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A (2nd REVISED) PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR THE SASOL SHONDONI CONVEYER AMENDMENT PROJECT ON THE EASTERN HIGHVELD IN THE MPUMALANGA PROVINCE

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EXECUTIVE SUMMARY

This 2nd revised Phase I Heritage Impact Assessment (HIA) study for the Sasol Shondoni Conveyer Amendment 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). This project is here referred to as the Sasol Project and the footprint of the area to be affected by the project was referred to as the Sasol Project Area.

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 Heritage Impact Assessment (HIA) for the Sasol Project Area revealed the following types and ranges of heritage resources in and near the Sasol Project Area as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999), namely:

- Historical remains consisting of houses and cattle enclosures.
- Informal graveyards.
- No archaeological [pre-historical] remains were recorded. Neither was any paleontological study conducted.

Possible impact on the heritage resources

The historical remains and GY01, GY04 and GY05 will be impacted by the Sasol Project and the effect of the impact on the heritage resources will be permanent. The magnitude of the impact will be high but will be limited to the Sasol Project Area.

The significance of the heritage resources

The significance of the heritage resources therefore is indicated and mitigation measures are outlined for those heritage resources which will be affected by the Sasol Project.

The historical remains

The historical remains (dwellings, enclosures and graveyards) constitute a small cultural landscape along the higher eastern banks of the Grootspruit due to the temporal and spatial connection between these remains. The dwellings, cattle enclosures and graveyards are culturally and functional interrelated with each other and supports each other's meaning and existence. This landscape is also historical in nature as it approaches sixty years of age.

However, the cultural landscape has low significance when considering criteria such as the following (Table 3):

- These remains are common across the Eastern Highveld (although being threatened on an increasing scale due to general development).
- These remains do not have any educational, research, aesthetical or any other significance which warrants their continued existence, conservation or even future use (e.g. as a historical site [open air museum]).
- The remains have been adequately documented for future reference during the Phase I HIA study.

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 (Act No 25 of 1999) whenever graves are older than sixty years. It seems as if all the graveyards hold graves which 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).

Mitigation of the heritage resources

The following mitigation measures are recommended for the heritage resources.

The historical remains

The historical remains have been described; geo-referenced; briefly described and tabulated; mapped on a 1:50 000 topographical map and have been photographed, the evidence of which is provided in this report. These remains therefore have been adequately documented for

future reference by any researcher or interested person seeking knowledge about the early occupation, life-ways, settlement patterns and traditions on the Eastern Highveld during the early twentieth century.

As these remains have been documented in the Phase I HIA study Sasol needs not to apply for a demolishing permit from SAHRA for these remains to be destroyed in order to make way for the proposed new Sasol Project.

The graveyards

Graveyards and graves 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.

The graveyards that will not be affected by the Sasol Project (GY02, GY03) must be protected given the fact that they will occur in close proximity of the new conveyer alignment. A grave management plan therefore must be developed in conjunction with the implementation of the Sasol Project in order to see to the protection of these sites during the construction, operation and eventual decommissioning of the Sasol Project.

Studies conducted for three conveyer alternative routes indicated that the western route serves as the preferred alternative. The western route contains three graveyards (approximately 44 graves), the south-eastern route two graveyards (with hundreds of graves) and the central route one graveyard (with thirteen graves) that will and possibly may be affected by the Sasol Project. Considering the general circumstances of undeclared graveyards in the area (abandoned, unprotected, vandalised, endangered), the relocation of certain graveyards such as GY01, GY04 and GY05 (after the necessary legal processes have been complied with) can be interpreted as a positive influence on these resources.

General note:

Discrepancies between the number of graves recorded by JCC Pistorius (during the Phase I HIA study) and A Pelser and the AVBOB team (during the grave census) is outlined in Appendix A attached to this report.

Disclaimer

Although due consideration was given to the observing and documenting of all heritage resources in the Sasol Project Area some resources may not have been detected due to various reasons (occurring beneath the surface, unmarked, inconspicuous or eroded nature, covered by vegetation, human failure to recognise, etc.).

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.

1 INTRODUCTION

This document contains the 2nd revised report on a Phase I Heritage Impact Assessment (HIA) study which was done for the Sasol Shondoni Conveyer Amendment Project on the Eastern Highveld in the Mpumalanga Province**.**

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.

2 TERMS OF REFERENCE

The Sasol Shondoni Conveyer Amendment Project may have an impact on any of the types and ranges of heritage resources as outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999). Therefore, JMA Associates (Pty) Ltd who is responsible for the compiling the Environmental Impact Assessment report for the Sasol Shondoni Conveyer Amendment Project, commissioned the author to undertake a Phase I HIA study for this project.

The aims with the Phase I HIA 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) (except paleontological remains) 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.

3 METHODOLOGY

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

- Surveying the proposed Sasol Project Area with a vehicle and selected spots on foot.
- Briefly surveying literature relating to the pre-historical and historical context of the Sasol Project Area.
- Consulting maps of the proposed Sasol Project Area.
- Consulting archaeological (heritage) data bases.
- Synthesising all information obtained from the data bases, fieldwork, maps and literature survey into this report.

3.1 Field survey

The field survey involved following the proposed conveyer route with a vehicle. Selected stretches and spots along the conveyer route indicated by ecological markers such as cleared spots in the vegetation; alien vegetation (mostly intruder species); surface features (soil [mud] dumps, protrusions, depressions, Blue Gum lots, etc.), were surveyed on foot. Heritage resources such as cattle enclosures constructed with stone walls were obvious and clearly noticeable even where tall grass occurred.

At the onset of the project an initial survey was undertaken which involved personnel from Sasol, JMA Associates, specialists covering various disciplines of study for the project and the archaeologist (author). The total length of the surveyor corridor was travelled with a vehicle. Two subsequent surveys were done by the archaeologist. Whilst the length of the conveyer corridor was once again travelled with a vehicle tracks of land most likely to harbour the presence of heritage resources, e.g. the strip of land covered with Blue Gum trees adjacent to the R547 and the piece of land wedged between the Grootspruit (west) and a tailings dump and the West Shaft (east), were thoroughly surveyed by means of a pedestrian survey.

No GPS track log for the survey is available as the first surveys were done well in advance of SAHRA advising the use of this application. However, Figures A to D (below)outline obvious environmental features and characteristics associated with the length of the proposed conveyer route, namely:

- The northern part where the Shondoni Shaft complex is located and where the conveyer route commencesis characterised by grass veld which slopes to the south. The grass veld edges onto a maize field which runs to the central part of the conveyer route where most of the heritage resources were recorded.

Figure A- The northern stretch for the Shondoni conveyer route runs across grass veld to a Blue Gum lot (on the horizon) where the central stretch for the conveyer alignment commences. From here, most of the heritage resources were recorded.

- The southern stretch for the conveyer route is characterised by flat, outstretched grass veld which turns into agricultural fields which stretches to the R546 (which runs between Leandra and Standerton).

FiguresB & C- The northern stretch for the Shondoni conveyer route runs across amaize field which borders on grass veld (above). The southern stretch for the conveyer route crosses flat grass veld (below). No heritage resources were observed along these two stretches (below).

Figure D- The grass veld along the southern stretch for the Shondoni conveyer route turns into agricultural fields which ends on the shoulder of the R546.

Both the northern and southern stretches for the conveyer route are devoid of heritage resources, those of which occur are located beyond the influence of the conveyer route.

The central part of the conveyer route where most of the heritage resources were recorded is discussed in Part 6 of the report ('The Phase I Heritage Impact Assessment').

3.2 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 has been identified during earlier heritage surveys in or near the Sasol Project Area.

The author is acquainted with the Sasol Project Area at large as he had done several heritage impact assessment studies near the proposed project area (see Part 9, 'Select Bibliography').

Literature relating to the pre-historical and the historical unfolding of the Eastern Highveld where the Sasol Project Area is located was reviewed (see Part 5, 'Contextualising the Sasol Project Area').

In addition, the Sasol Project Area was studied by means of 1:50 000 topographical maps and the 1:250 000 map on which it appears.

3.3 Assumptions and limitations

Although due consideration was given to the observing and documenting of all heritage resources in the Sasol Project Area some resources may not have been detected due to various reasons (occurring beneath the surface, unmarked, inconspicuous or eroded nature, covered by vegetation, human failure to recognise, etc.).

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.

This heritage study did not provide for any paleontological study of the Sasol Project Area.

4 THE SASOL PROJECT AREA

4.1 Location

Sasol Mining's mine lease area incorporates incorporate the Middelbult, Brandspruit, Twistdraai and Bosjesspruit Mining Areas which are located to the south of Leandra and Kinross; the North Block and South Block Mining Areas which stretches towards Greylingstad in the south and west as well as Sasol Mining's Block 8 Reserves.The Sasol mining area on the Easter Highveld of Mpumalanga covers the following 1:50 000 topographical maps: 2628DB Willemsdal, 2628 VAL, 2629 AC Evander,2629CC Standerton 2628 BD, Leandra 2629CA, Secunda 2629CAand Bethal2629AD and also appears on the 1: 250 000 map (2628 East Rand 1:250 000).

This report focuses on the Sasol Shondoni Conveyer amendment which is part of the Shondoni Shaft's operations within the ambits of the Middelbult Mining Area (Figure 1).

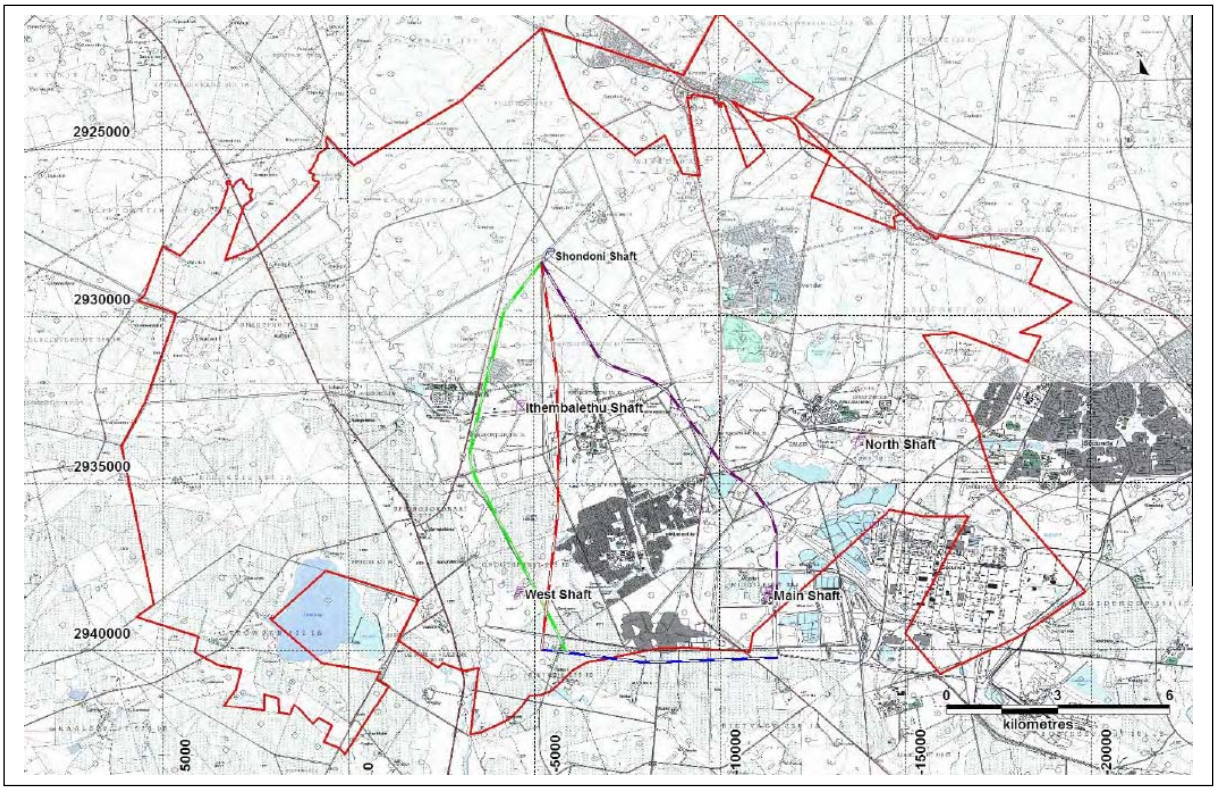

Figure 1 – The Sasol Shondoni Conveyer Amendment Project falls within the Middelbult Mining area (red outline). The map also indicates the three conveyer alternative alignments, namely western (green), central (red) and south-eastern (purple) (above).

4.2 The nature of the Sasol Project

Sasol Mining operates a number of underground coal mines in the Secunda Area. Middelbult Colliery represents one of these mines and has been in operation since 1981. During its existence Middelbult Colliery has gone through several expansions. Whilst some of the original shafts have already been closed and rehabilitated, new shafts have been developed to access coal within the larger Middelbult Reserves. As part of this on-going development to ensure access to exploitable reserves Sasol Mining decided to replace the existing Middelbult West Man and Materials Shaft with a new Man and Materials Shaft (Shondoni) in the Block 8 Reserves in order to increase its reserve utilisation.

The proposed infrastructure expansion for the Shondoni Shaft comprises one additional man and material shaft complex (Shondoni Shaft) with associated infrastructure which includes a new overland conveyor to convey the coal *via* the Middelbult Main Shaft to the Sasol Mining central coal stockpile area (Sasol Coal Supply or SCS). The original conveyor alignment (which crossed the Waterval Riverwith its well defined floodplain and wetland systems) required extensive design, management and monitoring measures. As this alignment was found to be an environmental risk theoriginal conveyer alignment was replaced with a more favourable environmental option.In order to support the EIA Amendment Application, DEDET required additional studies on aspects related to noise, wetlands and heritage, as well as additional public consultation with the land owners and directly affected parties.

Three alternatives for the overland conveyer were identified and assessed, namely a western, central and a south-eastern alignment (Figure 1). Two studies that were undertaken identified the western route as the preferred alternative for the overland conveyer, namely:

- A conveyer trade-off study undertaken by WorleyParsons indicated that the western route served as the best alternative for the conveyer in terms of engineering, operational and costs aspects.

- JMA Consulting's route ranking exercise indicated that the western route served as the preferred alternative for the overland conveyer taking environmental considerations such as the presence of heritage and cultural sites of interests into account.

The route ranking studyindicated that the western alignment will affect three graveyards (totalling approximately 30 [44] graves), the south-eastern route will affect two graveyards(totalling hundreds of graves) and the central alternativewill affect one graveyard (with probably more than 13 graves).

The initial baseline heritage survey which was done for the conveyer route (and the Sasol Block 8 reserves) (Pistorius 2013a) was subsequently followed by this Phase I Heritage Impact Assessment study for the amended conveyer alignment. The Phase I HIA study focussed on the preferred western route. This alignment is referred to as the Sasol Project whilst the area (footprint) to be affected by the conveyer is referred to as the Sasol Project Area.

4.3 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 transformedin 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 these transformation agents isclearly visible in the Sasol Project Area (Figures A to Dand Figures 3 to 12in this report).The Sasol Project Area therefore cannot be described as pristine any longer.

Nevertheless, the Sasol Project Area and surrounding Mpumalanga region is marked by heritage remains dating from the pre-historical into the historical (colonial) period. Stone Age sites, Iron Age sites and colonial remains therefore do occur in the Eastern Highveld. The archaeological and historical significance of this cultural landscape is described and outlined in the next chapter of this report.

5 CONTEXTUALISING THE SASOL 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 9 'Select Bibliography'). Heritage resources which are quite common in the larger Sasol 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 Sasol Project Area and the Mpumalanga Province.

5.1 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, KhoiKhoi herders and EIA farmers (Maggs 1983, 2008). Approximately 400 rock art sites are distributed throughout Mpumalanga, note-ably 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 KhoeKhoe paintings (thin scattering from the Limpopo Valley) through the Lydenburg district into the Nelspruit area) and localised late white farmer paintings. Farmer paintings can be divided into Sotho-Tswana finger paintings and Nguni engravings (Only 20 engravings occur at Boomplaats, north-west of Lydenburg). Farmer paintings are more localised than San or herder paintings and were mainly used by the painters for instructional purposes (Smith &Zubieta 2007).

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

Batwa people still live in the larger Project Area (Schapera 1927, Potgieter 1955, Schoonraad&Schoonraad 1975).

5.2 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 (KwaMaza 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.

5.3 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).

5.4 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 FrenchHoekValley 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.

5.5 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). 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 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.

6 THE PHASE I HERITAGE IMPACT ASSESSMENT

6.1 Types and ranges of heritage resources

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

- Historical remains consisting of houses and cattle enclosures.
- Informal graveyards.
- No archaeological [pre-historical] remains were recorded. Neither was any paleontological study conducted.

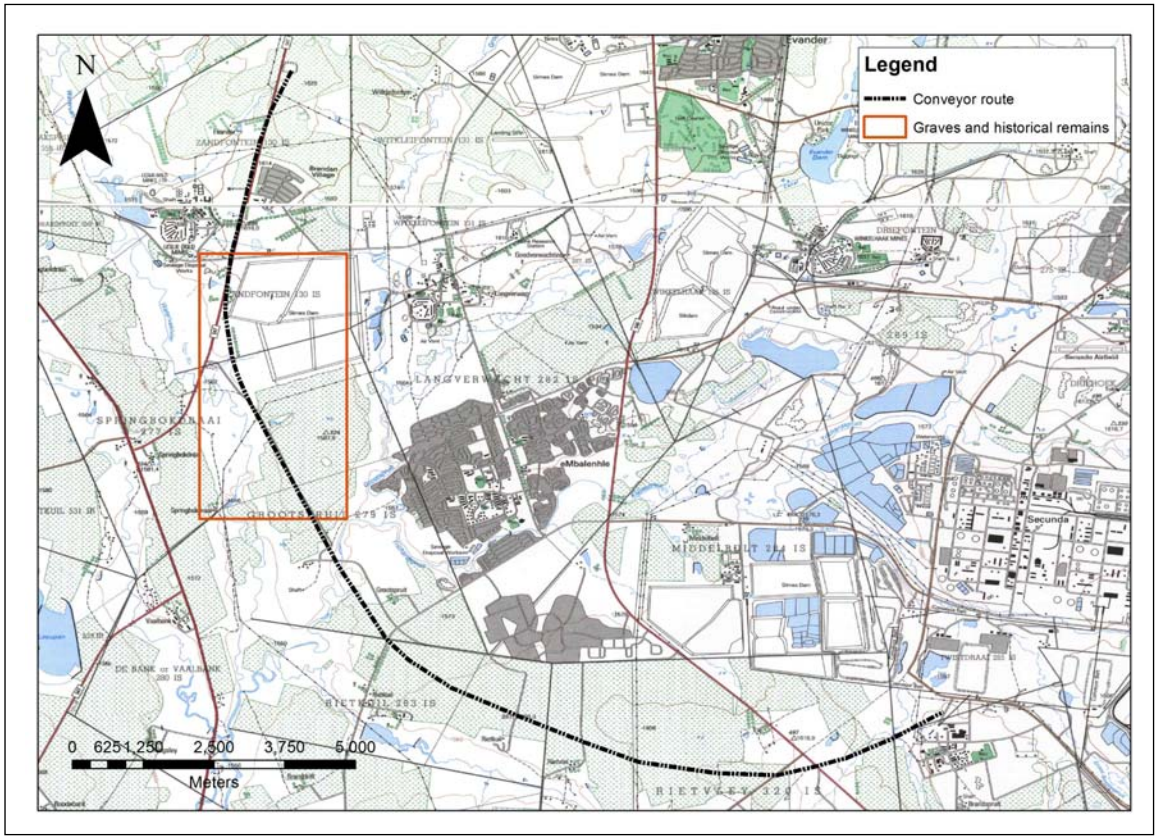

Figure 1- The Sasol Project Area in the Middelbult Mining Area with the preferred western route (black dotted line) which runs from the Shondoni Shaft (north) to the Secunda Plant (south-east).The orange-coloured demarcated block shows where the densest concentration of heritage resources (historical remains and graveyards) occurred (above).

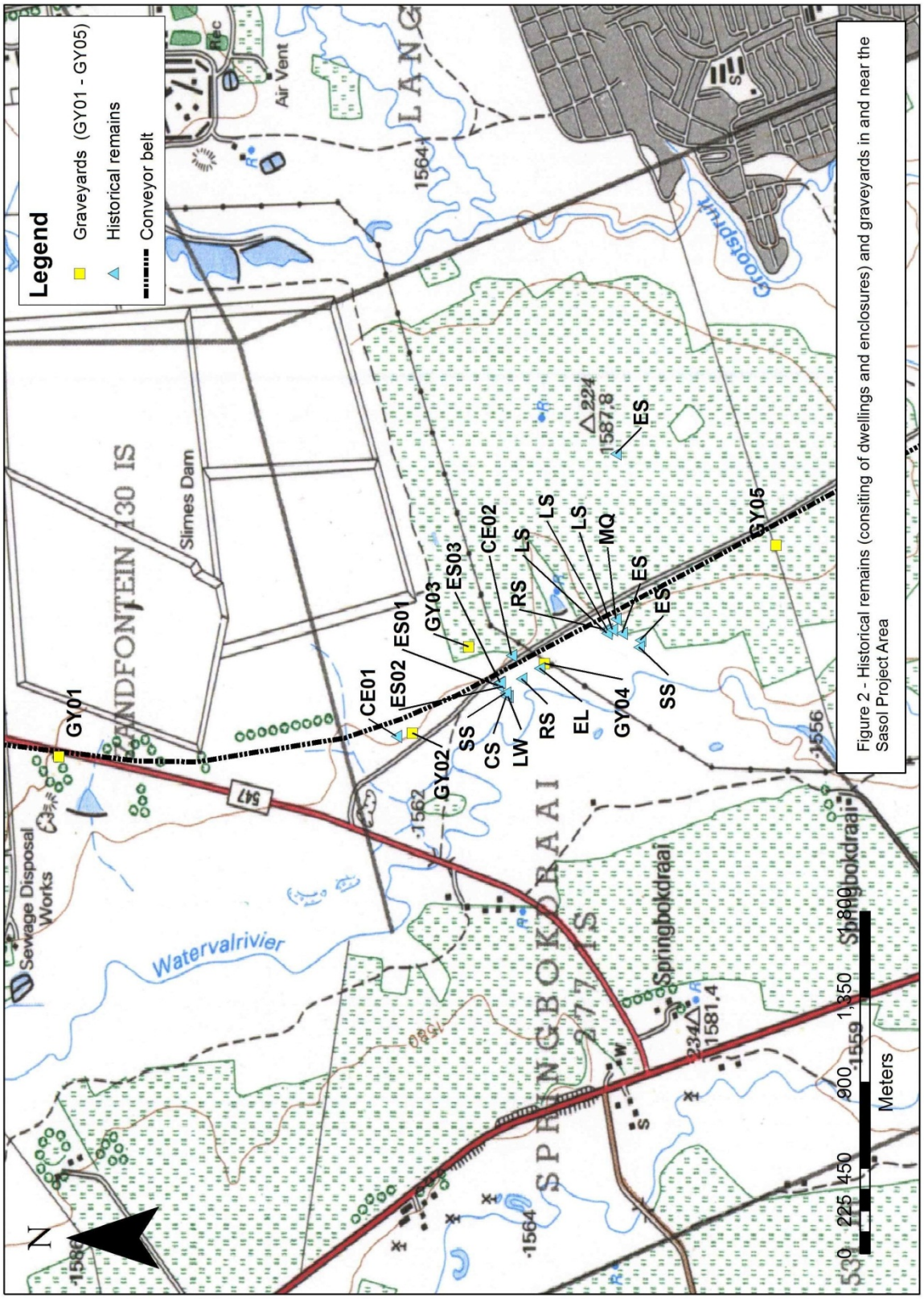

Figure 2 - Historical remains (consiting of dwellings and enclosures) and graveyards in and near the Sasol Project Area

6.2 Historical remains

Historical remains consisting of houses and cattle enclosures occur on Grootspruit 279IS in and near the Sasol Project Area. These remains occur in an area to the east of the Grootspruit and comprise the remains of dwellings that were built with stone, mixtures of stone and mud and some dwellings that were mainly constructed with mud. The mud dwellings have largely disintegrated and little of their remains can still be observed. Shallow holes or quarries from where some of the mud was quarried to construct the dwellings also occur. Rectangular enclosures constructed with stone in which cattle were penned occur in close proximity of the remains of the houses.

These remains probably date from the last decades of the nineteenth century and/or from the early twentieth century and were probably occupied well into the first half of the twentieth century.

Figure 3- One of several cattle enclosures built with dolerite stone in the Sasol Project Area. Two of these enclosures are located on the high ridge above the Grootspruit. Both structures were constructed with dolerite stone and are rectangular in ground plan. These two enclosures (CE01, CE02) are respectively associated with GY02 and GY03 (above).

Figures 4 & 5- A long stone wall on the banks of the Grootspruit comprises part of an enclosure in which cattle were penned close to the water (above). The remains of mud dwellings occur on higher ground away from the Grootspruit (above and below).

Figures 6 & 7- Hollows or shallow quarries where mud was mined and used in conjunction with stone to construct dwellings (above). The dilapidated remains of what probably used to be a mud dwelling near sisal plants (below).

Historical remains	Coordinates	Significance
CE01. Cattle enclosure	26º 31.636' 29º 02.027'	**Low**
CE02. Cattle enclosure	26º 31.962' 29º 02.257'	**Low**
LW. Long wall constructed with dolerite. Part of cattle enclosure next to the river	26° 31.952' 29˚ 02.143'	**Low**
CS. Circular stone structure. Possible dwelling	26° 31.948' 29˚ 02.147'	**Low**
SS. Square small stone and mud structure. Possible dwelling	26° 31.946' 29˚ 02.159'	**Low**
ES01. Elongated structure with several rooms which is part of an extended dwelling	26° 31.925' 29˚ 02.176'	**Low**
ES02. Elongated structure with several rooms. Extended dwelling	26° 31.927' 29˚ 02.186'	**Low**
ES03. Elongated structure. Extended dwelling	26° 31.930' 29˚ 02.181'	**Low**
RS. Rectangular structure. Cattle enclosure.	26° 31.991' 29˚ 02.192'	**Low**
EL. Small elongated structure. Possible dwelling	26° 32.042' 29˚ 02.225'	**Low**
RS. Dwelling with two rooms, one constructed with stone and the second with mud. Possible dwelling	26° 32.228' 29˚ 02.331'	**Low**
LS. Large structure constructed with mud and stone. Large dwelling?	26° 32.235' 29˚ 02.332'	**Low**
LS Large structure with unidentifiable features. Possible dwelling	26° 32.233' 29˚ 02.329'	**Low**
LS. Large structure with unidentifiable features. Possible dwelling	26° 32.249' 29˚ 02.334'	**Low**
MQ. Hollows from where mud where quarried to construct dwellings	26° 32.259' 29˚ 02.364'	**Low**
ES. Elongated structure with unidentifiable features. Possible dwelling	26° 32.277' 29˚ 02.328'	**Low**
ES. Elongated structure with unidentifiable features. Possible dwelling	26° 32.329' 29˚ 02.307'	**Low**
SS. Small structure constructed with stone	26° 32.325' 29˚ 02.285'	**Low**
ES. Large elongated structure constructed with dolerite	26° 32.259' 29˚ 02.831'	**Low**

Table 1- Coordinates for historical remains in and near the Sasol Project Area (above).

6.3 Graveyards

The following graveyards were observed in and near the Sasol Project Area:

6.3.1 Graveyard 01

GY01 is located in a Blue Gum plantation on Zandfontein 130IS near the western shoulder of the road that runs to Kinross further to the north (R547).

It holds the remains of at least eleven individuals. All the graves are covered with piles of stone. Only one of the graves is fitted with a granite headstone with the following inscription:

- 'Maria Mahlangu 31-12-1974'

GY01 is probably older than sixty years considering the appearance of the graves. GY01 will be affected by the Sasol Project.

Figure 8- GY01 is located in a Blue Gum bush and holds at least eleven graves, one of which is fitted with a granite head stone (above).

6.3.2 Graveyard 02

GY02 is situated on a high ridge away from the Grootspruit on the farm Grootspruit 279IS. It holds at least seven graves of which four are lined with cement strips and fitted with headstones.

Inscriptions on the headstones are indecipherable. Three graves are covered with piles of stone. GY02 is demarcated with a low dolerite stone wall and is probably older than sixty years.

GY02 will not be affected by the Sasol Project.

Figure 9- GY02 with seven graves is located on a high ridge above the Grootspruit (above).

6.3.3 Graveyard 03

GY03 is also located on high ground away from the Grootspruit on the farm Grootspruit 279IS. This graveyard is demarcated with a solidly constructed dolerite wall and is older than sixty years.

GY03 holds at least five or six graves which all have been severely vandalised. One cement headstone is still standing. It has the following inscription:

- 'Hierrus Jan HendrikAdriaanRoetsGeb 24 Mei 1859 Oorl 28 Sept 1940 Ges 182:1'

This graveyard will not be affected by the Sasol Project.

Figure 10- GY03 within the confines of an outer wall constructed with dolerite stone. All the graves have been severely vandalised - a phenomenon which is seen elsewhere on the Eastern Highveld (above).

6.3.4 Graveyard 04

GY04 is located near Sasol's 400kV power line and is situated near the banks of the Grootspruit on the farm Grootspruit 279IS.

Figure 11- GY04 comprises at least eight heaps of stone which are located near Sasol's 400kV power lines (above).

GY04 contains seven to eight graves, all covered with piles of stone. No inscription occurs on any of the graves.

It is highly likely that GY04 is older than sixty years. It will be affected by the Sasol Project.

6.3.4 Graveyard 05

GY05 holds approximately ten graves all of whom are demarcated with upright standing stones. One of the graves is edged with bricks and fitted with a cement headstone with the following inscription: 'NettyMazibuku'

GY05 is probably older than sixty years and will be affected by the Sasol Project.

Figure 12- GY05 is one of at least five graveyards located in and near the Sasol Project Area (below).

General note:

Graveyards 01, GY02 and GY03 identified during this survey correspond with GY15, GY16 and GY17 recorded in the baseline heritage survey which was done for the Shondoni Project and for Sasol's Block 8 Reserves:

- Pistorius, J.C.C. 2013. '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.Graveyard located in Blue Gum bush.	26º 30.679' 29º 01.969' Zandfontein 130IS	**HIGH**
GY02.Graveyard located on high ridge.	26º 31.682' 29º 02.036' Grootspruit 279IS	**HIGH**
GY03. Second graveyard located on high ridge.	26º 31.842' 29º 02.281' Grootspruit 279IS	**HIGH**

GY04. Graveyard with seven or eight graves near Sasol's 400kV power lines	26º 32.057' 29º 02.233' Grootspruit 279IS	**HIGH**
GY05. Graveyard with ten graves demarcated with upright stones	26° 32.714' 29° 02.572' Grootspruit 279IS	**HIGH**

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

7 POSSIBLE IMPACT ON, THE SIGNICANCE AND MITIGATION OF THE HERITAGE RESOURCES

7.1 Possible impact on the heritage resources

The historical remains and GY01, GY04 and GY05 will be impacted by the Sasol Project and the effect of the impact on the heritage resources will be permanent. The magnitude of the impact will be high but will be limited to the Sasol Project Area.

7.2 The significance of the heritage resources

The significance of the heritage resources therefore is indicated and mitigation measures are outlined for those heritage resources which will be affected by the Sasol Project.

7.2.1 The historical remains

The historical remains (dwellings, enclosures and graveyards) constitute a small cultural landscape along the higher eastern banks of the Grootspruit due to the temporal and spatial connection between these remains. The dwellings, cattle enclosures and graveyards are culturally and functional interrelated with each other and supports each other's meaning and existence. This landscape is also historical in nature as it approaches sixty years of age.

However, the cultural landscape has low significance when considering criteria such as the following (Table3):

- These remains are common across the Eastern Highveld (although being threatened on an increasing scale due to general development).
- These remains do not have anyeducational, research, aesthetical or any other significance which warrants their continued existence, conservation or even future use (e.g. as a historical site [open air museum]).
- The remains have been adequately documented for future reference during the Phase I HIA study.

Significancerating	Criteria for significance rating	Mitigation/Management Measures
High(3)	National/provincial value Educational, research, aesthetical conservation value Future use	Conserve unaffected for posterity (preferably)*in situ*
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 specificvalue 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).

7.2.2 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 (Act No 25 of 1999) whenever graves are older than sixty years. It seems as if all the graveyards hold graves which 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).

7.3 Mitigation of the heritage resources

The following mitigation measures are recommended for the heritage resources.

7.3.1 The historical remains

The historical remains have been described; geo-referenced; briefly described and tabulated; mapped on a 1:50 000 topographical map and have been photographed, the evidence of which is provided in this report.These remains therefore have been adequately documented for future reference by any researcher or interested person seeking knowledge about the early occupation, life-ways, settlement patterns and traditions on the Eastern Highveld during the early twentieth century.

As these remains have been documentedin the Phase I HIA study Sasol needsnot to apply for a demolishing permit from SAHRA for these remains to be destroyed in order to make way for the proposed new Sasol Project.

7.2.2 The graveyards

Graveyards and graves 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.

The graveyards that will not be affected by the Sasol Project (GY02, GY03) must be protected given the fact that they will occur in close proximity of the new conveyer. It is therefore recommended that a management plan be developed in conjunction with

the implementation of the Sasol Project in order to see to the protection of these sites during the construction, operation and eventual decommissioning of the Sasol Project.

Studies conducted for three conveyer alternative routes indicated that the western route serves as the preferred alternative. The western route contains three graveyards (approximately 44 graves), the south-eastern route two graveyards (with hundreds of graves) and the central route one graveyard (with thirteen graves) that will and possibly may be affected by the Sasol Project. Considering the general circumstances of undeclared graveyards in the area (abandoned, unprotected, vandalised, endangered), the relocation of certain graveyards such as GY01, GY04 and GY05 (after the necessary legal processes have been complied with) can be interpreted asa positive influence on these resources.

General note:
Discrepancies between the number of gravesrecorded by JCC Pistorius (during the Phase I HIA study) and A Pelser and the AVBOB team (during the grave census) is outlined in Appendix A attached to this report.

8 CONCLUSION AND RECOMMENDATION

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

- Historical remains consisting of houses and cattle enclosures.
- Informal graveyards.
- No archaeological [pre-historical] remains were recorded. Neither was any paleontological study conducted.

Possible impact on the heritage resources

The historical remains and GY01, GY04 and GY05 will be impacted by the Sasol Project and the effect of the impact on the heritage resources will be permanent. The magnitude of the impact will be high but will be limited to the Sasol Project Area.

The significance of the heritage resources

The significance of the heritage resources therefore is indicated and mitigation measures are outlined for those heritage resources which will be affected by the Sasol Project.

The historical remains

The historical remains (dwellings, enclosures and graveyards) constitute a small cultural landscape along the higher eastern banks of the Grootspruit due to the temporal and spatial connection between these remains. The dwellings, cattle enclosures and graveyards are culturally and functional interrelated with each other and supports each other's meaning and existence. This landscape is also historical in nature as it approaches sixty years of age.

However, the cultural landscape has low significance when considering criteria such as the following (Table 3):

- These remains are common across the Eastern Highveld (although being threatened on an increasing scale due to general development).

- These remains do not have any educational, research, aesthetical or any other significance which warrants their continued existence, conservation or even future use (e.g. as a historical site [open air museum]).
- The remains have been adequately documented for future reference during the Phase I HIA study.

The graveyards

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As these remains have been documented in the Phase I HIA study Sasol needs not to apply for a demolishing permit from SAHRA for these remains to be destroyed in order to make way for the proposed new Sasol Project.

The graveyards

Graveyards and graves 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.

The graveyards that will not be affected by the Sasol Project (GY02, GY03) must be protected given the fact that they will occur in close proximity of the new conveyer alignment. Agrave management plan therefore must be developed in conjunction with the implementation of the Sasol Project in order to see to the protection of these sites during the construction, operation and eventual decommissioning of the Sasol Project.

Studies conducted for three conveyer alternative routes indicated that the western route serves as the preferred alternative. The western route contains three graveyards (approximately 44 graves), the south-eastern route two graveyards (with hundreds of graves) and the central route one graveyard (with thirteen graves) that will and possibly may be affected by the Sasol Project.Considering the general circumstances of undeclared graveyards in the area (abandoned, unprotected, vandalised, endangered), the relocation of certain graveyards such as GY01, GY04 and GY05 (after the necessary legal processes have been complied with) can be interpreted asa positive influence on these resources.

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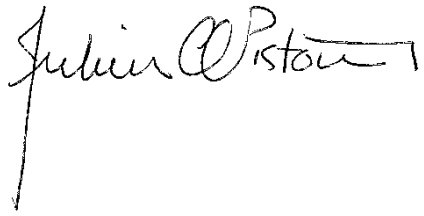

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APPENDIX A

EXPLANATION ON DISCREPANCIES: GRAVE SITE TOTALSDR JULIUS PISTORIUS VS A.PELSER/AVBOB FUNERAL UNDERTAKERS

It is necessary to provide an explanation on the discrepancies in terms of numbers of graves found during the initial Phase1 HIA for the SASOL SHONDONI Conveyor Route and the number of graves recorded and for which a permit was applied for.

Five grave sites (GY01-05) were recorded and discussed in the February 2013 Amended (Revised) Phase 1 HIA Report. Of these GY01, GY04 and GY05 will be directly impacted and will have to be exhumed and relocated. The details are as follows:

GY01 – **11** graves identified initially (Julius Pistorius)
22 graves counted and numbered by A.Pelser/AVBOB Funerals
GY02 – **11**graves identified initially (Julius Pistorius)
GRAVE Site will not be affected
GY03 – **5-6** graves identified initially (Julius Pistorius)
GRAVE Site will not be affected
GY04 – **7-8** graves identified initially (Julius Pistorius)
9 graves counted and numbered by A.Pelser/AVBOB Funerals
GY05 – **10** identified initially (Julius Pistorius)
13 graves counted and numbered by A.Pelser/AVBOB Funerals

The three sites that will be directly affected (GY01, 04 & 05) were initially thought to have contained around **29** graves. The number has now been determined to be around **44.** The discrepancy is easily explained. During the initial survey aspects such as dense grass cover (especially on Site GY01 Zandspruit) made visibility difficult. This was even true during the site visit by A.Pelser after appointment by SASOL to handle the grave exhumation and relocation project. Once the sites were cleaned and the graves numbered the real number of graves present was possible to be determined.

Another aspect that needs to be considered in determining the final number of graves to be exhumed and relocated and for which a permit is applied for at the end is a practical one, and this is based on experience. There are often open spaces/gaps in distinct rows of graves and in between individual graves. In many case these gaps do contain burials that were unmarked because the deceased's family members moved away or do not have time or funds to properly mark the graves. In other cases individuals from outside the specific communities that buried their dead here will bury their loved ones on the periphery of the burial ground. This has been the experience in around 80% of cases and therefore in order to try and totally remove the liabilities of clients test pits are dug in these spaces and around the edges of cemeteries. The number of graves for which a permit is applied for can be inflated between 25% and 30% and therefore the discrepancy in number of graves initially identified and finally documented and exhumed.

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