Prepared for:

SRK CONSULTING ENGINEERS AND SCIENTISTS

DE BEERS CONSOLIDATED MINES (VENETIA MINE)

A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR DE BEERS CONSOLIDATED MINES (VENETIA MINE) IN THE LIMPOPO PROVINCE:

AN AMENDMENT OF EXISTING ENVIRONMENTAL MANAGEMENT PROGRAMMES (EMPS)/PROGRAMME REPORTS (EMPRS) AND THE DEVELOPMENT OF AN ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED UNDERGROUND MINING PROJECT AND THE REVIEW AND CONSOLIDATION OF ALL EMPS AND EMPRS FOR THE EXISTING OPERATION

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EXECUTIVE SUMMARY

De Beers Consolidated Mines (DBCM) (Venetia Mine) intends to undertake a new Underground Mining Project in conjunction with a number of other activities which requires authorization from the authorities. The proposed new Underground Mining Project and other related developmental activities may have an influence on any of the types and ranges of heritage resources as set out in Section 3 of the National Heritage Resources Act (No 25 of 1999). SRK Consulting and Venetia Mine therefore commissioned the author to undertake a Phase I HIA study for the Project Area.

The aims with this Phase I HIA survey were the following:

- To establish whether any of the types and ranges of heritage resources ('national estate') as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) do occur in the Project Area.
- To indicate the level of significance of these heritage resources and to outline mitigation measures if any of the heritage resources are to be affected by any future mining developmental activities.

An extensive survey for archaeological sites on the farms Venetia 103MS, Rugen 105MS and Krone 104MS was undertaken by Mr. E.O.M. Hanisch of the University of Venda during 1989. The pipeline route between the Venetia Mine and the well fields on Schroda 46MS and and Greefswald 37MS was also inspected and during the course of its excavation was periodically checked to see if any archaeological finds were unearthed.

The affected areas on Drumsheigh 99MS and Elseger 37MS were not investigated.

The baseline archaeological survey revealed the presence of a Middle Stone Age site and seventeen Iron Age sites on the farm Venetia 103MS. The Iron Age sites are associated with the Mapungubwe (AD1100-1250) and the subsequent Khami peoples (AD1400-1750).

The significance of the archaeological finds can be summarized as follows: The archaeological finds did not differ from that which is to be found in the Linton-All Days

area. No outstanding significant site was discovered nor any sites' which should be protected at all costs. Archaeological remains on sites, such as pottery, were scarce and whenever they occurred, they were un-diagnostic. A general dearth of material marked most of the sites.

It was recommended that some of the smaller and interesting sites should be excavated to retrieve chronological and/or other special information. Consequently, important sites were fenced-off or were totally excavated whereas small-scale excavations were done on the less important sites. (Environmental Management Program Report for Venetia Mine. July 2000. Appendix 3).

The Phase I HIA study revealed the following types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) for the Project Area, namely:

- A MSA site and two Iron Age sites (villages). The two Iron Age sites are respectively composed of two and four smaller sites each. (These sites were identified during the 1989 survey).
- Stone walls which may be part of an Iron Age village composed of one or more smaller sites.
- A historical graveyard belonging to the Venter family.

The Phase I HIA study considered the results of the earlier archaeological survey; the developmental components (infrastructure and activities) for the proposed Underground Mining Project and the farms Elesger 37MS and Drumsheugh 99MS which are relevant for the review and consolidation of all EMP and EMPR reports for existing operations.

The most important sites that were discovered during 1989 have been investigated in the past. Those that have not been investigated as they had little or no significance have since been destroyed by mining activities. The exceptions are one MSA site and two Iron Age sites (villages) noted above.

The significance of the heritage resources

The significance of the heritage resources is determined and is indicated (Table 1). Some of the heritage resources in the Project Area may be affected by future mining activities. The significance of the impact on the Iron Age (Khami) sites is high (Table 2).

The Iron Age remains

The Iron Age remains represent archaeological remains which are protected by various sections in the National Heritage Resources Act (No 25 of 1999).

These remains have medium to low significance when considering criteria such as the following:

- The sites represent commoner settlements from the Khami period which occurs in numbers across the wider area. These sites therefore are represented elsewhere in the wider area.
- The sites are marked by a dearth of archaeological remains. It is therefore unlikely that archaeological deposits with an abundance of archaeological material occur in context with these sites.

The sites yield the potential to provide some information about aspects of the culture of the Khami people such as their settlement's layout and composition (settlement patterns and its relation to other cultural aspects).

The impact of the extension of the tailings dam on these sites will be high (Table 2).

The Middle Stone Age site

The MSA site represents archaeological remains which are protected by various sections in the National Heritage Resources Act (No 25 of 1999).

These MSA site has low significance when considering criteria such as the following:

- The site comprises a surface collection with a limited number of stone tools which all belong to known types. (Sealed archaeological deposits usually have high significance).
- The site was affected (damaged) when the corridor for the pipeline was excavated through the site.

The graveyard

All graveyards and graves can be considered to be of high significance and are protected by various laws. Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (No 25 of 1999) whenever graves are older than sixty years. The act also distinguishes between various categories of graves and burial grounds. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).

Mitigating (managing) the heritage resources

It is possible that the Iron Age site on Elesger 98MS may be affected (destroyed) when the tailings dam is extended.

The Iron Age sites on Venetia 103MS outside the western border fence (Project Area), the MSA site and the graveyard on Venetia 103MS on the southern border of the Project Area need not to be affected by mining activities.

The following mitigation (management) measures are proposed for all the heritage resources that occur in the Project Area.

The Iron Age remains

The Iron Age remains may not be affected (altered, removed or demolished) by any activities before a permit which authorises such an impact has been issued by the South African Heritage Resources Authority (SAHRA). The impact can only occur after the Iron Age remains have been subjected to a Phase II archaeological investigation. This implies that the remains have to be investigated before they are destroyed. The investigation would entail that the Iron Age remains be documented by means of surveying the structures and features of the village such as its house and stone walls. These structures, features and sites also have to be photographed and mapped. The results of this Phase II investigation must be published in a report which will be kept in SAHRA's data bank.

The Phase II process can be implemented immediately.

The Middle Stone Age site

The MSA has no significance and will not be affected by any of the development activities described in this report and therefore needs no mitigation measures.

A permit is needed from SAHRA before the MSA site may be affected by any developmental activity.

The graveyard

The graveyard is well outside the mining area and is fenced-in. Access to the graveyard is available at all times. It will not be affected by any of the developmental activities that are covered by this report. The graveyard needs no mitigation measures.

General

It is possible that this and earlier archaeological (heritage) surveys may have missed archaeological sites and other heritage resources in the Project Area as such sites may occur in thick clumps of vegetation while others may lie below the surface of the earth and may only be exposed once development commences.

If any heritage resources of significance is exposed during any development activities the South African Heritage Resources Authority (ASAPA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notify in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

Heritage resources which used to exist in the Venetia mining area were of low significance, were investigated in the past and now after two decades of open-cast mining have disappeared. The mining area therefore does not represent a sensitive archaeological, cultural or historical landscape. It has little significance within the context of the Mapungubwe buffer zone. However, the limited remains that still occur in the mining area must be mitigated (managed) according to the measures outlined in the report if they are to be affected by developmental activities.

CONTENTS

1 INTRODUCTION

Venetia Mine was commissioned in 1992. The mine anticipates that its current open pit operations will cease between 2020 and 2023. In order to access the remaining mineral reserves and to extend the life of the current mining activities it is proposed that the mining operations changes from an open pit mining method to an underground mining method.

On 2 September 2007 Venetia Mine converted their old mining rights to new order mining rights in terms of the Mineral and Petroleum Resources Development Act (No 28 of 2004) which included the authorisation of the current Environmental Management Programme Report (EMPR) and all subsequent amendments thereof made *prior* to this date.

Current mining operations are deemed to be approved and managed in accordance with the approved EMPR and subsequent amendments and it is DBCM's intention to review and consolidate all pertinent EMP documentation thereby ensuring a more integrated and effective management and reporting approach for its current and future mining operations.

Parts of the Limpopo Province, such as Polokwane, Mokopane, Phalaborwa, the Blouberg Mountains, Louis Trichardt (Makhado), the Steelpoort valley and areas to the north and south of the Soutpansberg have been explored for archaeological remains in the past. These explorations have shown that the Limpopo Province has a rich archaeological heritage comprised of remains dating from the prehistoric and the historical past.

Prehistoric and historical remains in the Limpopo Province therefore reflect the 'national estate' as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) (see Box 1).

Box 1: Types and ranges of heritage resources (the 'national estate') as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999)

The National Heritage Resources Act (No 25 of 1999) outlines the following types and ranges of heritage resources that qualify as part of the national estate, namely:

(a) places, buildings structures and equipment of cultural significance;
(b) places to which oral traditions are attached or which are associated with living heritage;
(c) historical settlements and townscapes;
(d) landscapes and natural features of cultural significance;
(e) geological sites of scientific or cultural importance;
(f) archaeological and paleontological sites;
(g) graves and burial grounds including-
  (i) ancestral graves;
  (ii) royal graves and graves of traditional leaders
  (iii) graves of victims of conflict
  (iv) graves of individuals designated by the Minister by notice in the Gazette;
  (v) historical graves and cemeteries; and
  (vi) other human remains which are not covered by in terms of the Human Tissue Act, 1983 (Act No 65 of 1983)
(h) sites of significance relating to the history of slavery in South Africa;
(i) moveable objects, including -
  (i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens;
  (ii) objects to which oral traditions are attached or which are associated with living heritage;
  (iii) ethnographic art and objects;
  (iv) military objects;
  (v) objects of decorative or fine art;
  (vi) objects of scientific or technological interest; and
  (vii) books, records, documents, photographs, positives and negatives, graphic, film or video material 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).

The National Heritage Resources Act (Act No 25 of 1999, Sec 3) also distinguishes nine criteria for places and objects to qualify as 'part of the national estate if they have cultural significance or other special value …'. These criteria are the following:

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

2 TERMS OF REFERENCE

De Beers Consolidated Mines (DBCM) (Venetia Mine) intends to undertake a new Underground Mining Project in conjunction with a number of other activities which requires authorization from the authorities. SRK Consulting Engineers, the environmental company responsible for compiling the necessary documents for authorization therefore is combining the EMP Amendment and EIA for the Underground Mining Project and waste activities (associated with the existing open pit operations and the proposed underground project) with the EMP Review and Consolidation process for the existing operation into a single document for submission to all relevant authorities.

The proposed new Underground Mining Project and other related developmental activities may have an influence on any of the types and ranges of heritage resources as set out in Section 3 of the National Heritage Resources Act (No 25 of 1999). SRK Consulting and Venetia Mine therefore commissioned the author to undertake a Phase I HIA study for the Project Area.

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- To indicate the level of significance of these heritage resources and to outline mitigation measures if any of the heritage resources are to be affected by any future mining developmental activities.

3 THE PROJECT AREA

3.1 Location

De Beers Consolidated Mines (DBCM) currently operates an open pit diamond (Venetia Mine) in the Limpopo Province of South Africa. Venetia Mine is located approximately 80 km west of Musina and 40 km north-east of Alldays. The mine is located in the Musina Local Municipality of the Vhembe District, just off the R521 road between Alldays and Pontdrift, approximately 500 km north of Johannesburg. Venetia Mine is situated near the South Africa's northern border with Botswana and Zimbabwe on approximately 3,000 ha of land. Adjacent to the Venetia Mine is the DBCM owned Venetia Limpopo Nature Reserve (VLNR) comprising 36,000 ha of land (Figure 1).

The following farms form part of the surface area of the Venetia Mine:

- Portions 1, 2, 3, 4, 5 and remainder of Venetia 103 MS;
- Portion 1 and remainder of Krone 104 MS;
- Remainder of Rugen 105 MS;
- Drumsheugh 99 MS; and
- Elesger 98 MS.

Although not part of the proclaimed mining area, the following two farms form part of the infrastructure of the mining operation in terms of water supply, namely:

- Schroda 46 MS; and
- Greefswald 37 MS.

The water pipeline running from the well ponds on these farms in the north to Venetia Mine in the south crosses several other farms.

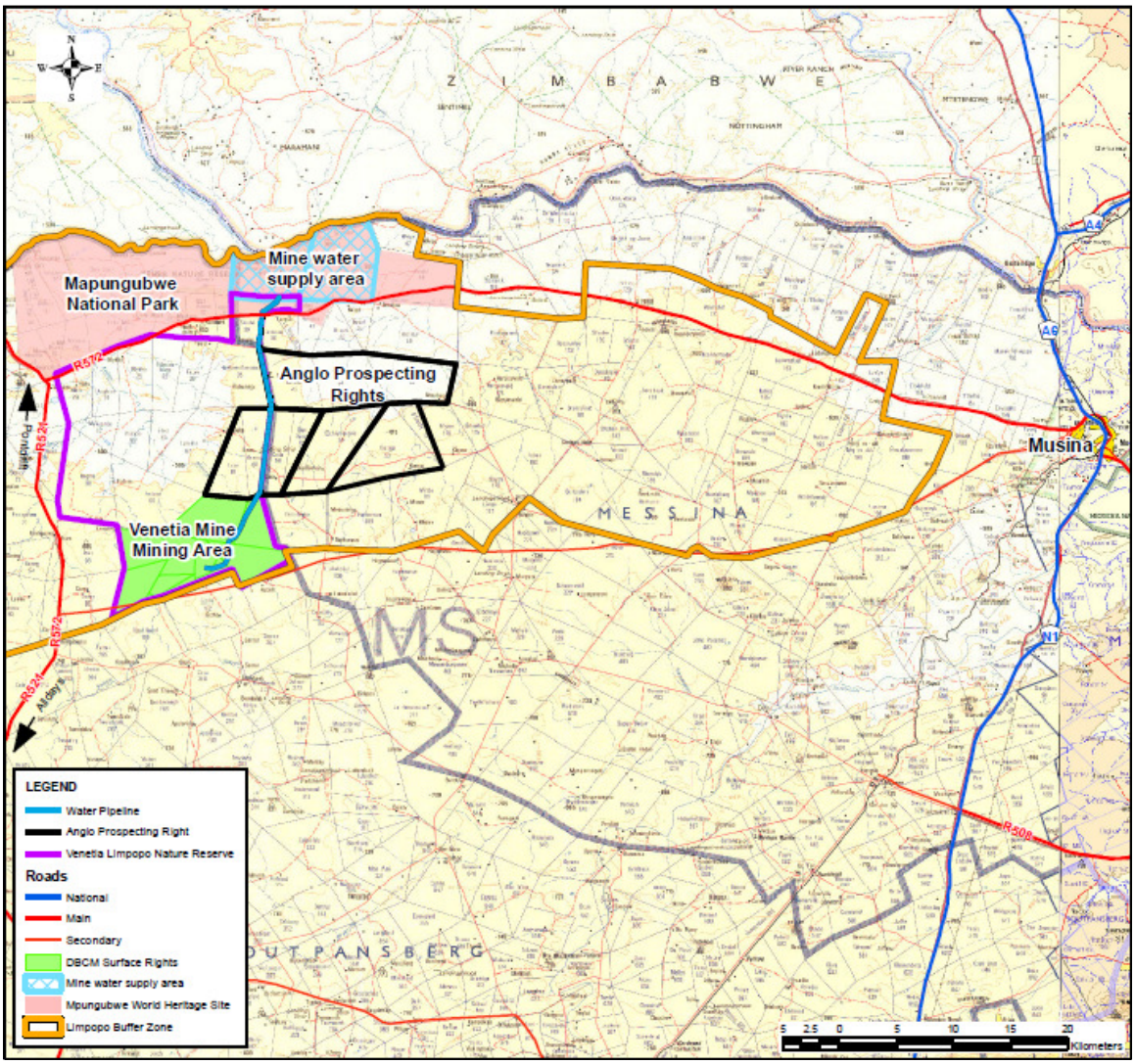

Figure 1- Venetia Mine in the Limpopo Province within the context of the larger region (above).

Schroda 46MS and Greefswald 37MS occur within the Mapungubwe National Park with the Mapungubwe Hill and K2 archaeological sites as its main focus on the farm Greefswald 37MS. The Mapungubwe National Park is located approximately 50 km to the west of Messina near the confluence of the Limpopo and Sashe Rivers (see 2229; 1:50 000 topographical maps). The Mapungubwe Cultural Landscape (National or Heritage Park) is one of South Africa's seven world heritage sites and attained its world heritage status in 2003. World heritage sites are declared by the United Nation's Educational, Scientific and Cultural Organisation

(UNESCO) to recognise and preserve places with outstanding cultural and natural heritage.

Venetia Mine is further surrounded to the north, east and west by the DBCM owned Venetia Limpopo Nature Reserve and to the south lies Gotha Farm which conducts stock and game farming.

Figure 2- Venetia Mine on the farms Venetia 103MS, Rugen 105MS, Krone 104MS, Elesger 37MS and Drumsheugh 99MS near Alldays in the Limpopo Province. The star indicates the main access gate to the mine (above).

3.2 The nature of the Project Area

The Project Area on the farms Venetia 103MS, Rugen 105MS and Krone 104MS has been affected by mining development activities since 1989. Some agricultural activities may have occurred on these farms before mining commenced. This piece of land cannot be described as pristine any longer although small patches of land which have not been influenced by developmental activities in the past do occur.

The far western part of the mine covers the farms Elesger 37MS and Drumsheugh 99MS which is hilly due to the presence of low dolerite outcrops and is also largely unaffected by mining activities. It is unlikely that any mining related development activities will occur here in the short term (Figure 2).

Figure 3- The far western part of the mine lease area on Elesger 37MS and Drumsheugh 99MS has not been affected by mining activities in the past.

The nature and character of the Project Area is illustrated with a few photographs which also illuminates some of the proposed development activities which the Underground Mining Project will involve.

Figure 4- The proposed Underground Mining Project is located between the geological core yard, a small village consisting of new offices which were constructed with pre-fabricated materials and the Primary Crusher Plant (above). This area has been intensely disturbed in the past and holds no heritage resources of significance.

Figure 5- The existing Tailings Dam (above) will be extended and may impact on Khami type settlements along dolerite outcrops near the western border of the Project Area.

4 METHODOLOGY

This Phase I survey was conducted by means of consulting heritage (archaeological) data bases; earlier heritage studies that were done for the Venetia Mine; doing a survey with a vehicle and on foot; studying maps of the Project Area; doing a brief survey of literature and by means of consulting spokespersons working in the Project Area.

4.1 Archaeological data bases

Archaeological data bases kept at institutions such as African Window and the South African Heritage Resources Authority (SAHRA) (Cape Town [national] and Polokwane [provincial]) were consulted in order to establish if any heritage resources of significance occur in the Project Area.

4.2 Earlier heritage (archaeological) studies done for Venetia Mine

An earlier archaeological survey for Venetia Mine's Environmental Management Program Report was done by Mr. E.O.M. Hanisch in July 2000. This study involved a thorough survey of the farm Venetia 103MS and parts of the farm Rugens 105MS and Krone 104MS as well as a survey along the pipeline route between the Venetia Mine and the well ponds on Schroda 46MS and Greefswald 37MS.

Mr. E.O.M. Hanisch is known for his life-long archaeological work in the Limpopo Province. He has done extensive research in the region, particularly on the farm Schroda 46MS where he excavated an Iron Age site which is a predecessor of the Mapungubwe cultural complex. The author has consulted with Mr. E.O.M. Hanisch during the completion of this study.

4.3 Survey with a vehicle and on foot

The Project Area was surveyed with a vehicle while spots where heritage resources were observed and which are indicated on the map (Figure 6) were further investigated on foot.

4.4 Maps and imagery

The 1: 50 000 topographical map and the 1: 250 000 maps outlining the various farms which is covered by the Project Area were also studied for any possible heritage resources which could be associated with certain topographical detail or altered vegetation patterns. Google imagery served as a useful source to confirm that archaeological sites which were identified in the past where destroyed by mining activities during the last twenty years.

4.5 Survey of literature

A brief survey of literature relating to the pre-historical, historical and cultural context of the broader Project Area was undertaken in order to contextualise the Project Area on a regional scale (see Part 5, 'Contextualising the Project Area' and Part 9, 'Select Bibliography').

4.6 Consulting spokespersons

Spokespersons working in the Project Area were consulted with regard to the possible presence of graves and other conspicuous heritage resources (see Part 10, 'Spokespersons Consulted').

4.7 Significance rating

Desktop and field information were critically examined in order to assess the potential direct and indirect impacts of the project on identified heritage resources. This analysis was undertaken using the generic significance rating criteria which are common to all studies being done for the EIA.

The nature of the impact describes what is being affected and how. The direction of the impact describes whether the impact will be positive or negative.

4.7.1 Generic significance rating criteria

Extent (Spatial Scale) of the Impact

The extent of the impact refers to its spatial scale (not its magnitude)

Rating	Descriptor
Site	Limited to within mine boundaries or local surrounds
Local	Municipality
District	Soutpansberg District
Provincial	Limpopo
National	South Africa
International	Global outside of South Africa

Duration and Reversibility

Duration refer to the period of time over which the impact occurs

Rating	Descriptor
Temporary	Can be reversed
Short term	0 – 5 years
Medium term	5 – 15 years
Long term	> 15 years, where the impact will cease after the operational life of the facility, either because of natural processes or human intervention
Permanent	Irreversible

Intensity (or Magnitude)

Intensity refers to whether the impact is destructive or benign.

Rating	Descriptor
Low	Where the impact affects the environment in such a way that the natural, social and cultural functions are not affected
Medium	Where the environment is altered but the natural, social and cultural functions and processes continue, albeit in a modified way
High	Where the natural, social or cultural functions are altered to the extent that they will temporarily or permanently cease

Probability

Probability refers to the likelihood of the impact occurring.

Rating	Descriptor
Low	Where the likelihood of the impact occurring is very low, either because of design or because of historical experience of such impacts
Medium	Where there is a moderate likelihood of the impact occurring
High	Where it is very likely that the impact will occur
Definite	Where the impact will occur, without question

Significance

The significance of impacts is determined through a synthesis of the previous ratings, including spatial scale, duration, intensity and probability.

Rating	Descriptor
Low	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts, mitigation is either easily achieved or little will be required, or both. Social, cultural and economic activities of communities can continue unchanged. In the case of beneficial impacts, alternative means of achieving this benefit are likely to be easier, cheaper, more effective and less time-consuming. Impacts with low significance ratings will not influence the decision about the project
Medium	Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. In the case of adverse impacts, mitigation

	is both feasible and fairly easily possible. Social, cultural and economic activities of communities are changed, but can be continued (albeit in a different form). Modification of the project design or alternative action may be required. In the case of beneficial impacts, other means of achieving this benefit are about equal in time, cost and effort. Impacts with medium significance ratings will have an influence on the decision unless mitigated.
High	Impact is of the highest order possible within the bounds of impacts that could occur. In the case of adverse impacts, there is no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time-consuming or some combination of these. Social, cultural and economic activities of communities are disrupted to such an extent that these come to a halt. In the case of beneficial impacts, the impact is of a substantial order within the bounds of impacts that could occur. Impact with high significance ratings will have an influence on the decision regardless of any mitigation.

4.8 Assumptions and limitations

It is possible that this and earlier archaeological (heritage) surveys may have missed archaeological sites and other heritage resources in the Project Area as such sites may occur in thick clumps of vegetation while others may lie below the surface of the earth and may only be exposed once development commences.

If any heritage resources of significance is exposed during any development activities the South African Heritage Resources Authority (ASAPA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notify in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

4.9 Some remarks on terminology

Terms that may be used in this report are briefly outlined below:

- Conservation: The act of maintaining all or part of a resource (whether renewable or non-renewable) in its present condition in order to provide for its continued or future use. Conservation includes sustainable use, protection, maintenance, rehabilitation, restoration and enhancement of the natural and cultural environment.

- Cultural resource management: A process that consists of a range of interventions and provides a framework for informed and value-based decision-making. It integrates professional, technical and administrative functions and interventions that impact on cultural resources. Activities include planning, policy development, monitoring and assessment, auditing, implementation, maintenance, communication, and many others. All these activities are (or will be) based on sound research.

- Cultural resources: A broad, generic term covering any physical, natural and spiritual properties and features adapted, used and created by humans in the past and present. Cultural resources are the result of continuing human cultural activity and embody a range of community values and meanings. These resources are non-renewable and finite. Cultural resources include traditional systems of cultural practice, belief or social interaction. They can be, but are not necessarily identified with defined locations.

- Heritage resources: The various natural and cultural assets that collectively form the heritage. These assets are also known as cultural and natural resources. Heritage resources (cultural resources) include all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of

heritage resources, as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa.

- In-Situ Conservation: The conservation and maintenance of ecosystems, natural habitats and cultural resources in their natural and original surroundings.

- Iron Age: Refers to the last two millennia and 'Early Iron Age' to the first thousand years AD. 'Late Iron Age' refers to the period between the 16th century and the 19th century and can therefore include the Historical Period.

- Maintenance: Keeping something in good health or repair.

- Pre-historical: Refers to the time before any historical documents were written or any written language developed in a particular area or region of the world. The historical period and historical remains refer, for the Project Area, to the first appearance or use of 'modern' Western writing brought to the Eastern Highveld by the first Colonists who settled here from the 1840's onwards.

- Preservation: Conservation activities that consolidate and maintain the existing form, material and integrity of a cultural resource.

- Recent past: Refers to the 20th century. Remains from this period are not necessarily older than sixty years and therefore may not qualify as archaeological or historical remains. Some of these remains, however, may be close to sixty years of age and may, in the near future, qualify as heritage resources.

- Protected area: A geographically defined area designated and managed to achieve specific conservation objectives. Protected areas are dedicated primarily to the protection and enjoyment of natural or cultural heritage, to

the maintenance of biodiversity, and to the maintenance of life-support systems. Various types of protected areas occur in South Africa.

- Reconstruction: Re-erecting a structure on its original site using original components.

- Replication: The act or process of reproducing by new construction the exact form and detail of a vanished building, structure, object, or a part thereof, as it appeared at a specific period.

- Restoration: Returning the existing fabric of a place to a known earlier state by removing additions or by reassembling existing components.

- Stone Age: Refers to the prehistoric past, although Late Stone Age peoples lived in South Africa well into the Historical Period. The Stone Age is divided into an Earlier Stone Age (3 million years to 150 000 thousand years ago) the Middle Stone Age (150 000 years to 40 000 years ago) and the Late Stone Age (40 000 years to 200 years ago).

- Sustainability: The ability of an activity to continue indefinitely, at current and projected levels, without depleting social, financial, physical and other resources required to produce the expected benefits.

- Translocation: Dismantling a structure and re-erecting it on a new site using original components.

- Project Area: refers to the area (footprint) where the developer wants to focus its development activities (refer to plan).

- Phase I studies refer to surveys using various sources of data in order to establish the presence of all possible types and ranges of heritage resources in any given Project Area (excluding paleontological remains as these studies are done by registered and accredited palaeontologists).

- Phase II studies include in-depth cultural heritage studies such as archaeological mapping, excavating and sometimes laboratory work. Phase II work may include the documenting of rock art, engraving or historical sites and dwellings; the sampling of archaeological sites or shipwrecks; extended excavations of archaeological sites; the exhumation of human remains and the relocation of graveyards, etc. Phase II work involve permitting processes, require the input of different specialists and the co-operation and approval of SAHRA.

5 CONTEXTUALISING THE PROJECT AREA

5.1 The larger region

The Venetia Project Area is part of the Bushveld whose elevation varies between 750m to 1 400m above sea level. Annual rainfall varies from 350mm in the west to just over 600mm in parts in the north-east whilst the rainfall on the Soutpansberg in the south is more than 2 000mm in places. Summers are hot and winters comparatively mild while frost rarely occurs.

The Bushveldt is characterised by well-grassed plains which are punctuated with dense clusters of trees and tall savannah shrubs. (The grasses are tall and rank and turn yellow and brown in winter). Trees and shrubs varies from *Acacia*, *Combretum*, *Karee* and Boekenhout in the south to the umbrella *Acacia*, *Mopane*, Knobthorn, Leadwood, Kiaat and Tamboti further north. The Boabab dominates the far northern plains of the Bushveld.

Whilst the Crocodile, Matlabas, Mokolo and other rivers drain the western part of the Bushveld, the Olifants and Letaba rivers flow towards the Indian Ocean in the eastern part of the Bushveld. The Sand and Hout rivers join each other to the south of the Soutpansberg and cut through the mountain together with the railway line running to Zimbabawe in the far north. The Luvuvuhu, Klein Letaba and Mutale rivers drain the eastern part of the Soutpansberg.

5.2 The Stone Age

Stone Age sites are marked by stone artefacts that are found scattered on the surface of the earth or as parts of deposits in caves and rock shelters. The Stone Age is divided into the Early Stone Age (ESA) (covers the period from 2.5 million years ago to 250 000 years ago), the Middle Stone Age (MSA) (refers to the period

from 250 000 years ago to 22 000 years ago) and the Late Stone Age (LSA) (the period from 22 000 years ago to 300 years ago).

The LSA is associated, amongst other things, with rock paintings and engravings done by the San, the Khoi Khoi and, in more recent times, by Negroid (Iron Age) farmers. Stone Age sites from all periods occur throughout the larger Project Area whilst a few and large numbers of rock paintings have been recorded near Mapungubwe and in the Soutpansberg respectively.

5.3 The Iron Age

The Iron Age is associated with the first Bantu-Negroid agro-pastoralists who lived in semi-permanent villages and who practiced metal working during the last two millennia. The Iron Age is usually divided into the Early Iron Age (this covers the 1st millennium AD) and the Later Iron Age (this covers the first 880 years of the 2nd millennium AD).

5.3.1 The Iron Age in the larger Project Area

The larger Project Area is characterized by the following ceramic and chronological phases of the Iron Age:

Matakoma pottery is the oldest in the Limpopo Province and occurs on both sides of the Soutpansberg at places such as Happy Rest (Matakoma), Klein Afrika and Mapungubwe. It dates between the fourth and the ninth centuries.

Eiland ceramics occur over a wide area and were found in small quantities at sites such as Mapungubwe and various Toutswe sites. This phase of the Iron Age dates between the eleventh and thirteenth centuries in the larger Project Area and suggest a hiatus of roughly two centuries between Eiland and earlier Moloko pottery.

The K2 and Mapungubwe sites (in close proximity) near the confluence of the Limpopo and Sashe Rivers represent two phases in the southern branch of the Leopards Kopje Tradition with K2 being replaced by Mapungubwe during the middle of the twelfth century.

The end of the Eiland phase is marked by the sudden appearance of the Moloko phase which occurs across a wide area, even beyond the Highveld and the Vaal River. Near the Project Area Moloko appears at Icon where it dates to the early fourteenth century.

Khami ceramics occur in roughly the same area as Zimbabwe ceramics but extend westwards into Botswana and southwards into the Limpopo Province. This pottery dates between the middle fifteenth century and the seventeenth century and is grouped as a second phase of the Zimbabwe Tradition.

Letaba styled ceramics are spread from southern Mozambique and Zimbabwe through the north-eastern Lowveld to Polokwane and Mokopane. Letaba ceramics was manufactured by the Tonga, Northern Transvaal Ndebele, Phalaborwa and Lovedu in an area that used to be under the influence of the Venda.

5.3.2 Schroda, K2 and Mapungubwe

Venetia Mine's well fields consisting of numbers of boreholes, two pump stations and a dam occur on the farms Schroda 46MS and Greefswald 37MS where important Iron Age sites are located within the boundaries of the Mapungubwe National Park.

Mapungubwe is situated within the context of communities whose life ways were based on herding as is visible at settlements such as Pont Drift, a site with

several extensive midden deposits near the south banks of the Limpopo River (AD800-1100), Schroda a large site located on a rocky plateau overlooking the Limpopo River (AD900) and K2, a large midden site located directly to the south of Mapungubwe (AD1000-1100).

Mapungubwe comprises a stark sandstone hill that rises abruptly from the surrounding plains. Richly adorned burials as well as successive occupation levels were found on the summit of the hill. The occupation of the settlement stretched in a broad apron around the southern foot slope of the hill, also referred to as the southern terrace. Here, excavations of the deep stratified deposits indicated that homes were built and rebuilt over many decades. According to radio-carbon dates the first buildings were concentrated along the base of the hill during the eleventh century and that the town extended over the summit of the hill by the early twentieth century.

Mapungubwe sat at the top of a hierarchy of more or less contemporary settlements in the Limpopo Valley. All these sites were more or less similar with regard to their spatial layout and plans, e.g. Little Muck and Mmamagma Hill, respectively ten and forty kilometers to the west of Mapungubwe and Mapela, eighty-five kilometres to the north-west of Mapungubwe.

The Mapungubwe state as well as earlier settlements in the Limpopo Valley participated in a trade network which developed along the East Coast of Africa. Inland traders served as middlemen between traders who worked along the East Coast and settlements in the interior. Locally produced goods were exported and exotic items were imported.

By the ninth century glass beads, cowrie shells and other trade goods had arrived from the coast at Schroda. Ivory, animal skins and copper and iron (not in finished form) were among the early exports from the Limpopo Valley. Next to agro-pastoralism the people of the Limpopo Valley also spend time in hunting

antelopes (duikers, klipspringers, steenbuck and impala), carnivores (mongoose, Cape wild cat and the bat-eared fox) for their skins and possibly elephants and leopards.

When K2 became an important centre by the late tenth century, the flow of goods between the coast and the interior must have been well established. Similar glass beads and fragments of ivory occur both on Mapungubwe Hill and in the thick deposits of the southern terrace at the base of the hill. This indicated that trade continued through until the end of the twelfth century.

Other elements of the Mapungubwe economy included pottery-making and iron working as well as other craft specialisations such as the working of ivory which was locally traded as jewelry, the manufacturing of bone tools, the smelting of glass beads in order to manufacture large (called Garden Roller) type of glass beads, and the weaving of cotton as suggested by the presence of spindle whorls.

By the early eleventh century K2 must have represented an important centre in the Limpopo Valley. The regional importance of the settlement may have led to the relocation of its central cattle enclosures outside the site and the movement of the politically important assembly area from the central part of the site (Hall 1987).

5.4 Historical Period

Other historical villages close to Louis Trichardt in the Project Area include Mara, Buysdorp and Vivo.

The village of Mara is located 30km to the west of Louis Trichardt. The name ‘Mara’ is probably derived from the biblical name ‘Mara’ which means ‘bitter water’, thus referring to the quality of the underground water in the neighborhood.

The village of Vivo lies in a gap between the Soutpansberg and the Blouberg. The name is probably a corruption of the Sotho word ‘phefo’ (‘cold wind’) which refers to the wind that blows between the two mountains throughout the year.

The village of Buysdorp came into being after this piece of land was denoted by Paul Kruger to the descendants of Coenraad de Buys, an outlaw and adventurer who was well known in the Western and Northern Transvaal during the 19th century, in recognition of the assistance this group gave to the Voortrekkers of the Soutpansberg. Buysdorp is located approximately 15km to the east of Vivo, near the western end of the Soutpansberg.

6 THE PHASE I HERITAGE IMPACT ASSESSMENT STUDY

6.1 Earlier heritage work

An extensive survey for archaeological sites on the farms Venetia 103MS, Rugen 105MS and Krone 104MS was undertaken by Mr. E.O.M. Hanisch of the University of Venda during 1989. The pipeline route between the Venetia Mine and the well fields on Schroda 46MS and and Greefswald 37MS was also inspected and during the course of its excavation was periodically checked to see if any archaeological finds were unearthed.

The affected areas on Drumsheigh 99MS and Elseger 37MS were not investigated as these areas were disturbed.

The baseline archaeological survey revealed the presence of a Middle Stone Age site and seventeen Iron Age sites on the farm Venetia 103MS. The Iron Age sites are associated with the Mapungubwe (AD1100-1250) and the subsequent Khami peoples (AD1400-1750).

The significance of the archaeological finds can be summarized as follow: The archaeological finds did not differ from that which is to be found in the Linton-All Days area. No outstanding significant site was discovered nor any sites' which should be protected at all costs. Archaeological remains on sites, such as pottery, were scarce and whenever they occurred, they were un-diagnostic. A general dearth of material marked most of the sites.

It was recommended that some of the smaller and interesting sites should be excavated to retrieve chronological and/or other special information. Consequently, important sites were fenced-off or were totally excavated whereas small-scale excavations were done on the less important sites. (Environmental Management Program Report for Venetia Mine. July 2000. Appendix 3).

6.2 The Phase I Heritage Impact Assessment

The Phase I HIA study revealed the following types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) for the Project Area, namely:

- A MSA site and two Iron Age sites (villages). The two Iron Age sites are respectively composed of two and four smaller sites each. (These sites were identified during the 1989 survey).
- Stone walls which may be part of an Iron Age village composed of one or more smaller sites.
- A historical graveyard belonging to the Venter family.

The Phase I HIA study considered the results of the earlier archaeological survey; the developmental components (infrastructure and activities) for the proposed Underground Mining Project and the farms Elesger 37MS and Drumsheugh 99MS which are relevant for the review and consolidation of all EMP and EMPR reports for existing operations.

The most important sites that were discovered during 1989 have been investigated in the past. Those that have not been investigated as they had little or no significance have since been obliterated by mining activities. The exceptions are one MSA site and two Iron Age sites (villages) noted above.

These heritage resources are now briefly discussed. Their significance is indicated and mitigation measures are proposed should they be affected by future mining activities (Table 1).

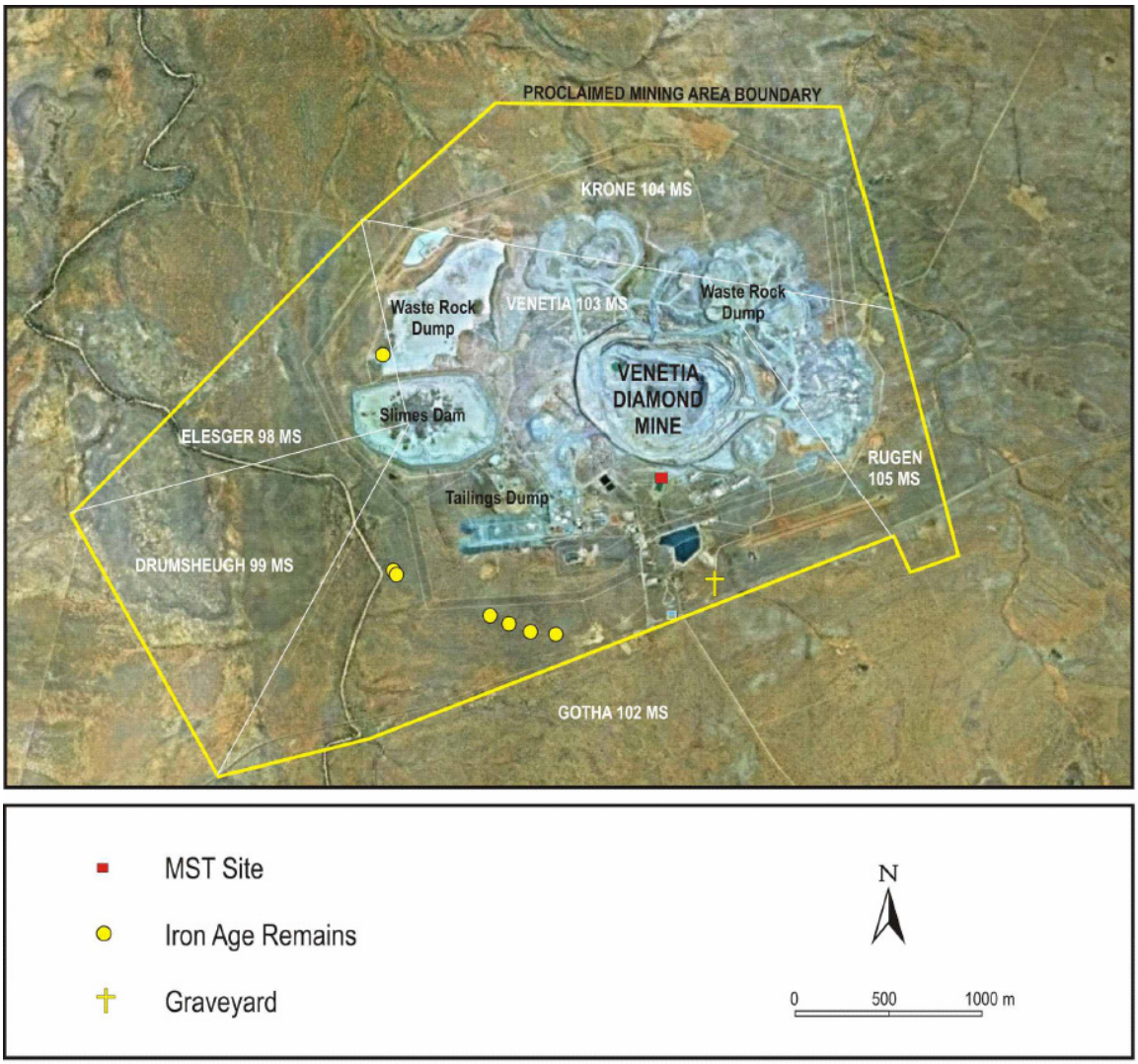

Figure 6- The Venetia Mine (Project Area) on several farms to the north of the Soutpansberg in the Limpopo Province.

Note the presence of Iron Age remains, a MSA site and a graveyard in the Project Area.

6.3 Types and ranges of heritage resources

6.3.1 The Iron Age remains

At least three Iron Age villages (each composed of one or more sites) occur in the Project Area. These sites are marked by rudimentary stone walls or lines of stone, platforms and circles which represent the remains of dwellings (huts), possible cattle enclosures, grain bin stands, a midden or two and un-diagnostic potsherds.

A general feature of these sites is the dearth of archaeological remains.

Figure 7- Rudimentary stone walls which are part of a possible Khami type site (AD1400 to 1750) on the western border of the Project Area where they will be affected when the tailings dam is extended (above).

These Iron Age villages belong to the Khami phase of the LIA and probably date between AD1400 to AD1750.

The Khami people were predecessors to the historic Venda people who settled and occupied the Soutpansberg area during the LIA and Historic Period.

6.3.2 A Middle Stone Age site

This site is situated along the pipeline route on a south-facing slope overlooking an airstrip. It holds a small scatter of MSA tools on the surface extending in an approximate circle with a diameter of 55m. Tools that occur include types such as: prepared platform cores (4), strangulated scraper (1), scraper (1) and flakes.

It seems that the stone tools date from the latter part of the MSA and therefore may date between 20 000 to 30 000 years before the present.

6.3.3 A graveyard

The historical Venter graveyard which holds a double and three single graves occur near the entrance gate to Venetia Mine.

All the graves are fitted with granite headstones and trimmings. Some of the graves are older than sixty years and confirm its historical significance.

Inscriptions on some of the graves read as follow:

- **‘**Ter gedachtenis aan ons teergeliefde moeder Martha Catharina Cornelia Venter Geb Kruger 12 Des 1888 Oorl 12 Jan 1959 Na ‘n lewe van veel lyding maar met ‘n vaste oortuiging in Christus Ges 58:7 Ruwe storme breek in woede’

- ‘Hier rus ons teergeliefde eggenoot en vader Cornelius Pas Venter Geb 5 Des 1917 Oorl 27 Junie 1973 Al lei ons weg deur smart en vrees sal die einde salig wees’

Figure 8- The historical graveyard of the Venter family on the southern border of the Project Area where it will not be affected by any developmental activities (above).

HERITAGE RESOURCES	DESCRIPTION	CULTURAL PERIOD	ON MAP	SIGNIFICANCE
Venetia 103 TVT1/1 TVT1/2	On hill overlooking Kalope R. House platforms and circles. Quarts outcrops mined for building material. No cultural remains	Khami AD1400-1750	●	Low-medium
Venetia 103 TVT3/1 TVT3/2 TYT3/3 TVT3/4	Series of sites (Iron Age village) situated on low hills. Un-diagnostic pottery. Twelve possible grain bin stands; cattle kraals; collapsed houses and midden.	Khami AD1400-1750	●	Low-medium
Elesger 98	Along hillside and on flat surface. House platforms and lines of stone. Some stone lines disturbed. Others may be mixed with stones from road construction	Khami ? AD1400-1750	●	Low-medium
Venetia 103 TVT2/1	Limited surface collection of MSA tools along south facing slope and along pipeline route.	20 000 to 30 000BP	■	Low
Venetia 103 Graveyard	Venter family Coordinates: S22° 27' 287"; E29° 19' 351".	Historical AD1800-2000	†	**HIGH**

Table 1- Heritage resources in the Project Area and their level of significance (above).

7 THE SIGNIFICANCE AND MITIGATION OF THE HERITAGE RESOURCES

7.1 The significance of the heritage resources

The significance of the heritage resources is determined and is indicated (Table 1). Some of the heritage resources in the Project Area may be affected by future mining activities. The significance of the impact on the Iron Age (Khami) sites is high (Table 2).

7.1.1 The Iron Age remains

The Iron Age remains represent archaeological remains which are protected by various sections in the National Heritage Resources Act (No 25 of 1999).

These remains have medium to low significance when considering criteria such as the following:

- The sites represent commoner settlements from the Khami period which occurs in numbers across the wider area. These sites therefore are represented elsewhere in the wider area.
- The sites are marked by a dearth of archaeological remains. It is therefore unlikely that archaeological deposits with an abundance of archaeological material occur in context with these sites.

The sites yield the potential to provide some information about aspects of the culture of the Khami people such as their settlement's layout and composition (settlement patterns and its relation to other cultural aspects).

The impact of the extension of the tailings dam on these sites will be high (Table 2).

7.1.2 The Middle Stone Age site

The MSA site represents archaeological remains which are protected by various sections in the National Heritage Resources Act (No 25 of 1999).

These MSA site has low significance when considering criteria such as the following:

- The site comprises a surface collection with a limited number of stone tools which all belong to known types. (Sealed archaeological deposits usually have high significance).
- The site was affected (damaged) when the corridor for the pipeline was excavated through the site.

7.1.3 The graveyard

All graveyards and graves can be considered to be of high significance and are protected by various laws. Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (No 25 of 1999) whenever graves are older than sixty years. The act also distinguishes between various categories of graves and burial grounds. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).

7.2 Mitigating (managing) the heritage resources

It is possible that the Iron Age site on Elesger 98MS may be affected (destroyed) when the tailings dam is extended.

The Iron Age sites on Venetia 103MS outside the western border fence (Project Area), The MSA site and the graveyard on Venetia 103MS on the southern border of the Project Area need not to be affected by mining activities.

The following mitigation (management) measures are proposed for all the heritage resources that occur in the Project Area.

7.2.1 The Iron Age remains

The Iron Age remains may not be affected (altered, removed or demolished) by any activities before a permit which authorises such an impact has been issued by the South African Heritage Resources Authority (SAHRA). The impact can only occur after the Iron Age remains have been subjected to a Phase II archaeological investigation. This implies that the remains have to be investigated before they are destroyed. The investigation would entail that the Iron Age remains be documented by means of surveying the structures and features of the village such as its house and stone walls. These structures, features and sites also have to be photographed and mapped. The results of this Phase II investigation must be published in a report which will be kept in SAHRA's data bank.

The Phase II process can be implemented immediately.

7.2.2 The Middle Stone Age site

The MSA has no significance and will not be affected by any of the development activities described in this report and therefore needs no mitigation measures.

A permit is needed from SAHRA before the MSA site may be affected by any developmental activity.

7.2.3 The graveyard

The graveyard is well outside the mining area and is fenced-in. Access to the graveyard is available at all times. It will not be affected by any of the developmental activities that are covered by this report. The graveyard needs no mitigation measures.

Table 2: Significance of the impact on the Iron Age (Khami site[s]) in the Project Area

Potential Environmental impact	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Extension of tailings dam	Site	Permanent	High	Definite	
	Low	HIGH	HIGH	HIGH	HIGH

8 CONCLUSION AND RECOMMENDATION

An extensive survey for archaeological sites on the farms Venetia 103MS, Rugen 105MS and Krone 104MS was undertaken by Mr. E.O.M. Hanisch of the University of Venda during 1989. The pipeline route between the Venetia Mine and the well fields on Schroda 46MS and and Greefswald 37MS was also inspected and during the course of its excavation was periodically checked to see if any archaeological finds were unearthed.

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The Iron Age sites on Venetia 103MS outside the western border fence (Project Area) and the graveyard on Venetia 103MS on the southern border of the Project Area need not to be affected by mining activities.

The following mitigation (management) measures are proposed for all the heritage resources that occur in the Project Area.

The Iron Age remains

The Iron Age remains may not be affected (altered, removed or demolished) by any activities before a permit which authorises such an impact has been issued by the South African Heritage Resources Authority (SAHRA). The impact can only occur after the Iron Age remains have been subjected to a Phase II archaeological investigation. This implies that the remains have to be investigated before they are destroyed. The investigation would entail that the Iron Age remains be documented by means of surveying the structures and features of the village such as its house and stone walls. These structures, features and sites also have to be photographed and mapped. The results of this Phase II investigation must be published in a report which will be kept in SAHRA's data bank.

The Phase II process can be implemented immediately.

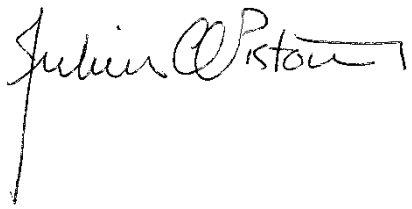
The Middle Stone Age site

The MSA has no significance and will not be affected by any of the development activities described in this report and therefore needs no mitigation measures.

A permit is needed from SAHRA before the MSA site may be affected by any developmental activity.

The graveyard

The graveyard is well outside the mining area and is fenced-in. Access to the graveyard is available at all times. It will not be affected by any of the developmental activities that are covered by this report. The graveyard needs no mitigation measures.



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9 SELECT BIBLIOGRAPHY

Berg, J.S. (red.) 1999. *Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies*. Van Schaiks: Pretoria.

Erasmus, B.P.J. 1995. *Oppad in Suid Afrika*. Jonathan Ball: Johannesburg.

Gaigher, S & Associates. 2009. Heritage Impact Assessment for a prospecting application – Alldays Limpopo Province. Unpublished report prepared for Venetia Mine.

Hall, M. 1987. *The changing past. Farmers, kings and traders in Southern Africa 200-1860*. David Philip: Cape Town.

Hanisch, E.O.M. 1979. Excavations at Icon, Northern Transvaal. In van der Merwe N.J. & Huffman, T,N. (Eds.) *South African Archaeological Society, Goodwin Series* 3:72-79.

Hanisch, E.O.M. 1981. Schroda: a Zhizo site in the northern Transvaal. In Voight, E.A. (Ed.). *Guide to the archaeological sites in the Northern and Eastern Transvaal*: 37-54 Pretoria: South African Association of Archaeologists.

Hanisch, E.O.M. 1989. Archaeological survey: Venetia. Report on findings and analysis of collected materials. *Environmental Management Program Report for Venetia Mine* (July 2000, Appendix 3).

Huffman, T.N. 1974. The Leopards Kopje Tradition. *Museum Memoir 6*. Salisbury. National Museums and Monuments of Rhodesia.

Huffman, T.N. 1987. *Symbols in Stone*. Johannesburg: Wits University Press.

Huffman, T.N. 2003. Archaeological Assessment of Tourist Developments in the Mapungubwe Cultural Landscape*. An unpublished report by Archaeological Resources Management on file at SAHRA as: 2003-SAHRA-0083.*

Huffman, T.N. & Hanisch, E.O.M. 1987. Settlement hierarchies in the northern Transvaal: Zimbabwe ruins and Venda history. *African Studies*. 46:79-116.

Loubser, J.H.N. 1991. The ethnoarchaeology of Venda speakers in Southern Africa. *Navorsinge van die Nasionale Museum, Bloemfontein*. Vol 7, No 8.

Mason, R. 1962. *Prehistory of the Transvaal*. Wits University Press: Johannesburg.

Murimbika, M. 2006. Archaeological Impact Assessment Study for the proposed construction of Electricity Distribution Powerlines Within, Limpopo Province. *An unpublished report by Nzumbululo Heritage Solutions on file at SAHRA as: 2006-SAHRA-0354.*

Roodt, F. 2008. *An Assessment of Possible Impacts on Heritage Resources on the Farm Hartbeestfontein 35 MS Resulting from the Drilling of Coal Exploration Boreholes: Vhembe District Municipality, Limpopo.* An unpublished report by R & R Cultural Resource Consultants on file at SAHRA as: 2008-SAHRA-0228.

Roodt, F. 2008. An Assessment of Possible Impacts on Heritage Resources as a Result of Mining Prospecting on the Farms Hackthorne 30 MS, Athens 31 MS, Cerberus 38 MS, La Reve 39 MS, Hamilton 41 MS, Kilsyth 42 MS and Nekel 45 MS in the Vhembe District - Limpopo. *An unpublished report by R & R Cultural Resource Consultants on file at SAHRA as: 2008-SAHRA-0116.*

Rubidge, B. 2001. Report on Palaeontology in Area Surrounding Schroda Dam*. An unpublished report by the Bernard Price Institute on file at SAHRA as: 2001-SAHRA-0042.*

Van der Merwe, D.S. 1933. A preliminary survey of places and objects of archaeological interest in the Northern Transvaal. *South African Journal of Science*. 30:1-36 (plus illustrations).

Van Schalkwyk, J.A. 2001. Heritage Impact Assessment for the Proposed Main- And Wilderness Rest Camps as Well as the Main Entrance and Road at the Vhembe-Dongola Trans-Frontier Park*. An unpublished report by the National Cultural History Museum on file at SAHRA as: 2001-SAHRA-0108.*

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