



**PROPOSED WASTE RECYCLING PLANT
PORTION 1 MODDERFONTEIN 490 JR, BRONKHORSTSPRUIT,
CITY OF TSHWANE METROPOLITAN MUNICIPALITY
GAUTENG PROVINCE**

Heritage Impact Assessment Report

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Report Title	<i>Heritage Impact Assessment for the proposed waste recycling plant on Portion 1 Modderfontein 490 JR, Bronkhorstspuit, City of Tshwane Metropolitan Municipality, Gauteng Province</i>		
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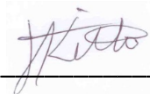
Declaration of Independence

The report has been compiled by PGS Heritage, an appointed Heritage Specialist for Tshikovha Environmental and Communication Consulting. The views stipulated in this report are purely objective and no other interests are displayed during the decision making processes discussed in the Heritage Impact Assessment Process

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EXECUTIVE SUMMARY

PGS Heritage was appointed by Tshikovha Environmental and Communication Consulting to undertake a Heritage Impact Assessment (HIA) that forms part of the Basic Assessment (BAR) for the proposed development of a waste recycling plant on Portion 1 Modderfontein 490 JR, Bronkhorstspuit, City of Tshwane Metropolitan Municipality, Gauteng Province.

Utilising the archival study completed for the desktop study as a guide, the field work identified **three cultural-heritage sites, including seven structures**, of which the following will require further mitigation:

Structures

- The more recent shop building (MF 002) can be demolished with no further mitigation.
- The structures located at Site MF 003 are all located outside the immediate development footprint and are all of modern/recent date (less than 60 years old). Therefore, if necessary, they can be demolished with no further mitigation

Conclusions and Recommendations

Further to these recommendations, the general Heritage Management Guidelines in Section 5 need to be incorporated into the EMP for the project.

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

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1 INTRODUCTION

PGS Heritage was appointed by Tshikovha Environmental and Communication Consulting to undertake a Heritage Impact Assessment (HIA) that forms part of the Basic Assessment (BAR) for the proposed development of a waste recycling plant on Portion 1 Modderfontein 490 JR, Bronkhorstspuit, City of Tshwane Metropolitan Municipality, Gauteng Province.

1.1 Scope of the Study

The aim of the study is to identify possible heritage sites and finds that may occur in the proposed development area. The Heritage Impact Assessment aims to inform the EIA in the development of a comprehensive EMP to assist the developer in managing the identified heritage resources in a responsible manner, in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999) (NHRA).

1.2 Specialist Qualifications

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

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

Wouter Fourie, the principal Archaeologist, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist and is accredited as a Principal Investigator, he is further an Accredited Professional Heritage Practitioner with the Association of Professional Heritage Practitioners (APHP)..

Jennifer Kitto, Heritage Specialist and Project Coordinator for this project, has 15 years' experience in the heritage sector, a large part of which involved working for a government department responsible for administering the National Heritage Resources Act, No 25 of 1999. She is therefore well-versed in the legislative requirements of heritage management. She holds a BA in Archaeology and Social Anthropology and a BA (Hons) in Social Anthropology.

1.3 Assumptions and Limitations

Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and the current dense vegetation cover over the study area, especially the north-western-portion/s, which is covered with stands of dense black wattle. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must be contacted immediately.

Such observed or located heritage features and/or objects may not be disturbed or removed in any way, until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply, as set out below.

1.4 Legislative Context

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

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

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

- i. National Environmental Management Act (NEMA) Act 107 of 1998
 - a. Basic Environmental Assessment (BEA) – Section (23)(2)(d)
 - b. Environmental Scoping Report (ESR) – Section (29)(1)(d)
 - c. Environmental Impacts Assessment (EIA) – Section (32)(2)(d)
 - d. EMP (EMP) – Section (34)(b)
- ii. National Heritage Resources Act (NHRA) Act 25 of 1999
 - a. Protection of Heritage resources – Sections 34 to 36; and

- b. Heritage Resources Management – Section 38
- iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
 - a. Section 39(3)
- iv. Development Facilitation Act (DFA) Act 67 of 1995
 - a. The GNR.1 of 7 January 2000: Regulations and rules in terms of the Development Facilitation Act, 1995. Section 31.

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

Table 1 -Terminology

Abbreviations	Description
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
DEA	Department of Environmental Affairs
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&AP	Interested & Affected Party
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Authority
ROD	Record of Decision
SAHRA	South African Heritage Resources Agency

The following definitions are taken from the National Heritage Resources Act, No 25 of 1999 (Section 2. Definitions):

Archaeological resources

This includes:

- i. material remains resulting from human activity, which are in a state of disuse and are in or on land, and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- ii. rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- iii. wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- iv. features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

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

Development

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

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

Early Stone Age

The archaeology of the Stone Age between 400 000 and 2500 000 years ago.

Fossil

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

Heritage

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

Heritage resources

This means any place or object of cultural significance

Holocene

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

Late Stone Age

The archaeology of the last 30 000 years, associated with fully modern people.

Late Iron Age (Early Farming Communities)

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

Middle Stone Age

The archaeology of the Stone Age between 30-300 000 years ago, associated with early modern humans.

Palaeontology

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

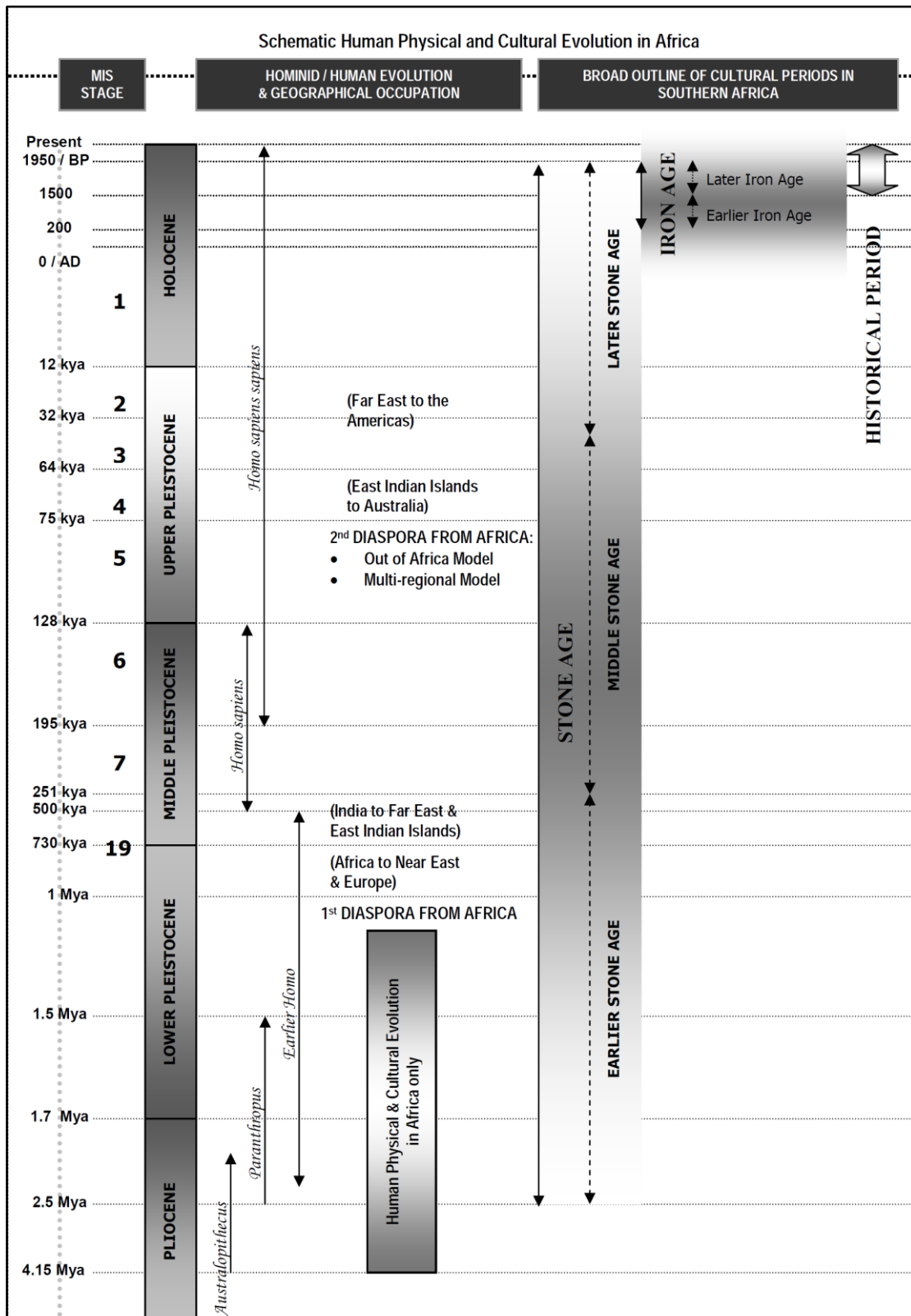


Figure 1 – Human and Cultural Time line in Africa (Morris, 2008)

2 TECHNICAL DETAILS OF THE PROJECT

2.1 Site Location and Description

Location	GPS S25.72840 E28.78397 The proposed development site is situated approximately 9 kilometres north-east of the town of Bronkhorstspuit in Gauteng on Portion 1 of the farm Modderfontein 490 JR.
Land	28 Hectares of land under option
Land Description	The land is not currently utilised and consists of previously ploughed fields with secondary grass cover, as well as several stands of dense black wattle, specifically on the northern and western boundaries of the property.

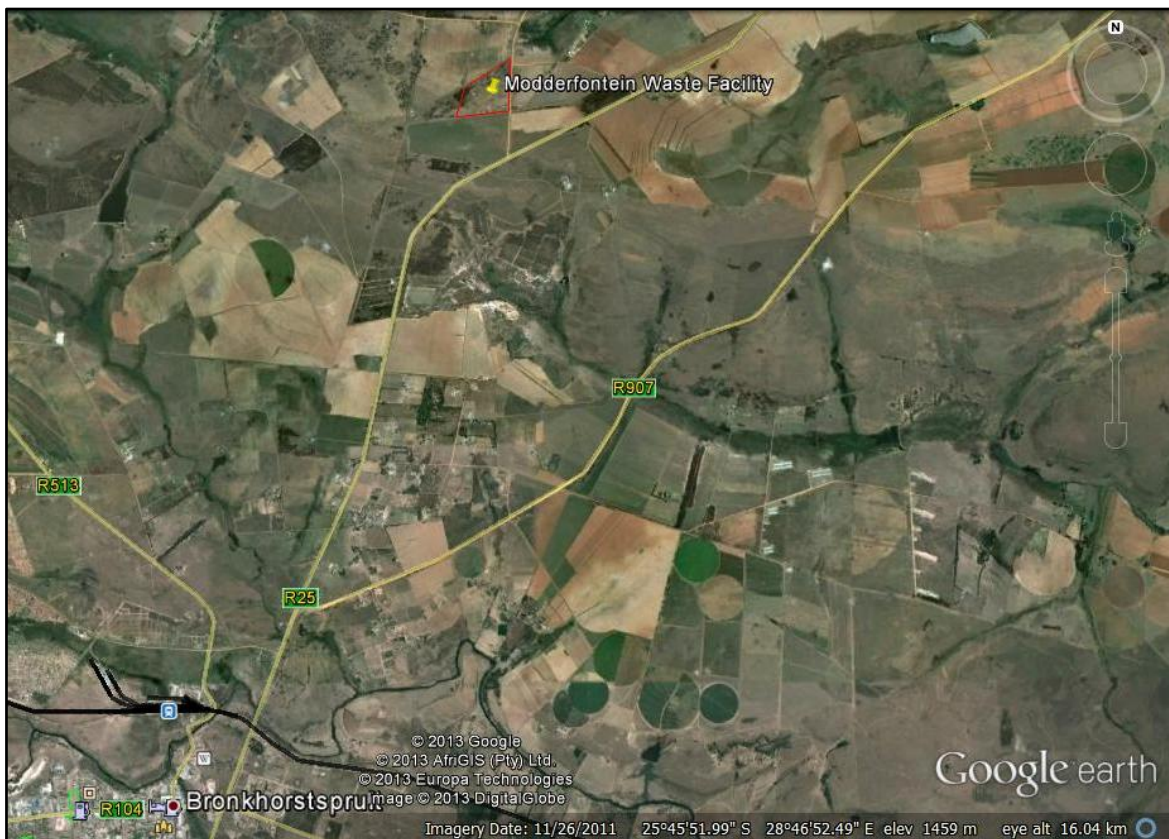


Figure 2 –Modderfontein Study Area (red polygon)

2.2 Technical Project Description

The client proposes to construct a waste disposal facility development on the property. The development will incorporate various elements, including: separate areas for general landfill waste,

garden waste, health risk waste; offices, and other infrastructure. The main area of the property to be affected is the eastern half of the study area.(see **Figure 3**).



Figure 3 – Provisional Development Concept (provided by Tshikovha)

2.3 Site Description

The current study area is located nine kilometres to the north-east of the town of Bronkhorstspuit. The archival and literature study provided no information on the previous history of the farm Modderfontein 490 JR.

The study area is located on fairly flat terrain that was previously used as ploughed fields and is now covered with secondary grassland, with several stands of dense wattle located along the northern and western boundaries.

Current structures on the property consist of several ruined structures, including an old store and a recent/historic farmstead, as well as existing workers homesteads that are currently occupied.



Figure 4 - General view of grassland and black wattle



Figure 5 – General view of study area (with worker houses)

2.4 Heritage Issues and Potential Impacts

Cartographic and Archival Information

The archival research focused on available information sources (historical maps, literature survey, etc.) that were used to compile a background history of the study area and surrounds. This data then informed the possible heritage resources to be expected during field surveying of the current study area.

The 1:50 000 topographic map, 2528DB Vaalplaas, measured in 1943 and drawn in 1944, was examined for information on structures that are 60 years or older. No structures were shown as present on the site.

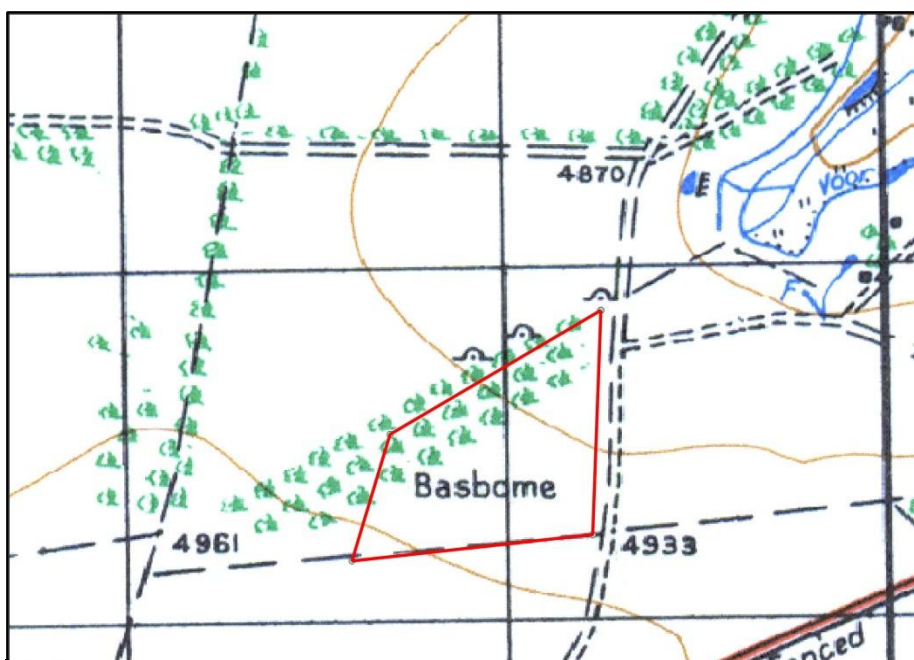


Figure 6 - 1943 map of study area indicating no structures within the boundaries of the study area

The 1969 map, which utilised 1965 aerial photography and was drawn in 1970, also does not indicate any structures on the site (Figure 7).

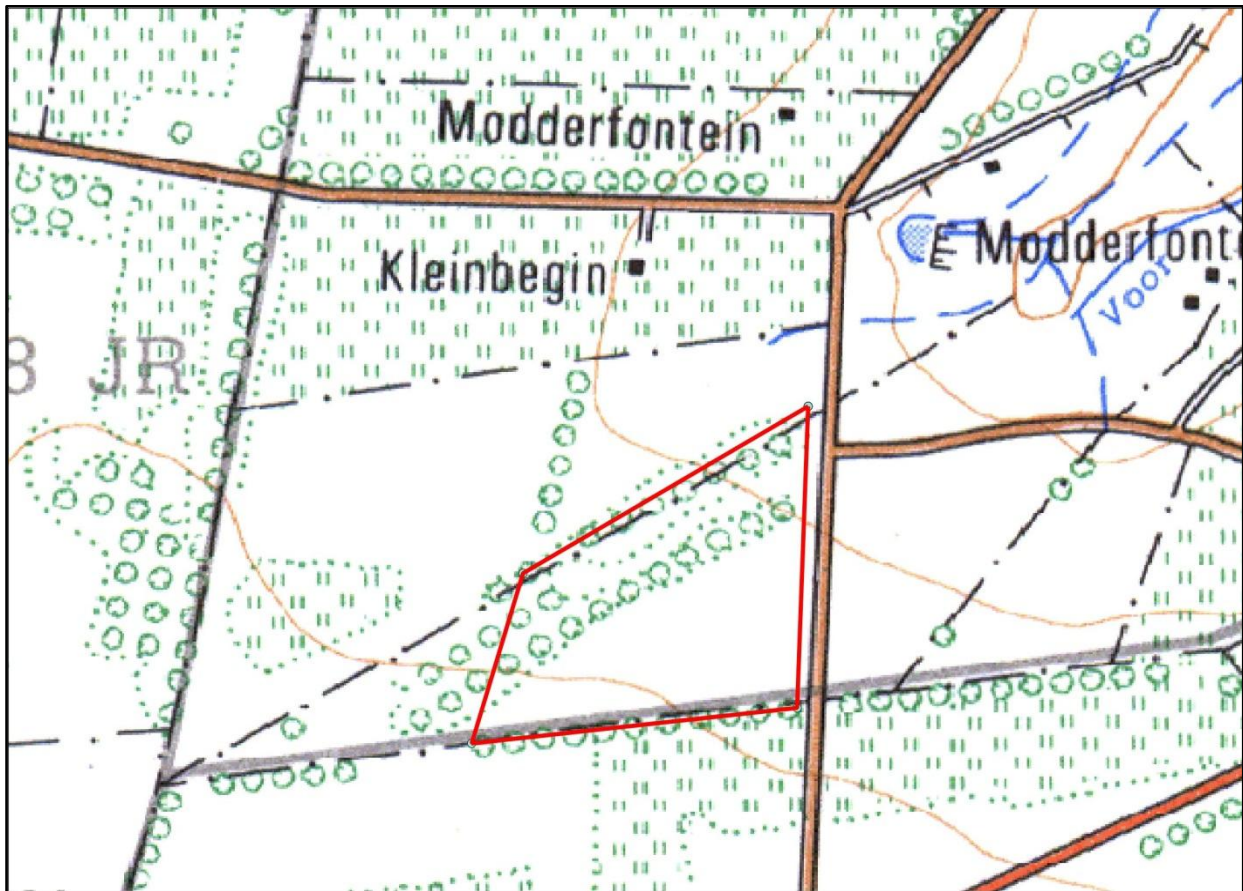


Figure 7 – 1969 map of study area indicating no structures within the boundaries of the study area

The archaeological and historical literature search provided the following information which has been compiled into an overview of the significant archaeological and historical sites and events relevant to the study area and surrounding landscape.

Archaeology

Two archaeological sites are known from the general area surrounding Bronkhorstspuit. The closest site is a shelter on the farm Flooikop which is situated 19.3 kilometres north-east of Bronkhorstspuit to the left of the road to Groblersdal. This shelter contained numerous remains (mostly stone artefacts) of the earlier and later phases of the Later Stone Age, as well as some potsherds which [could] suggest an occupation of this site during the Iron Age (Keenan-Smith, 1961). An unusual, incised and perforated soapstone artefact, thought to have been a pendant, was found at this site (*ibid*).

The second known site is situated on the farm Mooiplaas, which is located to the west of Bronkhorstspuit and east of Pretoria (close to the old district boundary). This site contains unusual rock engravings depicting human feet as well as the remains of an Iron Age settlement and a possible Iron Age cemetery (Geldmacher, 1967; Tobias, 1967).

No references to other known Stone Age or Iron Age sites in the vicinity were located during the literature search.

History

The town of Bronkhorstspuit was laid out in 1904 on the farm Hondsrivier and named Erasmus after the owner, C J G Erasmus. In 1935 the name was changed to Bronkhorstspuit, after the stream of that name. The town was the scene of a battle in December 1880 between a Boer commando under Commandant Frans Joubert and British troops under Lieutenant-Colonel Anstruther. (Raper, 1989)

The Battle of Bronkhorstspuit

This battle was the first action between the Boers and British forces in what became known as the First War of Independence (now called the First South African War 1880-1881). The battle took place at Bronkhorstspuit on the old road from Lydenburg to Pretoria on 20 December 1880 (Duxbury, 1980).

In 1877, Sir Theophilus Shepstone, the British Secretary for Native Affairs in Natal, had annexed the South African Republic (Transvaal Republic), for Britain using a special warrant. The British annexation resulted in resentment against the British occupation and a growing nationalism among the Boers. Three and a half years of ongoing protests against the annexation elicited no response from the British government. On 10 December 1880, 10 000 Boers held a meeting at Paardekraal (Krugersdorp) and the Republic's independence was formally proclaimed. The "Vierkleur" flag was raised and a Tribunal government was appointed (Paul Kruger as Vice-president, Piet Joubert as Commandant-General and M.W. Pretorius).

After the Transvaal formally declared its independence from the United Kingdom, the war began on 16 December 1880 with shots fired by Transvaal Boers at Potchefstroom. This led to the action at Bronkhorstspuit on 20 December 1880, where the Boers destroyed a British Army convoy. From 22 December 1880 to 6 January 1881, British army garrisons all over the Transvaal became besieged.

At the first battle at Bronkhorstspuit, Lieutenant-Colonel Anstruther and 120 men of the 94th Foot (Connaught Rangers) were dead or wounded by Boer fire within minutes of the first shots. Boer losses

totalled two killed and five wounded. This mainly Irish regiment was marching westward toward Pretoria, led by Lieutenant-Colonel Anstruther, when halted by a Boer commando group. Its leader, Piet Joubert, ordered Anstruther and the column to turn back, stating that the territory was now again a Boer Republic and therefore any further advance by the British would be deemed an act of war. Anstruther refused and ordered that ammunition be distributed. The Boers opened fire and the British troops were annihilated. With the majority of his troops dead or wounded, the dying Anstruther ordered surrender. (http://www.boereafrikana.com/Anglo%20Boere%20Oorlog/Anglo_Boere_Oorlog.htm)

3 FINDINGS OF THE HERITAGE IMPACT ASSESSMENT SURVEY

Methodology

Two PGS staff members surveyed the study area over one day. The staff traversed the area via vehicle and conducted a controlled-exclusive surface survey by foot. GPS co-ordinates were taken and the identified sites were recorded photographically.

The PGS staff members met up with Mr Pascual Mokoena (the landowner) who showed us the boundaries of the study area and stated that there were no graves on the study area. The graves he was aware of are located on a property across the road from the study area. During the survey, several ruined buildings were identified, as well as existing worker housing.

3.1 Sites Identified From The Survey

Site MF 001: (MF 001/1 – MF 001/7)

GPS: S25.730668 & E28.783309

This site consists of approximately seven worker homesteads located to the north of the western border of the study area (**Figures 8-10**). The homesteads all comprise modern/recent informal buildings. The residents were asked if they knew of any graves and they confirmed Mr Mokwena's statement that the known graves are situated on the other side of the main access road to the study area. No graves are known within the study area.



Figure 8 – General view of MF 001, worker houses (MF 001/1 & MF 001/2)



Figure 9 – MF 001, View of worker houses (MF 001/3)



Figure 10 – MF 001, More worker houses (MF 001/6)



Figure 11 – MF 001, worker houses (MF 001/4)

Significance and Impact rating:

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Mitigation
Negative	▪ Low	▪ Grade GP.C	▪ Probable	▪ Permanent	▪ A

Recommendation:

No mitigation required in terms of the heritage legislation requirements.

Site MF 002:

GPS: S25.730052 & E28.785566

The ruins of two old buildings were identified at this location. The main building is a rectangular multi-roomed building with modern tiles and bricks and metal door and window frames. The doors, windows, doorframes and window frames, as well as the roof, have been removed. There was a faded painted sign on the front facade indicating that this had been a shop (“winkel”). The small building located behind the shop was a toilet. The materials utilised during construction indicate that these structures are not older than 60 years.



Figure 12 – MF 002, Shop building – front (arrow indicates faded remains of sign - “winkel”)



Figure 13 – MF 002, Shop building - inside

Significance and Impact rating:

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Mitigation
Negative	▪ Low	▪ Grade GP.C	▪ Probable	▪ Permanent	▪ A

Recommendation:

No mitigation required.

Site MF 003:

GPS: S25.728651 & E28.282059

The ruins of a recent/historic house and associated outbuildings were identified. The complex consists of a modern house, and four sheds/barns/store-rooms.

The house is built of modern bricks, tiles, etc and the walls are plastered and painted. The house is a rectangular, multi-roomed structure with a single-pitched roof. The roof, doors, windows and all frames had been removed.

The remains of four outbuildings are located around the house. One, located to the eastern side, is built of the same material as the house and is the same style. This may have been a store-room.

Two of the other ruined buildings, located behind the house, have stone walls and cement floors. Only the cement floors and parts of the walls remain. One of the stone buildings is larger and rectangular-shaped; the other one is small and square-shaped. The small building has the remains of a probable extension of cement bricks lying scattered next to it. These were probably used as sheds/store-rooms.

A few meters away to the west of the main house, there is the remains of a rectangular building made of cement bricks and with a cement floor, which was probably an animal shed. Only the floor and parts of the walls remain. There is a cement ramp leading to the remains of the doorway.

Since none of these buildings is indicated on either the 1943 or the 1969 topographical maps, it is highly unlikely that they are 60 years or older.



Figure 14 – MF 003, Recent/modern house – side view



Figure 15 – MF 003, Recent/modern house – rear view



Figure 16 – MF 003, Outbuilding next to house, eastern side



Figure 17 – MF 003, Stone outbuilding behind house



Figure 18 – MF 003, Cement-brick outbuilding, on western side of house

Significance and Impact rating:

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Mitigation
Negative	▪ Low	▪ Grade GP.C	▪ Probable	▪ Permanent	▪ C

Recommendation:

Since these structures seem to fall outside the immediate footprint of the proposed waste disposal facility, no mitigation measures are required.

An evaluation of the available information together with the site visit data enabled the development of a heritage site map (**Figure 19 & 20**) to guide further investigations during the EIA phase of the project that may entail further detailed field work in the study area.

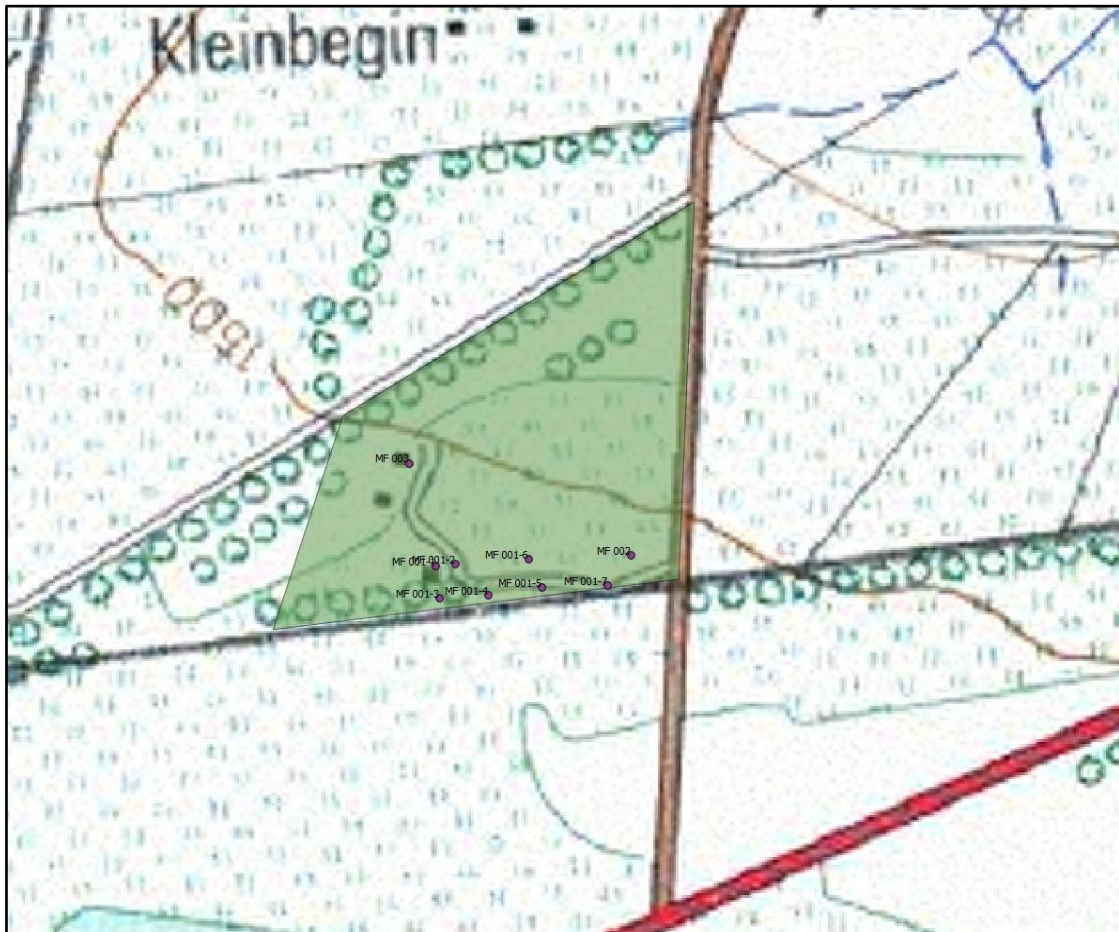


Figure 19 - Map of Identified Sites (1:50 000 – red dots)

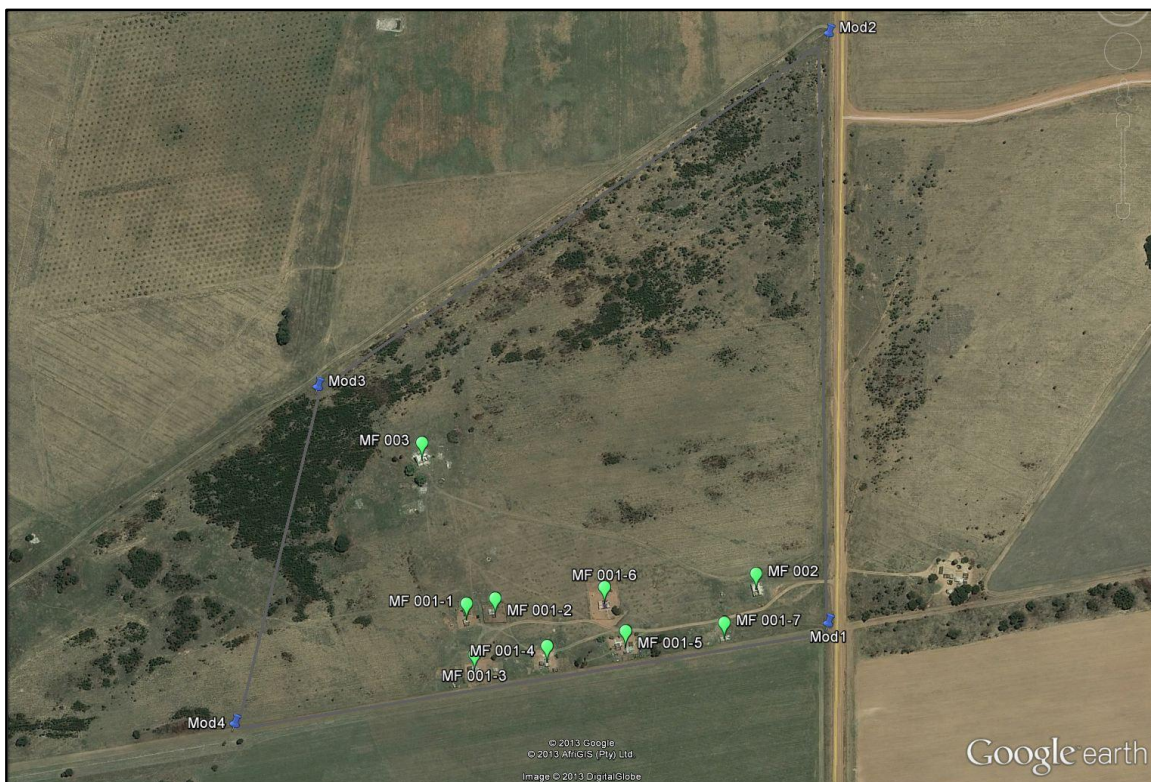


Figure 20 – Identified Sites, Google Earth view

4 CONCLUSIONS AND RECOMMENDATIONS

Utilising the archival study completed for the desktop study as a guide, the field work identified a total of **three cultural-heritage sites, including seven structures**, of which the following will require further mitigation:

Structures

- The modern/recent shop building (MF 002) can be demolished with no further mitigation.
- The structures located at Site MF 003 are all located outside the immediate development footprint and are all of modern/recent date (less than 60 years old). Therefore, if necessary, they can be demolished with no further mitigation.

Further to these recommendations the general Heritage Management Guidelines in **Section 5** need to be incorporated into the EMP for the project.

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

5 HERITAGE MANAGEMENT GUIDELINES

5.1 General Management Guidelines

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

development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

2. In the event that a further heritage assessment is required it is advisable to utilise a qualified heritage practitioner, preferably registered with the Cultural Resources Management Section (CRM) of the Association of Southern African Professional Archaeologists (ASAPA).

This survey and evaluation must include:

- (a) The identification and mapping of all heritage resources in the area affected;
- (b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6 (2) or prescribed under section 7 of the National Heritage Resources Act;
- (c) An assessment of the impact of the development on such heritage resources;
- (d) An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- (e) The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- (f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- (g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.

3. It is advisable that an information section on cultural resources be included in the SHEQ training given to contractors involved in surface earthmoving activities. These sections must include basic information on:

- a. Heritage;
- b. Graves;
- c. Archaeological finds; and
- d. Historical Structures.

This module must be tailor made to include all possible finds that could be expected in that area of construction.

4. In the event that a possible find is discovered during construction, all activities must be halted in the area of the discovery and a qualified archaeologist contacted.

5. The archaeologist needs to evaluate the finds on site and make recommendations towards possible mitigation measures.
6. If mitigation is necessary, an application for a rescue permit must be lodged with SAHRA.
7. After mitigation, an application must be lodged with SAHRA for a destruction permit. This application must be supported by the mitigation report generated during the rescue excavation. Only after the permit is issued may such a site be destroyed.
8. If during the initial survey sites of cultural significance are discovered, it will be necessary to develop a management plan for the preservation, documentation or destruction of such a site. Such a program must include an archaeological monitoring programme, timeframe and agreed upon schedule of actions between the company and the archaeologist.
9. In the event that human remains are uncovered, or previously unknown graves are discovered, a qualified archaeologist needs to be contacted and an evaluation of the finds made.
10. If the remains are to be exhumed and relocated, the relocation procedures as accepted by SAHRA need to be followed. This includes an extensive social consultation process.

Archaeological Monitoring

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

The purpose of an archaeological monitoring programme is:

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

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

Table 2: Roles and responsibilities of archaeological and heritage management

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

5.2 All phases of the project

Archaeology

Based on the findings of the HIA, all stakeholders and key personnel should undergo an archaeological induction course during this phase. Induction courses generally form part of the employees' overall training and the archaeological component can easily be integrated into these training sessions. Two courses should be organised – one aimed more at managers and supervisors, highlighting the value of this exercise and the appropriate communication channels that should be followed after chance finds,

and the second targeting the actual workers and getting them to recognize artefacts, features and significant sites. This needs to be supervised by a qualified archaeologist. This course should be reinforced by posters reminding operators of the possibility of finding archaeological sites.

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

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

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

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

Graves

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

- Mitigation of graves will require a fence around the cemetery with a buffer of at least 20 meters.
- If graves are accidentally discovered during construction, activities must cease in the area and a qualified archaeologist be contacted to evaluate the find. To remove the remains a rescue permit must be applied for with SAHRA and the local South African Police Services must be notified of the find.
- Where it is then recommended that the graves be relocated a full grave relocation process that includes comprehensive social consultation must be followed.

The grave relocation process must include:

- i. A detailed social consultation process, that will trace the next-of-kin and obtain their consent for the relocation of the graves, that will be at least 60 days in length;
- ii. Site notices indicating the intent of the relocation
- iii. Newspaper notices indicating the intent of the relocation
- iv. A permit from the local authority;
- v. A permit from the Provincial Department of Health;
- vi. A permit from the South African Heritage Resources Agency, if the graves are older than 60 years or unidentified and thus presumed older than 60 years;
- vii. An exhumation process that keeps the dignity of the remains intact;
- viii. The whole process must be done by a reputable company that is well versed in relocations;
- ix. The exhumation process must be conducted in such a manner as to safeguard the legal rights of the families as well as that of the developing company.

6 LIST OF PREPARERS

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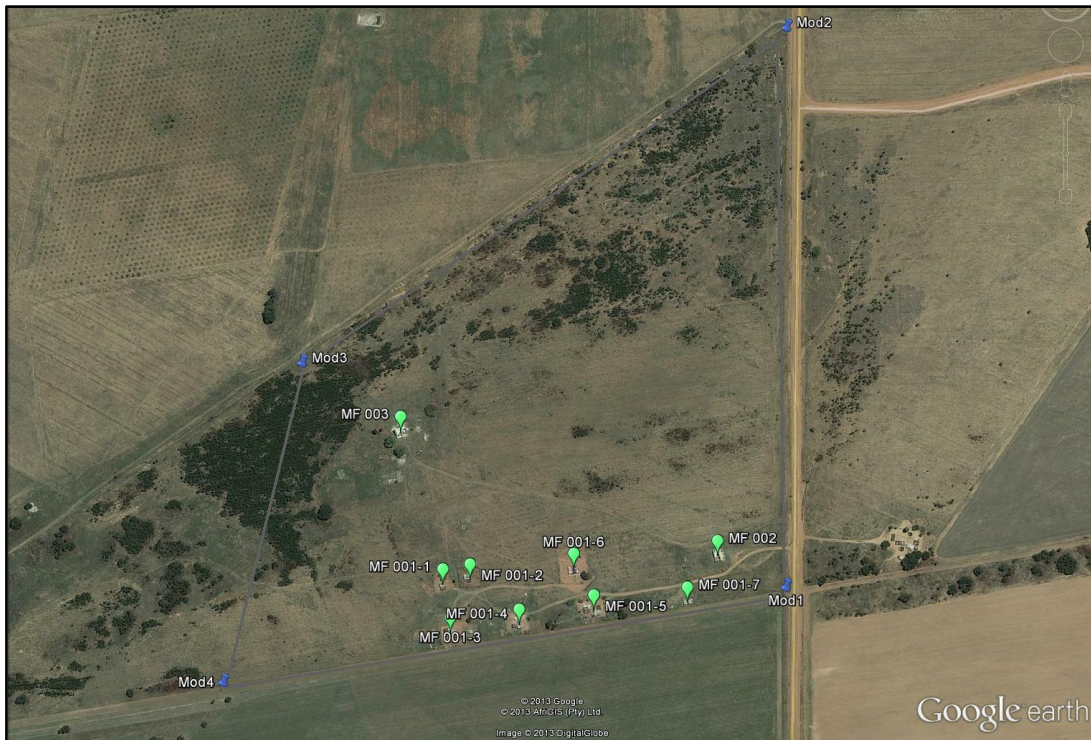
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APPENDIX A
SITE DISTRIBUTION MAP



LEGISLATIVE REQUIREMENTS – TERMINOLOGY AND ASSESSMENT CRITERIA

1 General Principles

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

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

In addition to the formal protection of culturally significant graves, all graves, which are older than 60 years and are not in a cemetery (such as ancestral graves in rural areas), are protected. The legislation protects the interests of communities that have interest in the graves: they may be consulted before any disturbance takes place. The graves of victims of conflict and those associated with the liberation struggle will be identified, cared for, protected and memorials erected in their honour.

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

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

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

- objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, meteorites and rare geological specimens;
- visual art objects;
- military objects;
- numismatic objects;
- objects of cultural and historical significance;
- objects to which oral traditions are attached and which are associated with living heritage;
- objects of scientific or technological interest;

- books, records, documents, photographic positives and negatives, graphic material, film or video or sound recordings, excluding those that are public records as defined in section 1 (xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996), or in a provincial law pertaining to records or archives; and
- any other prescribed category.

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

2 Graves and cemeteries

Graves younger than 60 years fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the Office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning, or in some cases the MEC for Housing and Welfare. Authorisation for exhumation and reinterment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. In order to handle and transport human remains the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

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

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

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

The Heritage Impact Assessment (HIA) report to be compiled by PGS Heritage and Grave Relocation Consultants (PGS) for the proposed Copperleaf Project will assess the heritage resources found on site. This report will contain the applicable maps, tables and figures as stipulated in the NHRA (no 25 of 1999), the National Environmental Management Act (NEMA) (no 107 of 1998) and the Minerals and Petroleum Resources Development Act (MPRDA) (28 of 2002). The HIA process consisted of three steps:

- Step I – Literature Review: The background information to the field survey leaned greatly on the initial desktop research completed by PGS Heritage for this report.

- Step II – Physical Survey: A physical survey was conducted by vehicle and on foot through the proposed project area by a qualified archaeologist and experienced staff, aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.

- Step III–The final step involved the recording and documentation of relevant archaeological resources, as well as the assessment of resources in terms of the heritage impact assessment criteria and report writing, as well as mapping and constructive recommendations

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

- **site integrity** (i.e. primary vs. secondary context),
- **amount of deposit, range of features** (e.g., stonewalling, stone tools and enclosures),
 - Density of scatter (dispersed scatter)
 - Low - <10/50m²
 - Medium - 10-50/50m²
 - High - >50/50m²
- **uniqueness** and
- **potential** to answer present research questions.

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

A - No further action necessary;

B - Mapping of the site and controlled sampling required;

C - No-go or mitigation

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

E - Preserve site

- Site Significance

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

Table 2: Site significance classification standards as prescribed by SAHRA

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

Impact Rating

VERY HIGH

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

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

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

HIGH

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

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

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

MODERATE

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

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

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

LOW

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by the public and/or the specialist as constituting a fairly

unimportant and usually short term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.

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

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

NO SIGNIFICANCE

There are no primary or secondary effects at all that are important to scientists or the public.

Example: A change to the geology of a particular formation may be regarded as severe from a geological perspective, but is of NO significance in the overall context.

Certainty

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

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

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

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

Duration

SHORT TERM: 0 to 5 years

MEDIUM: 6 to 20 years

LONG TERM: more than 20 years

DEMOLISHED: site will be demolished or is already demolished

An example of a ratings table:

Impact Grading

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