A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR THE
SASOL MINING (PTY) LTD’s PROPOSED IMPUMELELO MINE
EXTENSION PROJECT ON THE EASTERN HIGHVELD IN THE
MPUMALANGA PROVINCE

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EXECUTIVE SUMMARY

This document contains the report on a Phase I Heritage Impact Assessment (HIA) study which was done according to Section 38 of the National Heritage Resources Act (No 25 of 1999) for Sasol Mining (Pty) Ltd (Sasol's) proposed Impumelelo Mine Extension Project on the Eastern Highveld in the Mpumalanga Province.

Sasol requires knowledge of the presence, relevance and the significance of any heritage resources that may be affected by its mining activities. Sasol needs this information in order to take pro-active measures with regard to any heritage resources that may be affected by the mining activities. Sasol therefore commissioned Clean Stream Environmental Consultants (Pty) Ltd (CSEC) to apply for environmental authorisation and for a water use license for the Impumelelo Mine Extension Project. CSEC commissioned the author to undertake a Phase I Heritage Impact Assessment for the proposed Impumelelo Mine Extension Project.

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

- To establish whether any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) (see Box 1) do occur in the Sasol Project Area and, if so, to determine the nature, the extent and the significance of these remains.
- To establish if any of these heritage resources will be affected by Sasol’s proposed Impumelelo Mine Extension Project and, if so, to evaluate what appropriate mitigation measures must be taken to conserve and to manage these types and ranges of heritage resources.

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

- Stone walled sites dating from the Late Iron Age.
- Farm homesteads, houses and other historical remains.
- Graveyards.

These remains have been geo-referenced, tabulated and mapped (Tables 1 -3, Figure 3). Their significance as well as the significance of any possible impact on these remains is indicated...
(Tables 4, 5 & 6). Mitigation measures are outlined should any of these remains be directly impacted by unforeseen circumstances (Tables 4, 5 & 6).

The significance of the heritage resources
The significance of all the types and ranges of heritage resources which have been identified in the Sasol Project Area has to be indicated should any of these heritage resources be affected by the Impumelelo Mine Extension Project.

The significance of the stone walled sites
The stone walled sites qualify as archaeological and/or historical remains as these remains are older than sixty years. These remains are protected by the National Heritage Resources Act (No 25 of 1999).

The significance of the stone walled sites can be rated as medium to high when considering criteria such as the following (Table 1):

- These remains can contribute to a better understanding of the lifeways of Iron Age and historical agro-pastoral communities who occupied the Eastern Highveld during the last four centuries.
- These remains provide opportunities to be utilized in tourism, education and research particularly if further studied, renovated and applications to be utilized (e.g. in the tourism or leisure industry) can be implemented.

The significance of the historical remains
The farm homesteads, historical houses and other historical structures qualify as archaeological and/or historical remains as these remains are older than sixty years. These remains are protected by the National Heritage Resources Act (No 25 of 1999).

The significance of these historical remains can be rated as medium to high when considering criteria such as the following (Table 2):

- The remains of the farm homesteads, houses and other historical structures can contribute to a better understanding of the lifeways of early inhabitants on the eastern Highveld in Mpumalanga.
- The historical remains are under threat due to an established agro-economic industry and an expanding coal mining complex on the eastern Highveld of Mpumalanga.
- The historical remains provide opportunities to be utilized in tourism, education and research particularly if further studied, renovated and applications to be utilized (e.g. in the tourism or leisure industry) can be implemented.

The significance of the graveyards
All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 3). Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (No 25 of 1999) whenever graves are older than sixty years. The act also distinguishes various categories of graves and burial grounds.

Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).

Possible impact on the heritage resources
The Impumelelo Mine Extension Project is part of the existing Impumelelo Mine where coal is mined and transported by means of an existing conveyor to the Brandspruit Mine where the coal is processed at an existing plant. Coal is mined utilising a combination of underground mining methods (bord and pillar, and high extraction / stooping). The existing conveyor transports the coal from the Impumelelo Mine to the existing Sasol Coal Supply (SCS) blending plant close to Brandspruit Colliery. The servitude for the conveyor belt includes a service road, water pipelines, power and communication lines.

The Impumelelo Mine Extension Project therefore will have no direct influence on any of the types and ranges of heritage resources which have been observed, mapped and described in this report.

The significance of possible impacts on the heritage resources
The significance of any potential impacts on the heritage resources was determined using a generic ranking scale which is used in most environmental and heritage impact assessment studies and which is based various criteria.

The significance of any possible impact on the stone walled settlements is very low (Table 4).

The significance of any possible impact on the historical remains is very low (Table 5).
The significance of any possible impact on the graveyards is very low (Table 6).

**Mitigating the heritage resources**
The following mitigation measures have to be applied to the heritage resources. This will only occur if any direct impact of an unforeseen nature may occur on any of the heritage resources in the project area.

**Mitigating possible stone walled site impacts**
Stone walled settlements must be investigated by means of a Phase 2 investigation. An archaeologist registered with the Association for Southern African Professional Archaeologists (ASAPA) must obtain a permit from the SAHRA in order to conduct the necessary investigations. After the Phase 2 investigation has been completed the SAHRA may issue a permit for the demolishing of the Late Iron Age stone walled sites.

The significance of the impact on the stone walled settlements will be low after mitigation (Table 4).

**Mitigating possible historical remains’ impact**
The historical remains have to be studied and documented by a historical architect before any of these remains may be affected in any way, e.g. to be altered or to be demolished as a result of the implementation of the Sasol Impumelelo Extension Project. The South African Heritage Resources Agency (SAHRA) will require that the historical structures that may be affected have been studied and documented by the conservation architect before SAHRA will make any recommendations regarding the future existence of these remains.

The significance of any possible impact on the historical remains after the mitigation measures have been put in place will be low (Table 5).

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

However, graveyards can also be conserved by means of implementing the following management measures if they are not directly (physically) affected by the Sasol Impumelelo Extension Project, namely:

- Graveyards must be demarcated with fences or with walls and should be fitted with access gates.
- Regulated visitor hours should be implemented that is compatible with mine safety rules. This may not be necessary if the graveyards can directly be linked with existing provincial or local roads.
- Corridors of at least 20m should be maintained between graveyards’ fences and any developmental components such as roads or other mine infrastructure that may be developed in the future.
- Graveyards must be inspected every three months. Inspections must be noted in an inspection register. The register must outline the state of the graveyards during each inspection. Reports on damages to any of the graves or to the graveyards’ (fences, walls, gates) must be followed with the necessary maintenance work. Maintenance work must be recorded in in the inspection register.
- The graveyards must be kept tidy from any invader weeds and any other refuse.

The significance of any possible impact on the graveyards after the mitigation measures have been put in place will be low (Table 6).

**General (disclaimer)**

It is possible that this heritage survey may have missed heritage resources in the Sasol Project Area considering the size and extent of the area and the length of the power line. It is possible that undetected heritage resources still may occur as a result of the fact that archaeological remains such as settlements or graves may occur beneath the surface of the earth; that heritage resources are unmarked or inconspicuous such as informal graves; that archaeological remains including informal graves may be covered by grass or by dense clumps of bush or that the author (archaeologist) may have failed to recognise or to observed heritage resources such as graves.

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

In order to continue to satisfy existing market requirements of Synfuels, Sasol Mining (Pty) Ltd (Sasol) has recently developed the Impumelelo Mine to the south-west of Secunda, east of Greylingstad and north-west of Standerton in the Mpumalanga Highveld. Sasol Mining proposes to include portions of several of the surrounding farms into the Impumelelo Mining area which will replace the Brandspruit Mine operation. The proposed Impumelelo Mine Extension Project therefore may have an influence on any of the types and ranges of heritage resources which are outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) which may occur in the proposed new extended mining areas (Sasol Project Area).

Sasol therefore requires knowledge of the presence, relevance and the significance of any heritage resources that may be affected by its mining activities. Sasol needs this information in order to take pro-active measures with regard to any heritage resources that may be affected by the mining activities. Sasol therefore commissioned Clean Stream Environmental Consultants (CSEC) to obtain environmental authorisation for the extended mining activities and CSEC commissioned the author to conduct a Phase I Heritage Impact Assessment (HIA) study for the proposed Impumelelo Mine Extended Project.

The Mpumalanga Province of South Africa has a rich heritage comprised of remains dating from the pre-historic and from the historical (or colonial) periods of South Africa. Pre-historic and historical remains in the Mpumalanga Province present a record of the heritage of most groups living in South Africa today. Various types and ranges of heritage resources that qualify as part of South Africa’s ‘national estate’ (outlined in Section 3 of the National Heritage Resources Act, Act No 25 of 1999) occur in this province (see Box 1).
Box 1: Types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999).

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

(a) places, buildings structures and equipment of cultural significance;
(b) places to which oral traditions are attached or which are associated with living heritage;
(c) historical settlements and townscapes;
(d) landscapes and natural features of cultural significance;
(e) geological sites of scientific or cultural importance;
(f) archaeological and palaeontological sites;
(g) graves and burial grounds including-
   (i) ancestral graves;
   (ii) royal graves and graves of traditional leaders;
   (iii) graves of victims of conflict;
   (iv) graves of individuals designated by the Minister by notice in the Gazette;
   (v) historical graves and cemeteries; and
   (vi) other human remains which are not covered in terms of the Human Tissue Act (Act 65 of 1983);
(h) sites of significance relating to the history of slavery in South Africa;
(i) moveable objects, including -
   (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, material, meteorites and rare geological specimens;
   (ii) objects to which oral traditions are attached or which are associated with living heritage;
   (iii) ethnographic art and objects;
   (iv) military objects;
   (v) objects of decorative or fine art;
   (vi) objects of scientific or technological interest; and
   (vii) books, records, documents, photographs, positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act (Act 43 of 1996).

The National Heritage Resources Act (Act 25 of 1999, Sec 3) also distinguishes nine criteria for a place and/or object to qualify as ‘part of the national estate if they have cultural significance or other special value …’. These criteria are the following:

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

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

Qualifications:
- BA (Archaeology, Anthropology and Psychology) (UP, 1976)
- BA (Hons) Archaeology (distinction) (UP, 1979)
- MA Archaeology (distinction) (UP, 1985)
- D Phil Archaeology (UP, 1989)
- Post Graduate Diploma in Museology (Museum Sciences) (UP, 1981)

Work experience:
- Lecturer and Senior lecturer Department of Anthropology and Archaeology, University of Pretoria (1990-2003)
- Independent Archaeologist and Heritage Consultant (2003-)

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

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

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

Disclosure of Vested Interest

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

Private Consultant
15 March 2016
4 LEGAL FRAMEWORK

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

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

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

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

4.1 Legislation relevant to heritage resources

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

- National Heritage Resources Act (NHRA) Act 25 of 1999
• Development Facilitation Act (DFA) Act 67 of 1995

4.2 The National Heritage Resources Act (NHRA)

According to the NHRA (Act No 25 of 1999) the ‘national estate’ comprises the following (see Box 1):

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

Elaborating on the above the ‘national estate’ also includes (Box 1):
1. Places, buildings, structures and equipment of cultural significance
2. Places to which oral traditions are attached or which are associated with living heritage
3. Historical settlements and townscapes
4. Landscapes and features of cultural significance
5. Geological sites of scientific or cultural importance
6. Archaeological and paleontological sites of importance
7. Sites of significance relating to the history of slavery
8. Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military and ethnographic objects, books etc.)

4.3 Heritage Impact Assessment studies

According to Section 38 of the National Heritage Resources Act (Act No 25 of 1999) a Heritage Impact Assessment (HIA) process must be followed under the following circumstances:
• The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
• The construction of a bridge or similar structure exceeding 50m in length
• Any development or activity that will change the character of a site and which exceeds 5,000m² or which involve three or more existing erven or subdivisions thereof
• Re-zoning of a site exceeding 10,000 m²
• Any other category provided for in the regulations of SAHRA or a provincial heritage authority

4.4 Regulations with regard to heritage resources

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

4.4.1 Buildings and structures

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

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

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

4.4.2 Graves and burial grounds

Graves and burial grounds are divided into the following:
a. ancestral graves  
b. royal graves and graves of traditional leaders  
c. graves of victims of conflict  
d. graves designated by the Minister  
e. historical graves and cemeteries  
f. human remains

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

a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves

b) destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation, or any equipment which assists in the detection or recovery of metals.

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

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

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

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

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

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

5.1 Location

Sasol's Impumelelo Mine is located between the R547 in the east and a secondary road that runs from Devon in the north to Greylingstad and Frankfort in the south. The focus of the Sasol Project Area is the farm Strybult 542IR where the Impumelelo Mine and associated mining infrastructure was established in 2012. The Sasol Project Area is located in the Lekwa and Dipaseleng Municipalities in the Gert Sibande District Council on the Eastern Highveld in the Mpumalanga Province (Figure 1).

The Sasol Project Area stretches from the farms Hartebeesfontein 522, Boschmansfontein 523IR, Holgatsfontein 536IR and Wolwefontein 34IR in the north to the farms Grootvlei 579IR, Weltevreden 580IR and Hartbeeskuil 53IR in the south. The farms Raskop 524IR, Strybult 522IR, Platkop 543IR and Carmona 536IR fall between these farms. Towns closest to the Sasol Project Area include Devon, Leandra, Kinross, Evander and Secunda further to the north, Balfour and Greylingstad to the west and Standerton and Frankfort to the south (2628DB Willemsdal 1:50 000 topographical map; 2628 East Rand 1:250 000 and Google imagery) (Figure 1).

This part of the Eastern Highveld in the Mpumalanga Province is known for its long standing production of agricultural crops such as maize, wheat, sorghum, dairy, potatoes and other vegetables. Cattle and sheep ranching also make a significant contribution to the local economy.

Gold and silica mines also occur in the area.

Underground coal mining activities are on the increase due to the demand for electricity which is produced by a number of coal-driven power stations on the Eastern Highveld.
Figure 1- The Sasol Impumelelo Extension Project south-west of Secunda, east of Greylingstad and north-west of Standerton on the Eastern Highveld in the Mpumalanga Highveld (above).

5.2 The nature of the Sasol mining area

The Sasol Project Area stretches across an undulating piece of land and is largely covered with agricultural fields. Few trees occur in the project area. Those that do occur are exotics such as Blue Gum lots, poplar-groves on the banks of streams and Oak trees which are usually located near historical farm homesteads. Most of these trees are anthropogenic as they have been introduced in the area by means of early human activities during the more recent in the past. The Sasol Project is primarily being utilized for dry land agriculture, grazing for cattle and more recently for underground coal mining.
5.3 The nature of the Impumelelo Mine Extension Project

Sasol Mining is an existing coal mining company situated in close proximity to Secunda located approximately 16 km south-east of Kinross and 26 km south-west of Bethal in the Mpumalanga Province. Sasol Mining has been mining coal in the Secunda area for more than 30 years. The main purpose of Sasol Mining's Secunda operations is to supply coal to Sasol Synfuels, which utilises various processes and beneficiates the coal into a number of products such as petrol, diesel, plastics and various chemicals.

In order to continue to satisfy existing market requirements of Synfuels, Sasol Mining has recently developed the Impumelelo Mine (also previously known as Block 2). The Impumelelo Mine is located to the south-west of Secunda, east of Greylingstad and north-west of Standerton in the Mpumalanga Highveld. The Impumelelo Mine will replace the Brandspruit Mine operation.

The existing Impumelelo Mine consists of an area of approximately 21 000 ha in size. Coal is mined from the site utilising a combination of underground mining methods (bord and pillar, and high extraction / stooping). A conveyor from the Impumelelo Mine to the existing Sasol Coal Supply (SCS) blending plant located close to Brandspruit Colliery has been constructed. The servitude for the conveyor belt includes a service road, water pipelines, power and communication lines.

Sasol Mining is also the Holder of the Prospecting Rights of several additional areas surrounding and within the approved Impumelelo Mine Area. Sasol Mining is proposing to mine this coal, using underground bord-and-pillar and stooping methods. Coal will be accessed via the existing Impumelelo Mine, and the mined coal will be transported via the existing conveyor to the Brandspruit Mine where it will be processed at the existing plant.

The areas that Sasol Mining would like to include are portions of the following farms:

- Boschmansfontein
- Paardefontein
- Hartbeesfontein
- Raskop
- Hartbeestkuil
- Wolvenfontein
Mahemsfontein    Weltevreden
Grootvley.

These areas will hereafter be collectively referred to as the Impumelelo Mine Extension (Figure 1).

The Sasol Impumelelo Extension Project will contribute to the following socio-economic benefits:

1. Inclusion of the farms into the current Mining Rights area will extend the Life of Mine of the Impumelelo Mine.
2. Sasol Mining (Pty) Ltd. will continue supplying jobs to its current employees and may possibly create new jobs.
3. The surrounding communities will continue to benefit through direct and indirect income; as well as the mine’s use of local contractors and suppliers.
6 APPROACH AND METHODOLOGY

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

6.1 Field survey

The heritage survey was conducted with a vehicle whilst pedestrian surveys were conducted from a main track which was recorded with a mounted GPS instrument. The survey followed provincial and district roads as well as two track roads and any other accessible roads in order to gain access to parts of the extended mining areas which are located away from accessible roads.

Figure 2- A GPS track log was registered in the Sasol Project Area. Pedestrian surveys were conducted from main and secondary roads across the extended mining areas (above).

The main routes which were followed with a vehicle during the survey were recorded with a mounted GPS instrument. Pedestrian surveys were undertaken from these main pathways. The vegetation in the mining areas was limited to a short grass
cover and scatters of clumps of exotic trees such as Blue Gums, popular trees and wattle trees on some of the extended mining areas.

Vegetation in the project area is characterised by a short grass cover and scattered clumps of exotic trees such as Blue Gum lots and popular trees. Blue Gum trees usually appear as avenues or as lots and in many instances are associated with early colonial settlements whilst popular trees grow along permanent water courses, small streams and some of the rivers. Clumps of trees, stands with weeds such as khaki bush, rocky ridges and bare open spots in the open veld serve as the main ecological indicators for the possible presence of heritage resources in the project area.

Whilst plantations and avenues with Blue Gum trees served as the main ecological indicator for remains of former homesteads dating from the colonial era low rocky, dolerite outcrops were in some instances associated with stone walled sites.

Other ecological indicators such as alterations in vegetation patterns; open or bald spots in the veld or dense patches with grass and other vegetation were searched as these vegetation patterns in many instances were associated with heritage remains such as earlier settlements or graveyards.

Fieldwork was done on 21 and 22 March 2016 and on 24 and 25 March 2016 and was completed on the 5 and 6 April 2016. During March 2016 above average rainfall was recorded in the Sasol Project Area but vegetation cover did not recover as a result of the excessive dry summer which was experienced and vegetation cover was receded and allowed for average to above average visibility for the detection of heritage sites.

Coordinates for heritage resources were recorded with a Garmin Etrex hand set Global Positioning System (instrument) with an accuracy of < 15m.

Google imagery was used as a supplementary source next to the fieldwork to determine the possible presence of heritage sites.
6.2 Databases, literature survey and maps

Databases kept and maintained at institutions such as the Provincial Heritage Resources Agency (PHRA), the Archaeological Data Recording Centre at the National Flagship Institute (Museum Africa) in Pretoria and SAHRA’s national archive (SAHRIS), were consulted to determine whether any heritage resources of significance have been identified during earlier heritage surveys in or near the project area.

A number of heritage impact assessment studies have been done near the project area namely: (see ‘Part 12, Bibliography of studies relating to earlier heritage studies’).

These heritage surveys have revealed that the region includes heritage resources such as the following:

- Settlements which are associated with the Late Iron Age and therefore with stone walled sites.
- Colonial farm homesteads with associated infrastructure such as outbuildings, cattle enclosures and graveyard or single historical houses.
- Formal and informal graveyards belonging to colonial farmers and farm labourers.

Literature relating to the pre-historical and the historical unfolding of the project area reviewed (see Part 8, ‘Contextualising the Project Area’ and Part 11 ‘Select Bibliography’).

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

6.3 Assumptions and limitations

It is possible that this heritage survey may have missed heritage resources in the Sasol Project Area considering the size and extent of the area and the length of the power line. It is possible that undetected heritage resources still may occur as a
result of the fact that archaeological remains such as settlements or graves may occur beneath the surface of the earth; that heritage resources are unmarked or inconspicuous such as informal graves; that archaeological remains including informal graves may be covered by grass or by dense clumps of bush or that the author (archaeologist) may have failed to recognise or to observed heritage resources such as graves.

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

6.4 Some remarks on terminology

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

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

- Cultural resource management: A process that consists of a range of interventions and provides a framework for informed and value-based decision-making. It integrates professional, technical and administrative functions and interventions that impact on cultural resources. Activities include planning, policy development, monitoring and assessment, auditing, implementation, maintenance, communication, and many others. All these activities are (or will be) based on sound research.
Cultural resources: A broad, generic term covering any physical, natural and spiritual properties and features adapted, used and created by humans in the past and present. Cultural resources are the result of continuing human cultural activity and embody a range of community values and meanings. These resources are non-renewable and finite. Cultural resources include traditional systems of cultural practice, belief or social interaction. They can be, but are not necessarily identified with defined locations.

Heritage resources: The various natural and cultural assets that collectively form the heritage. These assets are also known as cultural and natural resources. Heritage resources (cultural resources) include all man-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage resources, as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa.

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

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

Maintenance: Keeping something in good health or repair.

Pre-historical: Refers to the time before any historical documents were written or any written language developed in a particular area or region of the world. The historical period and historical remains refer, for the Project Area, to the first appearance or use of ‘modern’ Western writing brought to the Eastern Highveld by the first Colonists who settled here from the 1840’s onwards.
• Preservation: Conservation activities that consolidate and maintain the existing form, material and integrity of a cultural resource.

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

• Protected area: A geographically defined area designated and managed to achieve specific conservation objectives. Protected areas are dedicated primarily to the protection and enjoyment of natural or cultural heritage, to the maintenance of biodiversity, and to the maintenance of life-support systems. Various types of protected areas occur in South Africa.

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

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

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

• Stone Age: Refers to the prehistoric past, although Late Stone Age people lived in South Africa well into the Historical Period. The Stone Age is divided into an Earlier Stone Age (3 million years to 150 000 thousand years ago) the Middle Stone Age (150 000 years to 40 000 years ago) and the Late Stone Age (40 000 years to 200 years ago).
• Sustainability: The ability of an activity to continue indefinitely, at current and projected levels, without depleting social, financial, physical and other resources required to produce the expected benefits.

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

• Project Area: refers to the area (footprint) where the developer wants to focus its development activities (refer to Figure 3).

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

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

The Sasol Project Area is located in the midst of a cultural landscape that is marked by heritage remains dating from the pre-historical into the historical period (see Part 11 ‘Select Bibliography’). Heritage resources which are quite common in the larger project area include:

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

However, the following overview of pre-historical, historical and cultural evidence indicates the wide range of heritage resources which do occur across the larger project area.

7.1 Stone Age and rock art sites

Stone Age sites are marked by stone artefacts that are found scattered on the surface of the earth or as parts of deposits in caves and rock shelters. The Stone Age is divided into the Early Stone Age (ESA) (covers the period from 2.5 million years ago to 250 000 years ago), the Middle Stone Age (MSA) (refers to the period from 250 000 years ago to 22 000 years ago) and the Late Stone Age (LSA) (the period from 22 000 years ago to 200 years ago).

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

LSA occupation of the Mpumalanga Province also has been researched at Bushman Rock Shelter where it dates back 12 000BP to 9 000BP and at Höningnestkrans near
Badfontein where a LSA site dates back to 4870BP to 200BP (Esterhuysen & Smith 2007).

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

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

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

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

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

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

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

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

- Early arrivals in the Mpumalanga Province such as Bakone clans who lived between Lydenburg, Badfontein and Machadodorp and Eastern Sotho clans such as the Pai, Pulana and Kutswe who established themselves in the eastern
parts of the province (Collett 1979, 1983; Delius 2007; Makhura 2007; Delius & Schoeman 2008).

- Swazi expansion into the Highveld and Lowveld of the Mpumalanga Province occurred during the reign of Sobhuza (AD1815 to 1836/39) and Mswati (AD1845 to 1868) while Shangaan clans entered the province across the Lembombo Mountains in the east during the second half of the nineteenth century (Delius 2007; Makhura 2007.).

- The Bakgatla (Pedi) chiefdom in the Steelpoort Valley rose to prominence under Thulare during the early 1800’s and was later ruled by Sekwati and Sekhukune from the village of Tsjate in the Leolo Mountains. The Pedi maintained an extended sphere of influence across the Limpopo and Mpumalanga Provinces during the nineteenth century (Mönnig 1978; Delius 1984).

- The Ndzundza-Ndebele established settlements at the foot of the Bothasberge (Kwa Maza and Esikhunjini) in the 1700’s and lived at Erholweni from AD1839 to AD1883 where the Ndzundza-Ndebele’s sphere of influence known as KoNomthjarhelho stretched across the Steenkampsberge.

- The Bakopa lived at Maleoskop (1840 to 1864) where they were massacred by the Swazi while the Bantwane live in the greater Groblersdal and Marble Hall areas.

- Corbelled stone huts which are associated with ancestors of the Sotho on Tafelkop near Davel which date from the AD1700’s into the nineteenth century (Hoernle 1930).

- Stone walled settlements spread out along the eastern edge of the Groot Dwarsriver Valley served as the early abode for smaller clans such as the Choma and Phetla communities which date from the nineteenth century.

### 7.3 The Historical Period

Towns closest to the project area include Devon, Leandra, Evander and Secunda in the far north and Balfour and Greylingstad in the south-east.
Devon is one of a number of small towns on the Eastern Highveld located approximately 40km to the south-east of Springs. The town appears as if it is composed of a scarce number of scattered buildings which are held together by a giant grain silo. The town's name is derived from the hometown of the surveyor, namely Devon in England. Nearby, but inaccessible to everybody but the military, is the underground nerve centre of the country's northern radar defence system.

The town of Leandra's name is derived from two townships, Leslie and Eendrag, which are incorporated in this mining village.

Evander, south of Kinross, was established in 1955 by the Union Corporation as a residential township for the employees of the Winkelhaak. Leslie and Bracken mines. The name Evander is a composite of Evelyn and Anderson, the names of the widow of the managing director of the company when prospecting began in the area.

Secunda developed around Sasol 1 and Sasol 2 in the 1970's. Sasol was born during the oil crisis of 1973 when OPEC virtually quadrupled the price of crude oil overnight. Construction started in 1976 and the first oil was delivered on 1 March 1980. Following the overthrow of the Shah of Iran in 1979, South Africa's major source of crude oil at the time, the government announced the construction of a second plant at Secunda to double output. Sasol 3 delivered its first oil from coal in May 1982. The total costs of the two plants came to R 5,8 billion, mostly financed by levies on motorists.

Sasol 2 and 3 use about 35 million tons of coal a year to produce mostly liquid fuels. The coal is produced by four mines collectively known as Secunda Colliers which is the world's largest underground mining complex and by a new open-cast mine at Syferfontein.

Several large coal mines which feed the Sasol plants at Secunda and Eskom's giant power stations on the Eastern Highveld are located near the project area. The wider project area is one of the most productive agricultural areas in the country. The principal crops which are produced in the region include maize, wheat, sorghum, dairy, potatoes and other vegetables.
Balfour serves as the junction for the branch railway line through the north-eastern Free State to Bethal. The town was proclaimed on 16 February 1898 on the farm Vlakfontein and named Mchattiesburg for the owner, Frederik Mchattie. Seven years later it was renamed Balfour in honour of Arthur Balfour, British prime minister who visited South Africa in 1905 and who made a speech from the local station platform.

7.4 A coal mining heritage

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

The earliest use of coal (charcoal) in South Africa was during the Iron Age (300-1880AD) when metal workers used charcoal, iron and copper ores and fluxes (quartzite stone and bone) to smelt iron and copper in clay furnaces.

Colonists are said to have discovered coal in the French Hoek Valley near Stellenbosch in the Cape Province in 1699. The first reported discovery of coal in the interior of South Africa was in the mid-1830s when coal was mined in Kwa-Zulu/Natal.

The first exploitation for coal was probably in Kwa-Zulu/Natal as documentary evidence refers to a wagon load of coal brought to Pietermaritzburg to be sold in 1842. In 1860 the coal trade started in Dundee when a certain Pieter Smith charged ten shillings for a load of coal dug by the buyer from a coal outcrop in a stream. In 1864 a coal mine was opened in Molteno. The explorer, Thomas Baines mentioned that farmers worked coal deposits in the neighbourhood of Bethal (Transvaal) in 1868. Until the discovery of diamonds in 1867 and gold on the Witwatersrand in 1886, coal mining only satisfied a very small domestic demand.

With the discovery of gold in the Southern Transvaal and the development of the gold mining industry around Johannesburg came the exploitation of the Boksburg-
Spring coal fields, which is now largely worked out. By 1899, at least four collieries were operating in the Middelburg-Witbank district, also supplying the gold mining industry. At this time coal mining also had started in Vereeniging. The Natal Collieries importance was boosted by the need to find an alternative for imported Welsh anthracite used by the Natal Government Railways.

By 1920 the output of all operating collieries in South Africa attained an annual figure of 9,5 million tonnes. Total in-situ reserves were estimated to be 23 billion tonnes in Witbank-Springs, Natal and Vereeniging. The total in situ reserves today are calculated to be 121 billion tonnes. The largest consumers of coal are Sasol, Mittal and Eskom.

7.5 A vernacular stone architectural heritage

A unique stone architectural heritage was established in the eastern Highveld from the second half of the 19th century well into the early 20th century. During this time period stone was used to build farmsteads and dwellings, both in urban and in rural areas. Although a contemporary stone architecture also existed in the Karoo and in the Eastern Free State Province of South Africa a wider variety of stone types were used in the eastern Highveld. These included sandstone, ferrcrete (‘ouklip’), dolerite (‘blouklip’), granite, shale and slate (Naude 1993).

The origins of a vernacular stone architecture in the eastern Highveld may be ascribed to various reasons of which the ecological characteristics of the region may be the most important. Whilst this region is generally devoid of any natural trees which could be used as timber in the construction of farmsteads, outbuildings, cattle enclosures and other structures, the scarcity of fire wood also prevented the manufacture of baked clay bricks. Consequently stone served as the most important building material in the eastern Highveld (Naude 1993, 2000). One of these historical structures was excavated and described after a heritage mitigation project was conducted for a coal mine (Pistorius 2005).

LIA Sotho, Pedi, Ndebele and Swazi communities contributed to the Eastern Highveld’s stone walled architecture. The tradition set by these groups influenced settlers from Natal and the Cape Colony to utilise the same resources to construct dwellings and
shelters. Farmers from Scottish, Irish, Dutch, German and Scandinavian descend settled and farmed in the eastern Highveld. They brought the knowledge of stone masonry from Europe. This compensated for the lack of fire wood on the Eastern Highveld which was necessary to bake clay bricks.
8 THE PHASE I HERITAGE IMPACT ASSESSMENT

8.1 Types and ranges of heritage resources

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

- Stone walled sites dating from the Late Iron Age.
- Farm homesteads, houses and other historical remains.
- Graveyards.

These remains have been geo-referenced, tabulated and mapped (Tables 1-3, Figure 3). Their significance as well as the significance of any possible impact on these remains is indicated (Tables 4, 5 & 6). Mitigation measures are outlined should any of these remains be directly impacted by unforeseen circumstances (Tables 4, 5 & 6).

![Figure 3- The Impumelelo Mine Extension Project covers farms and portions of farms in the Eastern Mpumalanga Province. Note the presence of a Late Iron Age stone walled site, historical farmsteads and other historical infrastructure and graveyards in the project area (above).](image-url)
8.2 Stone walled sites

Stone walled settlements which date from the Late Iron Age (AD1600 to AD1830) but also well into the Historical Period (AD1830 to AD1880) were encountered in the south – western part of the project area. These stone walls occur along a low rising dolerite outcrop on the farm Grootvlei 579IR where a large part of a stone walled complex is well preserved. It is surrounded by agricultural fields which were ploughed to the outer edges of the dolerite outcrop where the soil can still be cultivated before becoming too shallow and rocky to be ploughed.

The size and extent of the stone walled complex is clearly visible on a Google image which illuminates the distribution of sites and structures in the complex. Most of the structures in the stone walled complex comprise enclosures and semi-enclosures which are linked to each other.

Figure 4- Stone walls running across a dolerite outcrop on Grootvlei 579IR are barely visible in tall grass. This complex which covers a large area comprises a network of settlements which are linked together in order to establish a cultural landscape of some proportions (above).
8.3 Historical remains

Historical remains comprising of farm homesteads, houses and outbuildings dating from the Historical Period occur across the project area. Individual historical structures are discussed under a separate heading while graveyards, although they may be part of farmstead complexes, are also discussed under a separate heading. The single graveyard that was recorded in the Project Area occurs as an isolated phenomenon in the Project Area.

8.3.1 Farmstead complexes

At least three farmstead complexes with historical significance occur in the project area. These farmstead complexes are associated with farm houses and outbuildings such as second dwellings, rondavels, wagon sheds and in some instances enclosures for domestic stock. Graveyards may also occur near some of the farmstead complexes. Farmstead complexes therefore comprise of more than one historical structure which occur in a particular spatial relationship with each other and in some instances may constitute cultural landscapes of small proportions.

8.3.1.1 Farmstead Complex 01

This farmstead complex (FC01) is composed of a number of structures which may not have co-existed during the same time period. The structures that were built with dolerite and sandstone are older than those which were constructed with clay bricks and cement.

The complex consists of the following structures:

- A square structure which was constructed with dolerite and sandstone (FC01.1).
- A wagon shed which was constructed with cement bricks and which is fitted with a pitched corrugated zink roof. Its outer walls were plastered (FC01.2).
- A possible church (or chapel) which was constructed with clay bricks and cement. It is fitted with a pitched corrugated zink roof and its outer walls were
plastered. Its window openings are fitted with wooden window frames. (FC01.3).

- A wall which was constructed with dolerite and sandstone. It may have been part of a wagon shed which have collapsed in the distant past (FC01.4).

Figures 5 & 6- A possible church (chapel) and wall which was constructed with dolerite and sandstone is part of FC01 (above and below).
• A wagon shed which was constructed with clay bricks and which is fitted with a pitched corrugated zinc roof (FC01.5).

• A structure which was constructed with dolerite stone but which is severely dilapidated (FC01.6) and not geo-referenced.

### 8.3.1.2 Farmstead complex 02

This farmstead complex on Hartbeestfontein 522 comprises of two structures, namely;

• A main farm house (FC02.1) constructed with sandstone and covered with a red pitched corrugated iron roof. This house dates from the 1930’s or 1940’s and was extended when a verandah was constructed around the house.

• A wagon shed (FC02.2) which was also constructed with sandstone and fitted with a red pitched corrugated iron roof.

![Figure 7- The main residence (FC02.1) constructed with sandstone which is part of FC02. It is associated with a wagon shed (FC02.2) which reveals the same architecture features and building material (above).](image-url)
8.3.1.3 Farmstead complex 03

This farmstead complex on Boschmansfontein 522IR comprises of two structures, namely:

- A main farm house (FC03.1) which was constructed with sandstone and which was covered with a red pitched corrugated iron roof. This house dates from the 1930’s or 1940’s.
- A wagon shed (FC03.2) which also was constructed with sandstone and fitted with a red pitched corrugated iron roof.

Figure 8- A farm house on Boschmansfontein 522IR (FC03.1) which was constructed with sandstone. Behind the residence a wagon shed (FC03.2) which reveals the same architecture features and which was constructed with the same building material can be observed (above).
8.3.2 Historical houses

At least three historical houses which are relatively well preserved were recorded in the Sasol Project Area. Remains of houses which were severely dilapidated and in some instances barely recognisable were not recorded.

8.3.2.1 Historical house 01

A historical residence (HH01) occurs on Mahemsfontein 544IP which was built with clay bricks and cement. This residence was fitted with a pitched corrugated zink roof.

Figure 9- A historical residence on Mahemsfontein 544IP which was built with clay bricks and fitted with a pitched corrugated zink roof probably dates from the 1930’s or 1940’s (above).

8.3.2.2 Historical house 02

This historical house (HH02) on Boschmansfontein 522IR was constructed during the late nineteenth century and/or during the early decades of the twentieth century.
HH02 was constructed with dolerite stone and is fitted with a pitched corrugated iron roof. The house is currently falling into disrepair although it is being occupied.

Figure 10- The historical residence (HH02) on Boschmansfontein 522IR which was constructed with dolerite stone but which is falling into disrepair (above).

8.3.2.3 Historical House 03

This historical house (HH03) on Grootvlei 579IR originates from the 1930’s/1940’s and is currently still being occupied.

It was constructed with cement and bricks and fitted with a pitched corrugated roof. The house is currently painted blue.

HH03 is associated with at least one older dolerite structure which has totally collapsed. The remains of this structure were used in order to construct a new residence (HH03.1) with no historical significance.
Figure 11 & 12- HH03 on Grootvlei 579IR (above) is associated with a second dolerite structure which has collapsed. The material of this structure was used to construct a contemporary dwelling with no historical significance (below).
8.3.2.4 Historical House 04

HH04 on Grootvlei 579IR originates from the 1930’s/1940’s. It was constructed with cement and bricks and is fitted with a pitched corrugated iron roof. HH04.1 is associated with a wagon shed which was constructed with sandstone and which has been transformed into a structure with a new function (HH04.2).

Figures 13 & 14- HH04 on Grootvlei 579IR (above) is associated with a second older structure was constructed with sandstone and which is currently being re-used (below).
8.3.2.5 Historical House 05

This historical house (HH04) on Grootvlei 579IR originates from the 1930’s/1940’s. It was constructed with cement and bricks and is fitted with a pitched corrugated iron roof. It is also associated with a rondavel and a garage.

Figure 15- HH05 on Grootvlei 579IR dates from the 1930's or 1940a. This residence is associated with a garage and a rondavel which may be contemporary with the house (above).

8.3.2.5 Historical House 06

This historical house (HH06.1) on Grootvlei 579IR originates from the end of the nineteenth century or the early decades of the twentieth century. It was constructed with sandstone and was fitted with a pitched corrugated iron roof. However, it has fallen into a severe state of disrepair. It is associated with a second smaller sandstone structure (HH06.2) which is also severely dilapidated.
Figure 16- HH06 on Grootvlei 579IR originates from the end of the nineteenth century and/or the early decades of the twentieth century. It is associated with a second severely dilapidated sandstone structure (above).

8.3.3 Other historical structures

Several single historical structures were recorded. These buildings are mostly the remnants of former clusters of buildings which were part of farmstead complexes but which all have disappeared and which now occur in isolation and without any cultural or historical context. These remains therefore were part of farmstead complexes or may have been attached to historical houses but now are single as a result of the fact that they outlived associated structures which since have been demolished or which have fallen into total disrepair. It is even possible that the building material of some of these structures, e.g. sandstone, may have been recycled and used in other contemporary structures.

8.3.3.1 A shed

A shed (Sh) which was constructed with clay bricks and with cement occurs on Mahemsfontein 544IP. Its roof comprises of a curved corrugated zink roof (Sh).
8.3.3.2 Cattle enclosure

This large cattle enclosure (CE01) on Grootvlei 579IR has been constructed with dolerite stone and cement and clearly is not in its original state any longer. It is possible that the dolerite that was used to construct this enclosure was recycled from other former historical structures such as residences and/or wagon sheds. It is also possible that the existing cattle enclosure represents an original cattle enclosure which has have been renovated although this seems unlikely considering the size and extent (amount of stone) which was used to build the enclosure.

8.3.3.3 Silo

A silo (Si) constructed with clay bricks and with cement occurs near the shed. It is possible that this structure may approach sixty years of age and therefore qualifies as a historical structure.
8.2.3 Graveyards and graves

A number of graveyards and graves were recorded in the project area, namely:

8.2.3.1 Graveyard 01

This informal graveyard (GY01) on Mahemsfontein 544IP holds approximately twenty five graves of which the majority are undecorated. Some of the graves are edged with bricks or cement while some are fitted with cement headstones.

Inscriptions on some of the headstones read as follow:

- ‘Evelina Kubela’
- ‘Ngwenya Busiswe Born 25-10-1968 Died 08-01-2003 Rest in peace We will always remember you Mtismande’
Figure 20- GY01 on Mahemsfontein 544IR holds as many as twenty five graves most of which are not decorated but merely covered with piles of stone (above).

8.2.3.2 Graveyard 02

This graveyard (GY02) on Paardefontein 581IR holds at least five graves which are all decorated with granite headstones and trimmings. Inscriptions on some of the headstones read as follow:

- ‘In loving memory of Joce Murial Thompson (nee McDougal) B 02-11-1916 D 0305-2004’
- ‘In loving memory of Vivienne Myrah McDougal 10 July 1927 26 May 2008 She will always be remembered for her warmth and her love’

This graveyard is older than sixty years.
Figure 21- Graveyard 02 on Paardefontein 581IR holds the remains of at least five individuals who were part of the McDougal family (above).

8.2.3.3 Graveyard 03

GY03 on Paardefontein 581IR holds at least nine graves amongst others those of members of Willem Pistorius’ family (wife and daughter). The inscriptions on the older graves’ headstones are indecipherable whilst those on the younger graves are covered with low brush.

‘The graveyard also holds the remains of a British soldier from the Anglo Boer War (1899-1902). The inscription on this headstone reads as follow:

- ‘Here lies a British soldier. This is believed to be the grave of Private Angus Jenkins of Strathcona’s Horse who was killed in action near this place on Canada Day 1 July 1900 during the Anglo Boer War’.

This graveyard is older than sixty years.
Figure 22- Graveyard 02 on Paardefontein 581IR holds the remains of members of the Pistorius family as well as the grave of a British soldier who fought during the Anglo Boer War (above).

8.2.3.4 Graveyard 04

GY04 on Paardefontein 581IR holds an unknown number of graves and is covered with thick impenetrable bush. It is demarcated with a fence and sits along the edge of a maize field.

This graveyard is probably older than sixty years.

8.2.3.5 Graveyard 05

GY05 on Paardefontein 581IR holds an unknown number of graves and is covered with tall grass. It is located beyond a stream which could not be crossed and is demarcated with a fence. It is located in open veld close to a dam and quarters where labourers reside.

This graveyard is probably older than sixty years.
Figure 23- Graveyard 04 on Paardefontein 581IR holds an unknown number of graves and is covered with thick bush (above).

Figure 24- Graveyard 05 on Paardefontein 581IR holds an unknown number of graves and is covered with tall grass. The graveyard is demarcated with a fence and is located beyond a stream which cannot be crossed (above).
8.2.3.6 Graveyard 06

GY06 on Grootvlei 579IR holds the remains of five individuals amongst others those of the Vermaas family. Some of the graves are decorated with granite headstones and trimmings.

Inscriptions on two of the headstones read as follow:

- ‘Ter gedagtenis aan ons dierbare moeder en ouma MM Vermaas Geb 5 Junie 1875 Oorlede 20 April 1950 Haar lewe was vir ons ‘n inspirasie’
- ‘Ter gedagtenis aan my geliefde eggenoot PJ Vermaas Geb 18 Nov 1866 Oorl 4 Maart 1928’

This graveyard is older than sixty years.

Figure 25- Graveyard 06 on Grootvlei 579IR holds the remains of members of the Vermaas family (above).
8.3 Tables

Table 1 - Coordinates and significance rating for stone walled sites in the Sasol Project Area (below).

<table>
<thead>
<tr>
<th>LATE IRON AGE STONE WALLED SITE</th>
<th>COORDINATES</th>
<th>SIGNIFICANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIA01</td>
<td>26º 44.160’s 28º 50.320’e</td>
<td>Med-high</td>
</tr>
</tbody>
</table>

Table 2 - Coordinates and significance rating for farm homestead complexes, historical houses and other historical structures in the Sasol Project Area (below).

<table>
<thead>
<tr>
<th>HISTORICAL REMAINS</th>
<th>COORDINATES</th>
<th>SIGNIFICANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmstead complexes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmstead complex 01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FC01.1 Renovated square stone structure</td>
<td>26º 43.069’ 28º 49.736’</td>
<td>Med-high</td>
</tr>
<tr>
<td>FC01.2 Wagon shed constructed with concrete bricks</td>
<td>26º 43.065’ 28º 49.742’</td>
<td>Med-high</td>
</tr>
<tr>
<td>FC01.3 Possible church building (chapel)</td>
<td>26º 43.060’ 28º 49.745’</td>
<td>Med-high</td>
</tr>
<tr>
<td>FC01.4 Dolerite and sandstone wall</td>
<td>26º 43.060’ 28º 49.745’</td>
<td>Med-high</td>
</tr>
<tr>
<td>FC01.5 Wagon shed constructed with clay bricks</td>
<td>26º 43.117’ 28º 49.718’</td>
<td>Med-high</td>
</tr>
<tr>
<td>Farmstead complex 02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FC02.1 House</td>
<td>26º 38 16.07’s 28º 47 25.24’e</td>
<td>Med-high</td>
</tr>
<tr>
<td>FC02.2 Wagon shed</td>
<td>26º 38 14.81’s 28º 47 26.60’e</td>
<td>Med-high</td>
</tr>
<tr>
<td>Farmstead complex 03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FC03.1 House</td>
<td>26º 35 54.89’s</td>
<td>Med-high</td>
</tr>
</tbody>
</table>
Table 3 - Coordinates and significance rating for graveyards and graves in the Sasol Project Area (below).

<table>
<thead>
<tr>
<th>GRAVEYARDS</th>
<th>COORDINATES</th>
<th>SIGNIFICANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GY01 on Mahemsfontein 544IP holds approximately twenty five graves</td>
<td>26° 41.858’ 28° 49.793’</td>
<td>HIGH</td>
</tr>
<tr>
<td>GY02 on Paardefontein 581IR holds at least five graves</td>
<td>26° 43.105’s 28° 48.591’e</td>
<td>HIGH</td>
</tr>
<tr>
<td>Site</td>
<td>Location</td>
<td>Number of Graves</td>
</tr>
<tr>
<td>--------</td>
<td>----------</td>
<td>------------------</td>
</tr>
<tr>
<td>GY03 on Paardefontein 581IR</td>
<td>26° 43.073's 28° 58.484'e</td>
<td>HIGH</td>
</tr>
<tr>
<td>GY04 on Paardefontein 581IR</td>
<td>26° 42.251's 28° 59.935'e</td>
<td>HIGH</td>
</tr>
<tr>
<td>GY05 on Paardefontein 581IR</td>
<td>26° 41 57.26's 28° 56 38.45'e</td>
<td>HIGH</td>
</tr>
<tr>
<td>GY06 on Grootvlei 579IR holds remains of five individuals amongst others the Vermaas family</td>
<td>26° 44.201's 28° 50.237'e</td>
<td>HIGH</td>
</tr>
</tbody>
</table>
9 THE SIGNIFICANCE, POSSIBLE IMPACT ON AND MITIGATION OF THE HERITAGE RESOURCES

9.1 The significance of the heritage resources

The significance of all the types and ranges of heritage resources which have been identified in the Sasol Project Area has to be indicated should any of these heritage resources be affected by the Impumelelo Mine Extension Project.

9.1.1 The significance of the stone walled sites

The stone walled sites qualify as archaeological and/or historical remains as these remains are older than sixty years. These remains are protected by the National Heritage Resources Act (No 25 of 1999).

The significance of the stone walled sites can be rated as medium to high when considering criteria such as the following (Table 1):

- These remains can contribute to a better understanding of the lifeways of Iron Age and historical agro-pastoral communities who occupied the Eastern Highveld during the last four centuries.
- These remains provide opportunities to be utilized in tourism, education and research particularly if further studied, renovated and applications to be utilized (e.g. in the tourism or leisure industry) can be implemented.

9.1.2 The significance of the historical remains

The farm homesteads, historical houses and other historical structures qualify as archaeological and/or historical remains as these remains are older than sixty years. These remains are protected by the National Heritage Resources Act (No 25 of 1999).

The significance of these historical remains can be rated as medium to high when considering criteria such as the following (Table 2):
• The remains of the farm homesteads, houses and other historical structures can contribute to a better understanding of the lifeways of early inhabitants on the eastern Highveld in Mpumalanga.

• The historical remains are under threat due to an established agro-economic industry and an expanding coal mining complex on the eastern Highveld of Mpumalanga.

• The historical remains provide opportunities to be utilized in tourism, education and research particularly if further studied, renovated and applications to be utilized (e.g. in the tourism or leisure industry) can be implemented.

9.1.3 The significance of the graveyards

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 3). Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (No 25 of 1999) whenever graves are older than sixty years. The act also distinguishes various categories of graves and burial grounds.

Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).

9.2 Possible impact on the heritage resources

The Impumelelo Mine Extension Project is part of the existing Impumelelo Mine where coal is mined and transported by means of an existing conveyor to the Brandspruit Mine where the coal is processed at an existing plant. Coal is mined utilising a combination of underground mining methods (bord and pillar, and high extraction / stooping). The existing conveyor transports the coal from the Impumelelo Mine to the existing Sasol Coal Supply (SCS) blending plant close to Brandspruit Colliery. The servitude for the conveyor belt includes a service road, water pipelines, power and communication lines.
The Impumelele Mine Extension Project therefore will have no direct impact on any of the types and ranges of heritage resources which have been observed, mapped and described in this report.

9.3 The significance of possible impacts on the heritage resources

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

- **Occurrence**
  - Probability of occurrence (how likely is it that the impact may/will occur?), and
  - Duration of occurrence (how long may/will it last?)

- **Severity**
  - Magnitude (severity) of impact (will the impact be of high, moderate or low severity?), and
  - Scale/extent of impact (will the impact affect the national, regional or local environment, or only that of the site?)

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

<table>
<thead>
<tr>
<th>Probability:</th>
<th>Duration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 – Definite/don’t know</td>
<td>5 – Permanent</td>
</tr>
<tr>
<td>4 – Highly probable</td>
<td>4 – Long-term (ceases with the operational life)</td>
</tr>
<tr>
<td>3 – Medium probability</td>
<td>3 – Medium-term (5-15 years)</td>
</tr>
<tr>
<td>2 – Low probability</td>
<td>2 – Short-term (0-5 years)</td>
</tr>
<tr>
<td>1 – Improbable</td>
<td>1 – Immediate</td>
</tr>
<tr>
<td>0 – None</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scale:</th>
<th>Magnitude:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 – International</td>
<td>10 – Very high/don’t know</td>
</tr>
<tr>
<td>4 – National</td>
<td>8 – High</td>
</tr>
<tr>
<td>3 – Regional</td>
<td>6 – Moderate</td>
</tr>
<tr>
<td>2 – Local</td>
<td>4 – Low</td>
</tr>
</tbody>
</table>
The significance of each potential impact was assessed using the following formula:

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

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

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

### 9.3.1 The significance of possible impacts on the stone walled settlements

The significance of any impact on the stone walled settlements is very low (Table 4).

#### Table 4: The significance of possible impacts on the stone walled settlements (below).

<table>
<thead>
<tr>
<th>Stone walled settlements (LIA01)</th>
<th>Homesteads of impact</th>
<th>Probability of impact</th>
<th>Magnitude of impact</th>
<th>Duration of impact</th>
<th>Scale</th>
<th>Significance points</th>
<th>Significance of impact</th>
<th>Significance after mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIA01</td>
<td>1</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>16</td>
<td>Very low</td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>
9.3.2 The significance of possible impacts on the historical remains

The significance of any impact on the historical remains is very low (Table 5).

Table 5 - The significance of possible impacts on the historical remains is very low

<table>
<thead>
<tr>
<th>Historical remains</th>
<th>Probability of impact</th>
<th>Magnitude of impact</th>
<th>Duration of impact</th>
<th>Scale</th>
<th>Significance points</th>
<th>Significance of impact</th>
<th>Significance after mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC01-FC03</td>
<td>1</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>16</td>
<td>Very low</td>
<td>Not applicable</td>
</tr>
<tr>
<td>HH01-HH06</td>
<td>1</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>16</td>
<td>Very low</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Other historical remains</td>
<td>1</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>16</td>
<td>Very low</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

9.3.3 The significance of possible impacts on the graveyards

The significance of possible impacts on the graveyards is very low (Table 6).

Figure 6 - The significance of possible impacts on the graveyards is very low.

<table>
<thead>
<tr>
<th>Possible graveyards</th>
<th>Probability of impact</th>
<th>Magnitude of impact</th>
<th>Duration of impact</th>
<th>Scale</th>
<th>Significance points</th>
<th>Significance of impact</th>
<th>Significance after mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>G01-GY06</td>
<td>1</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>16</td>
<td>Very low</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

9.4 Mitigating the heritage resources

The following mitigation measures have to be applied to the heritage resources. This will only occur if any direct impact of an unforeseen nature may occur on any of the heritage resources in the project area.
9.4.1 Mitigating possible stone walled site impacts

Stone walled settlements must be investigated by means of a Phase 2 investigation. An archaeologist registered with the Association for Southern African Professional Archaeologists (ASAPA) must obtain a permit from the SAHRA in order to conduct the necessary investigations. After the Phase 2 investigation has been completed the SAHRA may issue a permit for the demolishing of the Late Iron Age stone walled sites.

The significance of the impact on the stone walled settlements will be low after mitigation (Table 4).

9.4.2 Mitigating possible historical remains’ impact

The historical remains have to be studied and documented by a historical architect before any of these remains may be affected in any way, e.g. to be altered or to be demolished as a result of the implementation of the Sasol Impumelelo Extension Project. The South African Heritage Resources Agency (SAHRA) will require that the historical structures that may be affected have be studied and documented by the conservation architect before SAHRA will make any recommendations regarding the future existence of these remains.

The significance of any possible impact on the historical remains after the mitigation measures have been put in place will be low (Table 5).

9.4.3 Mitigating possible graveyards’ impact

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

However, graveyards can also be conserved by means of implementing the following management measures if they are not directly (physically) affected by the Sasol Impumelelo Extension Project, namely:

- Graveyards must be demarcated with fences or with walls and should be fitted with access gates.
- Regulated visitor hours should be implemented that is compatible with mine safety rules. This may not be necessary if the graveyards can directly be linked with existing provincial or local roads.
- Corridors of at least 20m should be maintained between graveyards’ fences and any developmental components such as roads or other mine infrastructure that may be developed in the future.
- Graveyards must be inspected every three months. Inspections must be noted in an inspection register. The register must outline the state of the graveyards during each inspection. Reports on damages to any of the graves or to the graveyards’ (fences, walls, gates) must be followed with the necessary maintenance work. Maintenance work must be recorded in in the inspection register.
- The graveyards must be kept tidy from any invader weeds and any other refuse.

The significance of any possible impact on the graveyards after the mitigation measures have been put in place will be low (Table 6).
10 CONCLUSION AND RECOMMENDATIONS

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

- Stone walled sites dating from the Late Iron Age.
- Farm homesteads, houses and other historical remains.
- Graveyards.

These remains have been geo-referenced, tabulated and mapped (Tables 1 -3, Figure 3). Their significance as well as the significance of any possible impact on these remains is indicated (Tables 4, 5 & 6). Mitigation measures are outlined should any of these remains be directly impacted by unforeseen circumstances (Tables 4, 5 & 6).

The significance of the heritage resources

The significance of all the types and ranges of heritage resources which have been identified in the Sasol Project Area has to be indicated should any of these heritage resources be affected by the Impumelelo Mine Extension Project.

The significance of the stone walled sites

The stone walled sites qualify as archaeological and/or historical remains as these remains are older than sixty years. These remains are protected by the National Heritage Resources Act (No 25 of 1999).

The significance of the stone walled sites can be rated as medium to high when considering criteria such as the following (Table 1):

- These remains can contribute to a better understanding of the lifeways of Iron Age and historical agro-pastoral communities who occupied the Eastern Highveld during the last four centuries.
- These remains provide opportunities to be utilized in tourism, education and research particularly if further studied, renovated and applications to be utilized (e.g. in the tourism or leisure industry) can be implemented.
**The significance of the historical remains**

The farm homesteads, historical houses and other historical structures qualify as archaeological and/or historical remains as these remains are older than sixty years. These remains are protected by the National Heritage Resources Act (No 25 of 1999).

The significance of these historical remains can be rated as medium to high when considering criteria such as the following (Table 2):

- The remains of the farm homesteads, houses and other historical structures can contribute to a better understanding of the lifeways of early inhabitants on the eastern Highveld in Mpumalanga.
- The historical remains are under threat due to an established agro-economic industry and an expanding coal mining complex on the eastern Highveld of Mpumalanga.
- The historical remains provide opportunities to be utilized in tourism, education and research particularly if further studied, renovated and applications to be utilized (e.g. in the tourism or leisure industry) can be implemented.

**The significance of the graveyards**

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 3). Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (No 25 of 1999) whenever graves are older than sixty years. The act also distinguishes various categories of graves and burial grounds.

Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).

**Possible impact on the heritage resources**

The Impumelelo Mine Extension Project is part of the existing Impumelelo Mine where coal is mined and transported by means of an existing conveyor to the Brandspruit
Mine where the coal is processed at an existing plant. Coal is mined utilising a combination of underground mining methods (bord and pillar, and high extraction / stooping). The existing conveyor transports the coal from the Impumelelo Mine to the existing Sasol Coal Supply (SCS) blending plant close to Brandspruit Colliery. The servitude for the conveyor belt includes a service road, water pipelines, power and communication lines.

The Impumelelo Mine Extension Project therefore will have no direct influence on any of the types and ranges of heritage resources which have been observed, mapped and described in this report.

**The significance of possible impacts on the heritage resources**

The significance of any potential impacts on the heritage resources was determined using a generic ranking scale which is used in most environmental and heritage impact assessment studies and which is based on various criteria.

**The significance of possible impacts on the stone walled settlements**

The significance of any possible impact on the stone walled settlements is very low (Table 4).

**The significance of possible impacts on the historical remains**

The significance of any possible impacts on the historical remains is very low (Table 5).

**The significance of possible impacts on the graveyards**

The significance of possible impacts on the graveyards is very low (Table 6).

**Mitigating the heritage resources**

The following mitigation measures have to be applied to the heritage resources. This will only occur if any direct impact of an unforeseen nature may occur on any of the heritage resources in the project area.
**Mitigating possible stone walled site impacts**

Stone walled settlements must be investigated by means of a Phase 2 investigation. An archaeologist registered with the Association for Southern African Professional Archaeologists (ASAPA) must obtain a permit from the SAHRA in order to conduct the necessary investigations. After the Phase 2 investigation has been completed the SAHRA may issue a permit for the demolishing of the Late Iron Age stone walled sites.

The significance of the impact on the stone walled settlements will be low after mitigation (Table 4).

**Mitigating possible historical remains’ impact**

The historical remains have to be studied and documented by a historical architect before any of these remains may be affected in any way, e.g. to be altered or to be demolished as a result of the implementation of the Sasol Impumelelo Extension Project. The South African Heritage Resources Agency (SAHRA) will require that the historical structures that may be affected have be studied and documented by the conservation architect before SAHRA will make any recommendations regarding the future existence of these remains.

The significance of any possible impact on the historical remains after the mitigation measures have been put in place will be low (Table 5).

**Mitigating possible graveyards’ impact**

Graveyards can be mitigated by means of exhumation and relocation. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that have to be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police.
However, graveyards can also be conserved by means of implementing the following management measures if they are not directly (physically) affected by the Sasol Impumelelo Extension Project, namely:

- Graveyards must be demarcated with fences or with walls and should be fitted with access gates.
- Regulated visitor hours should be implemented that is compatible with mine safety rules. This may not be necessary if the graveyards can directly be linked with existing provincial or local roads.
- Corridors of at least 20m should be maintained between graveyards’ fences and any developmental components such as roads or other mine infrastructure that may be developed in the future.
- Graveyards must be inspected every three months. Inspections must be noted in an inspection register. The register must outline the state of the graveyards during each inspection. Reports on damages to any of the graves or to the graveyards’ (fences, walls, gates) must be followed with the necessary maintenance work. Maintenance work must be recorded in the inspection register.
- The graveyards must be kept tidy from any invader weeds and any other refuse.

The significance of any possible impact on the graveyards after the mitigation measures have been put in place will be low (Table 6).

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