Tselentis Colliery – Msobo Coal

Ramp 9 Expansion Project, Lilliput 83 IT, Breyten, Mpumalanga

Heritage Impact Report

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Declaration of Independence

The report has been compiled by PGS Heritage & Grave Relocation Consultants an appointed Heritage Specialist for Tselentis Colliery, Msobo Coal. The views stipulated in this report are purely objective and no other interests are displayed during the decision making processes discussed in the Heritage Impact Assessment.

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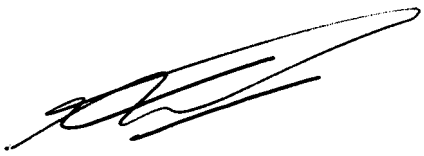

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ACKNOWLEDGEMENT OF RECEIPT

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EXECUTIVE SUMMARY

PGS Heritage & Grave Relocation Consultants was appointed by Msobo Coal to undertake a Heritage Impact Assessment (HIA) that forms part of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) for the Ramp 9 Expansion Project, on the farm Lilliput 83 IT, Breyten in the Mpumalanga Province.

The Heritage Impact Assessment has shown that numerous heritage resources with varying degrees of significance do occur within the proposed project area.

The field work identified a total of 2 heritage sites that fall directly in the proposed mining development area and the following management measures along with the general management measures in Section 6 is recommended.

Ramp 9/1

The cemetery is currently part of a grave relocation process due to the direct impact of the mining activities.
Alternatives for preserving the cemetery has been considered but none of the alternatives were feasible.
Currently a full social consultation process is underway to identify the next of kin.

Ramp 9/2

It is recommended that during the social consultation process or Site1, the local community be engaged on the possibility of infant burials and the identification of the previous owners of the structure.

If it is found that infant burials are present these be included in the grave relocation process.

Further to these recommendations the general Heritage Management Guideline in Sections 6 needs to be incorporated in to the EMP for the project.

The overall impact of the development on heritage resources is seen as acceptably low and can impacts can be mitigated to acceptable levels.

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PGS Heritage & Grave Relocation Consultants was appointed by Msobo Coal to undertake a Heritage Impact Assessment (HIA) that forms part of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) for the Ramp 9 Expansion Project, on the farm Lilliput 83 IT, Breyten in the Mpumalanga Province.

1.1 Scope of the Study

The aim of the study is to identify possible heritage sites and finds that may occur in the proposed development area. The Heritage Impact Assessment aims to inform the EIA in the development of a comprehensive EMP 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).

1.2 Specialist Qualifications

This Heritage Scoping Report was compiled by PGS Heritage & Grave Relocation Consultants (PGS).

The staff at PGS has a combined experience of nearly 40 years in the heritage consulting industry. PGS and its staff have extensive experience in managing HIA processes. PGS will only undertake heritage assessment work where they have the relevant expertise and experience to undertake that work competently.

Wouter Fourie, Principal Archaeologist for this project, and field archaeologist, Marko Hutton are registered with the Association of Southern African Professional Archaeologists (ASAPA) and has CRM accreditation within the said organisation.

1.3 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 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.

Large sections of the study area were heavily over grown with sickle bush that made access extremely difficult.

1.4 Legislative Context

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
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. EMP (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.

The NHRA stipulates that cultural heritage resources may not be disturbed without authorization from the relevant heritage authority. Section 34 (1) of the NHRA states that "no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority…". The NEMA (No 107 of 1998) states that an integrated EMP should (23:2 (b)) "…identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage". In accordance with legislative requirements and EIA rating criteria, the regulations of SAHRA and ASAPA have also been incorporated to ensure that a comprehensive legally compatible AIA report is compiled.

Terminology

Abbreviations	***Description***
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
DEA	Department of Environmental Affairs
DWA	Department of Water Affairs
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

Early Stone Age

The archaeology of the Stone Age between 700 000 and 2500 000 years ago.

Fossil

Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Heritage

That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

Heritage resources

This means any place or object of cultural significance

Holocene

The most recent geological time period which commenced 10 000 years ago.

Late Stone Age

The archaeology of the last 20 000 years associated with fully modern people.

Late Iron Age (Early Farming Communities)

The archaeology of the last 1000 years up to the 1800's, associated with iron working and farming activities such as herding and agriculture.

Middle Stone Age

The archaeology of the Stone Age between 20-300 000 years ago associated with early modern humans.

Palaeontology

Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Refer to **Appendix C** for further discussions on heritage management and legislative frameworks

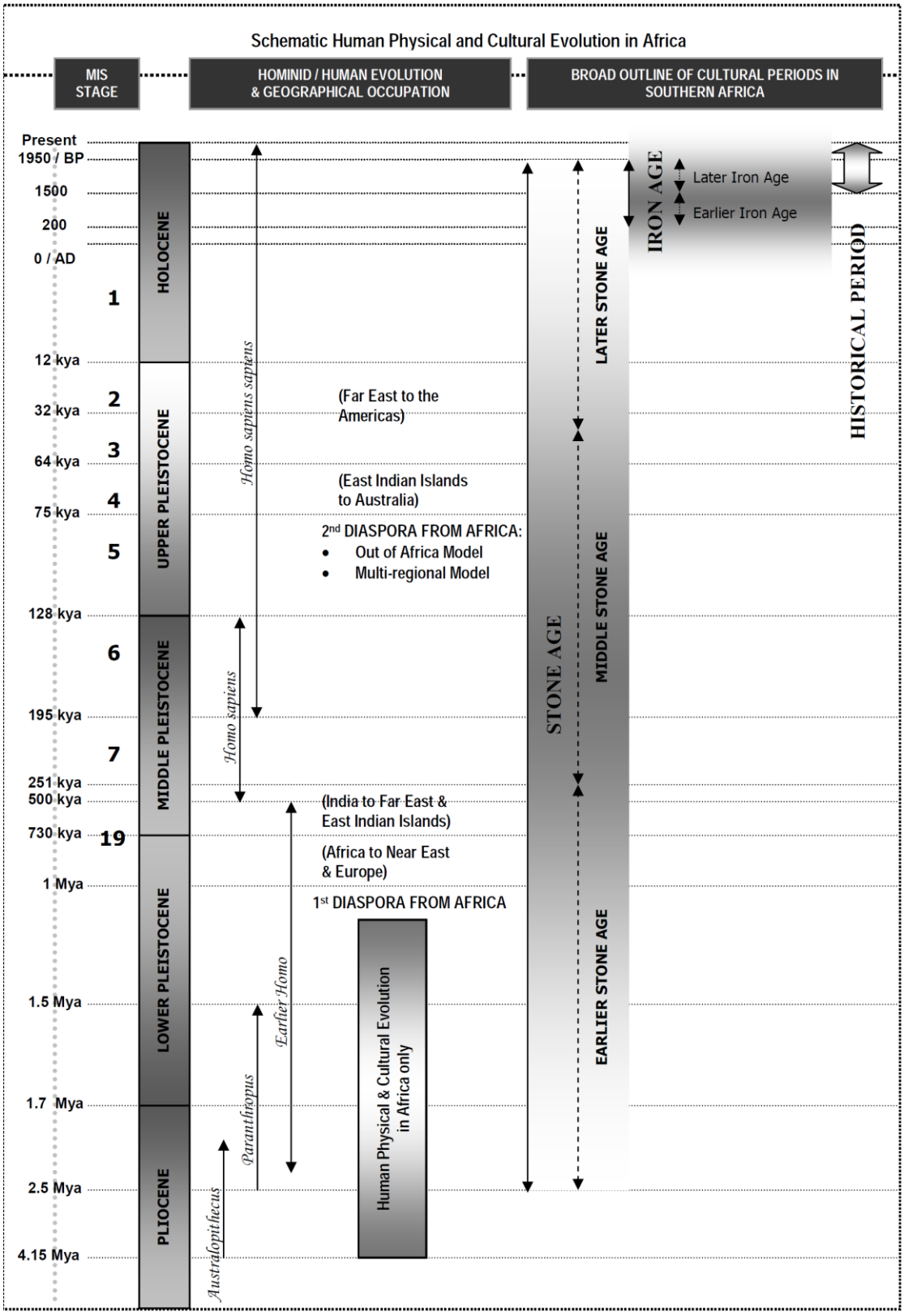

Figure 1 – Human and Cultural Time line in Africa (Morris, 2008)

2 TECHNICAL DETAILS OF THE PROJECT

2.1 Site Location and Description

Location	26° 16’ 05.1” S 30° 05’ 27.0” E The land is situated 15 kilometres east of the town of Breyten in the Mpumalanga Province.
Land	50 Hectares of land under option.
Land Description	The land is currently utilised for grazing. A small section was previously impacted by mining activities

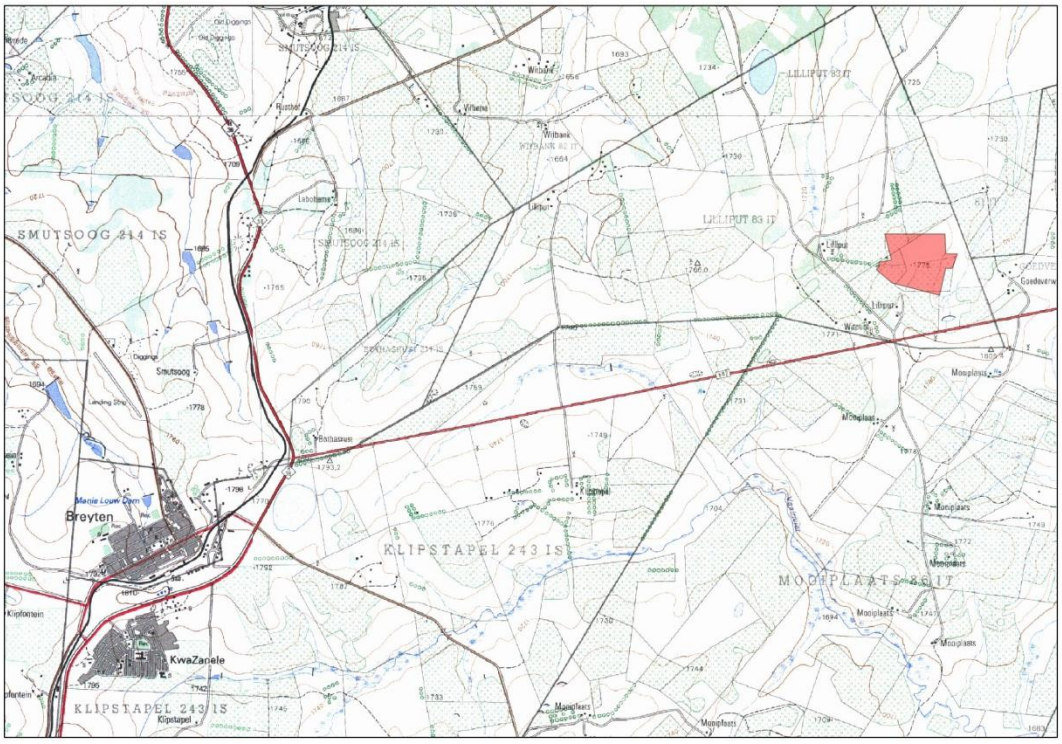

Figure 2 – Locality of Ramp 9 mining area on the farm Lilliput indicated in red to the east of the town of Breyten

2.2 Technical Project Description

Msobo Coal’s Tselentis Colliery is planning to extent their Lilliput Opencast pit and develop and area referred to as the Ramp 9. This extension covers an area of 50 hectares to the south of the previous mining activities on the farm Lilliput (**Figure 2**).

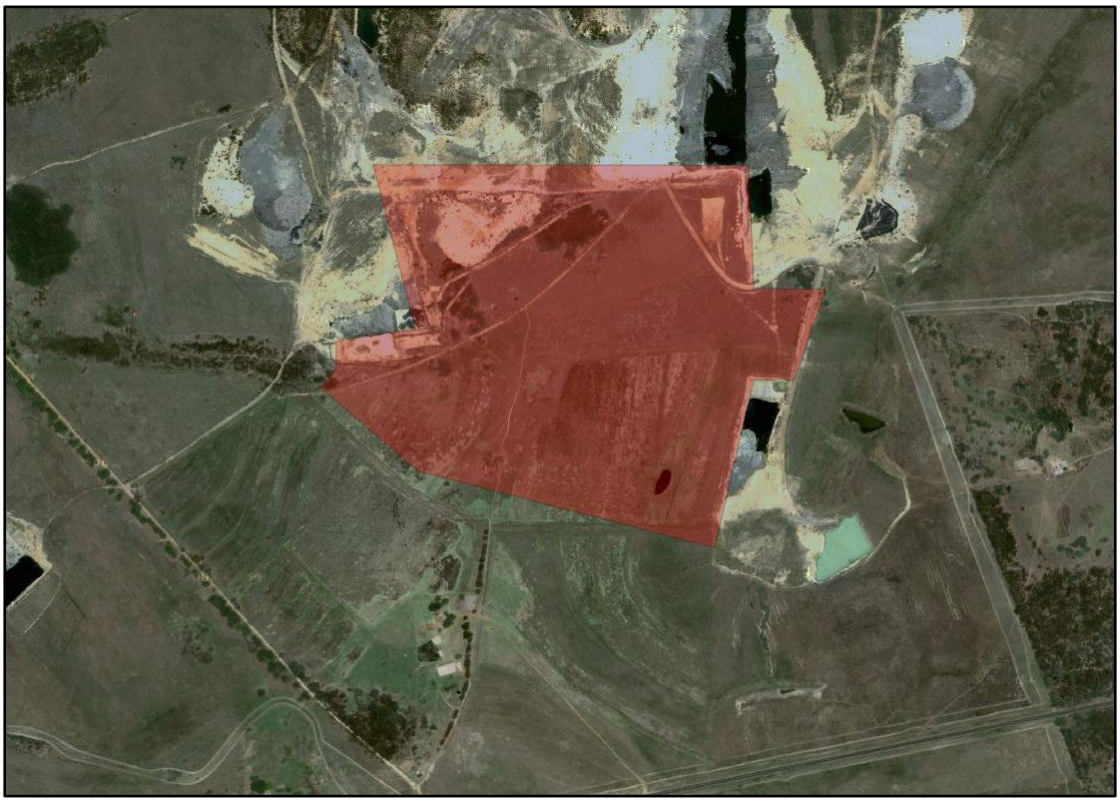

Figure 3 – Expansion area indicated on aerial photograph

3 ASSESSMENT METHODOLOGY

The section below outlines the assessment methodologies utilised in the study.

3.1 Methodology for Assessing Heritage Site significance

This Heritage Impact Assessment (HIA) report was compiled by PGS Heritage and Grave Relocation Consultants (PGS) for the proposed Lilliput Ramp 9 Project. The applicable maps, tables and figures, are included as stipulated in the NHRA (no 25 of 1999), the National Environmental Management Act (NEMA) (no 107 of 1998) and the Minerals and Petroleum Resources Development Act (MPRDA) (28 of 2002). The HIA process consisted of three steps:

- Step I – Literature Review: The background information to the field survey leans greatly on the Heritage Scoping Report completed by PGS for this site in September 2010.

- Step II – Physical Survey: A physical survey was conducted on foot through the proposed project area by qualified archaeologists (February 2011), 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 resources, as well as the assessment of resources in terms of the heritage impact assessment criteria and report writing, as well as mapping and constructive recommendations

The significance of heritage 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),
- Density of scatter (dispersed scatter)
    - Low - <10/50m2
    - Medium - 10-50/50m2
    - High - >50/50m2
- 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 - No-go or relocate pylon position
D - Preserve site, or extensive data collection and mapping of the site; and
E - Preserve site

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

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.

Table 1: Site significance classification standards as prescribed by SAHRA

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.A)	-	Low Significance	Destruction

3.2 Methodology for Impact Assessment

Impact Rating

VERY HIGH

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

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

Example: The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with a VERY HIGH significance.

HIGH

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

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

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

MODERATE

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

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

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

LOW

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

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

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

NO SIGNIFICANCE

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

Certainty

DEFINITE: More than 90% sure of a particular fact. Substantial supportive data exists to verify the assessment.

PROBABLE: Over 70% certainty of a particular fact, or of the likelihood of an impact occurring.

POSSIBLE: Only over 40% certainty of a particular fact or of the likelihood of an impact occurring.

UNSURE: Less than 40% certainty of a particular fact or likelihood of an impact occurring.

Duration

SHORT TERM: 0 to 5 years

MEDIUM: 6 to 20 years

LONG TERM: more than 20 years

PERMANENT: site will be demolished or is already demolished

An example of a ratings table:

Impact Grading

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Mitigation
Negative	Moderate	Grade GP.C	Possible	Permanent	C

4 CURRENT STATUS QUO

4.1 Site Description

The study area (**Figure 2**) is situated to the south of the current mining activities of Tselentis Colliery on the farm Lilliput 83 IT. The expansion of the Ramp 9 area covers approximately 50

hectares and will impact on previously disturbed farmland (**Figure 5**), and areas utilised for grazing (**Figure 4**).

Figure 4 – View of general conditions with rehabilitated mining areas in background

Figure 5 – Previous mining roads in area

Figure 6 – Over burden dumps covered with vegetation

4.1.1 Archival findings

The archival research focused on available information sourced that was used to compile a background history of the study area and surrounds. This data then informed the possible heritage resources to be expected during field surveying.

Early History of area

The farm Lilliput 83 IT, (Original farm number 142 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. The farm is divided into three sections by three tributaries that drain from a high in the centre of the farm to the north, west and south, with the road to Chrissiesmeer cutting through the southern end of the farm, just south of the study area (***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, Lilliput 82-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. 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 7**) and the Magisterial District Map, Ermelo-Carolina, compiled in the Surveyor General's office in Pretoria, October 1906 (**Figure 8**).

Both these maps showed the road that cuts through Lilliput on its southern end; however, none of them showed any form of structure (s) on the farm (s). 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.

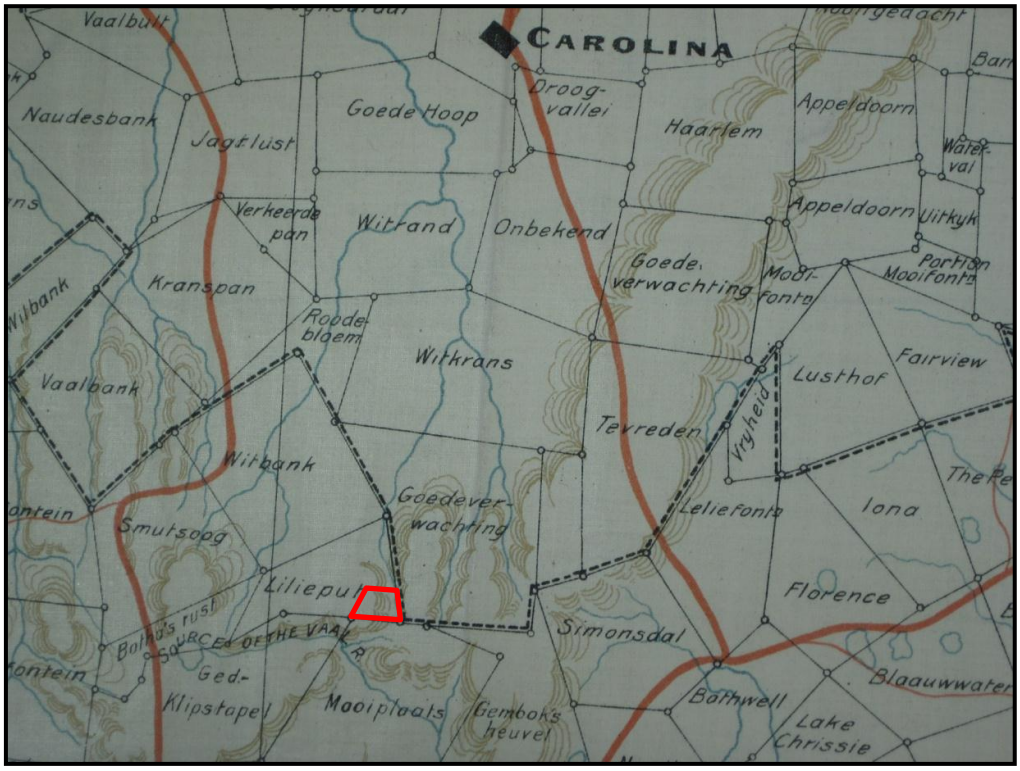

Figure 7 – Imperial Map of South Africa, Ermelo 1st edition, compiled by the Field Intelligence April 1900

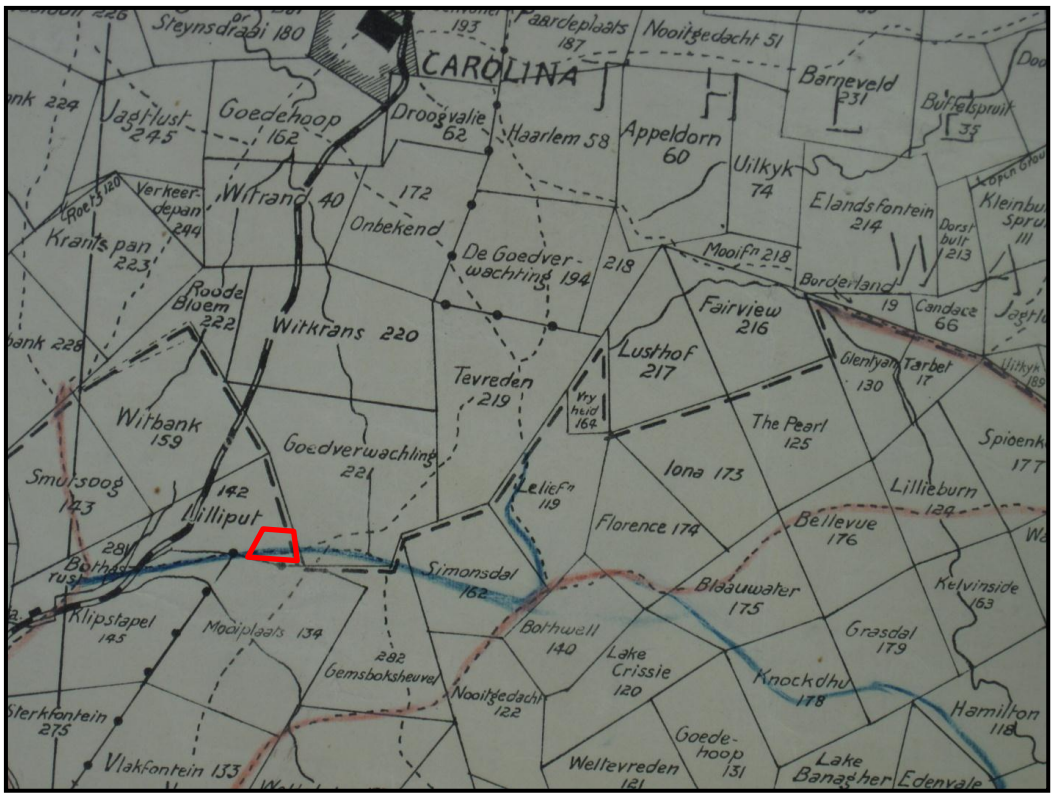

Figure 8 – Magisterial District Map, Ermelo-Carolina, compiled in the Surveyor General's office in Pretoria, October 1906

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 Lilliput. In this database two references are made about the farm Lelieput in the Ermelo and Carolina Districts;

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

The name "Lelieput" corresponds with a place name on the farm Lilliput 83 IT, and is thus in all probability the same farm.

Two families are associated with the farm, the Badenhorst and Du Toit families. Both families were interned in the Middelburg Concentration camp where the men, Frans Hendrik Badenhorst, Frans Lodewyk Badenhorst and Francois Jacobus du Toit took the Oath of Allegiance in May 1901.

Published material

Erick Rosenthal's book on legend stories of South Africa, *The Hinges Creaked* (chapter XXII), tells the story of highwaymen's loot and the hidden treasures in farm Goedverwachting adjacent to the farm Lilliput. 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 kayas 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, I936, 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 coins came from the October 1912 robbery of the last mail coaches plying in the Transvaal, held up by a gang of robbers. The coach was carrying boxes of coin for the National Bank of South Africa (now Barclay's Bank) from Mbabane to Breytenfrom where, it had to be shipped to Johannesburg by train. It is suggested that when the coach passed Lake Chrissie, east of the farm Goedverwachting where driver was overpowered and a pair of large boxes was taken as loot. 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.

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. 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).

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 9 - 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 that 90 per cent of biodiversity across the world was destroyed at species level within less that 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 of 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 ± 2.5 million yrs - ± 250 000 yrs ago. Acheulean stone tools are dominant.

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

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

Iron Age

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

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

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

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

4.1.2 Field work findings

The footprint area for this project covers approximately 400 hectares in total. Due to the nature of cultural remains, with the majority of artefacts occurring below surface, a controlled-exclusive surface survey was conducted over a period of 4 days on foot by an archaeologist of PGS. Field work was conducted between 21 and 25 November 2011. Refer to Appendix A for site map and track log of survey

4.1.3 Heritage sites

The following sites of heritage significance were identified during field work.

Site Ramp 9/1:

GPS: 26° 16' 05.1" S 30° 05' 27.0" E

An informal cemetery with 9 graves was identified at this location. The cemetery was not fenced and was situated in an open field. The graves were placed in 2 unequal lines next to each other and all the graves were orientated from west to east. The eastern most line consisted of 5 graves, with 4 graves in the other line. Two of the graves had rectangular shaped stone packed outlines which were filled with soil. Both of these graves had upright placed rocks at the western ends which served as headstones.

These rocks were crudely inscribed with information about the buried individuals. The rest of the graves had informal oval shaped mounds of packed rock and soil as dressings. The cemetery was not maintained and the graves were overgrown with grass and other vegetation.

Site size: Approximately 25m x 10m.

Figure 10 – View of cemetery

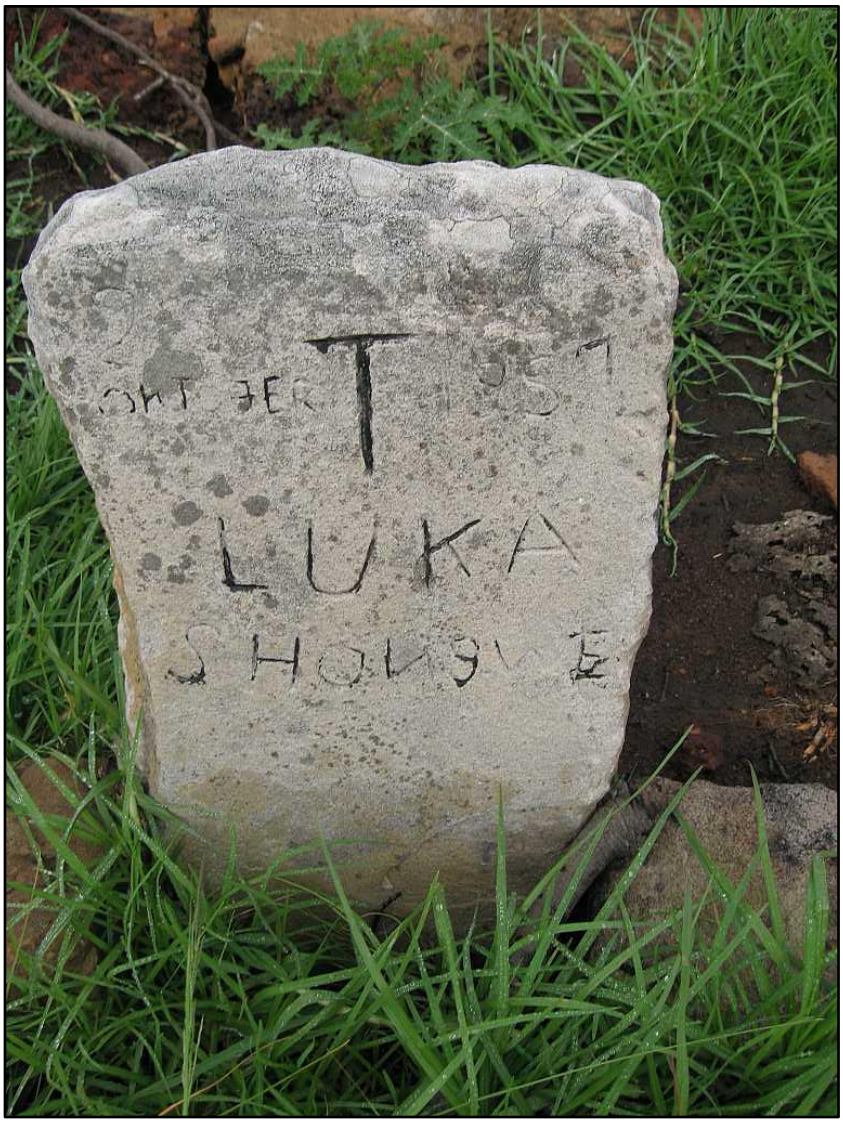

Figure 11 – Headstone with inscription

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Mitigation
-	High	GP.A	Definite	Permanent	C

Mitigation:

The cemetery is currently part of a grave relocation process due to the direct impact of the mining activities.

Alternatives for preserving the cemetery has been considered but none of the alternatives were feasible.

Currently a full social consultation process is underway to identify the next of kin.

Site Ramp 9/2

GPS: 26° 16’ 12.6” S 30° 05’ 12.7” E

The dilapidated remains of a mud brick homestead were identified here. The remains of the multi-roomed homestead were not clear and were overgrown with grass and other vegetation. The dilapidated homestead consisted of at least 5 square or rectangular shaped rooms and covered an area of approximately 20m x 25. The exact sizes and shapes of the structures could not be distinguished, but rocks were used in the foundations to support the mud brick walls. No other structures or features were associated with the structure.

The exact age and time span of occupation of the above mentioned site are not known. The architectural design, construction techniques and the artefacts found on the site were used to assume a relative age for the site. These structures and thus the identified homestead seem to be from within the last 60 years and are therefore not protected under the National Heritage Act (Act 25 of 1999). The structures themselves have little or no heritage value or significance due to their relevant recent origins from within the last 60 years.

The structures, however, should be avoided, due to the possibility of infant human remains underneath the remains of the structures.

Through experience of similar sites and the knowledge of cultural customs and traditions it is known that stillborn babies and deceased infants occasionally were being buried within the occupational settlement. These children were sometimes buried underneath the floors and walls of houses and huts. These burials were not marked, but were known to the immediate family.

Customs and traditions like these were common in the rural African communities during the earlier parts of the 20th century. It is therefore not only possible, but rather likely that some of these structures may be on top of some of these infant remains.

Site size: Approx. 25m x 30m.

Figure 12 – View of homestead remains

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Mitigation
-	High	GP.B	Definite	Permanent	C

Mitigation:

It is recommended that during the social consultation process or Site1, the local community be engaged on the possibility of infant burials and the identification of the previous owners of the structure.

If it is found that infant burials are present these be included in the grave relocation process.

5 CONCLUSIONS AND RECOMMENDATIONS

The Heritage Impact Assessment has shown that numerous heritage resources with varying degrees of significance do occur within the proposed project area.

The field work identified a total of 2 heritage sites that fall directly in the proposed mining development area and the following management measures along with the general management measures in Section 6 is recommended.

Ramp 9/1

The cemetery is currently part of a grave relocation process due to the direct impact of the mining activities.
Alternatives for preserving the cemetery has been considered but none of the alternatives were feasible.
Currently a full social consultation process is underway to identify the next of kin.

Ramp 9/2

It is recommended that during the social consultation process or Site1, the local community be engaged on the possibility of infant burials and the identification of the previous owners of the structure.

If it is found that infant burials are present these be included in the grave relocation process.

Further to these recommendations the general Heritage Management Guideline in Sections 6 needs to be incorporated in to the EMP for the project.

The overall impact of the development on heritage resources is seen as acceptably low and can impacts can be mitigated to acceptable levels.

6 HERITAGE MANAGEMENT GUIDELINES

6.1 General 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 m^2 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 m^2 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. In the event that a 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 the initial survey 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 an

archaeological/palaeontological monitoring programme, 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/palaeontological monitoring programme 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 an archaeological/palaeontological monitoring programme is:

- To allow, within the resources available, the preservation by record of archaeological/palaeontological 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/palaeontological 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 monitoring 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 the monitoring is to establish and make available information about the archaeological resource existing on a site.

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

Table 2: 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

6.2 All phases of the project

6.2.1 Archaeology

Based on the findings of the HIA, 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/palaeontological sites.

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, making and to make the correct judgment on which actions should be taken. A responsible archaeologist/palaeontologist 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 workface 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/palaeontological 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/palaeontologist available to do such work. This provision can be made in an archaeological/palaeontological monitoring programme.

6.2.2 Graves

In the case where a grave is identified during construction the following measures must be taken.

Mitigation of graves will require a fence around the cemetery with a buffer of at least 20 meters.

If graves are accidentally discovered during construction, activities must cease in the area and a qualified archaeologist be contacted to evaluate the find. To remove the remains a rescue permit must be applied for with SAHRA and the local South African Police Services must be notified of the find.

Where it is then recommended that the graves be relocated a full grave relocation process that includes comprehensive social consultation must be followed.

The grave relocation process must include:

i. A detailed social consultation process, that will trace the next-of-kin and obtain their consent for the relocation of the graves, that will be at least 60 days in length;
ii. Site notices indicating the intent of the relocation
iii. Newspaper Notice indicating the intent of the relocation

iv. A permit from the local authority;

v. A permit from the Provincial Department of health;

vi. A permit from the South African Heritage Resources Agency if the graves are older than 60 years or unidentified and thus presumed older than 60 years;

vii. An exhumation process that keeps the dignity of the remains intact;

viii. An exhumation process that will safeguard the legal implications towards the developing company;

ix. The whole process must be done by a reputable company that are well versed in relocations;

x. The process must be conducted in such a manner as to safeguard the legal rights of the families as well as that of the developing company.

7 REFERENCES

Rosenthal, E. 1951. The Hinges Creaked. Howard B. Timmins, Cape Town.

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

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

Records of Ex-Burger Fund, 1904

Agricultural Department Veterinary Division, 1908

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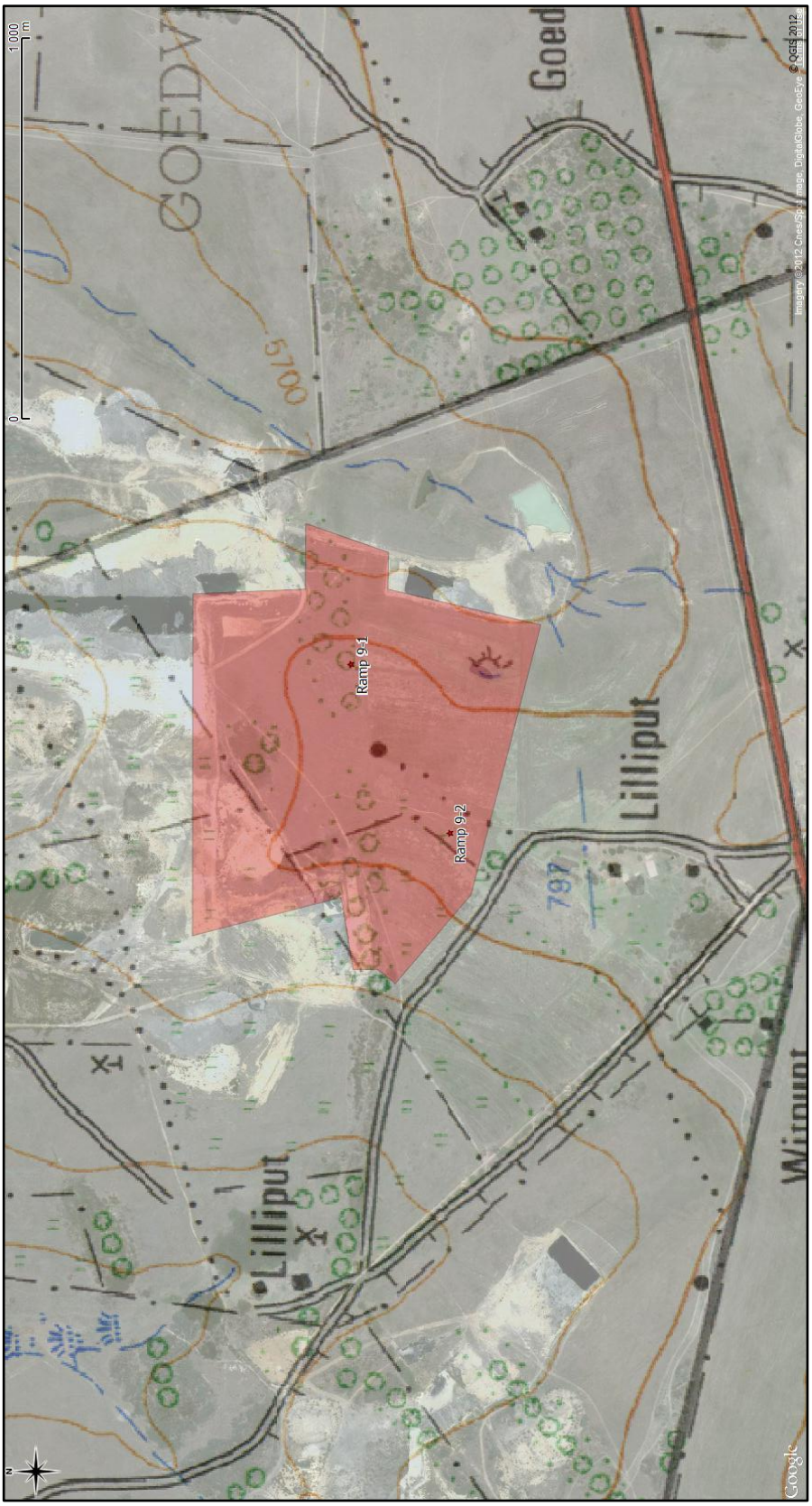
Appendix A

HERITAGE SITE DISTRIBUTION MAP



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 construction company's cost. Thus, the construction company 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.

3.2 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.