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**A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR THE
PROPOSED LUSTHOF COLLIERY NEAR CAROLINA ON THE
EASTERN HIGHVELD IN THE MPUMALANGA PROVINCE**

Prepared by:

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EXECUTIVE SUMMARY

This Phase I Heritage Impact Assessment (HIA) study for the proposed Lusthof Colliery near Carolina on the Eastern Highveld in the Mpumalanga Province of South Africa was done according to Section 38 of the National Heritage Resources Act (No 25 of 1999). The aims with the Phase I HIA study were the following, namely:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) (Box 1) do occur in the Project Area and, if so, to determine the nature, the extent and the significance of these remains.
- To determine whether such remains will be affected by the Mining Project and, if so, to determine appropriate mitigation (management) measures for those heritage resources which may be affected by the Mining Project.

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

- Possible historical remains consisting of an enclosure for stock (E01).
- Two graveyards (GY01, GY02) and a grave (G01). (GY02 is located outside the Project Area and is not further discussed).

Remains from the recent past such as three residences, possible pig stays and other structures also occur. However, these buildings date from the recent past whilst some are severely dilapidated. These structures has not been geo-referenced or described but is merely referred to as they have no heritage significance.

(No archaeological [pre-historical] remains were recorded. This study also did not provide for a paleontological study of the Project Area).

Possible impact on the heritage resources

It is highly probable that GY01, G01 and the historical enclosure (E01) will be affected (destroyed) when the Dirt Water Dam is constructed. These heritage resources are also located near the edge of the open cast mine. The significance of these heritage resources therefore is indicated as well as mitigation measures should these heritage remains be affected by the Mining Project.

The significance of the heritage resources

Historical remains

The enclosure (E01) is possibly older than sixty years and therefore qualifies as a historical structure. All remains older than sixty years are protected by the National Heritage Resources Act (No 25 of 1999).

The significance of the enclosure can be described as low when considering criteria such as the following (Table 2):

- The enclosure occurs as an isolated structure and does not have any historical or cultural context.
- The enclosure has no research (scientific) value.
- The enclosure cannot add to our knowledge regarding human life ways and traditions on the Eastern Highveld during the turn of the nineteenth century due to its isolated occurrence.
- The enclosure has no enduring value and cannot be utilized in any way in the future.

The significance of any possible impact on the enclosure is Low (Table 3).

The graveyard and grave

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 2). 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. It seems as if all the graves and graveyards are older than sixty years.

The act also distinguishes 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).

The significance of any possible impact on the graveyard and grave is HIGH (Table 4).

Mitigating and monitoring the heritage resources

The historical remains

The historical enclosure has been described, geo-referenced, photographed and mapped on a Google as can be witnessed in this report. These remains therefore have been adequately documented for future reference by any researcher or interested person seeking knowledge

about the early occupation, life-ways, settlement patterns and traditions on the Eastern Highveld.

As the enclosure has been documented in the Phase I HIA Black Gold Coal Estates needs not to apply for a demolishing permit from SAHRA when these remains are destroyed in order to make way for the proposed DWD.

The graveyard and grave

It seems as if GY01 and G01 may be older than sixty years. GY01 and G01 can be mitigated by means of exhumation and relocation. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that have to be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police.

General remark

It is possible that this Phase I HIA study may have missed heritage resources in the Mining Project Area as heritage sites may occur in clumps of vegetation or tall grass while others may lie below the surface of the earth and may only be exposed once development commences. Heritage resources may also have been missed as a result of human error.

If any heritage resources of significance is exposed during the Mining Project the South African Heritage Resources Authority (SAHRA) 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.

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1 INTRODUCTION

1.1 Project Background

Black Gold Coal Estates (Pty) Ltd proposes to mine coal on Portions 4 and 6 of the Farm Lusthof 60IT which is located within the Albert Luthuli Local Municipality on the Eastern Highveld in the Mpumalanga Province. The proposed Lusthof Colliery will mine coal from the Ermelo Coal Field by means of open cast mining methods. The surface extent of mining will be restricted to an area of 74 hectares and the mining depth will vary between 5m and 31m below ground surface. The coal will be transported by road to Eastside Colliery for beneficiation. General infrastructure on site will be limited and will be of temporary nature. A road diversion will form part of the construction phase as the mine has redesigned its mining plan to incorporate one open pit instead of three possible pits.

Negotiations between the mine and surrounding land owners have resulted in the mine considering alternative mining and environmental management measures. The measures considered are deemed to represent a state of the art approach towards small scale coal mining and associated environmental management and will be based on industry's best practice through the application of proven technologies.

This document contains the report for a Phase I Heritage Impact Assessment (HIA) study which was done for the proposed Lusthof Colliery. Previous heritage surveys conducted for developers on the Eastern Highveld in the Mpumalanga Province indicates that the most common types and ranges of heritage resources include historical farmstead complexes associated with formal and informal graveyards. Stone walled settlements dating from the Late Iron Age and Historical Period also occur but are limited to areas where low, dolerite kopjes and randjes exist.

However, various types and ranges of heritage resources that qualify as part of South Africa's 'national estate' as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) do occur across the Mpumalanga Province (see Box 1, next page).

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

The National Heritage Resources Act (Act 25 of 1999, Section 3) outlines the following types and ranges of heritage resources that qualify as part of the national estate:

- 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 palaeontological 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 in terms of the Human Tissue Act (Act 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 palaeontological objects, 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 (Act 43 of 1996).

The National Heritage Resources Act (Act 25 of 1999, Sec 3) also distinguishes nine criteria for a place and/or object 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; and/or
- i. Its significance relating to the history of slavery in South Africa.

1.2 Definitions

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.
- Conservation (*in-situ*): The conservation and maintenance of ecosystems, natural habitats and cultural resources in their natural and original surroundings.
- Cultural (heritage) 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.
- Cultural (heritage) 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.
- Heritage resources: The various natural and cultural assets that collectively form the heritage. These assets are also known as cultural and natural resources. Heritage (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.

- 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 300 years ago).
- 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.
- Historical period: Refers to the first appearance or use of 'modern' Western writing in a particular area or region of the world.
- 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.
- 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.
- Maintenance: Keeping something in good health or repair.
- Preservation: Conservation activities that consolidate and maintain the existing form, material and integrity of a cultural resource.
- 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.
- 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.

- 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.
- 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.

2 DETAILS OF THE SPECIALIST

Profession: Archaeologist, Museologist (Museum Scientists), Lecturer, Heritage Guide Trainer and Heritage Consultant

Qualifications:

BA (Archaeology, Anthropology and Psychology) (UP, 1976)

BA (Hons) Archaeology (distinction) (UP, 1979)

MA Archaeology (distinction) (UP, 1985)

D Phil Archaeology (UP, 1989)

Post Graduate Diploma in Museology (Museum Sciences) (UP, 1981)

Work experience:

Museum curator and archaeologist for the Rustenburg and Phalaborwa Town Councils (1980-1984)

Head of the Department of Archaeology, National Cultural History Museum in Pretoria (1988-1989)

Lecturer and Senior lecturer Department of Anthropology and Archaeology, University of Pretoria (1990-2003)

Independent Archaeologist and Heritage Consultant (2003-)

Accreditation: Member of the Association for Southern African Professional Archaeologists. (ASAPA)

Summary: Julius Pistorius is a qualified archaeologist and heritage specialist with extensive experience as a university lecturer, museum scientist, researcher and heritage consultant. His research focussed on the Late Iron Age Tswana and Lowveld-Sotho (particularly the Bamalatji of Phalaborwa). He has published a book on early Tswana settlement in the North-West Province and has completed an unpublished manuscript on the rise of Bamalatji metal workings spheres in Phalaborwa during the last 1 200 years. He has excavated more than twenty LIA settlements in North-West and twelve IA settlements in the Lowveld and has mapped hundreds of stone walled sites in the North-West. He has written a guide for Eskom's field personnel on heritage management. He has published twenty scientific papers in academic journals and several popular articles on archaeology and heritage matters. He collaborated with environmental companies in compiling State of the Environmental Reports for Ekurhuleni, Hartebeespoort and heritage management plans for the Magaliesberg and Waterberg. Since acting as an independent consultant he has done approximately 800 large to small heritage impact assessment reports. He has a longstanding working relationship with Eskom, Rio Tinto (PMC), Rio Tinto (EXP), Impala Platinum, Angloplats (Rustenburg), Lonmin, Sasol, PMC, Foskor, Kudu and Kelgran Granite, Bafokeng Royal Resources etc. as well as with several environmental companies.

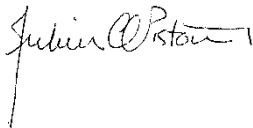
3 DECLARATION OF INDEPENDENCE

I, Julius CC Pistorius, declare that:

- I act as the independent environmental practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the National Heritage Resources Act (No 25 of 1999) and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest

I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010.



Signature of the environmental practitioner:
Private Consultant

Name of company:
5 January 2012

Date:

Signature of the Commissioner of Oaths:

Date:

Designation:

4 SCOPE OF WORK

Black Gold Coal Estates (Pty) Ltd intends to establish the Lusthof Colliery on the farm Lusthof 60IT to the south-east of Carolina on the Eastern Highveld in the Mpumalanga Province of South Africa. The Lusthof Colliery intends to mine coal by means of open cast mining activities. The mine infrastructure includes an open cast pit and a range of other mine infrastructure.

JMA Consulting (Pty) Ltd who is responsible for compiling an Environmental Impact Assessment (EIA) and an Environmental Management Program report (EMP) for the proposed Lusthof Colliery commissioned the author to undertake a Phase I HIA study for the proposed mine.

The aims with the Phase I HIA study were the following, namely:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) (Box 1) do occur in the Project Area and, if so, to determine the nature, the extent and the significance of these remains.
- To determine whether such remains will be affected by the Mining Project and, if so, to determine appropriate mitigation (management) measures for those heritage resources which may be affected by the Mining Project.

5 LEGAL FRAMEWORK

South Africa's heritage resources ('national estate') are protected by international, national and regional legislation which provides regulations, policies and guidelines for the protection, management, promotion and utilization of heritage resources. South Africa's 'national estate' includes a wide range of various types of heritage resources as outlined in Section 3 of the National Heritage Resources Act (NHRA, Act No 25 of 1999) (see Table 1).

According to the NHRA (Act No 25 of 1999) heritage resources are categorised using a three-tier system, namely Grade I (national), Grade II (provincial) and Grade III (local) heritage resources.

At the provincial level, heritage legislation is implemented by Provincial Heritage Resources Agencies (PHRAs) which apply the National Heritage Resources Act (Act 25 of 1999) together with provincial government guidelines and strategic frameworks. Metropolitan or Municipal (local) policy regarding the protection of cultural heritage resources is also linked to national acts and is implemented by the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Agencies.

At a national level heritage resources are dealt with by the National Heritage Council Act (Act No 11 of 1999) and the National Heritage Resources Act (Act No 25 of 1999).

5.1 Legislation relevant to heritage resources

The identification, evaluation and assessment of heritage resources in South Africa are regulated by the following legislation:

- National Environmental Management Act (NEMA) Act 107 of 1998
- National Heritage Resources Act (NHRA) Act 25 of 1999
- Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002

- Development Facilitation Act (DFA) Act 67 of 1995

5.2 The National Heritage Resources Act (NHRA)

According to the NHRA (Act No 25 of 1999) the 'national estate' comprises the following (see Table 1):

- Archaeological artefacts, structures and sites older than 100 years
- Ethnographic art objects (e.g. prehistoric rock art) and ethnography
- Objects of decorative and visual arts
- Military objects, structures and sites older than 75 years
- Historical objects, structures and sites older than 60 years
- Proclaimed heritage sites
- Graveyards, burial grounds and graves older than 60 years
- Meteorites and fossils
- Objects, structures and sites of scientific or technological value.

Elaborating on the above the 'national estate' also includes (Table 1):

- Places, buildings, structures and equipment of cultural significance
- Places to which oral traditions are attached or which are associated with living heritage
- Historical settlements and townscapes
- Landscapes and features of cultural significance
- Geological sites of scientific or cultural importance
- Archaeological and paleontological sites of importance
- Sites of significance relating to the history of slavery
- Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military and ethnographic objects, books etc.)

5.3 Heritage Impact Assessment studies

According to Section 38 of the National Heritage Resources Act (Act No 25 of 1999) a Heritage Impact Assessment (HIA) process must be followed under the following circumstances:

- The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
- The construction of a bridge or similar structure exceeding 50m in length
- Any development or activity that will change the character of a site and which exceeds 5 000m² or which involve three or more existing erven or subdivisions thereof
- Re-zoning of a site exceeding 10 000 m²
- Any other category provided for in the regulations of SAHRA or a provincial heritage authority

5.4 Regulations with regard to heritage resources

The regulations outlined below are applicable to the types and ranges of heritage resources which are the most common in the region where the heritage study was conducted, namely:

5.4.1 Buildings and structures

According to Section 34(1) of the NHRA (Act No 25 of 1999) no person may alter (demolish) any structure or part thereof which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

A structure means any building, works, device or any other facility made by people and which is fixed to land and which includes fixtures, fittings and equipment associated with such structures.

Alter means any action which affects the structure, appearance or physical properties of a place or object, whether by way of structural or any other works such as painting, plastering, decorating, etc..

5.4.2 Graves and burial grounds

Graves and burial grounds are divided into the following:

- a. ancestral graves
- b. royal graves and graves of traditional leaders
- c. graves of victims of conflict
- d. graves designated by the Minister
- e. historical graves and cemeteries
- f. human remains

In terms of Section 36(3) of the NHRA (Act No 25 of 1999) no person, without a permit issued by the relevant heritage resources authority, may:

- a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- b) destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation, or any equipment which assists in the detection or recovery of metals.

Unidentified graves are handled as if they are older than 60 years until proven otherwise.

Human remains that are less than 60 years old are subject to provisions of the Human Tissue Act (Act 65 of 1983) and to local regulations. Exhumation of graves must conform to the standards set out in the Ordinance on Excavations (Ordinance no. 12 of 1980) (replacing the old Transvaal Ordinance no. 7 of 1925).

Permission must also be gained from the descendants (where known), the National Department of Health, Provincial Department of Health, Premier of the Province and local police. Furthermore, permission must also be gained from the various landowners (i.e. where the graves are located and where they are to be relocated) before exhumation can take place. Human remains can only be handled by a registered undertaker or an institution declared under the Human Tissues Act (Act 65 of 1983 as amended).

5.4.3 Archaeology, palaeontology and meteorites

Section 35(4) of the NHRA (Act No 25 of 1999) deals with archaeology, palaeontology and meteorites and states that no person without a permit issued by the responsible heritage resources authority (national or provincial) may:

- destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite;
- destroy, damage, excavate, remove from its original position, collect or own any archaeological or paleontological material or object or any meteorite;
- trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or paleontological material or object, or any meteorite; or bring onto or use at an archaeological or paleontological site any excavation equipment or any equipment that assists in the detection or recovery of metals or archaeological and paleontological material or objects, or use such equipment for the recovery of meteorites.
- alter or demolish any structure or part of a structure which is older than 60 years.

Heritage resources may only be disturbed or moved by an archaeologist after being issued with a permit received from the South African Heritage Resources Agency (SAHRA). In order to demolish heritage resources the developer has to acquire a destruction permit by from SAHRA.

6 METHODOLOGY

The Phase I HIA study was conducted by means of the following:

6.1 Desktop study

Literature relating to the pre-historical and the historical unfolding of the Eastern Highveld was reviewed. This review provides a broad chronological overview of the region ranging from pre-historical times to the historical period including the development of coal mining in the region. It also refers to the indigenous architecture. This contextual evidence contributes to a better understanding of the identity and meaning of heritage sites which may occur in and near the proposed Lusthof Colliery.

A number of heritage studies which were done for developers near the Project Area also provided information regarding the general heritage characteristics of the larger Project Area (see 'Select Bibliography', Part 12).

The desktop study also involved consulting heritage data banks maintained at institutions such as the Mpumalanga Provincial Heritage Resources Agency in Barberton, the Archaeological Data Recording Centre at the National Flagship Institute (Museum Africa) in Pretoria and the national heritage resources register at the South African Heritage Resources Agency (SAHRIS) in Cape Town.

The Project Area was also studied by means of maps on which it appears (2630AA Carolina 1:50 000 topographical map; 2628 East Rand 1: 250 000 map and Google imagery).

6.2 Fieldwork and research

The Project Area was surveyed with a vehicle whilst a pedestrian survey was undertaken of the footprint of the mine infrastructure. A track log which was registered with a mounted GPS instrument outlines the main route for the field survey from where pedestrian surveys were conducted into the surrounding Project

Area. A number of photographs also outline the characteristics of the Project Area (see Part 9.1 'Fieldwork survey', Figures A –E).



Figures 00 and 01- GPS track log outlines the main routes that were followed during the field survey and from where pedestrian surveys were undertaken (above and below).



6.3 Baseline description

The baseline heritage assessment study was compiled by means of a synthesis of the evidence derived from the desktop study (heritage data bases and literature research for contextual evidence) with the fieldwork evidence (GPS recording, describing, photographing and evaluating heritage resources encountered in the veld). This evidence was used to provide a qualitative description and explanation of the various types and ranges of heritage resources that were encountered in the larger Project Area.

The baseline heritage information was used together with the technical information regarding the development of the proposed colliery to establish whether any impact may occur between the heritage resources and the coal mine. The outcome of this Phase I HIA contributed to formulating mitigation (management) measures for those heritage resources which may be impacted by the Mining Project.

6.4 Proposed activity description

It is assumed that the following project activities will have a bearing (impact) on heritage resources if these do exist in the Mining Project Area, namely:

- Clearing of topsoil (this action may be the most vital as it affects a large surface area and will affect all heritage resources except those that are located beneath the present surface level).
- Removal of Topsoil (this action will affect heritage resources which may occur beneath the present surface level)
- The construction of the Dirt Water Dam.

6.5 The heritage impact assessment

The significance of heritage resources in the Project Area is indicated by means of stipulations derived from the NHRA (Act No 25 of 1999) as well as criteria derived from the historical and cultural context of the heritage resources that may be impacted by the Mining Project.

The significance of potential heritage impacts was determined using a generic ranking scale which is used in most environmental impact assessment studies and which is based on the following:

- Occurrence
 - Probability of occurrence (how likely is it that the impact may/will occur?), and
 - Duration of occurrence (how long may/will it last?)
- Severity
 - Magnitude (severity) of impact (will the impact be of high, moderate or low severity?), and
 - Scale/extent of impact (will the impact affect the national, regional or local environment, or only that of the site?)

Each of these factors has been assessed for each potential impact using the following ranking scales:

Probability: 5 – Definite/don't know 4 – Highly probable 3 – Medium probability 2 – Low probability 1 – Improbable 0 – None	Duration: 5 – Permanent 4 – Long-term (ceases with the operational life) 3 – Medium-term (5-15 years) 2 – Short-term (0-5 years) 1 – Immediate
Scale: 5 – International 4 – National 3 – Regional 2 – Local 1 – Site only 0 – None	Magnitude: 10 – Very high/don't know 8 – High 6 – Moderate 4 – Low 2 – Minor

The environmental significance of each potential impact was assessed using the following formula:

Significance Points (SP) = (Magnitude + Duration + Scale) x Probability

The maximum value is 100 Significance Points (SP). Potential environmental impacts are rated as very high, high, moderate, low or very low significance on the following basis:

- More than 80 significance points indicates VERY HIGH environmental significance.
- Between 60 and 80 significance points indicates HIGH environmental significance.
- Between 40 and 60 significance points indicates MODERATE environmental significance.
- Between 20 and 40 significance points indicates LOW environmental significance.
- Less than 20 significance points indicates VERY LOW environmental significance.

6.6 Heritage management measures

Heritage management measures are based on guidelines derived from the National Heritage Resources Act (Act No 25 of 1999) and from guidelines provided by the South African Heritage Resources Authority SAHRA).

Recommendations for the handling of graves and human remains older than sixty years are based on terms derived from Section 36(3) of the National Heritage Resources Act (No 25 of 1999). Graves and human remains which are less than sixty years old are subject to provisions of the Human Tissue Act (Act 65 of 1983) and to local regulations. Exhumation of graves must also conform to the standards set out in the Ordinance on Excavations (Ordinance no. 12 of 1980) (replacing the old Transvaal Ordinance no. 7 of 1925).and

6.7 Heritage monitoring plan

Heritage monitoring measures are based on principles associated with best practise and guidelines are derived from practical experiences with regard to the monitoring of heritage resources. Guidelines for best practise are formulated by SAHRA and ASAPA and are recommended to and applied by heritage researchers and consultants.

7 ASSUMPTIONS AND LIMITATIONS

7.1 Adequacy of predictive methods

No predictive evidence (such as models) is used in this study.

7.2 Adequacy of under laying assumptions

This study was not primarily based on assumptions (or hypothetical evidence) but was mainly based on empirical evidence derived from fieldwork observations.

7.3 Uncertainty of information provided

It is possible that this Phase I HIA study may have missed heritage resources in the Mining Project Area as heritage sites may occur in clumps of vegetation or tall grass 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 the Mining Project the South African Heritage Resources Authority (SAHRA) 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.

8 THE PHASE I HERITAGE SURVEY

8.1 The Project Area

8.1.1 Location

The proposed Lusthof Colliery is located approximately fifteen kilometres to the south-east of Carolina. The mine proposes to mine coal from Portions 4 and 6 of the farm Lusthof 60IT which is located within the Albert Luthuli Municipality. Towns closest to the Project Area include Chrissiesmeer (10km), Carolina (17km), Breyten (27km) and Badplaas (43km). This region is part of the Eastern Highveld of the Mpumalanga Province (2630AA Carolina 1: 50 000 topographical map; 2628 East Rand 1: 250 000 map and Google imagery (Figure 1).

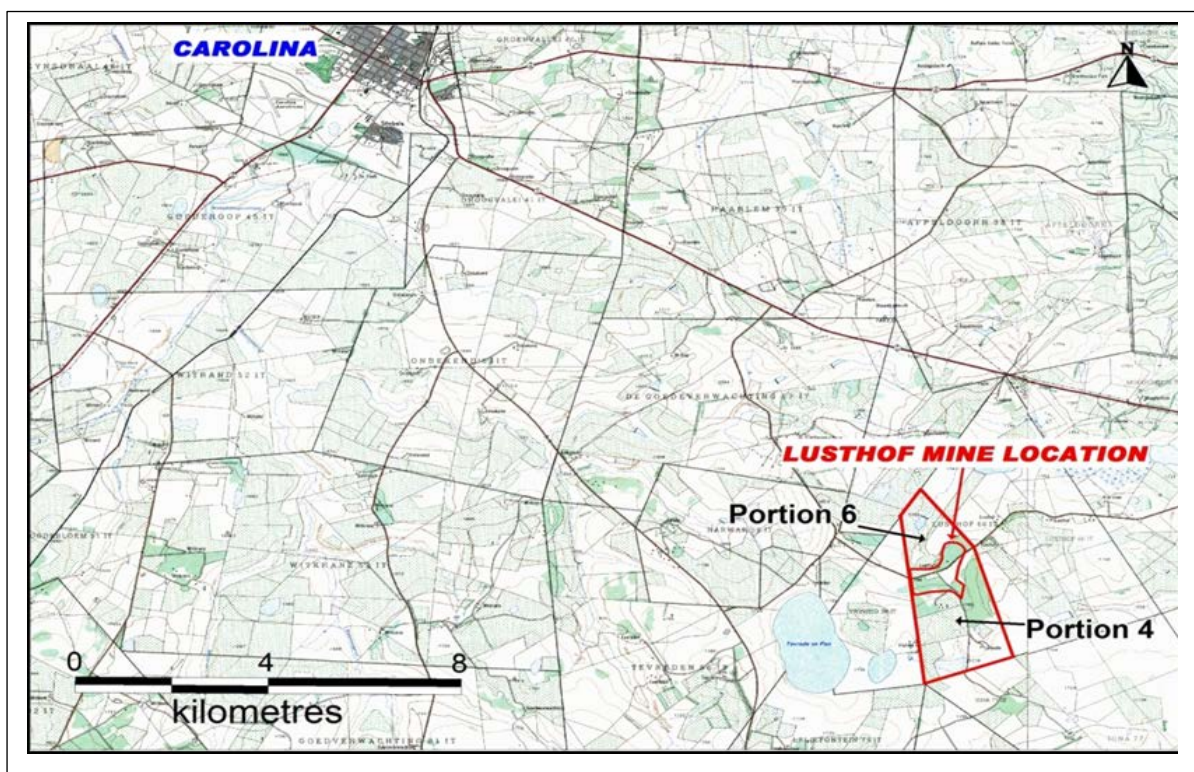


Figure 1- Regional setting for the proposed Lusthof Colliery near Carolina on the Eastern Highveld in the Mpumalanga Province (above).

The region is characterised for its vast outstretched grass veld with few trees. Trees that do occur are exotics such as Blue Gum lots, poplar-groves on the banks of streams and Oak trees which are usually located near historical farm homesteads.

Most of these trees are anthropogenic as they have been introduced by human activities during the more recent the past.

The Mpumalanga Province is also known for its long standing production of agricultural crops such as maize wheat, sorghum, dairy, potatoes and other vegetables. Cattle and sheep ranching also make a significant contribution to the local economy. Gold and silica mines also occur in the area. The coal mining industry in the region has been developing at an exponential rate during the last few decades

8.1.2 The nature of the Project Area

The Project Area comprises an undulating, outstretched grass plain with sandstone ridges in a valley to the west of the Project Area and a dolerite outcrop which manifest as large boulders on the southern border of the Project Area. The tree cover that does occur includes an avenue of Blue Gum trees in the north and extensive bushes of wattle which have invaded the north-eastern corner as well as the eastern perimeter of the Project Area.

Although these bushes were cut down a few years ago many of the trees have regenerated and the bush has proliferated to such an extent that the impact of the deforestation process can barely be observed today.

The Project Area is characterised by the presence of dry land agriculture fields in the north and in the south-west whilst some residential and farming infrastructure has been established towards the central part of the Project Area. The general characteristics of the area and the influence of transforming agents in the Project Area are visible in Figures A to D. In general, the Project Area cannot be described as pristine any longer.

8.1.3 The nature of the Mining Project

The Lusthof Colliery will mine coal by means of open cast mining activities on Portions 4 and 6 of the farm Lusthof 60IT. The Mining Project therefore will comprise of an open cast pit as well as a range of other mine infrastructure such as (Figure 2):

- A Dirty Water Dam (DWD)
- A Clean Water Diversion Dam (CWDD)
- A Run of Mine coal stockpile (ROM)
- A Water Treatment Plant (WTP)
- Road diversions (in the north and in the south)
- A haul road
- Contractor's yard and workshop.

A number of project activities relating to the development of the open cast mine will have a bearing (impact) on heritage resources if these do exist in the Mining Project Area (see Part 10.1, 'Project activities relevant to heritage resources').

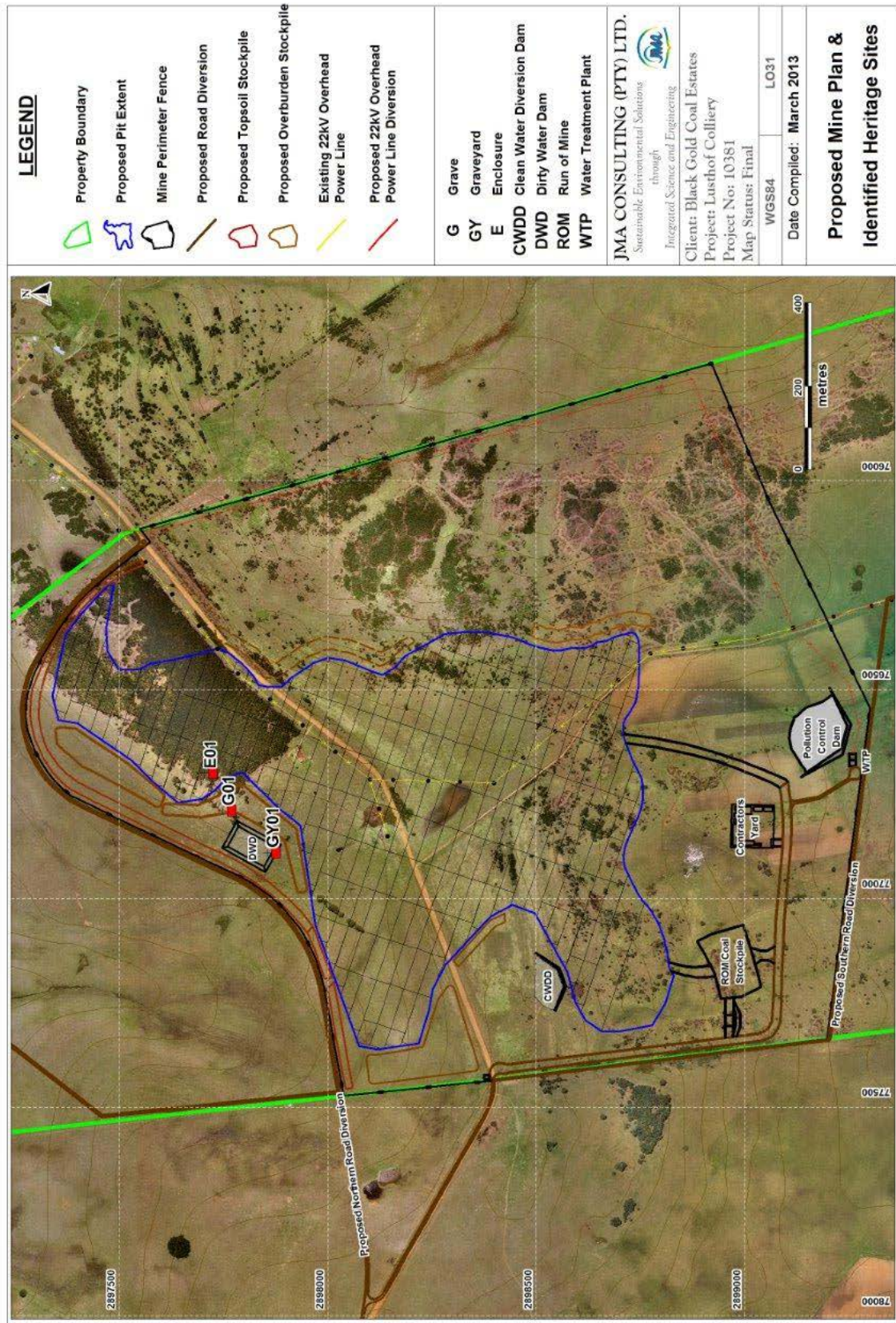


Figure 2- The proposed Lusthof Colliery near Carolina. Note the presence of a possible historical enclosure, graveyard and grave near the Project Area (above).

8.2 Contextualising the Project Area

Several studies for developers have been conducted in the larger Project Area (see Part 13 'Select Bibliography'). These studies have indicated that the most common heritage resources which occur in the region are the following:

- Historical remains associated with farmstead complexes consisting of houses, associated outbuildings, cattle enclosures and graveyards.
- Abandoned graveyards left by farm workers who moved from farms to urban areas.

The following overview of pre-historical, historical and cultural evidence outlines the wide range of heritage resources which do occur across the larger Project Area.

8.2.1 Stone Age and rock art sites

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 200 years ago).

Dongas and eroded areas at Maleoskop near Groblersdal is one of a few places in Mpumalanga where ESA Oldowan and Acheulian artefacts have been recorded. Evidence for the MSA has been excavated at the Bushman Rock Shelter near Ohrigstad. This cave was repeatedly visited over a prolonged period. The oldest layers date back to 40 000 years BP and the youngest to 27 000BP (Esterhuysen & Smith 2007).

LSA occupation in the Mpumalanga Province also has been researched at Bushman Rock Shelter where it dates back 12 000BP to 9 000BP and at Höningnestkrans near Badfontein where a LSA site dates back to 4 870BP to 200BP (Esterhuysen & Smith 2007).

The LSA is associated with rock paintings and engravings which were done by San hunter-gatherers, Khoi Khoi herders and EIA farmers (Maggs 1983, 2008). Approximately 400 rock art sites are distributed throughout Mpumalanga, notably in the northern and eastern regions at places such as Emalahleni (Witbank) (4), Lydenburg (2), White River and the southern Kruger National Park (76), Nelspruit and the Nsikazi District (250). The Ermelo area holds eight rock paintings (Smith & Zubieta 2007).

The rock art of the Mpumalanga Province can be divided into San rock art which is the most wide spread, herder or Khoe Khoe paintings (thin scattering from the Limpopo Valley) through the Lydenburg district into the Nelspruit area) and localised late white farmer paintings. Farmer paintings can be divided into Sotho-Tswana finger paintings and Nguni engravings (Only 20 engravings occur at Boomplaats, north-west of Lydenburg). Farmer paintings are more localised than San or herder paintings and were mainly used by the painters for instructional purposes (Smith & Zubieta 2007).

During the LSA and Historical Period, San people called the Batwa lived in sandstones caves and rock shelters near Lake Chrissie in the Ermelo area. The Batwa are descendants of the San, the majority of which intermarried with Bantu-Negroid people such as the Nhlapo from Swazi-descend and Sotho-Tswana clans such as the Pai and Pulana. Significant intermarriages and cultural exchanges occurred between these groups. The Batwa were hunter-gatherers who lived from food which they collected from the veldt as well as from the pans and swamps in the area. During times of unrest, such as the *difaqane* in the early nineteenth century, the San would converge on Lake Chrissie for food and sanctuary. The caves, lakes, water pans and swamps provided relatively security and camouflage. Here, some of the San lived on the surfaces of the water bodies by establishing platforms with reeds. With the arrival of the first colonists in the nineteenth century many of the local Batwa family groups were employed as farm labourers. Descendants of the Batwa people still live in the larger Project Area (Schapera 1927, Potgieter 1955, Schoonraad & Schoonraad 1975).

8.2.2 Iron Age remains

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

Evidence for the first farming communities in the Mpumalanga Province is derived from a few EIA potsherds which occur in association with the LSA occupation of the Höningnest Shelter near Badfontein. The co-existence of EIA potsherds and LSA stone tools suggest some form of 'symbiotic relationship' between the Stone Age hunter-gatherers who lived in the cave and EIA farmers in the area (also note Batwa and Swazi/Sotho Tswana relationship) (Esterhuysen & Smith 2007).

The Welgelegen Shelter on the banks of the Vaal River near Ermelo also reflects some relationship between EIA farmers who lived in this shelter and hunter-gatherers who manufactured stone tools and who occupied a less favourable overhang nearby during AD1200 (Schoonraad & Beaumont 1971).

EIA sites were also investigated at Sterkspruit near Lydenburg (AD720) and in Nelspruit where the provincial governmental offices were constructed. The most infamous EIA site in South Africa is the Lydenburg head site which provided two occupation dates, namely during AD600 and from AD900 to AD1100. At this site the Lydenburg terracotta heads were brought to light. Doornkop, located south of Lydenburg, dates from AD740 and AD810 (Evers 1981, Whitelaw 1996).

The Late Iron Age is well represented in Mpumalanga and stretches from AD1500 well into the nineteenth century and the Historical Period. Several spheres of influence, mostly associated with stone walled sites, can be distinguished in the region. Historically well-known spheres of influence include the following:

- Early arrivals in the Mpumalanga Province such as Bakone clans who lived between Lydenburg, Badfontein and Machadodorp and Eastern Sotho clans

such as the Pai, Pulana and Kutswe who established themselves in the eastern parts of the province (Collett 1979, 1983;. Delius 2007; Makhura 2007; Delius & Schoeman,2008).

- Swazi expansion into the Highveld and Lowveld of the Mpumalanga Province occurred during the reign of Sobhuza (AD1815 to 1836/39) and Mswati (AD1845 to 1868) while Shangaan clans entered the province across the Lembombo Mountains in the east during the second half of the nineteenth century (Delius 2007, Makhura 2007.).
- The Bakgatla (Pedi) chiefdom in the Steelpoort Valley rose to prominence under Thulare during the 1800's and was later ruled by Sekwati and Sekhukune from the village of Tsjate in the Leolo Mountains. The Pedi maintained a sphere of influence across the Limpopo and Mpumalanga Provinces during the nineteenth century (Mönnig 1978, Delius 1984).
- The Ndzundza-Ndebele established settlements at the foot of the Bothasberge (Kwa Maza and Esikhunjini) in the 1700's and lived at Erholweni from AD1839 to AD1883 where the Ndzundza-Ndebele's sphere of influence known as KoNomthjarhelo stretched across the Steenkampsberge.
- The Bakopa lived at Maleoskop (1840 to 1864) where they were massacred by the Swazi while the Bantwane live in the greater Groblersdal and Marble Hall areas.
- Corbelled stone huts which are associated with ancestors of the Sotho on Tafelkop near Davel which date from the AD1700's into the nineteenth century (Hoernle 1930).
- Stone walled settlements spread out along the eastern edge of the Groot Dwarsriver Valley served as the early abode for smaller clans such as the Choma and Phetla communities which date from the nineteenth century.

8.2.3 The Historical Period

Historical towns closest to the Project Area include, Breyton (27km), Carolina (17km), Chrissiesmeer (10km) and Badplaas (43km).

The town of Breyton lies at the foot of the mountain 'Klipstapel' (stone pile). The town was founded on the farm Bothasrus. The farm was first allocated to Lucas Potgieter in 1888 as compensation for the leg he lost in the battle of Schuinshoogte towards the end of the Transvaal Anglo Boer War. He sold a portion of the farm to Nicolaas Breytenbach, field cornet for part of the Ermelo District during the Anglo Boer War. The railway from Springs *via* Bethal reached the farm on 22 August 1905. On 25 October 1906 a new village was surveyed and named Breytenbach.

The area where the town of Carolina was proclaimed on 16 June 1886 served as a popular stop-over for transport riders for several years – especially after a gold reef was discovered in what was to become Barberton in 1884. Traffic increased to such an extent that a trading and staging post was soon established. However, there is uncertainty about the origins of Carolina. A notice in the Transvaal government gazette stated that it was laid out on the farms Groenvlei and Goede Hoop. According to another sources Cornelis Coetzee made available part of his farm Steynsdraai for a village provided it was given the name of his wife, Carolina.

Chrissiesmeer is the largest of about thirty lakelets in the Ermelo District and one of the largest bodies of freshwater in South Africa. A village by the same name developed on the northern side of the lake. The Swazi name for the area was 'Kachihibi' which is derived from 'lichibi' (lake) and 'khulu' (big). The lake was formerly known as Seekoeipan but was renamed in honour of Christiana (daughter of M.W. Pretorius the first president of the Z.A.R.) by Scotsman Alexander McCorkindale who took her with him to England in 1865 on one of his fruitless trips to recruit Scottish immigrants for the far Eastern Transvaal

Badplaas is a holiday and health resort (spa) in the valley of the Seekoeispruit, a tributary of the Komati River. It was built around a sulphur spring. The Swazi's called the spring 'eManzana' (healing waters) and showed it to the hunters Jacob De Clerq and one Van der Merwe in the 1870's. By all accounts the Swazi paramount chief then presented the spring as a gift to De Clerq who build a trading store nearby and started advertising the curative properties of the water. Very soon the area around

the spring in winter was festooned with tents especially after the discovery of gold at Kaap Valley (Barberton). On 6 November 19893 the Z.A.R. proclaimed the spa state property and a health resort for public use in perpetuity (Erasmus 1995).

8.2.4 A coal mining heritage

Coal mining on the Eastern Highveld is now older than one century and has become the most important coal mining region in South Africa. Whilst millions of tons of high-grade coal are annually exported overseas more than 80% of the country's electricity is generated on low-grade coal in Eskom's power stations such as Duvha, Matla and Arnot situated near coalmines on the Eastern Highveld.

The earliest use of coal (charcoal) in South Africa was during the Iron Age (300-1880AD) when metal workers used charcoal, iron and copper ores and fluxes (quartzite stone and bone) to smelt iron and copper in clay furnaces. Colonists are said to have discovered coal in the French Hoek Valley near Stellenbosch in the Cape Province in 1699. The first reported discovery of coal in the interior of South Africa was in the mid-1830 when coal was mined in Kwa Zulu/Natal.

The first exploitation for coal was probably in Kwa Zulu/Natal as documentary evidence refers to a wagon load of coal brought to Pietermaritzburg to be sold in 1842. In 1860 the coal trade started in Dundee when a certain Pieter Smith charged ten shillings for a load of coal dug by the buyer from a coal outcrop in a stream. In 1864 a coal mine was opened in Molteno. The explorer, Thomas Baines mentioned that farmers worked coal deposits in the neighbourhood of Bethal (Transvaal) in 1868.

With the discovery of gold in the Southern Transvaal and the development of the gold mining industry around Johannesburg came the exploitation of the Boksburg-Spring coal fields, which is now largely worked out. By 1899, at least four collieries were operating in the Middelburg-Witbank district, also supplying the gold mining industry.

8.2.5 A vernacular stone architectural heritage

A unique stone architectural heritage was established in the Eastern Highveld from the second half of the 19th century well into the early 20th century. During this time period stone was used to build farmsteads and dwellings, both in urban and in rural areas. Although a contemporary stone architecture also existed in the Karoo and in the Eastern Free State Province of South Africa a wider variety of stone types were used in the Eastern Highveld. These included sandstone, ferricrete ('oukclip'), dolerite ('bloukclip'), granite, shale and slate.

The origins of a vernacular stone architecture in the Eastern Highveld may be ascribed to various reasons of which the ecological characteristics of the region may be the most important. Whilst this region is generally devoid of any natural trees which could be used as timber in the construction of farmsteads, outbuildings, cattle enclosures and other structures, the scarcity of fire wood also prevented the manufacture of baked clay bricks. Consequently stone served as the most important building material in the Eastern Highveld (Naude 1993, 2000).

LIA Sotho, Pedi, Ndebele and Swazi communities contributed to the Eastern Highveld's stone walled architecture. The tradition set by these groups influenced settlers from Natal and the Cape Colony to utilize the same resources to construct dwellings and shelters. Farmers from Scottish, Irish, Dutch, German and Scandinavian descent settled and farmed in the Eastern Highveld. They brought the knowledge of stone masonry from Europe. One of these historical structures were excavated and described after a heritage mitigation project was conducted for a coal mine (Pistorius 2005).

8.3 Fieldwork survey

The footprint for the proposed Mining Project was subjected to a pedestrian survey. The dense wattle bush in the north-east and along the eastern perimeter of the Project Area together with the dry land agricultural fields in the northern (laying fowl) and southern part (planted) of the Project Area were not surveyed.



Figures A & B- The northern part of the Project Area with one of several buildings noticeable in the background. Although the grass cover is thin where the photograph was taken it is actually dense and tall, particularly in the southern part of the Project Area (above). Note the tall grass cover in the southern part of the Project Area (below).





Figures C & D- Dense wattle bush encroachment occurs in the north-eastern and along the eastern perimeter of the Project Area (above). Maize fields occur near the south-western corner of the Project Area as well as in the north where these fields are laying foul (below).





Figure E- Dolerite boulders which are associated with a dolerite dyke occur near the southern perimeter of the Project Area (below).

8.4 Types and ranges of heritage resources

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

- Possible historical remains consisting of an enclosure for stock (E01).
- Two informal graveyards (Gy01, GY02) and a grave (G01). (GY02 is located outside the Project Area).

Remains from the recent past such as three residences, possible pig stays and other structures also occur. However, these buildings date from the recent past whilst some are severely dilapidated. These structures has not been geo-referenced or described but is merely referred to as they have no heritage significance (see Part 8.3, 'Remains from the recent past').

(No archaeological [pre-historical] remains were recorded. This study also did not provide for a paleontological study of the Project Area).

The possible historical remains, graveyards and grave were geo-referenced and mapped (Figure 2, Table 1), their significance is indicated as well as the significance of impact on these heritage resources (Tables 2-4).

8.4.1 Possible historical remains

A single elongated structure (E01) which was constructed with a ferricrete wall was recorded in the northern part of the Project Area. This structure measures $\pm 10\text{m} \times 8\text{m}$ and was built with a solid, heavy wall comprising one layer of dolerite stone. The height of the walls are $\pm 50\text{cm}$ whilst the inner surface of the structure is slightly lower than the surrounding surface level. One of the short walls of the structure was not constructed.

It seems as if this structure served as an enclosure in which sheep/goat was kept and that the open side may have been closed with a wooden stockade. The building material that was used (ferricrete) resemble the stones that were used to decorate and cover the graves in the area. This structure therefore is probably contemporary with the graveyards and spatially can also be associated with one of the graveyards and the grave. This structure is probably older than sixty years.



Figure 3- The historical structure which probably served as an enclosure in which small stock such as sheep were penned (above).

8.4.2 Graveyards

Two graveyards and a single grave were recorded, namely:

8.4.2.1 Graveyard 01

This graveyard is located in the northern part of the Project Area approximately 500m from the infrastructure that occur in this part of the Project Area. GY01 comprises five or more graves which are covered with piles of ferricrete stone. One of the graves is fitted with an upright stone which serves as a headstone.

GY01 may be older than sixty years.



Figure 4- GY01 holds five or more graves which are merely represented by piles of ferricrete stone. One is fitted with an upright stone which serves as a headstone (above).

8.4.2.2 Graveyard 02

GY02 is located outside the southern perimeter of the Project Area, close to a dirt road which runs southwards across the Project Area. It holds approximately fifty (50) graves all which are covered with piles of ferricrete stone.

No headstone with inscriptions occurs. According to spokespersons members of the Khumalo clan are buried here.

GY02 is probably older than sixty years. As this graveyard has no relevance with regard to the Mining Project it is not further discussed.



Figure 5- GY02 occurs outside the southern border of the Project Area. It holds approximately fifty graves, all of which are covered with piles of ferricrete (above).

8.4.2.3 Grave 03

This single grave (G01) is located in the northern part of the Project Area in relatively close proximity of GY01. The grave is covered with a pile of ferricrete stone and is not fitted with a headstone. G01 may be older than sixty years.



Figure 6- A single grave (G01) which is covered with a heap of ferricrete stone in the northern part of the Project Area (above).

Graveyards and graves	Coordinates	Significance
GY01. Five or more graves covered with piles of ferricrete stone.	26° 11.270' 30° 13.849'	HIGH (According to legislation)
G01. Single grave covered with ferricrete stone.	26° 11.204' 30° 13.903'	HIGH (According to legislation)
Outside Project Area		
GY02. Approximately 50 graves covered with piles of ferricrete stone	26° 12.220' 30° 14.347'	HIGH (According to legislation)

Table 1- Coordinates and significance rating for graveyards in the Project Area (above).

8.3 Remains from the recent past

Remains from the recent past consisting of three dwellings and other structures such as pig stys and toilets occur in the northern part of the Project Area. Some of these buildings are still utilized and occupied by farm workers.

These remains have no heritage significance and are not further discussed.



Figure 7- Remains from the recent past such as residences with no heritage significance occur in the northern part of the Project Area above).

9 PROJECT DESCRIPTION AND IDENTIFICATION OF RELEVANT ACTIVITIES

The following activities are applicable for each of the relevant project life cycle phases for the mining project, namely:

- Coal transportation on tar roads from Carolina to Lusthof Colliery and back
- Coal transportation along gravel roads from Carolina to Lusthof Colliery and back
- Security fence around Lusthof Colliery Mining Area
- Security Office at Main Gate
- Coal transportation along Main Mine Access Road between main gate and ROM Stockpile
- Coal Transportation along Mine Haul Roads between Open pit and ROM Stockpile
- Weighbridge
- Contractors Yard
- Storm Water Management Berms and Canals
- Mining Soil Stripping
- Soil Stockpiles
- Mining Soft Overburden Stripping
- Soft Overburden Stockpiles
- Mining Hard Overburden Stripping
- Hard Overburden Stockpiles
- Mining Blasting
- Mining Coal Excavation
- Mining Hauling
- Mining Spoiling
- Mining Levelling, Compacting and Shaping
- Mining Top soiling
- Mining Re-vegetating

9.1 Project activities relevant to heritage resources

The following project activities will have a negative impact on the possible historical enclosure (E01), Graveyard (GY01) and the Grave (G01), namely:

- Clearing of topsoil (this action may be the most vital as it affects a large surface area and will affect all heritage resources except those that are located beneath the present surface level).
- Removal of Topsoil (this action will affect heritage resources which may occur beneath the present surface level)
- The construction of the Dirt Water Dam.

9.2 Listing of relevant activities per life cycle

9.2.1 Construction phase activities

Activities which may have a negative impact on heritage resources during the construction phase are those that are outlined above.

These activities will destroy heritage resources that occur on the surface of the land as well as heritage resources that occur beneath the surface of the land.

10 THE PHASE I HERITAGE IMPACT ASSESSMENT

The Phase I HIA for the proposed Mining Project revealed the following types and ranges of heritage resources outside the Mining Project Area, namely:

- Possible historical remains consisting of an enclosure for stock (E01).
- Two informal graveyards (GY01, GY02) and a grave (G01). (GY02 is located outside the Project Area and is not further discussed).

10.1 Possible impact on the heritage resources

It is highly probable that GY01, G01 and the historical enclosure (E01) will be affected (destroyed) when the Dirt Water Dam is constructed. These heritage resources also occur on the edge of the proposed open cast pit.

The significance of these heritage resources therefore is indicated as well as mitigation measures should these heritage remains be affected by the Mining Project.

10.2 The significance of the heritage resources

10.2.1 Historical remains

The enclosure is possibly older than sixty years and therefore qualifies as a historical structure. All remains older than sixty years are protected by the National Heritage Resources Act (No 25 of 1999).

The significance of the enclosure can be described as low when considering criteria such as the following (Table 2):

- The enclosure occurs as an isolated structure and does not have any historical or cultural context.
- The enclosure has no research (scientific) value.
- The enclosure cannot add to our knowledge regarding human life ways and traditions on the Eastern Highveld during the turn of the twentieth century due to its isolated occurrence.

- The enclosure has no enduring value and cannot be utilized in any way in the future.

Significance rating	Criteria for significance rating	Mitigation/Management Measures
High (3)	National/provincial value Educational, research, aesthetical conservation value Future use	Conserve unaffected for posterity (preferably) <i>in situ</i>
Medium (2)	Provincial value Medium educational, research, aesthetical conservation value No future use	Phase II investigation before demolishing. Permitting required
Low (1)	Local and site specific value Low educational, research, aesthetical conservation value No future use	Document during Phase I HIA Demolish during construction. No permitting required

Table 2- Significance rating for historical enclosure in the Project Area (above).

The significance of any impact on the enclosure is LOW (Table 3).

Historical Enclosure (E01)	Probability of project impacting on this site	Magnitude if project impacts on this site	Duration if project impacts on this site	Scale if project impacts on this site	Significance points	Significance rating
E01	1	10	5	3	18	LOW

Table 3: Significance of impact on historical enclosure near the Project Area (above).

10.2.2 The graveyard and grave

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 2). 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. It seems as if all the graves and graveyards are older than sixty years.

The act also distinguishes 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).

The significance of any impact on the graveyard and grave is HIGH (Table 4).

Grave-yards	Probability of project impacting on this site	Magnitude if project impacts on this site	Duration if project impacts on this site	Scale if project impacts on this site	Significance points	Significance rating
GY01	5	10	5	3	90	HIGH
G01	5	10	5	3	90	HIGH

Table 4: Significance of potential impacts on graveyard and grave near the Mining Project Area (above).

11 MITIGATING AND MONITORING THE HERITAGE RESOURCES

11.1 The historical remains

The historical enclosure has been described, geo-referenced, photographed and has been mapped on a Google image as can be witnessed in this report. These remains therefore have been adequately documented for future reference by any researcher or interested person seeking knowledge about the early occupation, life-ways, settlement patterns and traditions on the Eastern Highveld.

As the enclosure has been documented in the Phase I HIA Black Gold Coal Estates needs not to apply for a demolishing permit from SAHRA when these remains are destroyed in order to make way for the proposed DWD.

11.2 The graveyard and grave

It seems as if GY01 and G01 may be older than sixty years. GY01 and G01 can be mitigated by means of exhumation and relocation. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that have to be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police.

12 CONCLUSION AND RECOMMENDATIONS

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

- Possible historical remains consisting of an enclosure for stock (E01).
- Two graveyards (GY01, GY02) and a grave (G01). (GY02 is located outside the Project Area and is not further discussed).

Remains from the recent past such as three residences, possible pig stays and other structures also occur. However, these buildings date from the recent past whilst some are severely dilapidated. These structures has not been geo-referenced or described but is merely referred to as they have no heritage significance.

(No archaeological [pre-historical] remains were recorded. This study also did not provide for a paleontological study of the Project Area).

Possible impact on the heritage resources

It is highly probable that GY01, G01 and the historical enclosure (E01) will be affected (destroyed) when the Dirt Water Dam is constructed. These heritage resources are also located near the edge of the open cast mine. The significance of these heritage resources therefore is indicated as well as mitigation measures should these heritage remains be affected by the Mining Project.

The significance of the heritage resources

Historical remains

The enclosure (E01) is possibly older than sixty years and therefore qualifies as a historical structure. All remains older than sixty years are protected by the National Heritage Resources Act (No 25 of 1999).

The significance of the enclosure can be described as low when considering criteria such as the following (Table 2):

- The enclosure occurs as an isolated structure and does not have any historical or cultural context.
- The enclosure has no research (scientific) value.
- The enclosure cannot add to our knowledge regarding human life ways and traditions on the Eastern Highveld during the turn of the nineteenth century due to its isolated occurrence.
- The enclosure has no enduring value and cannot be utilized in any way in the future.

The significance of any possible impact on the enclosure is Low (Table 3).

The graveyard and grave

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 2). 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. It seems as if all the graves and graveyards are older than sixty years.

The act also distinguishes 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).

The significance of any possible impact on the graveyard and grave is HIGH (Table 4).

Mitigating and monitoring the heritage resources

The historical remains

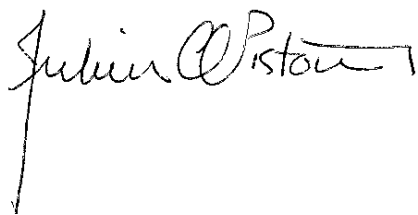
The historical enclosure has been described, geo-referenced, photographed and mapped on a Google as can be witnessed in this report. These remains therefore have been adequately documented for future reference by any researcher or interested person seeking knowledge about the early occupation, life-ways, settlement patterns and traditions on the Eastern Highveld.

As the enclosure has been documented in the Phase I HIA Black Gold Coal Estates

needs not to apply for a demolishing permit from SAHRA when these remains are destroyed in order to make way for the proposed DWD.

The graveyard and grave

It seems as if GY01 and G01 may be older than sixty years. GY01 and G01 can be mitigated by means of exhumation and relocation. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that have to be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police.

A handwritten signature in black ink, appearing to read 'Julius CC Pistorius'. The signature is written in a cursive style with a long vertical line extending downwards from the end of the name.

Dr Julius CC Pistorius

Archaeologist & Heritage Consultant

Member ASAPA

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