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**A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR
SASOL MINING'S PROPOSED BORROW PITS ON THE EASTERN
HIGHVELD IN THE MPUMALANGA PROVINCE**

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EXECUTIVE SUMMARY

This Phase I Heritage Impact Assessment (HIA) study for Sasol Mining's proposed borrow pits south-west of Secunda on the Eastern Highveld in the Mpumalanga Province of South Africa was done according to Section 38 of the National Heritage Resources Act (No 25 of 1999). The eight borrow pits and their immediate surroundings are collectively here referred to as the Sasol Project Area whilst the development of the borrow pits and associated infrastructure are referred to as the Sasol 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 within the perimeters of the Sasol Project Area.
- To determine the significance of these heritage resources and whether any of these types and ranges of heritage resources will be affected by the Sasol Project, and if so, to determine mitigation measures for those heritage resources that will be affected by the Sasol Project.

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

- The remains of historical houses.
- Informal and formal graveyards.
- (No archaeological [pre-historical] remains were recorded. This study also did not provide for a paleontological study of the Sasol Project Area).

These heritage resources do not occur in the Sasol Project Area. However, they were geo-referenced and mapped (Figure 3, Tables 1-2), their significance is indicated as well as the significance of any impact on these remains by the Sasol Project (Tables 3-5).

The significance of the heritage resources

Historical Houses

The historical houses are older than sixty years and therefore qualify as historical remains. All remains older than sixty years are protected by the National Heritage Resources Act (No 25 of 1999).

The significance of the historical houses can be described as medium when considering criteria such as the following (Table 3):

- Sandstone and other historical houses on the Eastern Highveld are rapidly disappearing as a result of agricultural activities and the expansion of the coal mining industry.
- The historical houses have research (scientific) value.
- The historical remains can add to our knowledge regarding human life ways and traditions on the Eastern Highveld during the turn of the nineteenth century.

The significance of any possible impact on the historical houses is LOW (Table 4).

The graveyards

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 2). Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (No 25 of 1999) whenever graves are older than sixty years.

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

The significance of any possible impact on the graveyards and graves is LOW (Table 5).

Mitigation and monitoring the heritage resources

No heritage resources will be impacted by the Sasol Project. Consequently, no mitigation or monitoring measures have to be implemented for the historical remains or the graveyards and graves.

Disclaimer

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

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

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1 INTRODUCTION

1.1 Project Background

This document contains the report for a Phase I Heritage Impact Assessment (HIA) study which was done for the development of eight borrow pits for Sasol Mining on the Eastern Highveld in the Mpumalanga Province. Dolerite will be sourced from the borrow pits and will be utilized in Sasol Mining's Impumeleleo and Shondoni Projects which include shafts and overland conveyor systems. The importance of the dolerite is related to the successful completion of the Impumeleleo and Shondoni expansion projects which are currently under construction. These two projects are of strategic importance as they have to secure a continuous supply of coal to Sasol Synfuels.

Surface strip mining techniques will be utilized to mine the sand and gravel from the borrow pits. This will require the minimum of infrastructure. The mineral deposit to be mined comprises of dolerite gravel and sand. Overburden to be removed consists of topsoil, hill-wash, sandstone and siltstone.

Previous heritage surveys conducted for Sasol Mining indicated that the most common types and ranges of heritage resources on the Eastern Highveld in the Mpumalanga Province include historical farmstead complexes associated with formal and informal graveyards. Stone walled settlements dating from the Late Iron Age and Historical Period also occur but are limited to areas where low, dolerite kopjes and randjes exist. These topographical features are generally scarce in the mining areas where Sasol is operational.

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

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

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

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

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

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

1.2 Definitions

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

- Conservation: The act of maintaining all or part of a resource (whether renewable or non-renewable) in its present condition in order to provide for its continued or future use. Conservation includes sustainable use, protection, maintenance, rehabilitation, restoration and enhancement of the natural and cultural environment.
- Conservation (*in-situ*): The conservation and maintenance of ecosystems, natural habitats and cultural resources in their natural and original surroundings.
- Cultural (heritage) resources: A broad, generic term covering any physical, natural and spiritual properties and features adapted, used and created by humans in the past and present. Cultural resources are the result of continuing human cultural activity and embody a range of community values and meanings. These resources are non-renewable and finite. Cultural resources include traditional systems of cultural practice, belief or social interaction. They can be, but are not necessarily identified with defined locations.
- Cultural (heritage) resource management: A process that consists of a range of interventions and provides a framework for informed and value-based decision-making. It integrates professional, technical and administrative functions and interventions that impact on cultural resources. Activities include planning, policy development, monitoring and assessment, auditing, implementation, maintenance, communication, and many others. All these activities are (or will be) based on sound research.
- Heritage resources: The various natural and cultural assets that collectively form the heritage. These assets are also known as cultural and natural resources. Heritage (cultural) resources include all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage resources, as

places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa.

- Stone Age: Refers to the prehistoric past, although Late Stone Age peoples lived in South Africa well into the Historical Period. The Stone Age is divided into an Earlier Stone Age (3 million years to 150 000 thousand years ago) the Middle Stone Age (150 000 years to 40 000 years ago) and the Late Stone Age (40 000 years to 300 years ago).
- Iron Age: Refers to the last two millennia and 'Early Iron Age' to the first thousand years AD. 'Late Iron Age' refers to the period between the 16th century and the 19th century and can therefore include the Historical Period.
- Historical period: Refers to the first appearance or use of 'modern' Western writing in a particular area or region of the world.
- Pre-historical: Refers to the time before any historical documents were written or any written language developed in a particular area or region of the world.
- Recent past: Refers to the 20th century. Remains from this period are not necessarily older than sixty years and therefore may not qualify as archaeological or historical remains. Some of these remains, however, may be close to sixty years of age and may, in the near future, qualify as heritage resources.
- Maintenance: Keeping something in good health or repair.
- Preservation: Conservation activities that consolidate and maintain the existing form, material and integrity of a cultural resource.
- Protected area: A geographically defined area designated and managed to achieve specific conservation objectives. Protected areas are dedicated primarily to the protection and enjoyment of natural or cultural heritage, to the maintenance of biodiversity, and to the maintenance of life-support systems.
- Reconstruction: Re-erecting a structure on its original site using original components.
- Replication: The act or process of reproducing by new construction the exact form and detail of a vanished building, structure, object, or a part thereof, as it appeared at a specific period.
- Restoration: Returning the existing fabric of a place to a known earlier state by removing additions or by reassembling existing components.

- Sustainability: The ability of an activity to continue indefinitely, at current and projected levels, without depleting social, financial, physical and other resources required to produce the expected benefits.
- Translocation: Dismantling a structure and re-erecting it on a new site using original components.
- Project Area: refers to the area (footprint) where the developer wants to focus its development activities (refer to plan).
- Phase I studies refer to surveys using various sources of data in order to establish the presence of all possible types and ranges of heritage resources in any given Project Area.
- Phase II studies include in-depth cultural heritage studies such as archaeological mapping, excavating and sometimes laboratory work. Phase II work may include the documenting of rock art, engraving or historical sites and dwellings; the sampling of archaeological sites or shipwrecks; extended excavations of archaeological sites; the exhumation of human remains and the relocation of graveyards, etc. Phase II work involve permitting processes, require the input of different specialists and the co-operation and approval of SAHRA.

2 DETAILS OF THE SPECIALIST

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

Qualifications:

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

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

MA Archaeology (distinction) (UP, 1985)

D Phil Archaeology (UP, 1989)

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

Work experience:

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

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

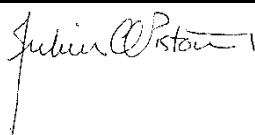
Lecturer and Senior lecturer Department of Anthropology and Archaeology, University of Pretoria (1990-2003)

Independent Archaeologist and Heritage Consultant (2003-)

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

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

3 DECLARATION OF INDEPENDENCE

<p>I, Julius CC Pistorius, declare that:</p> <ul style="list-style-type: none">• I act as the independent environmental practitioner in this application• I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant• I declare that there are no circumstances that may compromise my objectivity in performing such work;• I have expertise in conducting environmental impact assessments, including knowledge of the National Heritage Resources Act (No 25 of 1999) and any guidelines that have relevance to the proposed activity;• I will comply with the Act, regulations and all other applicable legislation;• I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;• I have no, and will not engage in, conflicting interests in the undertaking of the activity;• I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;• I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;• I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;• I will keep a register of all interested and affected parties that participated in a public participation process; and• I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not• all the particulars furnished by me in this form are true and correct;• I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and• I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act. <p>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.</p>
<p></p> <p>_____ Signature of the environmental practitioner: Private Consultant</p> <p>_____ Name of company: 5 January 2012</p> <p>_____ Date:</p>
<p>_____ Signature of the Commissioner of Oaths:</p> <p>_____ Date:</p> <p>_____ Designation:</p>

4 SCOPE OF WORK

Sasol Mining intends to develop eight borrow pits along the Impumelelo conveyor route which runs from the Impumeleleo Shaft (west) to Sasol Synfuels (east) on the Eastern Highveld in the Mpumalanga Province. JMA Consulting (Pty) Ltd who is responsible for compiling an Environmental Impact Assessment (EIA) and an Environmental Management Program report (EMP) for the borrow pits commissioned the author to undertake a Phase I HIA study for these features.

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

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

5 LEGAL FRAMEWORK

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

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

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

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

5.1 Legislation relevant to heritage resources

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

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

- Development Facilitation Act (DFA) Act 67 of 1995

5.2 The National Heritage Resources Act (NHRA)

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

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

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

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

5.3 Heritage Impact Assessment studies

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

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

5.4 Regulations with regard to heritage resources

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

5.4.1 Buildings and structures

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

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

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

5.4.2 Graves and burial grounds

Graves and burial grounds are divided into the following:

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

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

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

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

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

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

5.4.3 Archaeology, palaeontology and meteorites

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

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

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

6 METHODOLOGY

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

6.1 Desktop study

Literature relating to the pre-historical and the historical unfolding of the Eastern Highveld was reviewed. This review focused primarily on the pre-history as well as the Historical Period on the Eastern Highveld. It also provided a broad outline of the coal mining history of the region as well as its indigenous architecture. The literature research contextualises the pre-historical and historical background of the Eastern Highveld which again contributes to a better understanding of the identity and meaning of heritage sites which occur in and near the Sasol Project Area.

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

A number of Phase I HIA studies were done for Sasol Mining during the past decade the results of which were published in several reports (see 'Select Bibliography', Part 12).

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

6.2 Fieldwork and research

The larger Sasol Project Area (or area stretching from one borrow pit to the next) was surveyed with a vehicle as the borrow pits are located close to a dirt road along which the borrow pits will be developed. The positions and surroundings of the various borrow pits were surveyed by means of a pedestrian survey. The aim with

the fieldwork was to geo-reference, describe and photograph heritage resources in these critical areas.

No GPS track log for the survey is available as the survey was conducted during the early part of 2012, *prior* to SAHRA advising (September 2012) that GPS track log records be published in reports. However, photographs are presented which illuminate the areas where the borrow pits are located (see Part 9.1 'Fieldwork survey', Figures A –D).

6.3 Baseline description

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

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

6.4 Proposed activity description

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

- The fencing of borrow pits.
- Clearing of vegetation (this action may be the most vital as it affects the total surface area of the Sasol Project Area as it will affect all heritage resources except those that are located beneath the present surface level).

- Removal of topsoil (this action will affect heritage resources which occur beneath the present surface level)
- Transport of dolerite (the development of roads may affect heritage resources which do not occur in the Sasol Project Area).

6.5 The heritage impact assessment

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

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

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

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

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

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

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Duration} + \text{Scale}) \times \text{Probability}$$

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

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

6.6 Heritage management measures

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

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

6.7 Heritage monitoring plan

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

7 ASSUMPTIONS AND LIMITATIONS

7.1 Adequacy of predictive methods

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

7.2 Adequacy of under laying assumptions

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

7.3 Uncertainty of information provided

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

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

8 THE PHASE I HERITAGE SURVEY

8.1 The Sasol Project Area

8.1.1 Location

The Sasol Project Area stretches from north of the Impumelelo Shaft Complex on the farm Strybult 542IS eastwards across the undulating Eastern Highveld of the Mpumalanga Province to Sasol Synfuels near the town on Secunda (Figure 1).

This part of 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. Today, the region is dominated by the coal mining industry (2628DB Willemsdal 1:50 000 topographical map; 2628 East Rand 1:250 000) (Figure 1).

8.1.2 The nature of the Sasol Project Area

The Sasol Project Area used to be characterised by an undulating, outstretched grass plain with limited sandstone ridges and the odd dolerite outcrop which manifested as low randjes. Few trees used to occur on this vast outstretched landscape. Those that do exist today are exotics such as Blue Gum lots, poplar-groves on the banks of streams and Oak trees which are usually located near historical farm homesteads. Most of these trees are anthropogenic as they have been introduced by human activities during the more recent the past.

The Sasol Project Area has been transformed in the more recent past as a result of the development of Sasol's coal mining and synfuels industry, the practising of dry land agriculture, infrastructure development and urbanisation which lead to the development of towns such as Secunda, Leandra, Kinross and eMbalenhle. The influence of developing activities near the borrow pits is visible in Figures A to D in this report. The Sasol Project Area therefore cannot be described as pristine any longer.

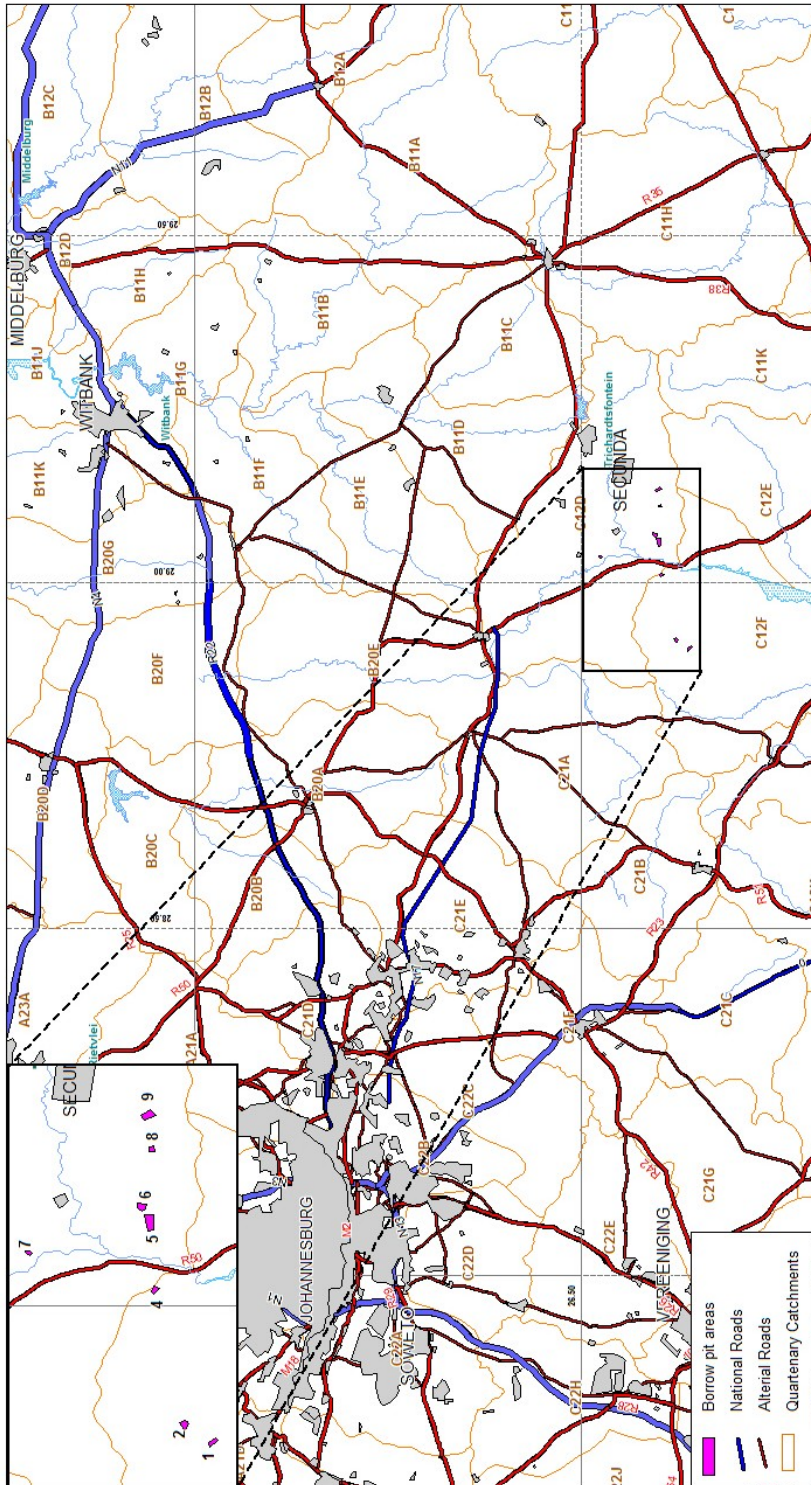


Figure 1- Regional setting for the Sasol Project which entails the development of eight borrow pits to the south-west of Secunda on the Eastern Highveld in the Mpumalanga Province (above).

8.1.3 The nature of the Sasol Project

Dolerite will be sourced from eight borrow pits and will be utilized in Sasol Mining's Impumelelelo and Shondoni Projects which include shafts and overland conveyor systems. The borrow pits are the following, namely (Figure 2):

- Borrow Pit 01 is an elongated feature in the central part of Holgatsfontein 533IS. It overlaps with a dolerite outcrop on this farm.
- Borrow Pit 02 is a near square feature on Holgatsfontein 533IS. It borders on the northern shoulder of a dirt road.
- Borrow Pit 04 is a near square feature located on Roodebank 357IS. It is situated on a piece land to the north and south a short dirt road that runs between the R547 in the west and the R50 in the east.
- Borrow Pit 05 is an elongated feature on Branddrift 321IS and is located directly west of Borrow Pit 06 and to the north of the dirt road which that links the R546 (east) with the R50 (west).
- Borrow Pit 06 is a near square feature on the farm Branddrift 321IS. This borrow pit stretches is located directly to the east of Eskom's power lines and to the north of the road that links the R546 (east) with the R50 (west).
- Borrow Pit 07 is an irregular shaped feature which is located near a tailings dump on Zandfontein 130IS.
- Borrow Pit 08 is a near square feature located on Rietvley 320IS. It is situated to the south of a dirt road which links the R546 (east) with the R50 (west).
- Borrow Pit 09 is located on Rietvley 320IS and comprises an elongated feature situated on the western shoulder of the national road running from Kinross to Standerton (R546).

A discussion of the field survey for the borrow pits is outline in Part 9.1, 'The fieldwork survey'.

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

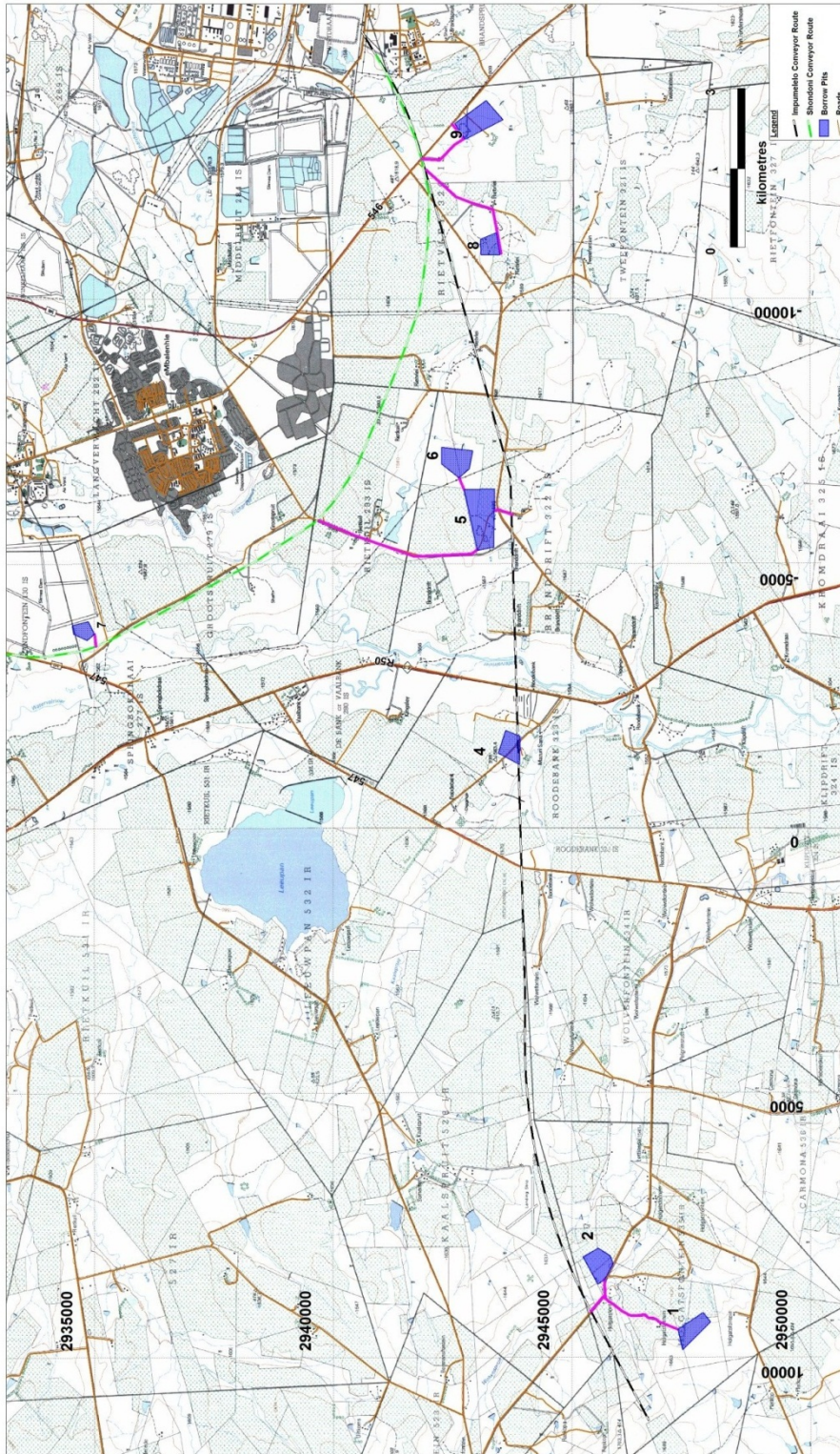


Figure 2- Sasol Mining’s proposed eight borrow pits to the south-west of Secunda closely follows the Impumelelo conveyer route and a dirt road which run from the Impumelelo Shaft (west) to Sasol Synfuels (east) on the Eastern Highveld in the Mpumalanga Province (above).

8.2 Contextualising the Sasol Project Area

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

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

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

8.2.1 Stone Age and rock art sites

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

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

LSA occupation 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 4 870BP 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 farmers (Maggs 1983, 2008). Approximately 400 rock art sites are distributed throughout Mpumalanga, notably in the northern and eastern regions at places such as Emalahleni (Witbank) (4), Lydenburg (2), White River and the southern Kruger National Park (76), Nelspruit and the Nsikazi District (250). The Ermelo area holds eight rock paintings (Smith & Zubieta 2007).

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

During the LSA and Historical Period, San people called the Batwa lived in 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 relatively security and camouflage. Here, some of the San lived on the surfaces of the water bodies by establishing platforms with reeds. With the arrival of the first colonists in the nineteenth century many of the local Batwa family groups were employed as farm labourers. Descendants of the Batwa people still live in the larger Project Area (Schapera 1927, Potgieter 1955, Schoonraad & Schoonraad 1975).

8.2.2 Iron Age remains

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

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

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

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

The Late Iron Age is well represented in Mpumalanga and stretches from AD1500 well into the nineteenth century and the Historical Period. Several spheres of influence, mostly associated with stone walled sites, can be distinguished in the region. 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 KoNomthjarhelo stretched across the Steenkampsberge.
- The Bakopa lived at Maleoskop (1840 to 1864) where they were massacred by the Swazi while the Bantwane live in the greater Groblersdal and Marble Hall areas.
- Corbelled stone huts which are associated with ancestors of the Sotho on Tafelkop near Davel which date from the AD1700's into the nineteenth century (Hoernle 1930).
- Stone walled settlements spread out along the eastern edge of the Groot Dwarsriver Valley served as the early abode for smaller clans such as the Choma and Phetla communities which date from the nineteenth century.

8.2.3 The Historical Period

Historical towns closest to the Sasol Project Area include Leandra, Kinross, Evander and Secunda.

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

Kinross, about 20 km east of Leandra, is the railhead for the township of Leandra and four gold mines in the region, namely Winkelhaak, Leslie, Bracken and Kinross who all opened in the 1950's.

The village was proclaimed in the 1915 and named for Kinross in Scotland by the engineers who constructed the railway line between Springs and Breyton. Kinross is near the watershed that separates the rivers flowing towards the Indian Ocean in the east and the rivers flowing towards the Atlantic Ocean in the west.

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.

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.

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 Sasol 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 (Erasmus 1995).

8.2.4 A coal mining heritage

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

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

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

The first exploitation for coal was probably in Kwa Zulu/Natal as documentary evidence refers to a wagon load of coal brought to Pietermaritzburg to be sold in 1842. In 1860 the coal trade started in Dundee when a certain Pieter Smith charged ten shillings for a load of coal dug by the buyer from a coal outcrop in a stream. In 1864 a coal mine was opened in Molteno. The explorer, Thomas Baines mentioned that farmers worked coal deposits in the neighbourhood of Bethal (Transvaal) in 1868. 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 has 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 colliers in South Africa attained an annual figure of 9,5million 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, Iscor and Eskom.

8.2.5 A vernacular stone architectural heritage

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

The origins of a vernacular stone architecture in the Eastern Highveld may be ascribed to various reasons of which the ecological characteristics of the region may be the most important. Whilst this region is generally devoid of any natural trees which could be used as timber in the construction of farmsteads, outbuildings, cattle enclosures and other structures, the scarcity of fire wood also prevented the manufacture of baked clay bricks. Consequently stone served as the most important building material in the Eastern Highveld (Naude 1993, 2000). At least one of these historical structures were 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 utilize the same resources to construct dwellings and shelters. Farmers from Scottish, Irish, Dutch, German and Scandinavian descent settled and farmed in the Eastern Highveld. They brought the knowledge of stone masonry from Europe. This compensated for the lack of fire wood on the eastern Highveld which was necessary to bake clay bricks.

8.3 Fieldwork survey

The eight borrow pits and their surroundings were subjected to a pedestrian survey. All eight borrow pits occur in homogenous surroundings, namely on level or sloped grass veld. These pits are under laid with dolerite, a younger volcanic rock which penetrated the older sedimentary sandstone of the area. The dolerite stone will be quarried from the borrow pits.

BP01 is located near a low dolerite randje (dyke) whilst at least two borrow pits (BP02, BP09) are associated with older quarrying activities and therefore have been scarred in the past.



Figure A- Borrow Pit 01 is located on level grassland near a low dolerite randje (above).



Figures B & C- Borrow Pit 02 partly overlaps with older quarrying activities (above) whilst similar activities are noticeable at Borrow Pit 09 (below).





Figures D and E- Borrow Pits 05 and 06 are close to each other and are located on pristine veld (above) although a soil walled dam near these features (below) indicates that the area has been affected by some kind of development activities in the past (above).



It also seems as if long abandoned agricultural activities were practised where BP04, BP08 and BP09 are going to be established whilst at least one borrow pits (BP07) is located in an area where a tailings dam occur and where developmental activities such as quarrying, road building, refuse dumping, etc. have occurred in the past.

Borrow Pits BP05 and 06 are partly established on part of a pristine grass veld although a soil walled dam used to exist where these features are going to be established (Figures A to D)

The general area where the borrow pits are to be developed therefor cannot be described as pristine any longer.

8.4 Types and ranges of heritage resources

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

- The remains of historical houses.
- Informal and formal graveyards.

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

These heritage resources do not occur in the Sasol Project Area. However, they were geo-referenced and mapped (Figure 3, Tables 1-2), their significance is indicated as well as the significance of any impact on these remains by the Sasol Project (Tables 3-5).

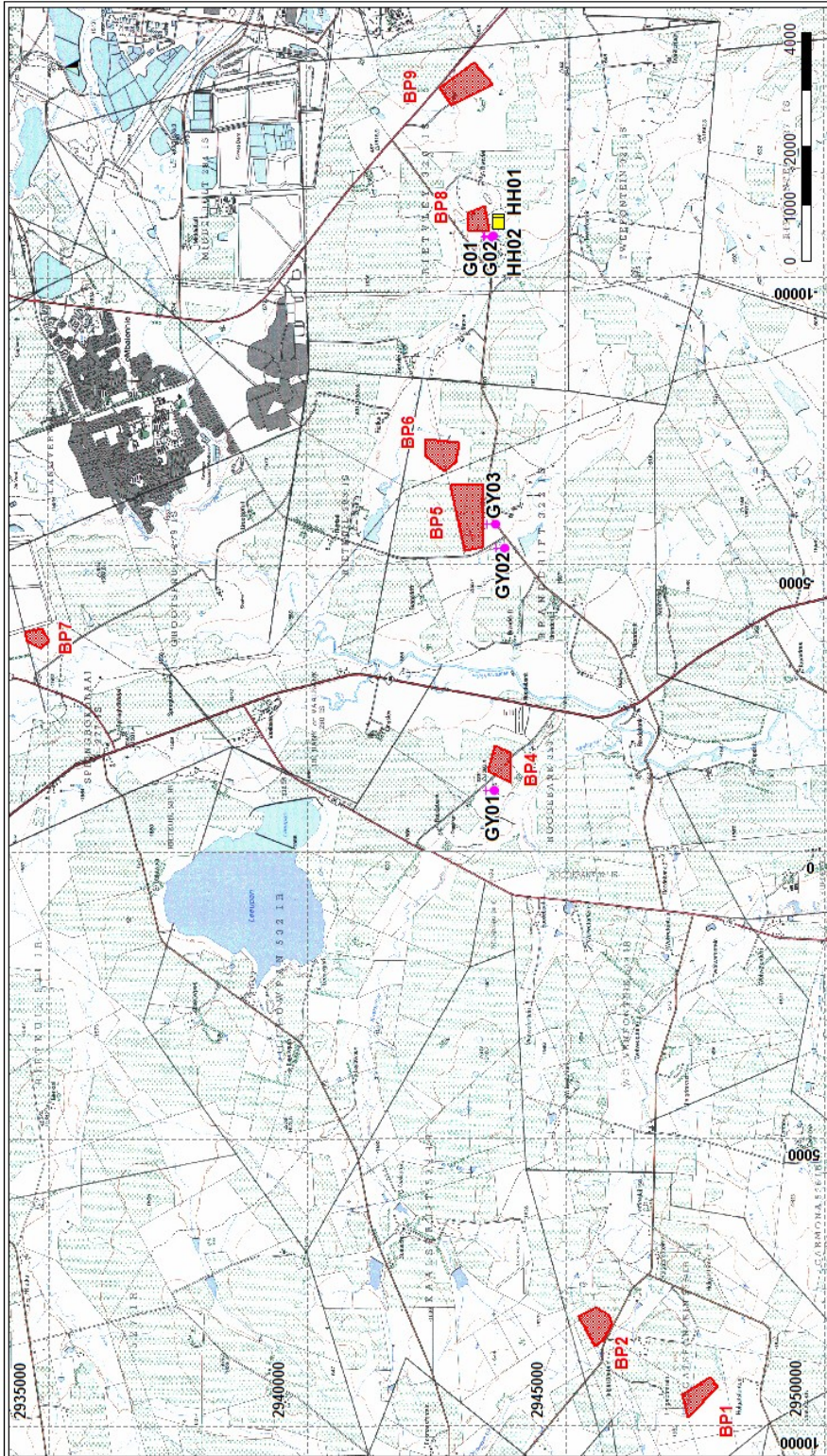


FIGURE 3:
 The Sasol Project Area consists of eight borrow pits to the south-west of Secunda on the Eastern Highveld in the Mpumalanga Province.
 (Note the presence of historical houses, graveyards and graves near some of the borrow pits)

LEGEND

-  Proposed Borrow Pit Areas
-  Graves / Grave yards
-  Historical Houses

Date: February 2013

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8.4.1 Historical structures

Historical remains on the Eastern Highveld can usually be divided into farmstead complexes consisting of a number of historical structures which are associated with each other (main residences with outbuildings, cattle enclosures and graveyards) or individual structures such as historical houses. Only the remains of historical houses were found near the Sasol Project Area. It is likely that these structures may have been part of farmstead complexes in the past. Associated remains such as sandstone outbuildings, etc. may have been demolished by agricultural activities or these structures may have been demolished to be reconstructed elsewhere.

8.4.1.1 Historical House 01

This structure on Rietvley 320IS near Borrow Pit 08 comprises the remains of a sandstone and dolerite house which consisted of at least three rooms and a 'stoep' (veranda). The house is associated with a small outbuilding which was constructed with sandstone.



Figure 4- The remains of a historical house (HH01) with outbuilding on Rietvley 320IS near Borrow Pit 08 which was constructed with sandstone (above).

8.4.1.2 Historical House 02

The remains of a second possible house occur on Rietvley 320IS near Borrow Pit 08. It was constructed with sandstone. However, it is severely dilapidated and covered with dense tall grass and khaki bush.

HH02 is associated with a square structure which is linked to the house. Some of this structure's foundation stones consist of large heavy dolerite boulders.

This structure may have been a wagon shed or a cattle kraal.



Figure 5- HH02 near Borrow Pit 8 was constructed with sandstone and dolerite is currently covered with tall grass and khaki bush (above).

Historical structures	Coordinates	Significance
<u>Historical House 01</u> Sandstone structure (with outbuilding)	26° 36.216'S 29° 06.627'E	Med (older than sixty years, Table 3)
<u>Historical House 02</u> Sandstone structure (with associated structure)	26° 36.208'S 29° 06.598'E	Med (older than sixty years, Table 3)

Table 1- Coordinates and significance of historical structures in the Sasol Project Area (above).

8.4.2 Graveyards

The following graveyards were observed in the larger Sasol Project Area, namely:

8.4.2.1 Graveyard 01

This informal graveyard on Roodebank 329IS near Borrow Pit 04 holds six graves all of which are covered with piles of stone.



Figure 6- Informal GY01 holds six graves. One is fitted with a cement headstone and is edged with cement strips (above).

One of the graves is fitted with a small cement headstone and is edged with cement strips. The headstone bears no inscriptions. GY01 is probably older than sixty years.

8.4.2.2 Graveyard 02

GY02 on Branddrift 322IS is located on the western shoulder of the dirt road which runs to Kinross. This graveyard is demarcated with sandstone walls. It holds the remains of six to seven individuals. Several of the graves have been severely vandalised. Vandals attempted to exhume the contents of the graves.



Figure 7- GY02 with the remains of six to seven individuals. The graves are subjected to vandalism, a phenomenon which was already observed on the Eastern Highveld as early as 2008 (above).

Inscriptions on two of the graves with granite headstones read as follow:

- 'Jacomina Hendrina Bester Viljoen Geb 17April 1881 Oor 27 Jan 1951
Nogtans het Hy ons krankheid op hom geneem en ons smart die het Hy
gedra'

- 'Hier rus ons moeder Maggel Magrietha Viljoen Geb Labushagne Gebore de 8ste Aug 1846 Overl 17 de Aug 1926 Gez 182 Vers 1'

GY02 is older than sixty years. (Vandalism on graves in the Eastern Highveld has been noted as early as 2008 and seems to be a continuing tradition).

8.4.2.3 Graveyard 03

This graveyard on Branddrift 322IS near the northern shoulder of a dirt road holds the remains of at least four individuals who are buried in two demarcated areas next to each other. GY03 is probably older than sixty years.

One of the graves is fitted with a large granite headstone with the following inscription:

- 'Mrs Shabangu'



Figure 9- GY03 on Branddrift 322IS comprises two demarcated areas next to each other. Each holds the remains of deceased individuals (above).

8.4.2.4 Graves 01 and 02

Two single graves (G01 and G02) on Rietvley 320IS is located in close proximity of two historical houses on the farm. All these heritage resources are close to Borrow Pit 08. Both graves are demarcated with fences.

The graves are not fitted with any headstones or are not associated with any inscriptions but are probably older than sixty years.



Figure 10- Two single graves which are demarcated with wire fences on Rietvley 320IS. These graves are located in close proximity of two dilapidated sandstone houses (HH01 and HH02) (above).

8.4.3 Heritage resources near Borrow Pit 07

Historical remains as well as five graveyards occur at a safe distance from Borrow Pit 07 where they will not be affected by the Sasol Project. These remains have not been discussed in this report (neither are they indicated on Figure 2) as they have no bearing on the Sasol Project under discussion and therefore on this report.

These remains have been recorded and discussed in heritage reports which have been done for the Sasol Shondoni and Block 8 Reserves Project as well as for the Sasol Shondoni Conveyer Amendment Project, the results of which have been published in the following reports, namely:

- Pistorius, J.C.C. 2013(a). A (2nd Revised) Phase I Heritage Impact Assessment study for the proposed Sasol Shondoni Conveyer Amendment Project on the Eastern Highveld in the Mpumalanga Province. Unpublished report prepared for JMA Consulting (Pty) Ltd and Sasol Mining.
- Pistorius, J.C.C. 2013(b). A (Revised) baseline heritage study for Sasol's Mining's proposed Sasol Shondoni Project and for the Block 8 reserves on the Eastern Highveld in the Mpumalanga Province. Unpublished report prepared for JMA Consulting (Pty) Ltd and Sasol Mining.

Graveyards	Coordinates	Significance
GY01. On Roodebank 329IS.	26° 36.154' 29° 00.656'	HIGH (According to legislation)
GY02. Branddrift 322IS. Vandalised.	26° 36.256' 29° 03.200'	HIGH (According to legislation)
GY03. Branddrift 322IS. Two components	26° 36.213' 29° 03.459'	HIGH (According to legislation)
G01 and G02. Rietvley 320IS. In proximity of HH01 and HH02	26° 36.134' 29° 06.470' 26° 36.132' 29° 06.467'	HIGH (According to legislation)

Table 2- Coordinates and significance rating for graveyards in the Sasol Project Area (above).

9 PROJECT DESCRIPTION AND IDENTIFICATION OF RELEVANT ACTIVITIES

The following selected activities are relevant to the Sasol Borrow Pits impact assessment, namely:

- Borrow Pit Fencing
- Clearing of Vegetation
- Removal of Topsoil
- Stockpiling of Topsoil
- Storm Water Management Berms
- Excavation of Dolerite
- Storm Water Management
- Transport of Dolerite
- Dust Suppression
- Shaping of Rehabilitation
- Placement of Topsoil for Rehabilitation
- Re-vegetation for Rehabilitation

9.1 Project activities relevant to heritage resources

The following project activities will have a negative impact on heritage resources should these occur within the confines of the borrow pits or access roads which lead to the borrow pits, namely:

- Borrow Pit Fencing (which will affect, damage or destroy heritage resources on the surface of the land).
- Clearing of Vegetation (this action may be the most vital as it affects the total surface area of the Sasol Project Area as it will affect all heritage resources except those that are located beneath the present surface level).
- Removal of Topsoil (this action will affect heritage resources which occur beneath the present surface level)
- Transport of Dolerite (the development of roads may affect heritage resources which do not occur in the Sasol Project Area).

9.2 Listing of relevant activities per life cycle

9.2.1 Construction phase activities

All the activities listed above may have a negative impact on heritage resources during the construction phase (if any heritage resources do occur in the Sasol Project Area).

However, none of the heritage resources which were recorded occur within the confines of the borrow pits or the access roads which lead to the borrow pits.

Consequently, no heritage resources will be impacted by the Sasol Project.

10 THE PHASE I HERITAGE IMPACT ASSESSMENT

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

- The remains of historical houses.
- Informal and formal graveyards.
- (No pre-historical [archaeological] remains were recorded in the Sasol Project Area. Neither did this study provide for a paleontological study).

10.1 The significance of the heritage resources

10.1.1 Historical Houses

The historical houses are older than sixty years and therefore qualify as historical remains. All remains older than sixty years are protected by the National Heritage Resources Act (No 25 of 1999).

The significance of the historical houses can be described as medium when considering criteria such as the following (Table 3):

- Sandstone and other historical houses on the Eastern Highveld are rapidly disappearing as a result of agricultural activities and the expansion of the coal mining industry.
- The historical houses have research (scientific) value.
- The historical remains can add to our knowledge regarding human life ways and traditions on the Eastern Highveld during the turn of the nineteenth century.

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

Table 3- Significance rating for historical remains in the Sasol Project Area (above).

The significance of any possible impact on the historical houses is LOW (Table 4).

Historical House	Probability of project impacting on this site	Magnitude if project impacts on this site	Duration if project impacts on this site	Scale if project impacts on this site	Significance points	Significance rating
HH01	1	10	5	3	18	LOW
HH02	1	10	5	3	18	LOW

Table 4: Significance of potential impacts on historical houses near the Sasol Project Area (above).

10.1.2 The graveyards

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 2). Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (No 25 of 1999) whenever graves are older than sixty years. It seems as if all the graves and graveyards are older than sixty years.

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

The significance of any possible impact on the graveyards and graves is LOW (Table 5).

Grave-yards	Probability of project impacting on this site	Magnitude if project impacts on this site	Duration if project impacts on this site	Scale if project impacts on this site	Significance points	Significance rating
GY01	1	10	5	3	18	LOW
GY02	1	10	5	3	18	LOW
GY03	1	10	5	3	18	LOW
G01	1	10	5	3	18	LOW
G02	1	10	5	3	18	LOW

Table 5: Significance of potential impacts on graveyards near the Sasol Project Area (above).

11 MITIGATING AND MONITORING THE HERITAGE RESOURCES

No heritage resources will be impacted by the Sasol Project. Consequently, no mitigation or monitoring measures have to be implemented for the historical remains or the graveyards and graves.

12 CONCLUSION AND RECOMMENDATIONS

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

- The remains of historical houses.
- Informal and formal graveyards.

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

These heritage resources do not occur in the Sasol Project Area. However, they were geo-referenced and mapped (Figure 3, Tables 1-2), their significance is indicated as well as the significance of any impact on these remains by the Sasol Project (Tables 3-5).

The significance of the heritage resources

Historical Houses

The historical houses are older than sixty years and therefore qualify as historical remains. All remains older than sixty years are protected by the National Heritage Resources Act (No 25 of 1999).

The significance of the historical houses can be described as medium when considering criteria such as the following (Table 3):

- Sandstone and other historical houses on the Eastern Highveld are rapidly disappearing as a result of agricultural activities and the expansion of the coal mining industry.
- The historical houses have research (scientific) value.
- The historical remains can add to our knowledge regarding human life ways and traditions on the Eastern Highveld during the turn of the nineteenth century.

The significance of any possible impact on the historical houses is LOW (Table 4).

The graveyards

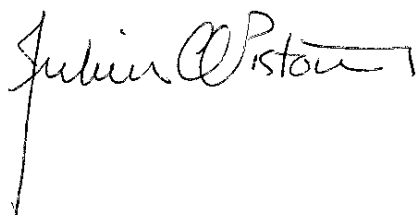
All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 2). Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (No 25 of 1999) whenever graves are older than sixty years.

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

The significance of any possible impact on the graveyards and graves is LOW (Table 5).

Mitigation and monitoring the heritage resources

No heritage resources will be impacted by the Sasol Project. Consequently, no mitigation or monitoring measures have to be implemented for the historical remains or the graveyards and graves.

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

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Member ASAPA

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