaeological components into employee induction course).	The client	Environmental Consultancy and the Archaeologist,
If required, conservation or relocation of burial grounds and/or graves according to the applicable regulations and legislation.	The client	Archaeologist, and/or competent authority for relocation services
Ensure that recommendations made in the Heritage Report are adhered to.	The client	The client
Provision of services and activities related to the management and monitoring of significant archaeological sites.	The client	Environmental Consultancy and the Archaeologist
After the specialist/archaeologist has been appointed, comprehensive feedback reports should be submitted to relevant authorities during each phase of development.	Client and Archaeologist	Archaeologist

9. IMPACT MANAGEMENT

9.1.1 Pre-construction phase

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

9.1.2 Construction phase

The project will encompass a range of activities during the construction phase, including ground clearance, establishment of construction camps area and small scale infrastructure development associated with the project.

It is possible that cultural material will be exposed during operations and may be recoverable, but this is the high-cost front of the operation, and so any delays should be minimised. Development surrounding infrastructure and construction of facilities results in significant disturbance, but construction trenches do offer a window into the past and it thus may be possible to rescue some of the data and materials. It is also possible that substantial alterations will be implemented during this phase of the project and these must be catered for. Temporary infrastructure is often changed or added to the subsequent history of the project. In general these are low impact developments as they are superficial, resulting in little alteration of the land surface, but still need to be catered for.

During the construction phase, it is important to recognize any significant material being unearthed, and to make the correct judgment on which actions should be taken. A responsible archaeologist must be appointed for this commission. This person does not have to be a permanent employee, but needs to sit in at relevant meetings, for example when changes in design are discussed, and notify SAHRA of these changes. The archaeologist would inspect the site and any development recurrently, with more frequent visits to the actual workforce and operational areas. In addition, feedback reports can be

submitted by the archaeologist to the client and SAHRA to ensure effective monitoring. This archaeological monitoring and feedback strategy should be incorporated into the Environmental Management Plan (EMP) of the project. Should an archaeological site or cultural material be discovered during construction (or operation), such as burials or grave sites, the project needs to be able to call on a qualified expert to make a decision on what is required and if it is necessary to carry out emergency recovery. SAHRA would need to be informed and may give advice on procedure. The developers therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the material and data are recovered. The project thus needs to have an archaeologist available to do such work.

The purpose of an archaeological monitoring programme is to provide general information to the developer with regards to management recommendations and cost estimates for the archaeological component, a specialist sub-section of the EMP, for the project.

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

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

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

10. LIST OF PREPARES

Wouter Fourie, BA (Hon) Archaeology (UP) – ASAPA CRM Member – Principal Investigator

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**ANNEXURE A:
Legislation, Terminology and Assessment Criteria**

LEGISLATIVE REQUIREMENTS – TERMINOLOGY AND ASSESSMENT CRITERIA

1.1 Legislation

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

- v. National Environmental Management Act (NEMA) Act 107 of 1998
- vi. National Heritage Resources Act (NHRA) Act 25 of 1999
- vii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
- viii. Development Facilitation Act (DFA) Act 67 of 1995

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

- v. National Environmental Management Act (NEMA) Act 107 of 1998
 - a. Basic Environmental Assessment (BEA) – Section (23)(2)(d)
 - b. Environmental Scoping Report (ESR) – Section (29)(1)(d)
 - c. Environmental Impacts Assessment (EIA) – Section (32)(2)(d)
 - d. Environmental Management Plan (EMP) – Section (34)(b)
- vi. National Heritage Resources Act (NHRA) Act 25 of 1999
 - a. Protection of Heritage resources – Sections 34 to 36; and
 - b. Heritage Resources Management – Section 38
- vii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
 - a. Section 39(3)
- viii. Development Facilitation Act (DFA) Act 67 of 1995
 - a. The GNR.1 of 7 January 2000: Regulations and rules in terms of the Development Facilitation Act, 1995. Section 31.

1.2 Terminology

Acronyms	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management

DEAT	Department of Environmental Affairs and Tourism
DWAF	Department of Water Affairs and Forestry
EIA practitioner	Environmental Impact Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&AP	Interested & Affected Party
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
PSSA	Palaeontological Society of South Africa
ROD	Record of Decision
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency

Archaeological resources

This includes:

- i. material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- ii. rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- iii. wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime

culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;

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

Cultural significance

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

Development

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

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

Heritage resources

This means any place or object of cultural significance

2. ASSESSMENT CRITERIA

This chapter describes the evaluation criteria used for the sites listed below.

The significance of archaeological sites was based on four main criteria:

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

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

A - No further action necessary;

B - Mapping of the site and controlled sampling required;

C - Preserve site, or extensive data collection and mapping of the site; and

D - Preserve site

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

2.1 IMPACT

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

2.1.1 *Nature and existing mitigation*

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

2.2 EVALUATION

2.2.1 Site Significance

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

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

IMPACT RATING AND THE ESTABLISHMENT OF CONFIDENCE LIMITS

The following criteria are applied in the rating of impacts.

Assessment criteria

Nature of impact

-	Negative
+	Positive
Neu	Neutral
Intensive: Negative Impacts	
Low (L)	The impact has no effect on natural, cultural and social functions and processes beyond that of nuisance value,
Moderate (M)	Natural processes and cultural and social functions continue, but in a modified way.
High (H)	Natural processes or cultural or social functions are altered to the extent that they temporarily or permanently cease, resulting in severe deterioration of the impacted environment.
Intensive: Positive Impacts	
Low (L)	The impact has a slight positive effect on natural, cultural and social functions and processes.
Moderate (M)	Natural processes and cultural and social functions continue in a noticeably enhanced way.
High (H)	Natural processes or cultural or social functions are altered to the extent where the sustainability of the impacted environment is considerably advanced.
Duration: life-time of impact	
Short term (S)	0-5 years, the effects can be reversed in a short time
Medium term (M)	5-15 years, the effects could be reversed over a medium time period, possibly coinciding with the life of mine.
Long term (L)	The impact will only cease after the operational life of the mine.
Permanent (P)	The impact on the receiving environment will effectively be irreversible.
Extent: the geographical extent of the impact	
Limited (LIM)	The impact is limited to the tenement/mine site
Low (L)	The impact will extend beyond the immediate boundaries of the mining tenement, affecting the environment/one or more of the communities in the area.
Regional (R)	The impact will affect the greater Barberton Region.
National (N)	The impact will affect South Africa
Phase: the particular phase of the mine life-cycle during which the impact will occur	
Exploration (E)	
Construction (Con)	

Operation (O)	
Closure (C)	
Post-Closure (PC)	
All Phase (All)	
Possibility of the impact occurring	
Definite (D)	The chances of the impact occurring are greater than 95%
Probable (P)	The chances of the impact occurring are between 5% and 95%
Unlikely (U)	The chances of the impact occurring are less than 5%
Significance (Socio-economic)	
High (H)	A strategy to manage the impact will be included in the Social Management Plan. Progress will be monitored by corporate head office on a monthly basis.
Moderate (M)	A strategy to manage the impact will be included in the Social Management Plan. Progress against indicators will be monitored on-site.
Low (L)	The significance status of the impact needs to be monitored and interventions made on the basis of a change to a higher status
Significance (biodiversity)	
High (H)	For negative impacts, the decision should be not to proceed without stringent mitigation measures for the project. For positive impacts, the impact supports the implementation of the project.
Medium (M)	This impact will not be avoided unless mitigation measures are put in place and could require modification of the project design.
Low (L)	The impact will not affect the decision to proceed with the project and will not need to be considered in the project design.
Potential for mitigation/optimization	
Low (L)	The potential for mitigation/optimization is limited because of the severity of the impact and a lack of capacity/resources and coping mechanisms in the receiving environment.
Moderate (M)	The intensity is moderate and the receiving environment has some mechanisms to mitigate or optimize the impact, as well as resources that can be called upon.
High (H)	The intensity is low and the receiving environment has the capacity, resources and mechanisms to mitigate or optimize the impact.
Confidence	
Certain	A wealth of information on and sound understanding of the

	environmental factors potentially influencing the impact.
Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact.
Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact.

Significance Ratings	Level of Criteria Required
High	<ul style="list-style-type: none"> • High magnitude with a regional extent and long term duration
	<ul style="list-style-type: none"> • High magnitude with either a regional extent and medium term duration or a local extent and long term duration
	<ul style="list-style-type: none"> • Medium magnitude with a regional extent and long term duration
Medium	<ul style="list-style-type: none"> • High magnitude with a local extent and medium term duration
	<ul style="list-style-type: none"> • High magnitude with a regional extent and construction period or a site specific extent and long term duration
	<ul style="list-style-type: none"> • High magnitude with either a local extent and construction period duration or a site specific extent and medium term duration
	<ul style="list-style-type: none"> • Medium magnitude with any combination of extent and duration except site specific and construction period or regional and long term
	<ul style="list-style-type: none"> • Low magnitude with a regional extent and long term duration
Low	<ul style="list-style-type: none"> • High magnitude with a site specific extent and construction period duration
	<ul style="list-style-type: none"> • Medium magnitude with a site specific extent and construction period duration
	<ul style="list-style-type: none"> • Low magnitude with any combination of extent and duration except site specific and construction period or regional and long term
	<ul style="list-style-type: none"> • Very low magnitude with a regional extent and long term duration
Very Low	<ul style="list-style-type: none"> • Low magnitude with a site specific extent and construction period duration
	<ul style="list-style-type: none"> • Very low magnitude with any combination of extent and duration except regional and long term
Neutral	<ul style="list-style-type: none"> • Zero magnitude with any combination of extent and duration

Impacts		
Summary of Impacts:		
Site Characteristics		
Impact Description:		
Mitigation Summary:		
	Without Mitigation	With Mitigation*
Nature of Impacts		
Intensity		
Frequency of Occurrence		
Duration		
Extent		
Probability		
Significance		
Potential for mitigation/optimisation LMH		
Degree of Confidence		
Phase		

L – Low, M – Moderate, H - High

DESCRIPTION OF IMPACTS

Direct impacts

Direct impacts are caused by the development itself e.g., the removal of gravel material from a borrow pit, for use in surfacing the road, is an obvious direct impact of road construction. Direct impacts are generally easier to inventory, assess, and control than indirect impacts, since the cause-effect relationship is usually obvious.

Indirect impacts

Indirect impacts (also known as secondary, tertiary, and chain impacts) are usually linked closely with the project, and may have more profound consequences on the environment than direct impacts. Indirect impacts are more difficult to measure, but can ultimately be more important. Over time they can affect larger geographical areas of the environment than anticipated.

Ecosystem function impacts

Technically a subset or variant of cumulative impacts, ecosystem function impacts, which disable or destabilize whole ecosystems, are the most dangerous and often the least likely to manifest themselves over a short period of time.

Examples include where developments traverse watersheds in which surface and subsurface water movement is complex. The effect on the ecosystem can be devastating and the impact on the local population that uses the area can be severe. A second example is in situation where a project such as a pipeline bisects wildlife migration routes; this can inflict stress on the migratory population for many generations, or even permanently, cause instability, increased mortality, and possibly catastrophic decline.

Positive and negative impacts

The emphasis of this EIA is primarily on avoiding and mitigating negative impacts of the development of the Bon Accord Project, which are a high priority to the company.

Environmental impacts sometimes have both positive and negative effects; some impacts can positively affect some people and negatively affect others in the same environment. For example, rechanneling streams might improve drainage for a roadside farmer, but wreak havoc on the livelihood of others who depend on the aquatic species disturbed by the rechanneling.

Random and predictable impacts

In the preliminary analysis of an environmental impact assessment, it is useful to distinguish between assured or highly probable impacts, and more random or unpredictable ones which have a low probability of occurring but which nevertheless may have serious consequences for the environment.

Local and widespread impacts

Local impacts include effects in the immediate vicinity of a project whereas widespread impacts can occur many kilometers from the project.

Temporary and permanent

Temporary impacts are those whose occurrence is not lasting, and which will eventually reverse themselves, the affected system having returned to its previous state. Permanent impacts are those which are irreversible—the affected system will not return to its previous state on a human timescale. It is important to note that —permanentll from the viewpoint of EIA, is defined as “within one’s lifetime”.

Short and long term

Short-term impacts are those which appear during or shortly after construction; long-term impacts may arise during construction, but many of their consequences appear during the operational phase, and may last for decades.

Cumulative impacts

A cumulative impact is an impact which:

- occurs in a receiving environment which is experiencing, has experienced, or may in the foreseeable future experience similar impacts,
- where there is the potential for synergistic interaction between impacts (i.e. the net impact is greater than the sum of the component impacts), and/or
- where ecological or social thresholds may be breached by a number of consecutive or simultaneous impacts, which individually may have not have resulted in impacts

Reference to cumulative impacts will be made in the discussion where relevant.

3. LEGAL AND POLICY REQUIREMENTS

3.1 General principles

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

Archaeological and palaeontological sites, materials, and meteorites are the source of our understanding of the evolution of the earth, life on earth and the history of people. In the new legislation, permits are required to damage, destroy, alter, or disturb them. People who already possess material are required to register it. The management of heritage resources are integrated with environmental resources and this means that before development takes place heritage resources are assessed and, if necessary, rescued.

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

conflict and those associated with the liberation struggle will be identified, cared for, protected and memorials erected in their honour.

Anyone who intends to undertake a development must notify the heritage resource authority and if there is reason to believe that heritage resources will be affected, an impact assessment report must be compiled at the developer's cost. Thus, developers will be able to proceed without uncertainty about whether work will have to be stopped if an archaeological or heritage resource is discovered.

According to the National Heritage Act (Act 25 of 1999 section 32) it is stated that:

An object or collection of objects, or a type of object or a list of objects, whether specific or generic, that is part of the national estate and the export of which SAHRA deems it necessary to control, may be declared a heritage object, including –

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

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

3.1 Graves and cemeteries

Graves younger than 60 years fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the National Department of Health and the relevant

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

Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act) as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the South African Heritage Resource Agency (SAHRA). The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery administrated by a local authority will also require the same authorisation as set out for graves younger than 60 years over and above SAHRA authorisation.

If the grave is not situated inside a formal cemetery but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws set by the cemetery authority must be adhered to.

**ANNEXURE B:
Heritage Sites**

