GROOTHOEK COAL MINING COMPANY: GROOTHOEK COAL MINE ON THE FARMS GROOTHOEK 504 LQ AND EENDRACHT 505 LQ, LEPHALALE, WATERBERG DISTRICT MUNICIPALITY, LIMPOPO PROVINCE

Archaeological Impact Assessment Report

Document version 2.0
Compiled by N. Kruger

February 2013

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GROOTHOEK COAL MINE: ARCHAEOLOGICAL IMPACT ASSESSMENT ON THE FARMS GROOTHOEK 504 LQ AND EENDRACHT 505 LQ, LEPHALALE, WATERBERG DISTRICT MUNICIPALITY, LIMPOPO PROVINCE

February 2013

Document Version 2

Conducted on behalf of:

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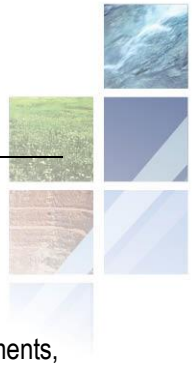

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I, Nelius Le Roux Kruger, declare that –

- I act as the independent specialist;
- I am conducting any work and activity relating to the Sishen Infrastructure Project in an objective manner, even if this results in views and findings that are not favourable to the client;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant Heritage Legislation (National Heritage Resources Act no. 25 of 1999, Human Tissue Act 65 of 1983 as amended, Removal of Graves and Dead Bodies Ordinance no. 7 of 1925, Excavations Ordinance no. 12 of 1980), the Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment (SAHRA and the CRM section of ASAPA), regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have not, 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;
- All the particulars furnished by me in this declaration are true and correct.

_____

SIGNATURE OF SPECIALIST

Company: AGES Gauteng (Pty) Ltd.

Date: 15 March 2013

NOTATIONS AND TERMS

Absolute dating:
Absolute dating provides specific dates or range of dates expressed in years.

Archaeology:
The study of the human past through its material remains.

Archaeological record:
The archaeological record minimally includes all the material remains documented by archaeologists. More comprehensive definitions also include the record of culture history and everything written about the past by archaeologists.

Artefact:
Entities whose characteristics result or partially result from human activity. The shape and other characteristics of the artefact are not altered by removal of the surroundings in which they are discovered. In the southern African context examples of artefacts include potsherds, iron objects, stone tools, beads and hut remains.

Assemblage:
A group of artefacts recurring together at a particular time and place, and representing the sum of human activities.

^{14}C or radiocarbon dating:
The ^{14}C method determines the absolute age of organic material by studying the radioactivity of carbon. It is reliable for objects not older than 70 000 years by means of isotopic enrichment. The method becomes increasingly inaccurate for samples younger than ±250 years.

Ceramic Facies:
In terms of the cultural representation of ceramics, a facies is denoted by a specific branch of a larger ceramic tradition. A number of ceramic facies thus constitute a ceramic tradition.

Ceramic Tradition:
In terms of the cultural representation of ceramics, a series of ceramic units constitutes as ceramic tradition.

Context:
An artefact's context usually consists of its immediate *matrix*, its *provenience* and its *association* with other artefacts. When found in *primary context*, the original artefact or structure was undisturbed by natural or human factors until excavation and if in *secondary context,* disturbance or displacement by later ecological action or human activities occurred.

Culture:
A contested term, "culture" could minimally be defined as the learned and shared things that people have, do and think.

Cultural Heritage Resource:
The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

Cultural landscape:
A cultural landscape refers to a distinctive geographic area with cultural significance.

Cultural Resource Management (CRM):
A system of measures for safeguarding the archaeological heritage of a given area, generally applied within the framework of legislation designed to safeguard the past.

Ecofact:
Non artefactual material remains that has cultural relevance which provides information about past human activities. Examples would include remains or evidence of domesticated animals or plant species.

Excavation:
The principal method of data acquisition in archaeology, involving the systematic uncovering of archaeological remains through the removal of the deposits of soil and the other material covering and accompanying it.

Feature:
Non-portable artefacts, in other words artefacts that cannot be removed from their surroundings without destroying or altering their original form. Hearths, roads, and storage pits are examples of archaeological features

GIS:
Geographic Information Systems (GIS) are computer software that allows layering of various types of data to produce complex maps; useful for predicting site location and for representing the analysis of collected data within sites and across regions.

Historical archaeology:
Primarily that aspect of archaeology which is complementary to history based on the study of written sources. In the South African context it concerns the recovery and interpretation of relics left in the ground in the course of Europe's discovery of South Africa, as well as the movements of the indigenous groups during, and after the "Great Scattering" of Bantu-speaking groups – known as the *mfecane* or *difaqane*.

Impact: A description of the effect of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

Iron Age:
Also known as "Farmer Period", the "Iron Age" is an archaeological term used to define a period associated with domesticated livestock and grains, metal working and ceramic manufacture.

Lithic:
Stone tools or waste from stone tool manufacturing found in on archaeological sites.

Management / Management Actions: Actions – including planning and design changes - that enhance benefits associated with a proposed development, or that avoid, mitigate, restore, rehabilitate or compensate for the negative impacts.

Matrix:
The material in which an artefact is situated (sediments such as sand, ashy soil, mud, water, etcetera). The matrix may be of natural origin or human-made.

Megalith:
A large stone, often found in association with others and forming an alignment or monument, such as large stone statues.

Midden:
Refuse that accumulates in a concentrated heap.

Microlith:
A small stone tool, typically knapped of flint or chert, usually about three centimetres long or less.

Monolith:
A geological feature such as a large rock, consisting of a single massive stone or rock, or a single piece of rock placed as, or within, a monument or site.

Oral Histories:
The historical narratives, stories and traditions passed from generation to generation by word of mouth.

Phase 1 CRM Assessment:
An Impact Assessment which identifies archaeological and heritage sites, assesses their significance and comments on the impact of a given development on the sites. Recommendations for site mitigation or conservation are also made during this phase.

Phase 2 CRM Study:

In-depth studies which could include major archaeological excavations, detailed site surveys and mapping / plans of sites, including historical / architectural structures and features. Alternatively, the sampling of sites by collecting material, small test pit excavations or auger sampling is required. Mitigation / Rescue involves planning the protection of significant sites or sampling through excavation or collection (in terms of a permit) at sites that may be lost as a result of a given development.

Phase 3 CRM Measure:

A Heritage Site Management Plan (for heritage conservation), is required in rare cases where the site is so important that development will not be allowed and sometimes developers are encouraged to enhance the value of the sites retained on their properties with appropriate interpretive material or displays.

Prehistoric archaeology:

That aspect of archaeology which concerns itself with the development of humans and their culture before the invention of writing. In South Africa, prehistoric archaeology comprises the study of the Early Stone Age, the Middle Stone Age and the greater part of the Later Stone Age and the Iron Age.

Probabilistic Sampling:

A sampling strategy that is not biased by any person's judgment or opinion. Also known as statistical sampling, it includes systematic, random and stratified sampling strategies.

Provenience

Provenience is the three-dimensional (horizontal and vertical) position in which artefacts are found. Fundamental to ascertaining the provenience of an artefact is *association,* the co-occurrence of an artefact with other archaeological remains; and *superposition,* the principle whereby artefacts in lower levels of a matrix were deposited before the artefacts found in the layers above them, and are therefore older.

Random Sampling:

A probabilistic sampling strategy whereby randomly selected sample blocks in an area are surveyed. These are fixed by drawing coordinates of the sample blocks from a table of random numbers.

Relative dating:

The process whereby the relative antiquity of sites and objects are determined by putting them in sequential order but not assigning specific dates.

Remote Sensing:

The small or large-scale acquisition of information of an object or phenomenon, by the use of either recording or real-time sensing device(s) that is not in physical or intimate contact with the object (such as by way of aircraft, spacecraft or satellite). Here, ground-based geophysical methods such as Ground Penetrating Radar and Magnetometry are often used for archaeological imaging.

Rock Art Research:

Rock art can be "decoded" in order to inform about cultural attributes of prehistoric societies, such as dress-code, hunting and food gathering, social behaviour, religious practice, gender issues and political issues.

Scoping Assessment: The process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addressed in an impact assessment. The main purpose is to focus the impact assessment on a manageable number of important questions on which decision making is expected to focus and to ensure that only key issues and reasonable alternatives are examined. The outcome of the scoping process is a Scoping Report that includes issues raised during the scoping process, appropriate responses and, where required, terms of reference for specialist involvement.

Sensitive:

Often refers to graves and burial sites although not necessarily a heritage place, as well as ideologically significant sites such as ritual / religious places. *Sensitive* may also refer to an entire landscape / area known for its significant heritage remains.

Site (Archaeological):

A distinct spatial clustering of artefacts, features, structures, and organic and environmental remains, as the residue of human activity. These include surface sites, caves and rock shelters, larger open-air sites, sealed sites (deposits) and river deposits. Common functions of archaeological sites include living or habitation sites, kill sites, ceremonial sites, burial sites, trading, quarry, and art sites,

Slag:
The material residue of smelting processes from metalworking.

Stone Age:
An archaeological term used to define a period of stone tool use and manufacture.

Stratigraphy:
This principle examines and describes the observable layers of sediments and the arrangement of strata in deposits

Stratified Sampling:
A probabilistic sampling strategy whereby a study area is divided into appropriate zones – often based on the probable location of archaeological areas, after which each zone is sampled at random.

Systematic Sampling:
A probabilistic sampling strategy whereby a grid of sample blocks is set up over the survey area and each of these blocks is equally spaced and searched.

Tradition:
Artefact types, assemblages of tools, architectural styles, economic practices or art styles that last longer than a phase and even a horizon are describe by the term *tradition*. A common example of this is the early Iron Age tradition of Southern Africa that originated ± 200 AD and came to an end at about 900 AD.

Trigger: A particular characteristic of either the receiving environment or the proposed project which indicates that there is likely to be an *issue* and/or potentially significant *impact* associated with that proposed development that may require specialist input. Legal requirements of existing and future legislation may also trigger the need for specialist involvement.

Tuyère:
A ceramic blow-tube used in the process of iron smelting / reduction.

LIST OF ABBREVIATIONS

Abbreviation	Description
ASAPA	Association for South African Professional Archaeologists
AIA	Archaeological Impact Assessment
BP	Before Present
BCE	Before Common Era
EIA FP	Early Iron Age Farmer Period (also Early Farmer Period)
EIA	Environmental Impact Assessment
EFP	Early Farmer Period (also Early Iron Age)
ESA	Earlier Stone Age
GIS	Geographic Information Systems
HIA	Heritage Impact Assessment
K2/Map	K2/Mapungubwe Period
LFP	Later Farmer Period (also Later Iron Age)
LIA FP	Later Iron Age Farmer Period (also Later Farmer Period)
LSA	Later Stone Age
MIA	Middle Iron Age (also Early later Farmer Period)
MRA	Mining Rights Application
MSA	Middle Stone Age
NHRA	National Heritage Resources Act No.25 of 1999, Section 35
SAHRA	South African Heritage Resources Association
YCE	Years before Common Era (Present)

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1 EXECUTIVE SUMMARY

This report details the results of an Archaeological Impact Assessment (AIA) Study as part of the scoping phase subject to a mining right application (MRA) and Environmental Impact Assessment (EIA) for the proposed Groothoek Coal Mine, north- west of Lephalale in the Limpopo Province. The report includes background information on the area's archaeology, its representation in southern Africa, and the history of the larger area under investigation, survey methodology and results as well as heritage legislation and conservation policies. A copy of the report will be supplied to the South African Heritage Resources Agency (SAHRA) and recommendations contained in this document will be reviewed in order to consider the conservation priority of sites located in the area.

A number of academic archaeological and historical studies have been conducted in this section of the Limpopo Province and these studies all infer a diverse archaeological and historical landscape, representative of most phases of human and cultural development in southern Africa. Seven areas of archaeological and heritage potential were located during the AIA survey of the Groothoek Coal Mine Study Area, covering a surface area of approximately 2000ha.

Palaeontology:

Since the palaeontological sensitivity of rock units within the study area is generally low the impact significance of the proposed mining activities as far as fossil heritage is concerned, is likely to be small. However, a Palaeontological Impact Assessment should be considered and, should fossil remains such as fossil fish, reptiles or vitrified wood be exposed during construction, these objects should be carefully safeguarded and the relevant heritage resources authority (SAHRA) should be notified immediately so that the appropriate action can be taken by a professional palaeontologist.

Stone Age:

Stone Age material dating to the Middle Stone Age was documented in the Study Area. The sites occur in open contexts and their original positions have probably been lost which implies a limited significance for these artefacts.

MSA scatters at **Site GH01** and **GH02** are of low heritage priority. The sites are situated within the Study Area and as such, the impact on the sites by the proposed activity might be direct and permanent in duration where in essence, the impact will result the potential damage / loss of the sites. However, since the sites are of limited significance, the direct impact on the heritage resource is expected to be moderate and the threshold of the impact can be limited to a low impact by the implementation of monitoring measures for the sites. It is recommended that site monitoring be done if any construction takes place in the vicinity of the sites.

Iron Age (Farmer Period):

No Iron Age (Farmer Period) occurrences were observed in the survey area.

Historical/ Colonial Period:

The Lephalale area has a long Colonial Period settlement and mining history. From around the first half of the 19th century, the area was frequented by explorers, prospectors and farmers, all in search of wealth and riches. A number of poorly preserved brick and mud structures and middens, probably belonging to 20th century farm workers, are situated on Groothoek and Eendracht at **Site GH03** and **GH04**. These structures are of medium-low significance due to the poor preservation of the sites. Since the sites are situated within the study area the impact

on the sites by the proposed activity might be direct and of permanent duration where in essence, the impact will result the potential damage / loss of the sites. However, the sites are not of major significance and generally the direct impact on the heritage resource is expected to be moderate, where the threshold can be limited to a low impact by the implementation of monitoring measures for the site. Therefore it is recommended that site monitoring of these structures be done when development commences, **as graves might occur around the structures**. If the sites were to be impacted on by the mining development, destruction permits should be obtained from the relevant heritage resources authority (SAHRA). The remains of a mine on the farm Groothoek at **Site GH07** is of possible heritage priority since the site might inform on the early mining history of the Lephalale area and the site is of medium significance. The site is situated within the study area and as such, the impact on the site by the proposed activity might be considered to be direct and of permanent duration where in essence, the impact will result the potential damage / loss structures and objects of heritage value. Since the site is of significance, the direct impact on the heritage resource is expected to be high and it is essential that the threshold be limited to a low impact by the implementation of mitigation and monitoring measures for the site. It is recommended that the site be carefully documented and a historical context of the site be established, if the site is to be impacted on by the mining development. Lastly, a destruction permit should be obtained from the relevant heritage resources authority (SAHRA) if the site is to be altered, and the general surroundings around the mine should be closely monitored when the mining development commences.

Graves:

Two graveyards, **Site GH05** and **GH06** were recorded in / around the Groothoek Coal Mine Project Area. An informal burial site on Eendracht consists of 2 graves and the site is of heritage priority and carries a high significance rating. The site is situated within the study area and as such, the impact on the site by the proposed activity might be direct and of permanent duration where in essence, the impact will result the potential damage / loss of the burials. Since the site is potentially of major significance, the direct impact on the heritage resource is expected to be very high and it is essential that the threshold be limited to a low impact by the implementation of mitigation and monitoring measures for the site. The Lephalale municipal cemetery occurs south of Groothoek outside the Study Area. The site consists of a graveyard containing a large number of marked and unmarked graves, and carries a high significance rating. The resource is situated outside the margin of the Study Area and the impact on the site by the proposed activity might be peripheral and of permanent duration where in essence, the impact might result the potential damage / loss of the burials. Since all burial sites are of major heritage significance it is essential that impact be limited to a low by the implementation of mitigation (avoidance) and monitoring measures for the site. For all burial sites, a conservation buffer zone of at least 20m as well as the fencing off of all cemeteries and graves is recommended. However, should any of the graves or the proposed 20m buffer zone be impacted in any way by the planned activities, full grave relocations are recommended for these burials. This measure should be undertaken by a qualified archaeologist, and in accordance with relevant legislation and subject to any local and regional provisions and laws and by-laws pertaining to human remains. A full social consultation process should occur in conjunction with the mitigation of cemeteries and burials and a concerted effort must also be made to identify all buried individuals and to contact their relatives and descendants. Other legislative measures which may be of relevance include the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925), the Human Tissues Act (Act no. 65 of 1983, as amended), the Ordinance on Excavations (Ordinance no. 12 of 1980) as well as any local and regional provisions, laws and by-laws that may be in place.

It is essential that cognisance be taken of the larger archaeological landscape of the area in order to avoid the destruction of previously undetected heritage sites. Here, care should be taken around rock faces and outcrops

in the larger landscape, as rock art is known to occur on these outcrops. Water sources such as drainage lines and rivers should also be regarded as potentially sensitive in terms of possible Stone Age and Iron Age deposits. The possible existence of Historical Period resources deriving from the area's more recent history should also be considered. Graves and cemeteries generally occur around homesteads and utmost care should be taken not to disturb these high risk heritage resources as they involve complex intrinsic social and ritual attributes within the community. This report details the methodology, limitations and recommendations relevant to these heritage areas, as well as areas of proposed development. It should be noted that mitigation measures are valid for the duration of the development process, and mitigation measures might have to be implemented on additional features of heritage importance not detected during this Phase 1 assessment (e.g. uncovered during the construction process).

2 BACKGROUND

2.1 Scope and Motivation

AGES was appointed by the Groothoek Coal Mining Company (GCMC) to conduct an Archaeological Impact Assessment (AIA) Study on the farms Groothoek 504 LQ and Eendracht 505 LQ near Lephalale in the Limpopo Province. The study was requested subject to the scoping phase for the Mining Right application and Environmental Impact Assessment (EIA) of the proposed Groothoek Coal Mine. The rationale of the study was to determine the presence of heritage resources such as archaeological and historical sites and features, graves and places of religious and cultural significance; to consider the impact of the proposed project on such heritage resources, and to submit appropriate recommendations with regard to the cultural resources management measures that may be required at affected sites / features.

2.2 Project Direction

AGES's expertise ensures that all projects be conducted to the highest international ethical and professional standards. As archaeological specialist for AGES, Mr Neels Kruger acted as field director for the project; responsible for the assimilation of all information, the compilation of the final AIA report and recommendations in terms of heritage resources on the demarcated project areas. Mr Kruger is an accredited archaeologist and Culture Resources Management (CRM) practitioner with the Association of South African Professional Archaeologists (ASAPA), a member of the Society for Africanist Archaeologists (SAFA) and the Pan African Archaeological Association (PAA) as well as a Master's Degree candidate in archaeology at the University of Pretoria.

2.3 Project Description

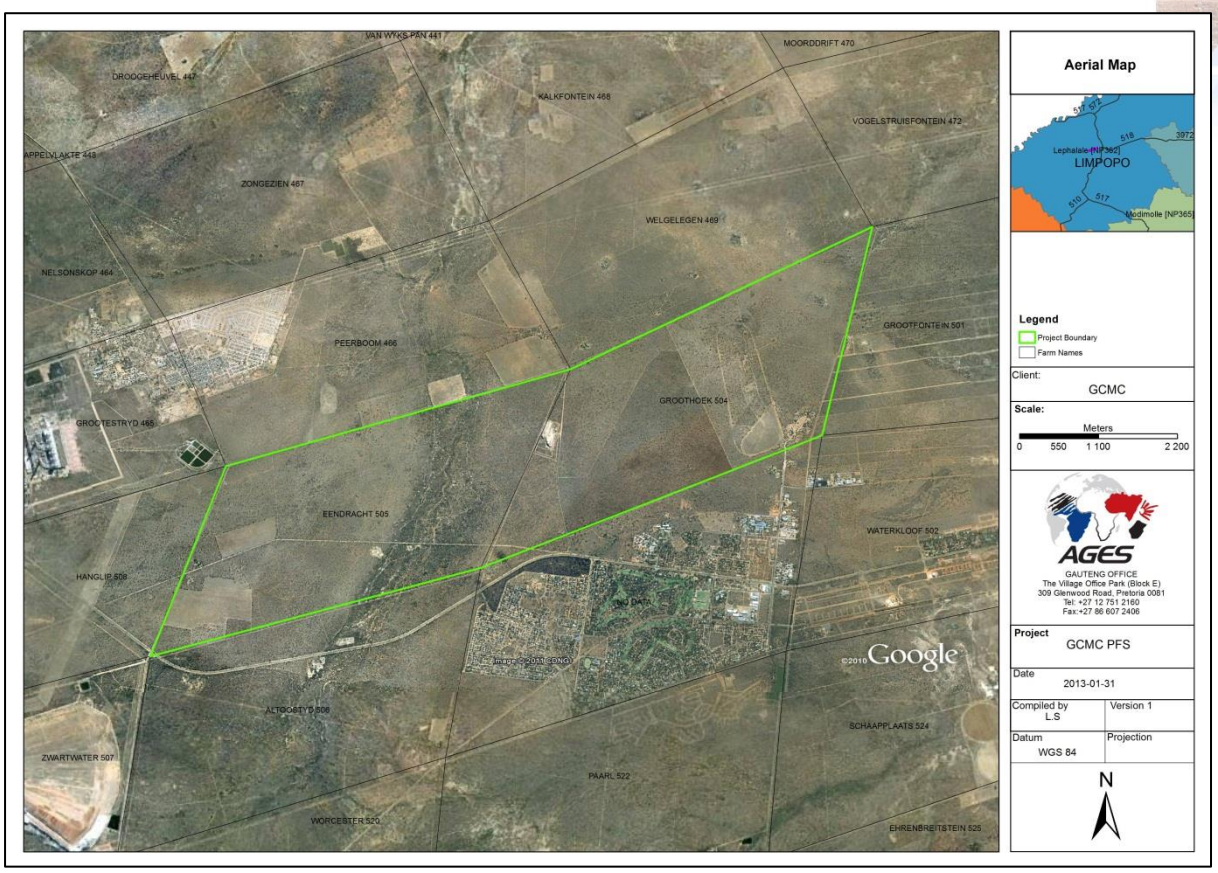

Figure 2-1: Aerial map indicating the Groothoek Coal Mine Study Area on the farms Eendracht (blue) and Groothoek (green).

The Groothoek Coal Mining Company (GCMC) has identified areas on the farms Groothoek 504 LQ and Eendracht 505 LQ directly north-west of Lephalale for the mining of coal. Scoping studies are currently underway subject to a Mining Right application and EIA of the proposed Groothoek Coal Mine. The following infrastructure items form part of the mining right application, although no detailed layout plan is currently available:

- Opencast pit or underground mining shafts;
- Waste Rock Dump;
- Haul and Access Roads;
- Topsoil Dumps;
- Weighbridge;
- Processing Plant;
- Housing, Workshops and Administrative Facilities;
- Water supply infrastructure;
- Electricity supply infrastructure

2.4 Terms of Reference

Heritage specialist input in Environmental Impact Assessment (EIA) processes is essential to ensure that through the management of change, development conserves our heritage. Heritage specialist input in EIA processes can play a positive role in the development process by enriching an understanding of the past and its contribution to the present. It is also a legal requirement for certain categories of development defined in the relevant heritage

legislation, which may have an impact on heritage resources. Thus, EIAs should, in all cases, include the assessment of Heritage Resources. The heritage component of the EIA is provided for in the **National Environmental Management Act, (Act 107 of 1998)** and endorsed by section 38 of the **National Heritage Resources Act (NHRA - Act 25 of 1999)**. In addition, the NHRA protects all structures and features older than 60 years (see Section 34), archaeological sites and material (see Section 35) and graves as well as burial sites (see Section 36). The objective of this legislation is to enable and to facilitate developers to employ measures to limit the potentially negative effects that the development could have on heritage resources.

Based hereon, this project functioned according to the following **terms of reference for** heritage specialist input**:**

- *Provide a detailed description of all archaeological artefacts, structures (including graves) and settlements which may be affected, if any.*
- *Assess the nature and degree of significance of such resources within the area.*
- *Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance.*
- *Assess any possible impact on the archaeological and historical remains within the area emanating from the proposed development activities.*
- *Propose possible heritage management measures provided that such action is necessitated by the development.*
- *Liaise and consult with the South African Heritage Resources Agency (SAHRA).*

2.5 CRM: Legislation, Conservation and Heritage Management

The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

2.5.1 Legislation regarding archaeology and heritage sites

The South African Heritage Resources Agency (SAHRA) and their provincial offices aim to conserve and control the management, research, alteration and destruction of cultural resources of South Africa. It is therefore vitally important to adhere to heritage resource legislation at all times.

- *National Heritage Resources Act No 25 of 1999, section 35*

According to the National Heritage Resources Act of 1999 a historical site is “any identifiable building or part thereof, marker, milestone, gravestone, landmark or tell older than 60 years.” This clause is commonly known as the “60-years clause”. Buildings are amongst the most enduring features of human occupation, and this definition therefore includes all buildings older than 60 years, modern architecture as well as ruins, fortifications and Iron Age settlements. “Tell” refers to the evidence of human existence which is no longer above ground level, such as building foundations and buried remains of settlements (including artefacts).

The Act identifies heritage objects as:

- 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
- any other prescribed category

With regards to activities and work on archaeological and heritage sites this Act states that:

"No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit by the relevant provincial heritage resources authority." (34. [1] 1999:58)

and

"No person may, without a permit issued by the responsible heritage resources authority-

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites. (35. [4] 1999:58)."

And:

"No person may, without a permit issued by SAHRA or a provincial heritage resources agency-

(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, 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;

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals (36. [3] 1999:60)."

- *Human Tissue Act of 1983 and Ordinance on the Removal of Graves and Dead Bodies of 1925*

Graves 60 years or older are heritage resources and fall under the jurisdiction of both the National Heritage

Resources Act and the Human Tissues Act of 1983. However, graves younger than 60 years are specifically protected by the Human Tissues Act (Act 65 of 1983) and the Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) as well as any local and regional provisions, laws and by-laws. Such burial places also fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial MEC as well as the relevant Local Authorities.

2.5.2 Background to HIA and AIA Studies

South Africa's unique and non-renewable archaeological and palaeontological heritage sites are 'Generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. Heritage sites are frequently threatened by development projects and both the environmental and heritage legislation require impact assessments (HIAs & AIAs) that identify all heritage resources in areas to be developed. Particularly, these assessments are required to make recommendations for protection or mitigation of the impact of the sites. HIAs and AIAs should be done by qualified professionals with adequate knowledge to (a) identify all heritage resources including archaeological and palaeontological sites that might occur in areas of developed and (b) make recommendations for protection or mitigation of the impact on the sites. The National Heritage Resources Act (Act No. 25 of 1999, section 38) provides guidelines for Cultural Resources Management and prospective developments:

"38. *(1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as:*

(a) the construction of a road, wall, powerline, 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 50 m 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."

And:

"The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

(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;

(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 (38. [3] 1999:64)."

Consequently, section 35 of the Act requires Heritage Impact Assessments (HIAs) or Archaeological Impact Assessments (AIAs) to be done for such developments in order for all heritage resources, that is, all places or objects of aesthetics, architectural, historic, scientific, social, spiritual, linguistic or technological value or significance to be protected. Thus any assessment should make provision for the protection of all these heritage components, including archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects.

3 REGIONAL CONTEXT

3.1 Area Location

The farms Groothoek 504 LQ and Eendracht 505 LQ are situated approximately 3km north-west of Lephalale and north of the township of Onverwacht in the western Limpopo Province, generally at **S23°40'19.60" E27°40'08.47".** The area falls within the Waterberg Magisterial District, more specifically the Lephalale Local Municipality of the Limpopo Province. The farms are situated on the Steenbokpan provincial road (D1675) which passes the Meduppectingi Power Station, in an expanding industrial area where an increasing number of power plants are constructed around rich coal resources.

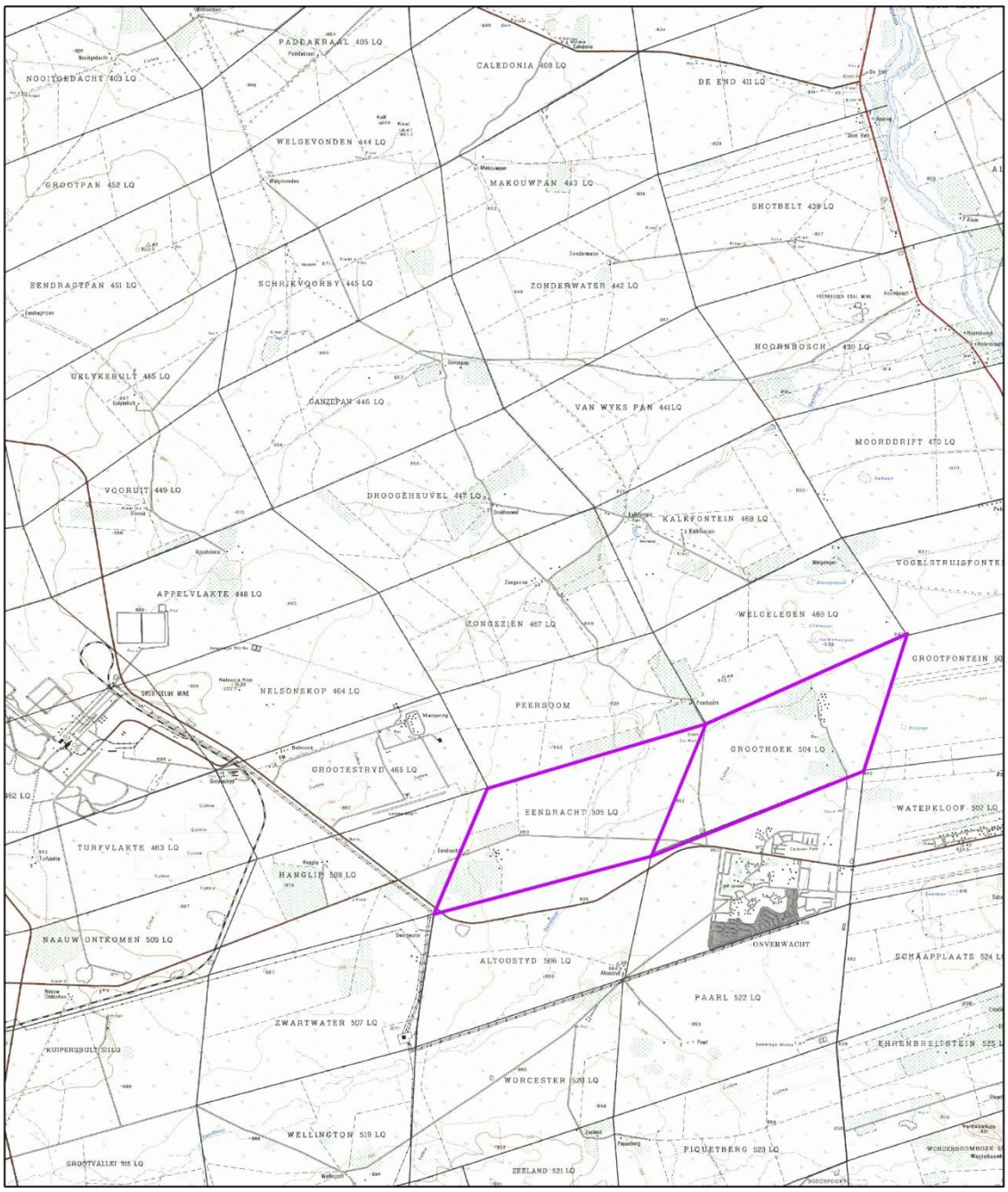

Figure 3-1: 1:50 00 Map representation of the location of the proposed Groothoek Coal Mine (2327DA)

3.2 Area Description: Receiving Environment

The study area falls within the Savanna Biome, which is the largest Biome in southern Africa, occupying over one-third of the surface area of South Africa (Acocs 1988). It is characterised by a grassy ground layer and a distinct upper layer of woody plants. The vegetation of the site is classified as Limpopo Sweet Bushveld and is characterised by thorny trees (*Acacia* species) and open woodland. The area's geology is mostly constituted out of the the Volksrust Formation, consisting of 55m of intercalated mudstones and coal and the Vryheid Formation. These formations are also the major coal bearing horizons of the Ecca Group in the Waterberg. The study area occurs in the Mokolo River Catchment, which drains into the Limpopo River to the north. The topography of the area is flat, varying between 900 and 922 meters above mean sea level. The study area is drained mainly by surface run-off with surface water flowing into the Sandloop River that bisects the site from South to North. Human interventions and development forms part of the history of the Waterberg and large sections of land has been altered by human activity in the past. The area contributes significantly towards the activity of agriculture with the cultivations of, amongst others, tobacco, cotton, sunflower, sorghum, and maize. In addition, the area provides vast grazing areas adding significantly to the production of red meat and the game industry and the effect of subsistence crop farming, as well as overgrazing by cattle and game with resulting vegetation changes is prevalent across the Waterberg biome. The growing tourism, hunting and power generation industries also influences the current human footprint on the area.

3.3 Site Description

The Groothoek Coal Mine Study Area on the farms Groothoek 504 LQ and Eendracht 505 LQ covers more or less 2000ha in surface extent. Large surface portions of Eendracht have been converted to crop fields (see Figure 3-2) with other areas on this farm, and across the farm Groothoek covered with indigenous vegetation. A large municipal rubbish dump facility occurs on the border between the two farms in a central portion of the Study Area. A large portion of Groothoek towards the east has been converted into the Lephalale equestrian grounds and horse racing track (see Figure 3-3). A number of small natural pans occur on Groothoek and a prominent drainage line transects Eendract from the South to the North (see previous section). Portions of the properties have been disturbed as a result of erosion and diggings. The Matimba and Medupi power generation plant occurs directly west of Eendracht.

Figure 3-2: Crop fields on the farm Eendracht, the Matimba power generation facility is visible in the distance.

Figure 3-3: The Lephalale equestrian grounds on the farm Groothoek.

4 METHOD OF ENQUIRY

4.1 Sources of Information

Data from detailed desktop, aerial and field studies were employed in order to sample surface areas systematically and to ensure a high probability of heritage site recording.

4.1.1 Desktop Study

A desktop study was prepared in order to contextualize the proposed project within a larger historical milieu. The study focused on relevant previous studies, archaeological and archival sources, Heritage Impact Assessment Reports, aerial photographs, historical maps and local histories, all pertaining to the larger landscape of this section of the Limpopo Province.

4.1.2 Aerial Representations and Survey

Aerial photography is often employed to locate and study archaeological sites, particularly where larger scale area surveys are performed. This method was applied to great success in the pedestrian and vehicular survey in the Groothoek Coal Mine Study Area, where contour lines of elevations, depressions, variation in vegetation, soil marks and landmarks were examined.

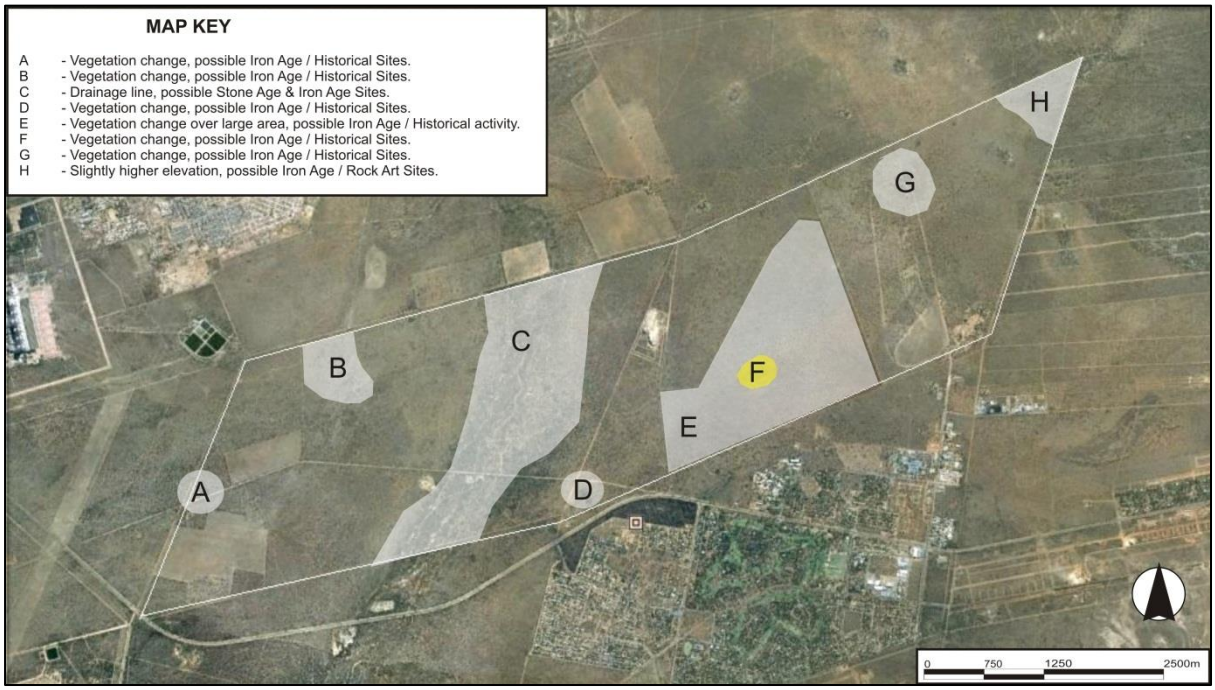

Figure 4-1: Aerial representation of the landscape on Eendracht and Groothoek, indicating areas of possible heritage potential. .

Specific attention was given to shadow sites (shadows of walls or earthworks which are visible early or late in the day), crop mark sites (crop mark sites are visible because disturbances beneath crops cause variations in their height, vigour and type) and soil marks (e.g. differently coloured or textured soil (soil marks) might indicate ploughed-out burial mounds). Attention was also given to moisture differences, as prolonged dampening of soil as a result of precipitation frequently occurs over walls or embankments. By superimposing high frequency aerial photographs with images generated with Google Earth, potential sensitive areas were subsequently identified,

geo-referenced and transferred to a handheld GPS device. In addition, based on existing knowledge of the local heritage landscape, the farms were divided into smaller survey zones centred around areas of higher site catchment probability (where human activity was likely to occur in prehistoric and historic times e.g. around water sources, near soils fit for agriculture, on ridges). These survey zones were then transferred to a handheld GPS device. These areas served as referenced points from where further vehicular and pedestrian surveys were carried out

4.1.3 Field Survey

Archaeological survey implies the systematic procedure of the identification of archaeological sites. An archaeological survey of areas to be impacted by the proposed Groothoek Coal Mine was conducted in September 2012. The process encompassed a systematic field survey in accordance with standard archaeological practise by which heritage resources are observed and documented. In order to sample surface areas systematically and to ensure a high probability of site recording the farms were systematically surveyed, GPS reference points were visited and random spot checks were made (see detail in previous section). Using a Garmin E-trex Legend GPS objects and structures of archaeological / heritage value were recorded and photographed with a Canon 450D Digital camera. Real time aerial orientation, by means of a mobile Google Earth application was also employed to investigate possible disturbed areas during the survey.

Figure 4-2: Captured screen contents of real time mobile aerial orientation representations employed during the field survey, current field location indicated by blue marker.

As most archaeological material occur in single or multiple stratified layers beneath the soil surface, special attention was given to disturbances, both man-made such as roads and clearings, as well as those made by natural agents such as burrowing animals and erosion.

4.1.4 General Public Liaison

Consultation with locals and the farm owner of Eendracht provided information on the general history of the area, possible locations of heritage resources and brief commentaries on the recent history of the area.

4.2 Limitations

4.2.1 Access

Access to the farms Eendracht is gained through a farm road connecting to the D1675 Steenbokpan provincial road. Access control applies to the property but the site could easily be accessed. The farm is interconnected with a series of smaller farm roads. Groothoek is accessed via a number of smaller dirt roads around Lephalale, and the road approaching the Lephalale equestrian grounds. However, few farm roads occur within the property and access to more remote parts of Groothoek proved to be somewhat of a constraint during the site survey.

4.2.2 Visibility

The surrounding vegetation around Lephalale is mostly constituted out of a combination of scattered bush, trees and grasslands. The general visibility at the time of the AIA survey (September 2012) was moderate to low due to dense vegetation occurring in most areas in the Study Area. In single cases during the survey sub-surface inspection was possible. Where applied, this revealed no archaeological deposits.

Figure 4-3: View of general surroundings in the south-eastern portion of Eendracht, looking south.

Figure 4-4: View of vegetation in the prominent drainage line on the farm Eendracht.

Figure 4-5: View of general surroundings around a small water pan on the farm Groothoek.

Figure 4-6: View of general surroundings in the Study Area on the farm Eendracht, looking north.

4.2.3 Limitations and Constraints

Due to the large extent of the surface area subject to the AIA study, the pedestrian and vehicular site survey primarily focused around areas tentatively identified as sensitive and of high heritage probability (i.e. those noted during the aerial survey) as well as areas of high human settlement catchment. However, the following constraints were encountered:

- **Survey Time and Extent:** Generally, time restrictions in terms of the site survey proved to be a constraint due to the vast surface extent of the Groothoek Coal Mine Study Area. Therefore, pedestrian site surveys focused around areas tentatively identified as sensitive (i.e. along drainage lines and those noted during the aerial survey) as well as zones to be directly impacted by future infrastructure (sites identified for tailings dams & the mine plant).
- **Visibility:** Visibility proved to be a constraint in more pristine areas where documented sites proved to be densely overgrown and obstructed by surface vegetation.

Thus, even though it might be assumed that survey findings are representative of the heritage landscape of the Groothoek Coal Mine Study Area, it should be stated that the possibility exists that individual sites could be missed due to the localised nature of some heritage remains as well as the possible presence of sub-surface archaeology. Therefore, maintaining due cognisance of the integrity and accuracy of the archaeological survey, it should be stated that the heritage resources identified during the study do not necessarily represent *all* the heritage resources present on the property. The subterranean nature of some archaeological sites, dense vegetation cover and visibility constraints sometimes distort heritage representations and any additional heritage resources located during consequent development phases must be reported to the Heritage Resources Authority or an archaeological specialist.

5 RESULTS: ARCHAEOLOGICAL SURVEY

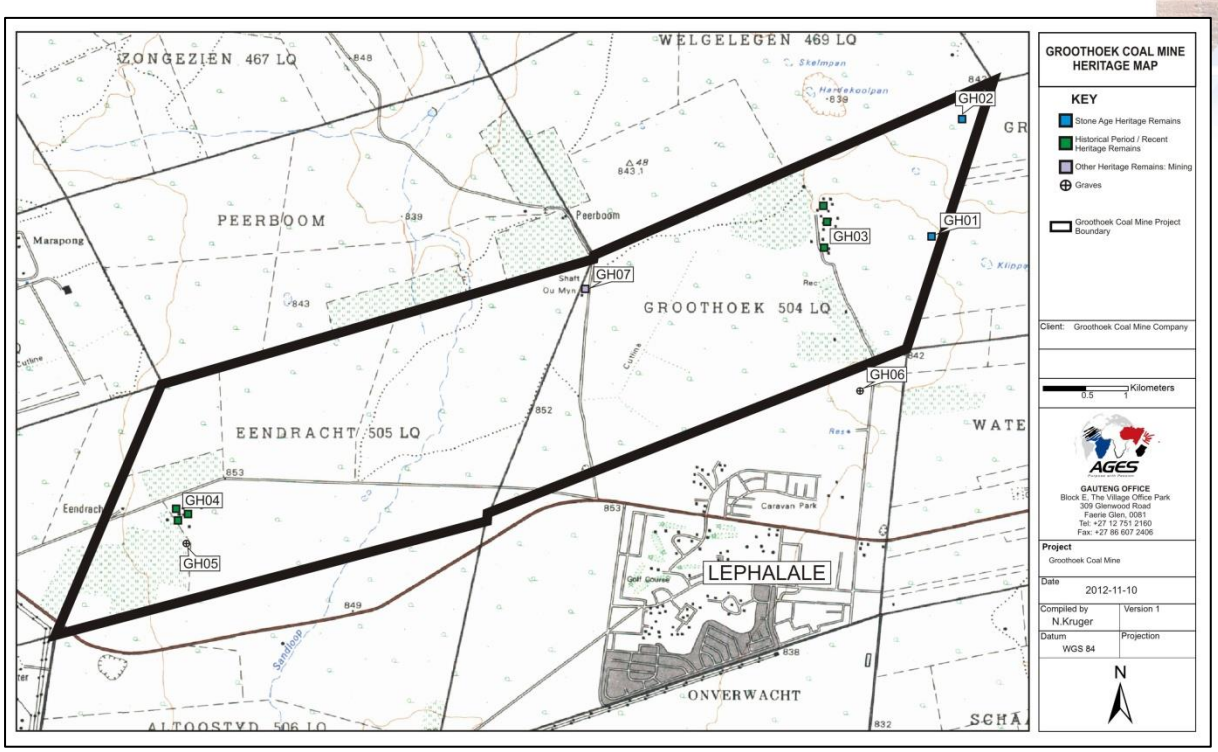

Figure 5-1: Map indicating the locations of archaeological and historical occurrences discussed in the text.

5.1 The Stone Age

- **Site GH01: S23°39'22.89" E27°42'37.63"**
- **Site GH02: S23°38'40.43" E27°42'47.88"**

Single debris lithic flakes on fine grained stone, probably dating to the Middle Stone Age (MSA) were observed on the surface at two small pans on the farm Groothoek. A large rock core showing clear signs of knapping were also observed at one of the sites. These lithic occurrences occur in very low frequencies in open contexts and their original positions have been lost as a result of surface movement around the pans. They are of limited scientific value.

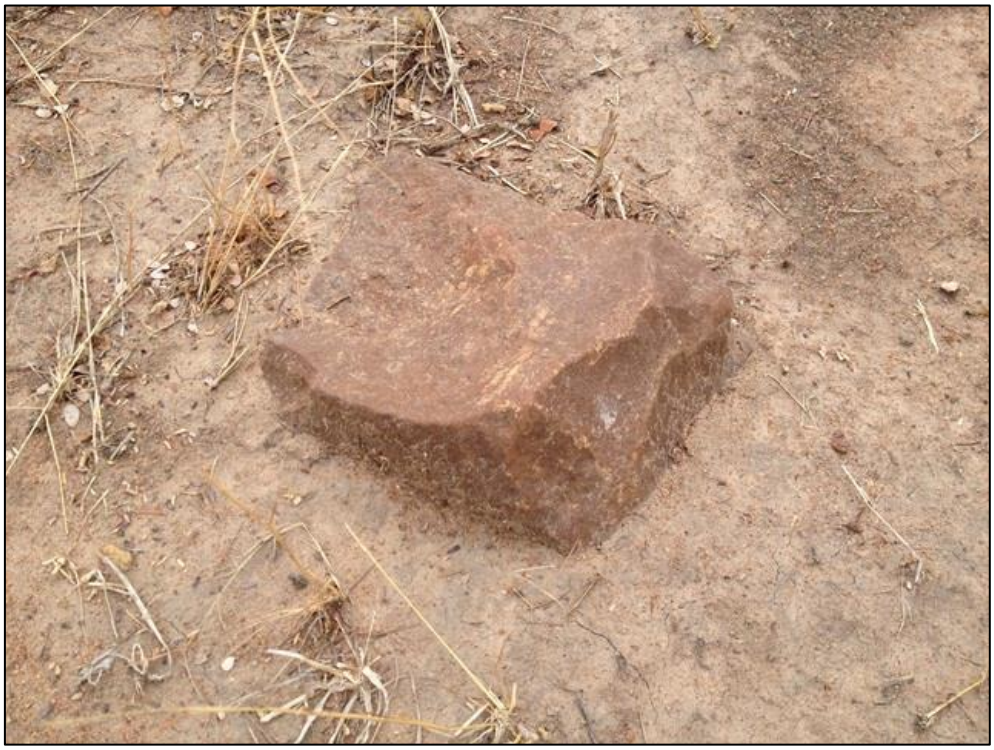

Figure 5-2: Rock core showing clear signs of knapping documented at Site GH02.

5.2 The Iron Age (Farmer Period)

No Iron Age (Farmer Period) occurrences were observed in the survey area. Since portions of the farm Eendracht have been altered by past farming activities, it is likely that Iron Age remnants possibly occurring in the landscape might have been destroyed by farming and agriculture in the 20th century.

5.3 Historical / Colonial Period and recent times

Rich remnants of recent occupation around Ellisras (now Lephalale) occur across the landscape, with two ruined Colonial Period / Recent sites documented in the study area.

- **Site GH03: S23°39'25.93" E27°41'59.23"**

A number of poorly preserved brick and concrete foundation structures, wall enclosures and middens occur in an area of approximately 200m x 50m north of the Lephalale equestrian grounds on the farm Groothoek. The structures, generally from bricks in square of circular shapes, probably belonged to farm workers who resided in the area, or employees of the equestrian club in the later-20th century. In addition, material in middens such as glass, metal, enamel, plastic and wood as well as farming implements indicate a more recent age for the structures. The sites are probably of limited significance due to the poor preservation of structures, and the apparent recent age of some of the features.

Figure 5-3: Farming implements of recent age at Site GH03.

- **Site GH04: S23°40'57.60" E27°38'11.06"**

The ruined remains houses, fire places and large middens south west of the current farmstead on the farm Eendracht next to cultivated crop fields. According to the current farm owner, the houses, generally built with clay bricks in square shapes belonged to farm labourers and are of recent age. Material in middens such as glass, metal, enamel, plastic and wood also indicate a more recent age for the structures. The sites are probably of limited significance due to the poor preservation of structures and the recent age of some of the features.

Figure 5-4: Brick house ruin at Site GH04.

Figure 5-5: Metal, glass and plastic objects from Site GH04.

- **Possible other Historical / Colonial Period Remains**

It unlikely that further historical period remains will be present away from crop lands and existing remains in the study area.

5.4 Graves

Two graveyards and/ or burial places were recorded within the surroundings of the study area. In some instances, burial locations in this area follow a general pattern where graves occur around historical house structures and homestead complexes.

- **Site GH05: S23°41'9.02" E27°38'17.57"**

A small graveyard was recorded south of the recent ruins (**Site GH04**) on the farm Eendracht. The site consists of 2 graves of which one have a marble gravestone with dressings. The following inscriptions were recorded:

Mokau Malefyane Elizabeth
Birth: 1931-02-03
Death: 1965-02-28
Robala Ka Kgotso Mokwena
Ke Bana Ba Gago Le Ditlogolo Ka Psalm 23
Re Tla Dula Re Go Gopola

The other grave is demarcated by iron rods placed on the four edges of the burial pit. No grave dressing or offering were observed on the grave. According to the current farm owner, the graves are those of farm labourers who resided at Site GH04 and had worked on Eendracht.

Figure 5-6: Two graves at Site GH05. Note iron rods demarcating the extremities of the unmarked grave.

Figure 5-7: Detail of inscription on the marked grave at Site GH05.

- **Site GH06: S23°40'16.76" E27°42'11.95"**

The Lephalale municipal cemetery is situated directly south of the farm Groothoek outside of the study area, next to a small road towards the Lephalale equestrian grounds. The fenced and well maintained graveyard containing a large number of marked and unmarked graves is currently still in use.

Figure 5-8: View of Site GH06, the Lephalale municipal cemetery.

- **Possible other Burial Sites**

In this area, graves and family cemeteries are sometimes found in association with homesteads, crop fields and historical buildings and burials might be found to occur around these locations.

5.5 Other: Mining

- **Site GH07: S23°39'41.48" E27°40'35.47"**

The remains of a mine were documented on the farm Groothoek, directly north of the Lephalale refuse dump site. Small mine dumps, an open mine shaft and mining infrastructure such as a crusher, mine tower and generators still remain at the site. The mine was probably in use in the mid-20th century. The project site has been under investigation since the 1960's and several studies have been conducted to determine the extent of the resource and the feasibility of the proposed coal mining operations. Coal has not been mined from the site in the past probably due to economic reasons, and because the type of coal was not in demand in the past (DWA, 2008). A small vertical shaft fitted with a kibble was erected on the extreme western border of Groothoek and sunk to a depth of 70-80 m. It is understood that bulk samples were excavated from this shaft in the 1980's.

Figure 5-7: Abandoned mine shaft and crusher at the cemetery at Site GH07.

Figure 5-8: Remains of mining equipment and infrastructure at Site GH07.

6 ARCHAE0-HISTORICAL CONTEXT

6.1 The archaeology of Southern Africa

Archaeology in southern Africa is typically divided into two main fields of study, the **Stone Age** and the **Iron Age** or **Farmer Period**.

The following table provides a concise outline of the chronological sequence of periods, events, cultural groups and material expressions in Southern African pre-history and history:

Period	Epoch	Associated cultural groups	Typical Material Expressions
Early Stone Age 2.5m – 250 000 YCE	Pleistocene	Early Hominins: *Australopithecines* *Homo habilis* *Homo erectus*	Typically large stone tools such as hand axes, choppers and cleavers.
Middle Stone Age 250 000 – 25 000 YCE	Pleistocene	First *Homo sapiens* species	Typically smaller stone tools such as scrapers, blades and points.
Late Stone Age 20 000 BC – present	Pleistocene / Holocene	*Homo sapiens sapiens* including San people	Typically small to minute stone tools such as arrow heads, points and bladelets.
Early Iron Age / Early Farmer Period 300 – 900 AD	Holocene	First Bantu-speaking groups	Typically distinct ceramics, bead ware, iron objects, grinding stones.
Middle Iron Age (Mapungubwe / K2) / early Later Farmer Period 900 – 1350 AD	Holocene	Bantu-speaking groups, ancestors of present-day groups	Typically distinct ceramics, bead ware and iron / gold / copper objects, trade goods and grinding stones.
Late Iron Age / Later Farmer Period 1400 AD -1850 AD	Holocene	Various Bantu-speaking groups including Venda, Thonga, Sotho-Tswana and Zulu	Distinct ceramics, grinding stones, iron objects, trade objects, remains of iron smelting activities including iron smelting furnace, iron slag and residue as well as iron ore.
Historical / Colonial Period ±1850 AD – present	Holocene	Various Bantu-speaking groups as well as European farmers, settlers and explorers	Remains of historical structures e.g. homesteads, missionary schools etc. as well as, glass, porcelain, metal and ceramics.

6.1.1 The Stone Ages

- **The Earlier Stone Age (ESA)**

Earlier Stone Age deposits typically occur on the flood-plains of perennial rivers and may date to between 2 million and 250 000 years ago. These ESA open sites sometimes contain stone tool scatters and manufacturing debris ranging from pebble tool choppers to core tools such as handaxes and cleavers. These stone tools were made by the earliest hominins. These groups seldom actively hunted and relied heavily on the opportunistic scavenging of meat from carnivore fill sites.

- **The Middle Stone Age (MSA)**

The majority of Middle Stone Age (MSA) sites occur on flood plains and sometimes in caves and rock shelters. Sites usually consist of large concentrations of knapped stone flakes such as scrapers, points and blades and associated manufacturing debris. Tools may have been hafted but organic materials, such as those used in hafting, seldom remain preserved in the archaeological record. Limited drive-hunting activities are also associated with the MSA.

- **The Later Stone Age (LSA)**

Sites dating to the Later Stone Age (LSA) are better preserved in rock shelters, although open sites with scatters of mainly stone tools can occur. Well-protected deposits in shelters allow for stable conditions that result in the preservation of organic materials such as wood, bone, hearths, ostrich eggshell beads and even bedding material. By using San (Bushman) ethnographic data a better understanding of this period is possible. South African rock art is also associated with the LSA.

6.1.2 The Iron Age (Farmer Period)

- **Early Iron Age (Early Farming Communities)**

The Early Iron Age (also Early Farmer Period) marks the movement of Bantu speaking farming communities into South Africa at around 200 A.D. These groups were agro-pastoralists that settled in the vicinity of water in order to provide subsistence for their cattle and crops. Artefact evidence from Early Farmer Period sites is mostly found in the form of ceramic assemblages and the origins and archaeological identities of this period are largely based upon ceramic typologies and sequences, where diagnostic pottery assemblages can be used to infer group identities and to trace movements across the landscape. Early Farmer Period ceramic traditions are classified by some scholars into different "streams" or trends in pot types and decoration that, over time emerged in southern Africa. These "streams" are identified as the Kwale Branch (east), the Nkope Branch (central) and the Kalundu Branch (west). More specifically, in the northern regions of South Africa at least three settlement phases have been distinguished for prehistoric Bantu-speaking agropastoralists. The first phase of the Early Iron Age, known as Happy Rest (named after the site where the ceramics were first identified), is representative of the Western Stream of migrations, and dates to AD 400 - AD 600. The second phase of Diamant is dated to AD 600 - AD 900 and was first recognized at the eponymous site of Diamant in the western Waterberg. The third phase, characterised by herringbone-decorated pottery of the Eiland tradition, is regarded as the final expression of the Early Iron Age (EIA) and occurs over large parts of the North West Province, Northern Province, Gauteng and Mpumalanga. This phase has been dated to about AD 900 - AD 1200. Early Farmer Period ceramics typically display features such as large and prominent inverted rims, large neck areas and fine elaborate decorations. The Early Iron Age continued up to the end of the first millennium AD.

- **Middle Iron Age / K2 Mapungubwe Period (early Later Farming Communities)**

The onset of the middle Iron Age dates back to ±900 AD, a period more commonly known as the Mapungubwe / K2 phase. These names refer to the well known archaeological sites that are today the pinnacle of South Africa's Iron Age heritage. The inhabitants of K2 and Mapungubwe, situated on the banks of the Limpopo, were agriculturalists and pastoralists and were engaged in extensive trade activities with local and foreign traders. Although the identity of this Bantu-speaking group remains a point of contestation, the Mapungubwe people were the first state-organized society southern Africa has known. A considerable amount of golden objects, ivory, beads (glass and gold), trade goods and clay figurines as well as large amounts of potsherds were found at these sites and also appear in sites dating back to this phase of the Iron Age. Ceramics of this tradition take the form of beakers with upright sides and decorations around the base (K2) and shallow-shouldered bowls with decorations as well as globular pots with long necks (Mapungubwe). The site of Mapungubwe was deserted at around 1250 AD and this also marks the relative conclusion of this phase of the Iron Age.

- **Later Iron Age (Later Farming Communities)**

The late Iron Age of southern Africa marks the grouping of Bantu speaking groups into different cultural units. It also signals one of the most influential events of the second millennium AD in southern Africa, the difaqane. The difaqane (also known as "the scattering") brought about a dramatic and sudden ending to centuries of stable society in southern Africa. Reasons for this change was essentially the first penetration of the southern African

interior by Portuguese traders, military conquests by various Bantu speaking groups primarily the ambitious Zulu King Shaka and the beginning of industrial developments in South Africa. Different cultural groups were scattered over large areas of the interior. These groups conveyed with them their customs that in the archaeological record manifest in ceramics, beads and other artefacts. This means that distinct pottery typologies can be found in the different late Iron Age groups of South Africa.

6.1.3 Historical and Colonial Times and Recent History

The Historical period in southern Africa encompass the course of Europe's discovery of South Africa and the spreading of European settlements along the East Coast and subsequently into the interior. In addition, the formation stages of this period are marked by the large scale movements of various Bantu-speaking groups in the interior of South Africa, which profoundly influenced the course of European settlement. Finally, the final retreat of the San and Khoekhoen groups into their present-day living areas also occurred in the Historical period in southern Africa.

6.1.4 Bantu Speaking Groups in the South African interior:

It should be noted that terms such as "Nguni", "Sotho", "Venda" and others refer to broad and comprehensive language groups that demonstrated similarities in their origins and language. It does not imply that these Nguni / Sotho groups were homogeneous and static; they rather moved through the landscape and influenced each other in continuous processes marked by cultural fluidity.

Ethnographers generally divide major Bantu-speaking groups of southern Africa into two broad linguistic groups, the Nguni and the Sotho with smaller subdivisions under these two main groups. Nguni groups were found in the eastern parts of the interior of South Africa and can be divided into the northern Nguni and the southern Nguni. The various Zulu and Swazi groups were generally associated with the northern Nguni whereas the southern Nguni comprised the Xhosa, Mpondo, Thembu and Mpondomise groups. The same geographically based divisions exist among Sotho groups where, under the western Sotho (or Tswana), groups such as the Rolong, Hurutshe, Kwena, Fokeng and Kgatla are found. The northern Sotho included the Pedi, and an amalgamation of smaller groups united to become the southern Sotho group or the Basutho. Other smaller language groups such as the Venda, Lemba and Tshonga Shangana transpired outside these major entities but as time progressed they were, however to lesser or greater extent influenced and absorbed by neighbouring groups.

During the last 500 years, the Highveld areas of Gauteng, Mpumalanga and the Limpopo Province were occupied mainly by Ndebele and Pedi groups. These Ndebele groups originated from the Hlubi, a small split group that moved to the north-eastern parts of the Transvaal where they became known as the Transvaal Ndebele (not to be confused with the Ndebele of Mzilikazi). Ndebele groups settled in areas surrounding present-day Pretoria, at Kwa Maza near present-day Stoffberg, at Polokwane and Modimole and across large parts of Mpumalanga. The Kgatla, a Pedi group was established at the end of the 15th century by chief Mokgatla, who broke away from the Hurutshe group to settle in the Witwatersrand area. The Kgatla resided in an expansive area that included present-day Pretoria, the surroundings of the Magaliesberg and areas around present-day Brits, Rustenburg, Modilmolle and Bela-Bela as well as the Pilansberg area. Isolated Kgatla communities also settled in the surroundings of Lydenburg, Middelburg, Bronkhorstspruit and the Soutpansberg.

6.2 South-Western Limpopo and the Waterberg: Special Themes.

6.2.1 Early History

The cultural historical landscape of the Waterberg area spans million years with evidence of hominin occupation, Stone Age traditions, Iron Age farmers and historical events. Makapansgat, a deep limestone cave near Mokopane has yielded remains of *Australopithecus africanus* that dates to more than 3 million years BP and also *Homo erectus*, dating to approximately 1 million years BP. However, Earlier Stone Age (ESA) material is scarce on the Waterberg plateau. The Middle Stone Age (MSA) is abundantly represented in the Waterberg area and archaeological excavations at sites such as the Olieboomspoort Shelter in the north-western part of the Waterberg have yielded rich MSA deposits which display a large degree of specialisation and skill in stone working (Van der Ryst 1996). These groups occupied open camps which were situated in the proximity of water sources such as pans, lakes or rivers. There is a noticeable gap in the Waterberg between MSA assemblages and material form the Later Stone Age (LSA), suggesting that the Waterberg may not have seen dense human occupation for a long period of time. However, Later Stone Age groups, including the San hunter gatherers and Khoi herders frequented the area in the last few millennia, and numerous LSA sites have been discovered and excavated. Similarly, LSA evidence such as stone implements, ceramics and a wealth of rock paintings and markings are scattered over the plateau.

6.2.2 Later History

Within the last two thousand years, San and Khoi groups were displaced by Iron Age farming communities moving into the Waterberg area, possibly prompted by the spread of tsetse fly into the Lowveld areas. Three phases of Iron Age occupation are generally distinguished in the Waterberg (Aukema 1989). The first phase, known as the Eiland tradition, is characterised by herringbone decoration motives on pottery. Little to no stone walling occurs at sites dating to this phase. On the other hand, sites of the second phase of occupation dating to the Later Iron Age are commonly found on hilltops where they display elaborate stone walling. These settlements could be linked to the arrival of Nguni-speakers (Ndebele) in the region between the 16th and 17th centuries AD. The third phase of Iron Age settlement, dating to the 18th and early 19th century, contains bi and multi chrome (red and black) pottery commonly attributed to a Sotho-Tswana ceramic tradition known as Moloko (see *Sotho-Tswana History* section below).

Early Sotho-Tswana History

Within a larger archaeological context, Iron Age settlement representations in the form of stone walling in the Waterberg can undoubtedly be traced back to ancestral Sotho-Tswana occupation and developments from the sixteenth century AD onwards. Diagnostic pottery assemblages are commonly used in the South African Iron Age to infer group identities and to trace movements across the landscape. Similarly, the migration of the Sotho-Tswana speakers in South Africa in the 16th century marked a new ceramic style, known as Moloko. The Moloko Tradition can be divided into two phases: an early phase (e.g. Icon) in which sites were usually located at the foot of hills and contained little or no stone walling; and a later phase characterised by extensive stone wall complexes which were often erected on hills. In the Waterberg area, this later phase manifested in the Madikwe ceramic facies with pottery typically displaying stab and fingernail impression decoration motives. At around the 17th century, Madikwe pottery developed into a tradition known as “Buispoort”, sites of which display complex and elaborate stone walling. The stone walls were erected to construct stock byres and to demarcate residential units where pole-and-dagha (clay) huts were placed.

In addition, various Sotho-Tswana groups were found in the interior of the Highveld areas of South Africa by the

end of the 18th century. These units occupied a large area, from present-day Botswana across large sections of the old Transvaal, the Free State Province into the Northern Cape. Based on Sotho-Tswana oral histories various groups acted as cores from which the Sotho-speaking communities sprouted.

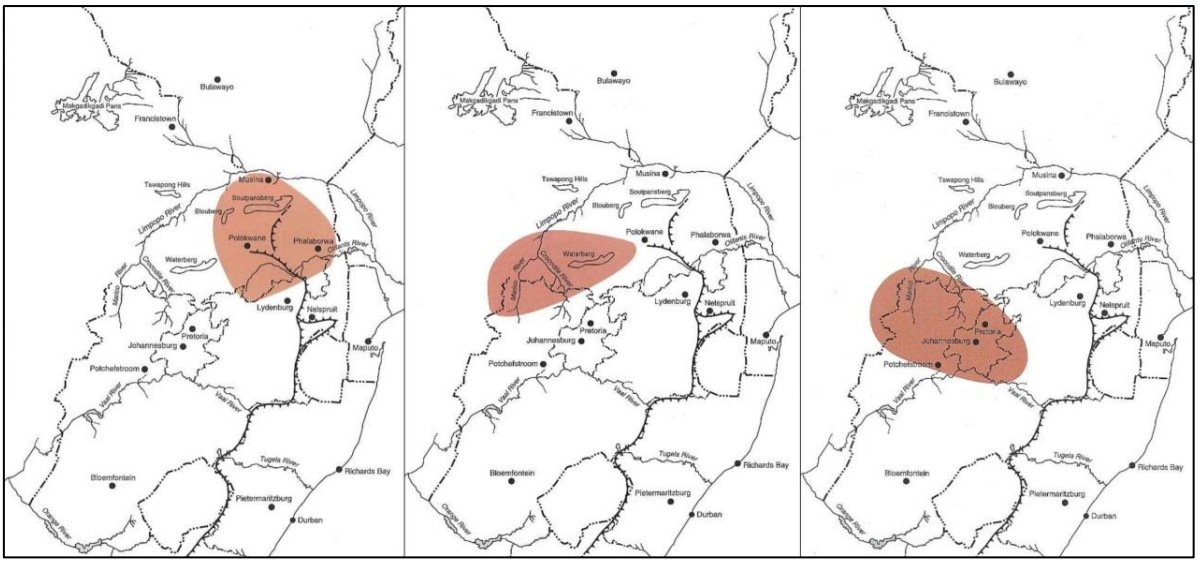

Figure 6-1: Map detailing the distribution of 16th century Maloko (left), 17th century Madikwe (centre) and 18th century Buispoort tradition sites (After Huffman 2007).

Figure 6-2: Ceramic decoration motives typical of 17th century Madikwe (left) and later Buispoort (right) facies (After Huffman 2007).

6.2.3 European Occupation and Recent History

The Waterberg was considered remote and inaccessible by early white migrants from the south and, with the exception of a few hunting and trading expeditions passing through, the area was one of the last regions in the former Transvaal to be permanently occupied by white farmers. Although the first Voortrekker farmers moved into the Waterberg during the 1850's, the region has been increasingly occupied on a regular basis only since the early part of the twentieth century. The early historical period of the area is dominated by the siege of

Makapansgat where in September 1854, Chief Makapane and over 1 500 of his people died of hunger, dehydration and injuries after being besieged in the cave by a Boer commando in retaliation for an attack on a Voortrekker settlement. The majority of farms in the Waterberg area were surveyed in the late 1860's as part of the Transvaal government's strategy to settle white farmers in the Waterberg region. At that time, access to the Waterberg plateau was circuitous and difficult with the shortest route extending via Sandrivierspoort near present-day Vaalwater. After a railway line to Vaalwater was completed in the 1920's, maize became an economically viable crop but by the end of the 1960's, slumps in maize prices resulted in many farmers abandoning crop farming in favour of cattle. The rise of eco-tourism and the interest of foreigners in acquiring land for hunting and game viewing over the last decade have led to a recent revival of property prices in the Waterberg and a sharp growth in game ranching activities.

6.2.4 Rock Art of the Waterberg Landscape

The Waterberg Plateau is rich in rock art and rock markings and many such sites are still to be described and studied. At many sites "refined" San paintings occur with cruder depictions in red or white paint (sometimes black), painted directly with fingers by later Farmer groups. Numerous paintings of people in trance positions, dance scenes of men and women, men with hunting equipment, a large variety of antelope and other animals, imaginary rain animals, handprints, and geometric designs form part of the contents of the rock art of the Waterberg (Van der Ryst 1998). Two traditions of Rock Art occur in the Waterberg. First the more "naturalised" form of fine-line art, including skilled depictions of animals and people, attributed to San Hunter Gatherers. The second tradition, often called "Late White" art, is characterised by more geometric, schematic illustrations which includes a large amount of finger painting. This tradition is associated with Iron Age farmers.

6.2.5 Archaeo-Metallurgy and Prehistoric Mining

Africa is fortunate as its general geology is such that iron deposits exist almost everywhere in some level of mine-able ore - from solid nuggets of hematite to iron ore dust or clays rich in iron. In South Africa, the Later Iron Age is characterised by a greater degree of economic specialisation where villages were no longer self-sufficient units; instead, there was greater regional interdependency and more emphasis on trade. Iron smelting activities no longer occurred on most sites; instead, there were a number of main centres which specialised in the mining and production of iron. Phalaborwa in the Limpopo Province was one of the most important iron and copper production centres. Iron was used mainly to manufacture hoes, knife-blades, axes, spears, adzes, awls and metalworking tools. In addition, it also acted as currency and bridal wealth (lobola) as well as fulfilling ceremonial and political functions.

Copper production was even more restricted and there is little evidence of copper-working south of the Vaal and the Nkomati Rivers. Copper and bronze were used to manufacture ornaments such as beads, earrings and arm bangles. Tin was mined at Rooiberg near Warmbaths/Bela-Bela in the Limpopo Province, while gold objects, particularly beads, were recovered from a few sites such as Mapungubwe and Machemma in the Limpopo Province and Thulamela in the Kruger National Park. Metal products were important trade items during the Late Iron Age. Furnaces were usually constructed in an oval shape with at least two vents that held the tuyères or blowpipes that were attached to bellows. Grass, charcoal and wood was used to reach temperatures of up to 1500ºC inside the furnace, sufficient to reduce iron ore to iron.

The role of metallurgy in the cultural life ways of metal workers in Africa is sophisticated and includes much more than just the practical value associated with metals. In unstratified societies metal smiths were free independent

agents and part-time specialists that conserved their knowledge. In some instances smaller clans or settlements had their own metal smiths. Metal smiths were respected and did not easily share knowledge of the practise but they sometimes would employ helpers such as bellow operators. In stratified societies metal smiths were not independent and they had to pay dues to a chief or king. With the appearance of large states in Africa, metal smiths were permanently hired by royalty in order to perform iron smelting practices.

Iron smelting was almost without exception, a highly ritualised activity with a deep symbolic meaning. Communication and consent from the ancestors was crucial in order to successfully reduce iron ore. It was also believed that the furnaces and the iron smelting area had to be purified and that certain aspects would render it unclean.

The implication of the ritual association with iron smelting was that:

- the iron smelting areas were positioned outside settlement areas and usually out of line of sight of the villages and villagers. In many cases these areas were situated behind hills or kopjes.
- the metal smiths had to seclude themselves during the time of iron reduction. They had to abstain from sexual activities and they were not to come into contact with menstruating women ("unclean women").

The iron smiths were supplied with food by young girls or older women. Any woman biologically capable of menstruation had to keep away from the activities.

7 RESULTS: STATEMENT OF SIGNIFICANCE AND IMPACT RATING

7.1 Heritage resources management and conservation

Archaeological sites, as previously defined in the National Heritage Resources Act (Act 25 of 1999) are places in the landscape where people have lived in the past – generally more than 60 years ago – and have left traces of their presence behind. In South Africa, archaeological sites include hominid fossil sites, places where people of the Earlier, Middle and Later Stone Age lived in open sites, river gravels, rock shelters and caves, Iron Age sites, graves, and a variety of historical sites and structures in rural areas, towns and cities. Palaeontological sites are those with fossil remains of plants and animals where people were not involved in the accumulation of the deposits. The basic principle of cultural heritage conservation is that archaeological and other heritage sites are valuable, scarce and *non-renewable.* Many such sites are unfortunately lost on a daily basis through development for housing, roads and infrastructure and once archaeological sites are damaged, they cannot be re-created as site integrity and authenticity is permanently lost. Archaeological sites have the potential to contribute to our understanding of the history of the region and of our country and continent. By preserving links with our past, we may not be able to revive lost cultural traditions, but it enables us to appreciate the role they have played in the history of our country.

7.2 Categories of significance

Rating the significance of archaeological sites, and consequently grading the potential impact on the resources is linked to the significance of the site itself. The significance of an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences. The guidelines as provided by the NHRA (Act No. 25 of 1999) in Section 3, with special reference to subsection 3 are used when determining the cultural significance or other special value of archaeological or historical sites. In addition, ICOMOS (the Australian Committee of the International Council on Monuments and

Sites) highlights four cultural attributes, which are valuable to any given culture:

- *Aesthetic value:*

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria include consideration of the form, scale, colour, texture and material of the fabric, the general atmosphere associated with the place and its uses and also the aesthetic values commonly assessed in the analysis of landscapes and townscape.

- *Historic value:*

Historic value encompasses the history of aesthetics, science and society and therefore to a large extent underlies all of the attributes discussed here. Usually a place has historical value because of some kind of influence by an event, person, phase or activity.

- *Scientific value:*

The scientific or research value of a place will depend upon the importance of the data involved, on its rarity, quality and on the degree to which the place may contribute further substantial information.

- *Social value:*

Social value includes the qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a certain group.

It is important for heritage specialist input in the EIA process to take into account the heritage management structure set up by the NHR Act. It makes provision for a 3-tier system of management including the South Africa Heritage Resources Agency (SAHRA) at a national level, Provincial Heritage Resources Authorities (PHRAs) at a provincial and the local authority. The Act makes provision for two types or forms of protection of heritage resources; i.e. formally protected and generally protected sites:

Formally protected sites:

- Grade 1 or national heritage sites, which are managed by SAHRA
- Grade 2 or provincial heritage sites, which are managed by the provincial HRA.
- Grade 3 or local heritage sites.

Generally protected sites:

- Human burials older than 60 years.
- Archaeological and palaeontological sites.
- Shipwrecks and associated remains older than 70 years.
- Structures older than 60 years.

With reference to the evaluation of sites, the certainty of prediction is definite, unless stated otherwise and if the significance of the site is rated high, the significance of the impact will also result in a high rating. The same rule applies if the significance rating of the site is low. The significance of archaeological sites is generally ranked into the following categories.

Significance	Rating Action
No significance: sites that do not require mitigation.	None
Low significance: sites, which may require mitigation.	2a. Recording and documentation (Phase 1) of site; no further action required 2b. Controlled sampling (shovel test pits, augering), mapping and documentation (Phase 2 investigation); permit required for sampling and destruction
Medium significance: sites, which require mitigation.	3. Excavation of representative sample, C14 dating, mapping and documentation (Phase 2 investigation); permit required for sampling and destruction [including 2a & 2b]
High significance: sites, where disturbance should be avoided.	4a. Nomination for listing on Heritage Register (National, Provincial or Local) (Phase 2 & 3 investigation); site management plan; permit required if utilised for education or tourism
High significance: Graves and burial places	4b. Locate demonstrable descendants through social consulting; obtain permits from applicable legislation, ordinances and regional by-laws; exhumation and reinterment [including 2a, 2b & 3]

Furthermore, the significance of archaeological sites was based on six 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),
- Social value,
- Uniqueness, and
- Potential to answer current and future research questions.

A fundamental aspect in assessing the significance and protection status of a heritage resource is often whether or not the sustainable social and economic benefits of a proposed development outweigh the conservation issues at stake. When, for whatever reason the protection of a heritage site is not deemed necessary or practical, its research potential must be assessed and mitigated in order to gain data / information, which would otherwise be lost.

7.3 Potential Impacts and Significance Ratings[1]

The following section provides a background to the identification and assessment of possible impacts and alternatives, as well as a range of risk situations and scenarios commonly associated with heritage resources management. The section ultimately provides a guideline (Section 7.3.1, Section 7.3.2 & Section 7.3.3) for the rating of impacts and recommendation of management actions for sites of heritage potential in the Groothoek Mine Project area, as supplied in section 7.3.4.

7.3.1 General assessment of impacts on resources

Generally, the value and significance of archaeological and other heritage sites might be impacted on by any activity that would result immediately or in the future in the destruction, damage, excavation, alteration, removal or collection from its original position, any archaeological material or object (as indicated in the National Heritage Resources Act (No 25 of 1999)). Thus, the destructive impacts that are possible in terms of heritage resources would tend to be direct, once-off events occurring during the initial construction period. However, in the long run, the proximity of operations in any given area could result in secondary indirect impacts. The EIA process

[1] Based on: Winter, S. & Baumann, N. 2005. *Guideline for involving heritage specialists in EIA processes: Edition 1.*

therefore specifies impact assessment criteria which can be utilised from the perspective of a heritage specialist study which elucidates the overall extent of impacts.

Significance of the heritage resource

This is a statement of the nature and degree of significance of the heritage resource being affected by the activity. From a heritage management perspective it is useful to distinguish between whether the significance is embedded in the physical fabric or in associations with events or persons or in the experience of a place; i.e. its visual and non-visual qualities. This statement is a primary informant to the nature and degree of significance of an impact and thus needs to be thoroughly considered. Consideration needs to be given to the significance of a heritage resource at different scales (i.e. site specific, local, regional, national or international) and the relationship between the heritage resource, its setting and its associations.

Nature of the impact

This is an assessment of the nature of the impact of the activity on a heritage resource, with some indication of its positive and/or negative effect/s. It is strongly informed by the statement of resource significance. In other words, the nature of the impact may be historical, aesthetic, social, scientific, linguistic or architectural, intrinsic, associational or contextual (visual or non-visual). In many cases, the nature of the impact will include more than one value.

Extent

Here it should be indicated whether the impact will be experienced:

- On a site scale, i.e. extend only as far as the activity;
- Within the immediate context of a heritage resource;
- On a local scale, e.g. town or suburb
- On a metropolitan or regional scale; or
- On a national/international scale.

Duration

Here it should be indicated whether the lifespan of the impact will be:

- Short term, (needs to be defined in context)
- Medium term, (needs to be defined in context)
- Long term where the impact will persist indefinitely, possibly beyond the operational life of the activity, either because of natural processes or by human intervention; or
- Permanent where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.

Of relevance to the duration of an impact are the following considerations:

- Reversibility of the impact; and
- Renewability of the heritage resource.

Intensity

Here it should be established whether the impact should be indicated as:

- Low, where the impact affects the resource in such a way that its heritage value is not affected;
- Medium, where the affected resource is altered but its heritage value continues to exist albeit in a modified way; and
- High, where heritage value is altered to the extent that it will temporarily or permanently be damaged or destroyed.

Probability

This should describe the likelihood of the impact actually occurring indicated as:

- Improbable, where the possibility of the impact to materialize is very low either because of design or historic experience;
- Probable, where there is a distinct possibility that the impact will occur;
- Highly probable, where it is most likely that the impact will occur; or
- Definite, where the impact will definitely occur regardless of any mitigation measures

Confidence

This should relate to the level of confidence that the specialist has in establishing the nature and degree of impacts. It relates to the level and reliability of information, the nature and degree of consultation with I&AP's and the dynamic of the broader socio-political context.

- High, where the information is comprehensive and accurate, where there has been a high degree of consultation and the socio-political context is relatively stable.
- Medium, where the information is sufficient but is based mainly on secondary sources, where there has been a limited targeted consultation and socio-political context is fluid.
- Low, where the information is poor, a high degree of contestation is evident and there is a state of socio-political flux.

Impact Significance

The significance of impacts can be determined through a synthesis of the aspects produced in terms of the nature and degree of heritage significance and the nature, duration, intensity, extent, probability and confidence of impacts and can be described as:

- Low; where it would have a negligible effect on heritage and on the decision
- Medium, where it would have a moderate effect on heritage and should influence the decision.
- High, where it would have, or there would be a high risk of, a big effect on heritage. Impacts of high significance should have a major influence on the decision;
- Very high, where it would have, or there would be high risk of, an irreversible and possibly irreplaceable negative impact on heritage. Impacts of very high significance should be a central factor in decision-making.

7.3.2 Direct impact rating

Direct or primary effects on heritage resources occur at the same time and in the same space as the activity, e.g. loss of historical fabric through demolition work. **Indirect effects or secondary effects** on heritage resources occur later in time or at a different place from the causal activity, or as a result of a complex pathway, e.g. restriction of access to a heritage resource resulting in the gradual erosion of its significance, which is dependent on ritual patterns of access. The following table provides an outline as to the relationship between the significance of a heritage context, the intensity of development and the significance of heritage impacts to be expected.

	TYPE OF DEVELOPMENT			
HERITAGE CONTEXT	**CATEGORY A**	**CATEGORY B**	**CATEGORY C**	**CATEGORY D**
CONTEXT 1 High heritage Value	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected	Very high heritage impact expected
CONTEXT 2 Medium to high heritage value	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected
CONTEXT 3 Medium to low heritage value	Little or no heritage impact expected	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected
CONTEXT 4 Low to no heritage value	Little or no heritage impact expected	Little or no heritage impact expected	Minimal heritage value expected	Moderate heritage impact expected

NOTE: A DEFAULT "LITTLE OR NO HERITAGE IMPACT EXPECTED" VALUE APPLIES WHERE A HERITAGE RESOURCE OCCURS OUTSIDE THE IMPACT ZONE OF THE DEVELOPMENT.

HERITAGE CONTEXTS	CATEGORIES OF DEVELOPMENT
Context 1: Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 1, 2 or 3A heritage resources **Context 2:** Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources. **Context 3:** Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources **Context 4:** Of little or no intrinsic, associational or contextual heritage value due to disturbed, degraded conditions or extent of irreversible damage.	**Category A: Minimal intensity development** - No rezoning involved; within existing use rights. - No subdivision involved. - Upgrading of existing infrastructure within existing envelopes - Minor internal changes to existing structures - New building footprints limited to less than 1000m^2. **Category B: Low-key intensity development** - Spot rezoning with no change to overall zoning of a site. - Linear development less than 100m - Building footprints between 1000m^2-2000m^2 - Minor changes to external envelop of existing structures (less than 25%) - Minor changes in relation to bulk and height of immediately adjacent structures (less than 25%). **Category C: Moderate intensity development** - Rezoning of a site between 5000m^2-10 000m^2. - Linear development between 100m and 300m. - Building footprints between 2000m^2 and 5000m^2 - Substantial changes to external envelop of existing structures (more than 50%) - Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 50%)

	Category D: High intensity development - Rezoning of a site in excess of 10 000m^2 - Linear development in excess of 300m. - Any development changing the character of a site exceeding 5000m^2 or involving the subdivision of a site into three or more erven. - Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 100%)

7.3.3 Management actions

Recommendations on relevant heritage resources management actions are vital to the conservation of heritage resources. Recommended management actions may include the following:

No further action / Monitoring

Where no heritage resources have been documented, heritage resources occur well outside the impact zone of any development or the primary context of the surroundings at a development footprint has been largely destroyed or altered, no further immediate action is required. Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation in order to ensure that no undetected heritage\ remains are destroyed.

Avoidance

This is appropriate where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. Mitigation is not acceptable or not possible.

Mitigation

This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated to a degree of medium to low significance, e.g. the high to medium impact of a development on an archaeological site could be mitigated through sampling/excavation of the remains. Not all negative impacts can be mitigated.

Compensation

Compensation is generally not an appropriate heritage management action. The main function of management actions should be to conserve the resource for the benefit of future generations. Once lost it cannot be renewed. The circumstances around the potential public or heritage benefits would need to be exceptional to warrant this type of action, especially in the case of where the impact was high.

Rehabilitation

Rehabilitation is considered in heritage management terms as an intervention typically involving the adding of a new heritage layer to enable a new sustainable use. It is not appropriate when the process necessitates the removal of previous historical layers, i.e. restoration of a building or place to the previous state/period. It is an appropriate heritage management action in the following cases:

- The heritage resource is degraded or in the process of degradation and would benefit from rehabilitation.
- Where rehabilitation implies appropriate conservation interventions, i.e. adaptive reuse, repair and maintenance, consolidation and minimal loss of historical fabric.
- Where the rehabilitation process will not result in a negative impact on the intrinsic value of the resource.

Enhancement

Enhancement is appropriate where the overall heritage significance and its public appreciation value are improved. It does not imply creation of a condition that might never have occurred during the evolution of a place, e.g. the tendency to sanitize the past. This management action might result from the removal of previous layers where these layers are culturally of low significance and detract from the significance of the resource. It would be appropriate in a range of heritage contexts and applicable to a range of resources. In the case of formally protected or significant resources, appropriate enhancement action should be encouraged. Care should, however, be taken to ensure that the process does not have a negative impact on the character and context of the resource. It would thus have to be carefully monitored.

7.3.4 Site significance and impact rating

Refer to Section 7.3.1, Section 7.3.2 & Section 7.3.3 for background on the rating of impacts and recommendation of management actions for sites of heritage potential. Impact thresholds and management measures for the sites are further discussed in section 7.4.

- **Site GH01, Site GH02: Minor MSA lithic scatter.**

1. SITE DESCRIPTION							
1.1 General Site Description							
6 Graves of which 3 have marble grave dressings (dilapidated) and the remaining graves are indicated by stone piles.							
1.2 Site features / artefacts / Other							
Site Location							
Province / District	**Limpopo Province**			Map Number	**2429BC**		
Farm Name	**Zaaikloof 480 KS**			Co-ordinates	**S24°24'06.04"**	**E29°42'48.65"**	
Site Type							
Surface sites	**X**			Caves and rock shelters			
Larger open-air sites	**X**			Sealed sites (deposits			
River deposits				Other			
Site Function							
Living / habitation				Kill			
Ceremonial				Burial	**X**		
Trading / Barter				Art			
Quarry / Mining / Smelting				Other			
Site Placement							
Valley floor		Hill top		Vlei/swamp		River Mouth	
Dam		River Bank		Slope		Plains	**X**
Other / Comments							
Vegetation							
Riverine forest		Bushveld	**X**	Savannah		Mountain forest	
Thornveld	**X**	Grassland	**X**	Cultivated	**X**	Other	
Age Classification							
Stone Age		Early Iron Age		Middle Iron Age		Later Iron Age	
Historical	**X**	Other	**X - Recent**				
Material Culture							
Midden		House Remains		Stone Walling		Stone Structures	
Granary		Grinding Stone (L)		Grinding Stone (U)		Granary Stand	
Metal		Ceramics (Pottery)		Ceramics (Porcelain)		Stone (non-lithic)	
Metal slag		Tuyere		Fauna		Bead (Glass)	
Bead (OES / Shell)		Glass		Lithics	**X**	Smelting Residues	
Other: **X – grave dressing**				Other: **X – funeral goods**			
1.3 Site Condition							
Site preservation is good as the burials are of recent age.							
2. SITE EVALUATION							

2.1 Heritage Value (NHRA, section 2 [3])	High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.		**X**	
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.	**X**		
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.		**X**	
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.	**X**		
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			**X**

It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			X
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).	X		
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.			X
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			X
It has significance relating to the history of slavery in South Africa.			X
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.		X	

2.2 Field Register Rating	
National/Grade 1 [should be registered, retained]	
Provincial/Grade 2 [should be registered, retained]	
Local/Grade 3A [should be registered, mitigation not advised]	
Local/Grade 3B [High significance; mitigation, partly retained]	X
Generally Protected A [High/Medium significance, mitigation]	
Generally protected B [Medium significance, to be recorded]	
Generally Protected C [Low significance, no further action]	

2.3 Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Local	X		
Specific community			

3. IMPACT RATING AND MITIGATION

3.1 Impact assessment

APPROXIMATE DISTANCE FROM DEVELOPMENT: 0 - 100METERS

NATURE OF IMPACT: Historical, Aesthetic, Social, Scientific, Intrinsic, Associational & Contextual

EXTENT OF IMPACT: Local

SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High

3.2 Impact Significance and Severity

		Without Management*	With Management*
General assessment of impacts on resource (Refer to Section 7.3.1)	Duration	**Permanent: High**	**Permanent: Low**
	Intensity	**High**	**Low**
	Probability	**Probable**	**Probable**
	Impact Significance	**High**	**Low**

3.3 Direct Impact Rating

Direct impact on resource	None (the potential development does not adversely or positively affect the heritage resource)	
	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)	
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)	X

Direct impact rating (Refer to Section 7.3.2) Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.	**Very high heritage impact expected.**

3.4 Recommended Management* (refer to section 7.3.3)

Mitigation

Comments on recommended management

If impact is envisaged the following mitigation measures will be required:

- **Documentation of site.**

- Exhumation and reburial
- Full social consultation.
- Possible conservation management and protection measures.
- Relevant Permitting from Heritage Resources Authority.

4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS

- Human Tissue Act (Act 65 of 1983 as amended).
- Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925)
- Ordinance on Excavations (Ordinance no. 12 of 1980)
- Local and regional provisions, laws and by-laws
- National Heritage Resources Act (Act no. 25 of 1999)
- Permit from SAHRA for removal

- Site GH03, Site GH04: Ruins of brick and stone foundation structures

1. SITE DESCRIPTION

1.1 General Site Description

6 Graves of which 3 have marble grave dressings (dilapidated) and the remaining graves are indicated by stone piles.

1.2 Site features / artefacts / Other

Site Location				
Province / District	**Limpopo Province**	Map Number	**2429BC**	
Farm Name	**Zaaikloof 480 KS**	Co-ordinates	**S24°24'06.04"**	**E29°42'48.65"**

Site Type			
Surface sites	X	Caves and rock shelters	
Larger open-air sites	X	Sealed sites (deposits	
River deposits		Other	

Site Function			
Living / habitation		Kill	
Ceremonial		Burial	X
Trading / Barter		Art	
Quarry / Mining / Smelting		Other	

Site Placement							
Valley floor		Hill top		Vlei/swamp		River Mouth	
Dam		River Bank		Slope		Plains	X
Other / Comments							

Vegetation							
Riverine forest		Bushveld	X	Savannah		Mountain forest	
Thornveld	X	Grassland	X	Cultivated	X	Other	

Age Classification							
Stone Age		Early Iron Age		Middle Iron Age		Later Iron Age	
Historical	X	Other	X - Recent				

Material Culture							
Midden		House Remains		Stone Walling		Stone Structures	
Granary		Grinding Stone (L)		Grinding Stone (U)		Granary Stand	
Metal		Ceramics (Pottery)		Ceramics (Porcelain)		Stone (non-lithic)	
Metal slag		Tuyere		Fauna		Bead (Glass)	
Bead (OES / Shell)		Glass		Lithics	X	Smelting Residues	
Other: **X – grave dressing**				Other: **X – funeral goods**			

1.3 Site Condition

Site preservation is good as the burials are of recent age.

2. SITE EVALUATION

2.1 Heritage Value (NHRA, section 2 [3])	High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.		X	
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.	X		
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.		X	
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.	X		
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			X
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			X
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).	X		
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.			X
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			X
It has significance relating to the history of slavery in South Africa.			X
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.		X	

2.2 Field Register Rating	
National/Grade 1 [should be registered, retained]	
Provincial/Grade 2 [should be registered, retained]	
Local/Grade 3A [should be registered, mitigation not advised]	
Local/Grade 3B [High significance; mitigation, partly retained]	X
Generally Protected A [High/Medium significance, mitigation]	
Generally protected B [Medium significance, to be recorded]	
Generally Protected C [Low significance, no further action]	

2.3 Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Local	X		
Specific community			

3. IMPACT RATING AND MITIGATION

3.1 Impact assessment

APPROXIMATE DISTANCE FROM DEVELOPMENT: 0 - 100METERS

NATURE OF IMPACT: Historical, Aesthetic, Social, Scientific, Intrinsic, Associational & Contextual

EXTENT OF IMPACT: Local

SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High

3.2 Impact Significance and Severity

		Without Management*	With Management*
General assessment of impacts on resource (Refer to Section 7.3.1)	Duration	**Permanent: High**	**Permanent: Low**
	Intensity	**High**	**Low**
	Probability	**Probable**	**Probable**
	Impact Significance	**High**	**Low**

3.3 Direct Impact Rating

Direct impact	None (the potential development does not adversely or positively affect the heritage resource)	

on resource	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)	
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)	X
Direct impact rating (Refer to Section 7.3.2) Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.	**Very high heritage impact expected.**	

3.4 Recommended Management* (refer to section 7.3.3)

Mitigation

Comments on recommended management

If impact is envisaged the following mitigation measures will be required:

- **Documentation of site.**
- **Exhumation and reburial**
- **Full social consultation.**
- **Possible conservation management and protection measures.**
- **Relevant Permitting from Heritage Resources Authority.**

4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS

- **Human Tissue Act (Act 65 of 1983 as amended).**
- **Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925)**
- **Ordinance on Excavations (Ordinance no. 12 of 1980)**
- **Local and regional provisions, laws and by-laws**
- **National Heritage Resources Act (Act no. 25 of 1999)**
- **Permit from SAHRA for removal**

- Site GH05: Informal Burial Place

1. SITE DESCRIPTION

1.1 General Site Description

6 Graves of which 3 have marble grave dressings (dilapidated) and the remaining graves are indicated by stone piles.

1.2 Site features / artefacts / Other

Site Location

Province / District	**Limpopo Province**	Map Number	**2429BC**	
Farm Name	**Zaaikloof 480 KS**	Co-ordinates	**S24°24'06.04"**	**E29°42'48.65"**

Site Type

Surface sites	X	Caves and rock shelters	
Larger open-air sites	X	Sealed sites (deposits	
River deposits		Other	

Site Function

Living / habitation		Kill	
Ceremonial		Burial	X
Trading / Barter		Art	
Quarry / Mining / Smelting		Other	

Site Placement

Valley floor		Hill top		Vlei/swamp		River Mouth	
Dam		River Bank		Slope		Plains	X
Other / Comments							

Vegetation

Riverine forest		Bushveld	X	Savannah		Mountain forest	
Thornveld	X	Grassland	X	Cultivated	X	Other	

Age Classification

Stone Age		Early Iron Age		Middle Iron Age		Later Iron Age	

Historical	X	Other	**X - Recent**

Material Culture

Midden		House Remains		Stone Walling		Stone Structures	
Granary		Grinding Stone (L)		Grinding Stone (U)		Granary Stand	
Metal		Ceramics (Pottery)		Ceramics (Porcelain)		Stone (non-lithic)	
Metal slag		Tuyere		Fauna		Bead (Glass)	
Bead (OES / Shell)		Glass		Lithics	X	Smelting Residues	
Other: **X – grave dressing**				Other: **X – funeral goods**			

1.3 Site Condition

Site preservation is good as the burials are of recent age.

2. SITE EVALUATION

2.1 Heritage Value (NHRA, section 2 [3])	High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.		X	
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.	X		
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.		X	
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.	X		
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			X
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			X
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).	X		
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.			X
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			X
It has significance relating to the history of slavery in South Africa.			X
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.		X	

2.2 Field Register Rating

National/Grade 1 [should be registered, retained]	
Provincial/Grade 2 [should be registered, retained]	
Local/Grade 3A [should be registered, mitigation not advised]	
Local/Grade 3B [High significance; mitigation, partly retained]	X
Generally Protected A [High/Medium significance, mitigation]	
Generally protected B [Medium significance, to be recorded]	
Generally Protected C [Low significance, no further action]	

2.3 Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Local	X		
Specific community			

3. IMPACT RATING AND MITIGATION

3.1 Impact assessment

APPROXIMATE DISTANCE FROM DEVELOPMENT: 0 - 100METERS

NATURE OF IMPACT: Historical, Aesthetic, Social, Scientific, Intrinsic, Associational & Contextual

EXTENT OF IMPACT: Local			
SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High			
3.2 Impact Significance and Severity			
		Without Management*	**With Management***
General assessment of impacts on resource (Refer to Section 7.3.1)	Duration	**Permanent: High**	**Permanent: Low**
	Intensity	**High**	**Low**
	Probability	**Probable**	**Probable**
	Impact Significance	**High**	**Low**

3.3 Direct Impact Rating		
Direct impact on resource	None (the potential development does not adversely or positively affect the heritage resource)	
	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)	
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)	X
Direct impact rating (Refer to Section 7.3.2) Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.		**Very high heritage impact expected.**

3.4 Recommended Management* (refer to section 7.3.3)

Mitigation

Comments on recommended management

If impact is envisaged the following mitigation measures will be required:

- **Documentation of site.**
- **Exhumation and reburial**
- **Full social consultation.**
- **Possible conservation management and protection measures.**
- **Relevant Permitting from Heritage Resources Authority.**

4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS

- **Human Tissue Act (Act 65 of 1983 as amended).**
- **Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925)**
- **Ordinance on Excavations (Ordinance no. 12 of 1980)**
- **Local and regional provisions, laws and by-laws**
- **National Heritage Resources Act (Act no. 25 of 1999)**
- **Permit from SAHRA for removal**

- **Site GH06: Large cemetery.**

1. SITE DESCRIPTION				
1.1 General Site Description				
6 Graves of which 3 have marble grave dressings (dilapidated) and the remaining graves are indicated by stone piles.				
1.2 Site features / artefacts / Other				
Site Location				
Province / District	**Limpopo Province**	Map Number	**2429BC**	
Farm Name	**Zaaikloof 480 KS**	Co-ordinates	**S24°24'06.04"**	**E29°42'48.65"**
Site Type				
Surface sites	**X**	Caves and rock shelters		
Larger open-air sites	**X**	Sealed sites (deposits		
River deposits		Other		
Site Function				
Living / habitation		Kill		
Ceremonial		Burial	**X**	
Trading / Barter		Art		
Quarry / Mining / Smelting		Other		

Site Placement							
Valley floor		Hill top		Vlei/swamp		River Mouth	
Dam		River Bank		Slope		Plains	X
Other / Comments							

Vegetation							
Riverine forest		Bushveld	X	Savannah		Mountain forest	
Thornveld	X	Grassland	X	Cultivated	X	Other	

Age Classification							
Stone Age		Early Iron Age		Middle Iron Age		Later Iron Age	
Historical	X	Other	**X - Recent**				

Material Culture							
Midden		House Remains		Stone Walling		Stone Structures	
Granary		Grinding Stone (L)		Grinding Stone (U)		Granary Stand	
Metal		Ceramics (Pottery)		Ceramics (Porcelain)		Stone (non-lithic)	
Metal slag		Tuyere		Fauna		Bead (Glass)	
Bead (OES / Shell)		Glass		Lithics	X	Smelting Residues	
Other: **X – grave dressing**				Other: **X – funeral goods**			

1.3 Site Condition

Site preservation is good as the burials are of recent age.

2. SITE EVALUATION

2.1 Heritage Value (NHRA, section 2 [3])	High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.		X	
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.	X		
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.		X	
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.	X		
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			X
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			X
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).	X		
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.			X
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			X
It has significance relating to the history of slavery in South Africa.			X
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.		X	

2.2 Field Register Rating	
National/Grade 1 [should be registered, retained]	
Provincial/Grade 2 [should be registered, retained]	
Local/Grade 3A [should be registered, mitigation not advised]	
Local/Grade 3B [High significance; mitigation, partly retained]	X
Generally Protected A [High/Medium significance, mitigation]	
Generally protected B [Medium significance, to be recorded]	
Generally Protected C [Low significance, no further action]	

2.3 Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Local	X		
Specific community			

3. IMPACT RATING AND MITIGATION

3.1 Impact assessment

APPROXIMATE DISTANCE FROM DEVELOPMENT: 0 - 100METERS

NATURE OF IMPACT: Historical, Aesthetic, Social, Scientific, Intrinsic, Associational & Contextual

EXTENT OF IMPACT: Local

SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High

3.2 Impact Significance and Severity

		Without Management*	With Management*
General assessment of impacts on resource (Refer to Section 7.3.1)	Duration	**Permanent: High**	**Permanent: Low**
	Intensity	**High**	**Low**
	Probability	**Probable**	**Probable**
	Impact Significance	**High**	**Low**

3.3 Direct Impact Rating

Direct impact on resource	None (the potential development does not adversely or positively affect the heritage resource)	
	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)	
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)	X

Direct impact rating (Refer to Section 7.3.2) Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.	**Very high heritage impact expected.**

3.4 Recommended Management* (refer to section 7.3.3)

Mitigation

Comments on recommended management

If impact is envisaged the following mitigation measures will be required:

- **Documentation of site.**
- **Exhumation and reburial**
- **Full social consultation.**
- **Possible conservation management and protection measures.**
- **Relevant Permitting from Heritage Resources Authority.**

4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS

- **Human Tissue Act (Act 65 of 1983 as amended).**
- **Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925)**
- **Ordinance on Excavations (Ordinance no. 12 of 1980)**
- **Local and regional provisions, laws and by-laws**
- **National Heritage Resources Act (Act no. 25 of 1999)**
- **Permit from SAHRA for removal**

- **Site GH07: Abandoned Mine**

1. SITE DESCRIPTION

1.1 General Site Description

6 Graves of which 3 have marble grave dressings (dilapidated) and the remaining graves are indicated by stone piles.

1.2 Site features / artefacts / Other

Site Location

Province / District	**Limpopo Province**	Map Number	**2429BC**

Farm Name	Zaaikloof 480 KS	Co-ordinates	S24°24'06.04"	E29°42'48.65"

Site Type			
Surface sites	X	Caves and rock shelters	
Larger open-air sites	X	Sealed sites (deposits	
River deposits		Other	

Site Function			
Living / habitation		Kill	
Ceremonial		Burial	X
Trading / Barter		Art	
Quarry / Mining / Smelting		Other	

Site Placement							
Valley floor		Hill top		Vlei/swamp		River Mouth	
Dam		River Bank		Slope		Plains	X
Other / Comments							

Vegetation							
Riverine forest		Bushveld	X	Savannah		Mountain forest	
Thornveld	X	Grassland	X	Cultivated	X	Other	

Age Classification							
Stone Age		Early Iron Age		Middle Iron Age		Later Iron Age	
Historical	X	Other	X - Recent				

Material Culture							
Midden		House Remains		Stone Walling		Stone Structures	
Granary		Grinding Stone (L)		Grinding Stone (U)		Granary Stand	
Metal		Ceramics (Pottery)		Ceramics (Porcelain)		Stone (non-lithic)	
Metal slag		Tuyere		Fauna		Bead (Glass)	
Bead (OES / Shell)		Glass		Lithics	X	Smelting Residues	
Other: **X – grave dressing**				Other: **X – funeral goods**			

1.3 Site Condition

Site preservation is good as the burials are of recent age.

2. SITE EVALUATION

2.1 Heritage Value (NHRA, section 2 [3])	High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.		X	
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.	X		
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.		X	
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.	X		
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			X
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			X
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).	X		
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.			X
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			X
It has significance relating to the history of slavery in South Africa.			X

It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.		X	

2.2 Field Register Rating	
National/Grade 1 [should be registered, retained]	
Provincial/Grade 2 [should be registered, retained]	
Local/Grade 3A [should be registered, mitigation not advised]	
Local/Grade 3B [High significance; mitigation, partly retained]	X
Generally Protected A [High/Medium significance, mitigation]	
Generally protected B [Medium significance, to be recorded]	
Generally Protected C [Low significance, no further action]	

2.3 Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Local	X		
Specific community			

3. IMPACT RATING AND MITIGATION

3.1 Impact assessment

APPROXIMATE DISTANCE FROM DEVELOPMENT: 0 - 100METERS

NATURE OF IMPACT: Historical, Aesthetic, Social, Scientific, Intrinsic, Associational & Contextual

EXTENT OF IMPACT: Local

SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High

3.2 Impact Significance and Severity

General assessment of impacts on resource (Refer to Section 7.3.1)		Without Management*	With Management*
	Duration	Permanent: High	Permanent: Low
	Intensity	High	Low
	Probability	Probable	Probable
	Impact Significance	High	Low

3.3 Direct Impact Rating

Direct impact on resource		
	None (the potential development does not adversely or positively affect the heritage resource)	
	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)	
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)	X

Direct impact rating (Refer to Section 7.3.2) Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.	Very high heritage impact expected.

3.4 Recommended Management* (refer to section 7.3.3)

Mitigation

Comments on recommended management

If impact is envisaged the following mitigation measures will be required:

- **Documentation of site.**
- **Exhumation and reburial**
- **Full social consultation.**
- **Possible conservation management and protection measures.**
- **Relevant Permitting from Heritage Resources Authority.**

4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS

- **Human Tissue Act (Act 65 of 1983 as amended).**
- **Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925)**
- **Ordinance on Excavations (Ordinance no. 12 of 1980)**
- **Local and regional provisions, laws and by-laws**
- **National Heritage Resources Act (Act no. 25 of 1999)**
- **Permit from SAHRA for removal**

7.4 Discussion: Evaluation of Results and Impacts

Previous studies conducted in this section of the Limpopo Province all infer a rich and diverse archaeological and historical landscape, representative of most phases of human and cultural development in southern Africa. The following assessment impact discussion more clearly describes to extent of heritage significance and impact on resources, cognisant of this rich larger archaeo-historical landscape.

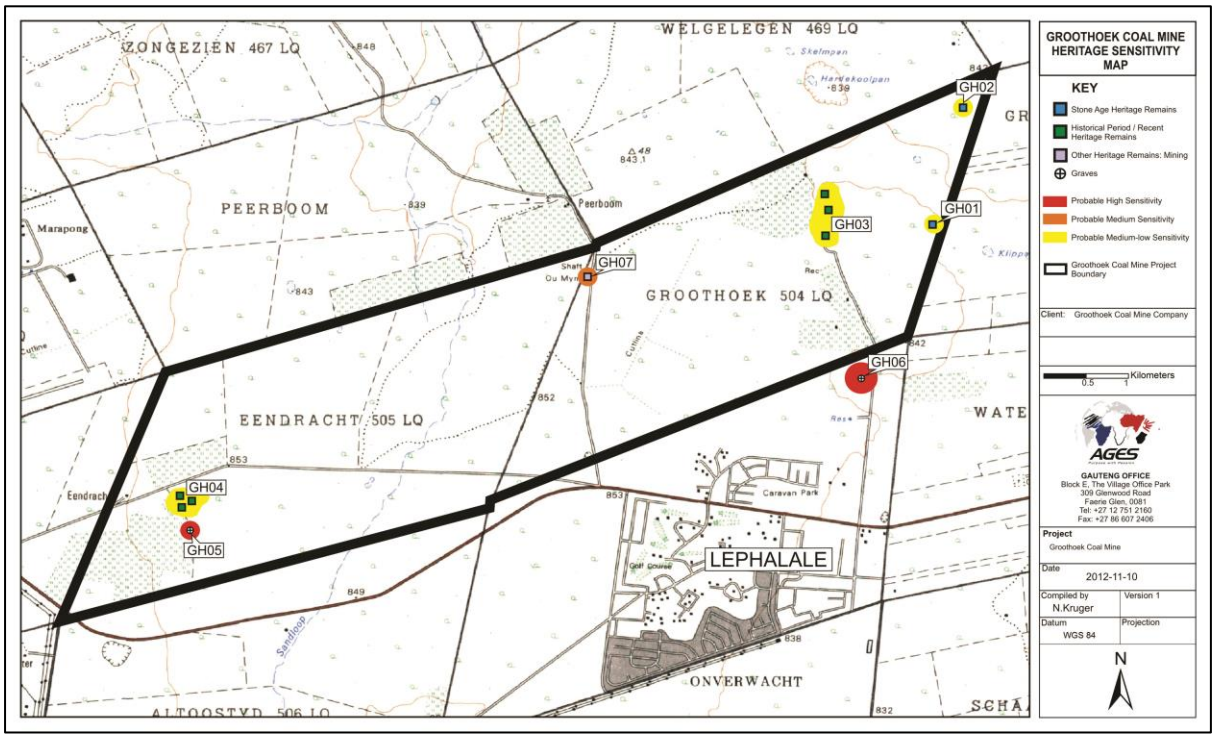

Figure 7-1: Heritage sensitivity map for the Groothoek Coal Mine Project Area

Stone Age material dating to the Middle Stone Age occurs in the study area in open contexts and their original positions have probably been lost which implies a low significance for these artefacts. MSA material at **Site GH01** and **GH02** on the farm Groothoek are of low heritage priority. The sites are situated within the study area and as such, the impact on the sites by the proposed activity might be direct and permanent in duration where in essence, the impact will result the potential damage / loss of the sites. The threshold of the impact can be limited by the implementation of general site monitoring measures by an informed ECO.

Sites dating to the **Historical / Colonial Period** around Lephalale can typically be related to early farming activities. However, later sites occurring in the Groothoek Coal Mine Project Area, such as the numerous ruined farmsteads scattered across the landscape, are of recent age and their significance deemed low. The poorly preserved brick and cement structures and middens on Eendract and Groothoek at **Site GH03** and **GH04** are of medium-low significance due to the poor preservation of the sites. Since the sites are situated in the study area, the impact on the sites by the proposed activity is considered to be direct and of permanent duration where in essence, the impact will result the potential damage / loss of the sites. However, the sites are not of major

significance and generally the direct impact on the heritage resource is expected to be moderate, where the threshold can be limited to a low impact by the implementation of general site monitoring measures by an informed ECO. The remains of a mine on the farm Groothoek at **Site GH07** is of possible heritage priority since the site might inform on the early mining history of the Lephalale area. The site is therefore of medium significance. The site is situated within the study area and as such, the impact on the site by the proposed activity might be considered to be direct and of permanent duration where in essence, the impact will result the potential damage / loss of structures and objects of heritage value. Since the site is of significance, the direct impact on the heritage resource is expected to be high and it is essential that the threshold be limited to a low impact by the implementation of mitigation and monitoring measures for the site.

Graves are generally protected and of high significance. This applies to all cemeteries and burial places identified in the Groothoek Coal Mine Area. In addition, one should also consider that burial places function as places of "Living Heritage". Here, "Living Heritage" can broadly refer to a place of cultural heritage and sacred nature; with cultural attributions that are not generally physically manifested. This said, due cognisance should be taken of the value and intrinsic symbolic power of cemeteries as sites of "Living Heritage" in the general landscape around the study area. The informal cemetery and 2 graves on the farm Eendracht at **Site GH05** is of heritage priority and carries a high significance rating. The site is situated within the study area and as such, the impact on the site by the proposed activity might be considered to be direct and of permanent duration where in essence, the impact will result the potential damage / loss of the burials. Since the site is of major significance, the direct impact on the heritage resource is expected to be very high and it is essential that the threshold be limited to a low impact by the implementation of mitigation and monitoring measures for the site. The Lephalale municipal cemetery south of the farm Groothoek at **Site GH06** is of heritage priority and carries high significance ratings. The site is situated outside the study area and the impact on the site by the proposed activity is considered to be peripheral. Since the site is of major significance it is essential that the impact threshold be limited to a low impact by the implementation of mitigation and monitoring measures, where the site should be avoided.

8 RECOMMENDATIONS

8.1 Recommendations

The larger landscape around Lephalale is rich in pre-historical and historical remnants. Cognisant of this historically significant landscape and the need for the conservation of its heritage resources, the following recommendations are made based on general observations in the proposed Groothoek Coal Mine Mine Project Area:

- Since the palaeontological sensitivity of rock units within the study area is generally low the impact significance of the proposed mi activities as far as fossil heritage is concerned, is likely to be small. However, a Palaeontological Impact Assessment should be considered and, should fossil remains such as fossil fish, reptiles or petrified wood be exposed during construction, these objects should carefully safeguarded and the relevant heritage resources authority (SAHRA) should be notified immediately so that the appropriate action can be taken by a professional palaeontologist.
- Considering the localised nature of heritage remains, a careful watching brief monitoring process is recommended for all stages of the project, specifically around heritage sensitive areas i.e. historical period structures and graves. Should any subsurface palaeontological, archaeological or historical

material, or burials be exposed during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately

- MSA scatters in at **Site GH01** and **GH02** are of low heritage priority and it is recommended that development in these areas be monitored in order to avoid the destruction of previously undetected heritage remains.
- The number of poorly preserved brick and concrete structures and middens on Groothoek and Eendracht (**Site GH03, Site GH04)** are of medium-low significance and site monitoring of these structures are recommended when development commences, **as graves are likely to occur around the structures**. If the sites were to be impacted on by the mining development, destruction permits should be obtained from the relevant heritage resources authority (SAHRA). In addition, the ruined mine on Groothoek at **Site GH07** is of medium significance and it is recommended that the site be carefully documented and a historical context of the site be established, if the site is to be impacted on by the mining development. Lastly, a destruction permit should be obtained from the relevant heritage resources authority (SAHRA) if the site is to be altered.
- All cemeteries and burials in and around the Groothoek Coal Mine Study Area (**Site GH04, Site GH05)** are of high significance and since they are structurally stable, the resources will require management or mitigation if impact cannot be avoided. A conservation buffer zone of at least 20m around the graves, as well as the fencing off of all cemeteries and graves are recommended. However, should any of the burial places or graves, or the proposed 20m buffer zone be impacted in any way by the planned activities, full grave relocations are recommended. This measure should be undertaken by a qualified archaeologist, and in accordance with relevant legislation and subject to any local and regional provisions and laws and by-laws pertaining to human remains. A full social consultation process should occur in conjunction with the mitigation of cemeteries and burials and a concerted effort must also be made to identify all buried individuals and to contact their relatives and descendants. Other legislative measures which may be of relevance include the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925), the Human Tissues Act (Act no. 65 of 1983, as amended), the Ordinance on Excavations (Ordinance no. 12 of 1980) as well as any local and regional provisions, laws and by-laws that may be in place. **As burial locations in this area follow a general (and fairly common) pattern where graves occur around historical house structures and homestead complexes, utmost care should be taken not to disturb such resources without the relevant processes having been followed and the necessary permits obtained.**
- Due cognisance should be taken of the larger palaeontological, archaeological and historical landscape of the area in order to avoid the destruction of previously undetected heritage sites in the area. Here, care should be taken around sandstone outcrops and rock faces, as rock art is known to occur on such features. Water sources such as drainage lines, springs and pans should also be regarded as potentially sensitive in terms of possible Stone Age and Iron Age deposits. The existence of Historical Period and recent resources deriving from the area's contemporary farming history should also be considered.

8.2 Fatal Flaw Guidelines

Based on an existing environmental Fatal Flaw Analysis Report[2] for Groothoek, the following site-specific guidelines should be considered in order to reduce impacts on heritage resources. These principles should be considered throughout the planning, implementation and management phases of the Groothoek Coal Project.

[2] Digby Wells Environ,ental. 2008. : The Groothoek / Eendracht Coal Project, Fatal Flaws Analysis Report, Environmental Aspects

- Riverbanks, rims of pans and smaller watercourses (e.g. the Sandloop River) should be avoided as far as possible as past communities settled near water sources.
- In the Waterberg Area, Iron Age groups preferred saddle areas between mountains, hills and outcrops. These areas should also be avoided.
- Avoid all patches bare of vegetation unless previously inspected by an archaeologist. These might be old settlement sites.
- Rock outcrops might contain rock shelters, engravings or stone walled settlements, and should be avoided unless previously inspected by an archaeologist.
- Communities living close to areas demarcated for development e.g. Lephalale, should be consulted as to the existence of sites of cultural significance, e.g. graves, as well as sites that do not show any structures but have emotional significance, such as battlefields, etc.
- All graves or cemeteries should be avoided, unless when totally impossible. The correct procedure, i.e. notification of intent to relocate them, consultation with descendants and permit application, should then be followed in relocating the graves. If any of the graves are older than 60 years, they can only be exhumed by an archaeologist. Graves of victims of conflict requires additional permits from SAHRA before they can be relocated.
- Archaeological material, by its very nature, occurs below ground. It should be considered that archaeological sites might be exposed during the construction work. If anything is noticed, work in that area should be stopped and the occurrence should immediately be reported to a museum, preferably one at which an archaeologist is available. The archaeologist should then investigate and evaluate the find.
- The larger area around Lephalale has been occupied for many decades and places of "Living Heritage" might be present in the landscape. Here, "Living Heritage" can broadly refer to a place of cultural heritage and sacred nature; with cultural attributions that are not generally physically manifested. Such places might include initiation sites, places of ritual seclusion, old farmsteads, ritual graves and specific meeting areas. These sites and possible material residues thereof convey an intangible cultural significance beyond the site, shelter or object, where the meaning speaks directly of a sense of place and lived experience. Therefore, Historical period and recent material culture and structures should be regarded as potentially sensitive in terms of the tangible and intangible value of such resources.

9 GENERAL COMMENTS AND CONDITIONS

This AIA report serves to confirm the extent and significance of archaeological material in the Groothoek Coal Mine Project Area. In addition to heritage resources occurring here, the larger Limpopo and Waterberg areas encompass a rich and diverse archaeological landscape and cognisance should be taken of heritage resources and archaeological material that might be present in surface and sub-surface deposits. If, during construction, any possible archaeological material culture are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find. Such material culture might include:

- Formal Earlier Stone Age stone tools such as handaxes, choppers and cleavers.
- Formal Middle Stone Age stone tools such as points, blades and scrapers.
- Formal Later Stone Age stone tools such a microlithic blades, points and scrapers.
- Lithic residues and debris such as stone cores and flakes.
- Decorated and undecorated potsherds.
- Iron objects.
- Beads made from ostrich eggshell and glass.
- Ash middens and cattle dung deposits and accumulations.

- Animal bones and faunal remains.
- Human remains/graves.
- Stone walling or any sub-surface structures.
- Historical glass, tin or ceramics.
- Fossils.

If such sites were to be encountered or impacted by any proposed developments, recommendations contained in this report, as well as endorsement of mitigation measures as set out by SAHRA, the National Heritage Resources Act and the CRM section of ASAPA will be required. Please note that this report is an archaeological scoping study only and does not include or exempt other required heritage impact assessments.

It must be emphasised that the conclusions and recommendations expressed in this archaeological heritage sensitivity investigation are based on the visibility of archaeological sites/features and may not therefore, represent the area's complete archaeological legacy. Many sites/features may be covered by soil and vegetation and might only be located during sub-surface investigations. If subsurface archaeological deposits, artefacts or skeletal material were to be recovered in the area during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately **(*cf.* NHRA (Act No. 25 of 1999)**, Section 36 (6)).

It must also be clear that Archaeological Specialist Reports will be assessed by the relevant heritage resources authority. The final decision rests with the heritage resources authority, which should give a permit or a formal letter of permission for the destruction of any cultural sites.

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