



HERITAGE STATEMENT FOR THE BASIC ASSESSMENT UNDERTAKEN FOR A POWERLINE UPGRADE, SYFERFONTEIN MINE, SECUNDA, MPUMALANGA PROVINCE

SASOL MINING (PTY) LTD

FEBRUARY 2014

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Report Title: **Heritage Statement for the Basic Assessment undertaken for a Powerline Upgrade, Syferfontein Mine, Secunda, Mpumalanga Province**

Project Number: **SAS1744**

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EXECUTIVE SUMMARY

Sasol Mining (Pty) Ltd (Sasol) has commissioned Digby Wells Environmental (Digby Wells) to conduct a Basic Assessment and associated studies for the proposed powerline upgrade on the Syferfontein Mine near Secunda, Mpumalanga Province.

Sasol is planning to extend the existing Syferfontein Mine into the adjacent Block 4 reserves towards the north-west of the Syferfontein reserves. A separate Heritage Statement has been completed for the Block 4 extension – known as the Syferfontein Expansion project. An existing powerline located on the Syferfontein Mine property must be upgraded in order to sustain the proposed Block 4 operation. The upgrade of the existing powerline is a Listed Activity that will require a Basic Assessment in accordance with the National Environment Management Act, 1998 (Act No. 107 of 1998) (NEMA). The upgrade of the existing powerline will not involve any extension of the existing powerline nor will the supporting structure of the powerline be replaced. Instead, the 22 kV powerline (cable) will be replaced by a 132 kV powerline.

Based on desktop research and a review of previous heritage studies conducted for the Syferfontein Mine it is evident that diverse heritage resources are expected to occur in the region. Tangible resources include resources generally protected under the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) in terms of:

- Section 34: historical structures older than 60 years;
- Section 35: archaeological and palaeontological resources; and
- Section 36: burial grounds and graves.

Sources of risk to heritage resources that may be present are limited to the immediate surrounding environment of the powerline that is scheduled to be upgraded from a 22 kV powerline to a 132 kV powerline. The sources of risk are short-term and can be managed by implementing Change Find Procedures. Therefore, a Heritage Impact Assessment (HIA) is not required for this activity.

GLOSSARY OF ABBREVIATIONS AND TERMS

BA	Bachelor of Arts
BSc	Bachelor of Science
CE	Common Era
EMP	Environmental Management Plan
GMLM	Govan Mbeki Local Municipality
GMM-IDP	Govan Mbeki Municipality Integrated Development Plan
GS-IDP	Gert Sibande Integrated Development Plan
HIA	Heritage Impact Assessment
HRA	Heritage Resources Authority
HRM	Heritage Resources Management
IWULA	Integrated Water Use Licence Application
KPA	Key Performance Area
LSA	Later Stone Age
MGDP	Mpumalanga Growth and Development Path
MJS	Major Jackson Series
MPHRA	Mpumalanga Provincial Heritage Resources Agency
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 57 of 2002)
MSA	Middle Stone Age
MSc	Master of Science
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID	Notification of Intent to Develop
SAHRA	South African Heritage Resources Agency
ToR	Terms of Reference
WITS	University of the Witwatersrand

TABLE OF CONTENTS

1	INTRODUCTION	1
2	BACKGROUND INFORMATION OF PROJECT	1
2.1	Project Details.....	1
2.2	Relevant Contact Details	1
2.3	Legislative Framework	2
2.3.1	<i>National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)</i>	2
2.3.2	<i>National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)</i>	2
2.4	Terms of Reference	3
2.5	Scope of Work	4
2.6	Expertise of Specialist.....	5
3	METHODOLOGY.....	5
3.1	Literature Review	5
3.2	Historical Layering	5
3.3	Heritage Assessment.....	5
3.4	Site Naming	5
3.4.1	<i>Confirmed sites identified during desktop study</i>	5
3.4.2	<i>Unconfirmed sites identified during desktop study</i>	6
3.4.3	<i>Sites identified during screening assessment</i>	6
4	STATE OF THE RECEIVING ENVIRONMENT - CULTURAL LANDSCAPE.....	6
4.1	Description of Property and / or Affected Environment.....	6
4.1.1	<i>Location data</i>	6
4.1.2	<i>Location maps</i>	6
4.1.3	<i>Rezoning</i>	7
4.1.4	<i>Development context of study area</i>	7
4.2	Literature Review	9
4.3	Summary of Identified Heritage Resources (EMP – 2010)	13
5	SOURCES OF RISK.....	14
5.1	Construction Phase.....	14

5.2	Operational Phase	14
5.3	Decommissioning Phase	14
5.4	Cumulative Impacts	14
6	DISCUSSION OF FINDINGS	15
7	RECOMMENDATIONS.....	15
8	REFERENCES	16

LIST OF TABLES

Table 2-1: Client contact details	1
Table 2-2: Consultant contact details	2
Table 2-3: Listed triggers according to the NHRA	3

LIST OF APPENDICES

Appendix A: Curriculum Vita

Appendix B: Site List of Identified Heritage Resources in the Project and Study Areas

Appendix C: Location and Site Maps

LIST OF PLANS

Plan 1: Regional setting of the project and study areas 1:250 000	21
Plan 2: Regional setting of the project area 1:50 000	22
Plan 3: Regional setting of the project area 1:10 000	23
Plan 4: Geological setting of the project area 1:350 000	24
Plan 5: Identified heritage resources in the project and study areas 1:50 000	25
Plan 6: Identified heritage resources in the project area 1:10 000	26
Plan 7: Heritage resources identified near and around the powerline to be upgraded 1:10 000.....	27

1 INTRODUCTION

Sasol Mining (Pty) Ltd (Sasol) has commissioned Digby Wells Environmental (Digby Wells) to conduct a Basic Assessment and associated studies for the proposed powerline upgrade on the Syferfontein Mine near Secunda, Mpumalanga Province.

2 BACKGROUND INFORMATION OF PROJECT

2.1 Project Details

Sasol is planning to extend the existing Syferfontein Mine into the adjacent Block 4 reserves towards the north-west of the Syferfontein reserves. An existing powerline located on the Syferfontein Mine property must be upgraded in order to sustain the proposed Block 4 operation. The proposed upgrade of the existing powerline is a Listed Activity requiring a Basic Assessment in the current mining right area.

The proposed upgrade will not involve any extension of the existing powerline nor will the supporting structure of the powerline be replaced. Instead, the 22 kV powerline (cable) will be replaced by a 132 kV powerline. The Basic Assessment will be compiled in accordance with the National Environmental Management Act, 1998 (Act no. 107 of 1998) (NEMA).

An Environmental Management Programme (EMP) and Integrated Water Use License Application (IWULA) for the existing Syferfontein Mine are available. Specialist studies including archaeology and heritage studies were conducted for the current EMP in 2010.

2.2 Relevant Contact Details

The contact details of the developer, consultant and landowners are provided in Table 2-1 and Table 2-2.

Table 2-1: Client contact details

ITEM	COMPANY CONTACT DETAILS
Company	Sasol Mining (Pty) Ltd
Contact person	Abdullah Gamieldien
Cell no	076 402 5843
E-mail address	gamieldien@sasol.com

Table 2-2: Consultant contact details

ITEM	COMPANY CONTACT DETAILS
Company	Digby Wells Environmental
Contact person	Casper Joubert
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E-mail address	casper.joubert@digbywells.com
Postal address	Private Bag X10046, Randburg, 2125

2.3 Legislative Framework

2.3.1 National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)

The NEMA stipulated under Section 2(4)(a) that sustainable development requires the consideration of all relevant factors including (iii) the disturbance of landscapes and sites that constitute the nation's cultural heritage must be avoided, or where it cannot be altogether avoided, is minimised and remedied.

2.3.2 National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)

Section 38(8) - The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the NEMA, or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Mineral and Petroleum Resources Development Act, 2002 (Act No. 57 of 2002) (MPRDA), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.

The table below lists the activities that trigger a Heritage Impact Assessment (HIA) in accordance with the NHRA.

Table 2-3: Listed triggers according to the NHRA

NHRA (1999) Trigger	Description
Basic Assessment	
38(1)(a)	Construction of a road longer than 300 m
38(1)(c)(i)	Transformation of land in excess of 5 ha that will change the character of a site
38(1)(d)	Rezoning of land in excess of 10 ha
38(1)(c)(ii)	Transformation of land involving three or more existing erven or divisions

2.4 Terms of Reference

Sasol has requested Digby Wells to undertake the following:

- A Basic Assessment for the upgrade of an existing powerline on the current mining right area in accordance with the NEMA.

To comply with the legislative requirements necessary for the Basic Assessment, Digby Wells has developed a Heritage Resources Management (HRM) process that is aimed at expediting decisions by relevant Heritage Resources Authorities (HRAs), and is firmly founded on the NHRA. This process is a phased approach aimed at integrating HRM with the NEMA process.

A HIA can only commence subsequent to the submission to the South African Heritage Resources Agency (SAHRA) and to the responsible HRA, in this case the Mpumalanga Provincial Heritage Resources Authority (MPHRA), of a Notification of Intent to Develop (NID) as required under Section 38 of the NHRA. Subsection 1 states that 'any person who intends to undertake a development ... must at the very earliest stages of initiating such a development, notify the responsible HRA and furnish it with details regarding the location, nature and extent of the development'.

According to Subsection 38(2), the HRA must 'within 14 days of receipt of a NID in terms of Subsection (1)' inform the client whether an impact assessment is required. If an impact assessment is required, based on information contained in the NID, the client must be provided with Terms of Reference (ToR) by the HRA as stipulated in Subsection 38(3).

If an HIA is required by the HRA, the HIA may include a range of complimentary specialist studies such as:

- Phase 1 Archaeological Impact Assessment;
- Phase 1 Palaeontological Assessment;

- Built Environment Assessment; and
- Visual Impact Assessment.

2.5 Scope of Work

In order to comply with the above, this Heritage Statement was compiled that should inform the NID. The Heritage Statement includes appropriate information regarding existing and potential heritage resources that may occur in the project location. The nature of the development was also described in sufficient detail to enable SAHRA and MPRHA to determine whether a heritage impact assessment is required. If an impact assessment is required, the Heritage Statement should thus be considered the actual first phase of the HIA Phase.

The Heritage Statement therefore includes the following activities:

- Project background;
- Details of properties on which the proposed project will take place, including regional and site maps, footprints of proposed infrastructure;
- Landowner contact details and permission;
- Details of known and / or potential heritage resources located in the vicinity of the proposed project area identified through:
 - Archival and database searches to determine relevant historical information of the project area;
 - Desktop GIS-based cartographic surveys to determine historical land use and to identify potential heritage resources that may be visible on maps, aerial and satellite imagery;
 - Review and collation of information contained in available heritage assessments that can contribute to understanding and defining the cultural landscape;
 - Screening of the proposed project area through brief physical surveys to establish whether actual heritage resources are located in the project area, as well as to evaluate the potential for heritage resources to occur;
 - Predict and list potential or envisaged impacts on heritage resources;
 - Preliminary Statement of Significance of existing or potential heritage resources; and
 - Specialist motivation whether or not an HIA is required.

2.6 Expertise of Specialist

Shahzaadee Karodia has completed a Bachelor of Arts (BA) degree in Archaeology and Anthropology, a Bachelor of Science (BSc) Honours degree in Palaeontology, and a Master of Science (MSc) degree in Archaeology at the University of the Witwatersrand (WITS). Ms Karodia currently holds the position of Assistant Heritage Consultant and Palaeontological Specialist at Digby Wells. Her curriculum vita is attached in Appendix A.

3 METHODOLOGY

3.1 Literature Review

Relevant and available published works such as academic journals, academic books, unpublished theses and reports, previous palaeontological and heritage assessments, and websites were reviewed.

3.2 Historical Layering

A review of historical maps, such as the Major Jackson Series (MJS) maps, previous 1:50 000 topographical maps, and aerial imagery was completed. Aerial imagery was overlaid to assess the changes in the receiving environment over time. Additionally, published geological maps were also assessed.

3.3 Heritage Assessment

A heritage assessment was conducted for the project in 2010 on the existing Syferfontein Mine. The results of the heritage assessment were included in the Syferfontein Mine EMP.

3.4 Site Naming

All identified sites are presented in Appendix B.

3.4.1 Confirmed sites identified during desktop study

Sites may be identified based on previous relevant reports. The site names and / or numbering that were used in the original reports will be used, but prefixed with the relevant SAHRA report number if available. For example, a heritage resource identified by Roodt (1999) described as an archaeological site and numbered Site 1 in that report will be:

1999-SAHRA-0021/1

If the relevant report does not have a SAHRA report number, then the site names and / or numbering that were used in the original reports will be used, but prefixed with the relevant author. For example, a heritage resources identified by Van Schalkwyk (2007) described as an archaeological site and numbered '1' in that report will be:

Van Schalkwyk-2007/1

3.4.2 Unconfirmed sites identified during desktop study

Potential sites not previously identified, but noted as a result of historical layering, desktop studies or through indicators such as vegetation, were named using the Digby Wells project number, followed by the map sheet number and reference to the relevant NHRA section suffixed with the site number:

SAS1744/2629AC/S.35-001.

3.4.3 Sites identified during screening assessment

Sites identified during the screening assessment were named using the site naming format described in Section 3.4.2 above.

4 STATE OF THE RECEIVING ENVIRONMENT - CULTURAL LANDSCAPE

This section describes the receiving environment of the project and study areas. The study area was considered to include the cultural landscape in an approximately 100 km radius of the project area. The project area was defined as the boundaries supplied by Sasol for the proposed Syferfontein Expansion project. The study area allowed inferences to be made of potential sites that could exist within the project area based on certain sources of information such as previously completed and relevant heritage studies.

4.1 Description of Property and / or Affected Environment

4.1.1 Location data

The project is located near Secunda in the Mpumalanga Province. The surrounding towns include Leandra, Kinross, Evander and Secunda.

4.1.2 Location maps

The regional settings of the project area are depicted in Plan 1, Plan 2 and Plan 3 in Appendix C.

4.1.2.1 Site maps

The following site maps are available in Appendix C:

- Plan 4: Geological setting of the project area 1:350 000;
- Plan 5: Identified heritage resources in the project and study areas 1:50 000;
- Plan 6: Identified heritage resources in the project area 1:10 000; and
- Plan 7: Heritage resources identified near and around the powerline to be upgraded 1:10 000.

4.1.3 Rezoning

The project area will not require rezoning as there will be no infrastructure constructed in the proposed extension.

4.1.4 Development context of study area

The Gert Sibande District Municipality Integrated Development Plan (GS-IDP) was reviewed to gain a more detailed understanding of the development context within which the project area is situated (Gert Sibande District Municipality, 2012). The GS-IDP represented a five-year plan to guide socio-economic development within the district municipality. With regards to heritage, an understanding of the development context of the study area is important in order to assess and/or predict the magnitude of possible impacts on heritage resources that are identified in the study area. Cumulative impacts on heritage resources and the cultural landscape can also be more accurately addressed.

The GS-IDP included a Mpumalanga Growth and Development Path (MGDP) aimed at promoting local economic growth (Gert Sibande District Municipality, 2012). The MGPD identified the following economic sectors within the Gert Sibande District Municipality to promote economic growth and create employment:

- Agriculture and forestry;
- Mining and energy;
- Manufacturing and beneficiation; and
- Tourism and cultural interests.

Overall, the GS-IDP identified job creation as a key factor for economic growth. In order to promote job creation key areas in the major socio-economic sectors, the agriculture and mining sectors in particular, were identified to facilitate economic growth and promote job creation. These key areas primarily involve infrastructure development, social development, municipal financial viability, economic development and institutional development.

Each identified sector above comprises specific types or categories of development that may impact on heritage resources in various manners. Proposed development relative to the project must therefore be taken into account. The identified sectors are briefly discussed below.

4.1.4.1 Agriculture and forestry

According to the GS-IDP, growth within the agriculture sector will include a massive drive on infrastructure development that may include, among other things:

- Dams,
- Irrigation,
- Farm roads,
- Silos,

- Pack houses,
- Mechanisation,
- Electricity; and
- Infrastructure for agro-processing.

4.1.4.2 Mining and energy

The key areas that were identified within the mining sector to facilitate economic growth included:

- The upgrading and maintenance of the coal haulage network;
- The expansion of the water network and increase reliance on water transfer schemes;
- The increase of South Africa's energy load and the improvement of alternative energy supply;
- The establishment of a mining supplier park to enhance enterprise development in the province;
- The resolution of land claims to release land for development; and
- The provision of comprehensive support to small-scale mining enterprises.

4.1.4.3 Tourism and Culture

The GS-IDP also identified key areas to facilitate growth in the tourism and cultural industries. These included broadening and diversifying primarily nature-based tourism product offerings in Mpumalanga into more mainstream market segments such as:

- Sports events;
- Business/conference meetings; and
- Theme or amusement parks.

In line with these strategic focus areas for development, the Govan Mbeki Municipality Integrated Development Plan (GMM-IDP) identified Key Performance Areas (KPA's):

- Governance and Stakeholder Participation;
- Physical Infrastructure and Energy Efficiency;
- Services and Customer Care;
- Economic Growth and Development;
- Safety and Environment;
- Social and Community Development;
- Institutional Transformation; and
- Financial Sustainability.

Proposed projects and activities aimed at achieving the KPAs identified in the Govan Mbeki Local Municipality (GMLM) IDP are discussed briefly below:

4.1.4.4 KPA 2 – Physical infrastructure and energy efficiency

The strategic objective for this KPA is to ensure that physical infrastructure is appropriately serviced and well-maintained and that energy is used efficiently. Proposed activities and projects that may occur in the study area and that have the potential to impact on heritage resources in the area include:

- The upgrading of medium voltage network in Bethal/Emzinoni;
- The construction of a Standerton-Morgenzon link road;
- The construction of new roads in Kinross;
- The construction of Phase 2 Lebohang storm water drainage;
- The construction of roads in eMzinoni;
- The construction of a Wastewater Treatment Plant and sewer network;
- The installation of new boreholes;
- The construction of a new primary health care centre in Lebohang
- The upgrade of the Bethal dam;
- The construction of the Leandre Fire Station; and
- Construction of a manufacturing Hive;

4.1.4.5 KPA 6 – Social and community development

The strategic objective for the KPA is to facilitate social and community development. Proposed activities and projects that may occur in the study area and that have the potential to impact on heritage resources in the area include:

- The construction of 40 Low Cost houses.

4.2 Literature Review

The study area lies on the Highveld of the Mpumalanga Province surrounded by the towns of Kinross, Evander, Secunda and Trichardt. Topographically, the study area is very gentle with an elevation of between 1500 m and 1750 m above sea-level (Acocks, 1975).

There are two stratigraphic units in the project area:

- The Karoo Dolerite Suite; and
- The *Madzaringwe Formation* of the Karoo Supergroup.

The dolerite rocks of the Karoo Dolerite Suite are plutonic igneous rocks and will not contain fossils (Rubidge, 2013a; Rubidge, 2013b).

The lithologies of the *Madzaringwe Formation* comprise shales, sandstones, mudstones and coals that are interrupted by Karoo-aged intrusive dolerite dykes. Coals are rich in plant material but good quality coals do not preserve the plant fossils. The shales found between the coals and the sandstone outcrops found on the surface do, however, preserve plant fossils. Fossil that could occur include *Glossopteris* leaves, roots and inflorescences, lycopod and sphenophyte stems, ferns, cordaitaleans and early gymnosperms (Bamford, 2012).

During a palaeontological field survey for the proposed Consbrey Colliery for Msobo Coal (Pty) Ltd, fossil plants were identified and recorded in the sandstone ridges of the *Madzaringwe Formation*. The fossil plants that were identified included *Breytenia*. The proposed Consbrey Colliery lies approximately 70 km east of the project area and it is possible for similar fossil finds to occur here. Only one specimen of *Breytenia* was recorded in the 1950s by Edna Plumstead and therefore any subsequent finds of this fossil plant would be highly valued.

Though previous impact assessments have been conducted in the region, none of these identified any significant Stone Age occupation. The majority of the Stone Age recorded sites were limited to scatters of stone tools associated with the Middle Stone Age (MSA) (250 000 to 20 000 years ago (CE)) and Late Stone Age (LSA). The MSA period can be defined by the occurrence of blades and points produced from good quality raw material. Bone tools, shell beads and pendants, as well as the use of ochre are also present. The LSA is dated to approximately 20 000 BP onwards and can be characterised by the presence of microlithic technology and strong signs of ritual practises and complex societies, as well as rock art. Microlithics are produced from very fine-grained material such as quartz or chert, and often used as composite tools where they are hafted onto sticks for arrows (Deacon & Deacon, 1999). The identified occurrences may be associated with the Bushmen who were active in the region. Mr G.P. van Zyl recounts stories of his grandfather shooting Bushmen who were raiding livestock on his farm and the occurrence of rock art in the area (Van Schalkwyk & Pelsner, 2000). Additionally, the extensively recorded presence of Bushmen in areas surrounding present day Breyten and Chrissiesmeer some 80 km to the east attest to the possible affiliation of these Stone Age finds with early Bushmen occupation.

Climatic conditions of this area during the Early Iron Age were not conducive to permanent settlement by the Iron Age farmers, who preferred the savannah area below 1000 m (Maggs, 1974). Permanent settlement of the region by farming communities began during the Late Iron Age from approximately 1500 CE. Generally, these groups preferred to settle along rivers to utilise alluvial soils, more suited for agricultural purposes, and near natural outcrops to provide material for the construction of settlements. Archaeologically, one of the identifiers of Iron Age Sites is stonewalled settlements. Stonewalled settlements occur over much of southern Africa and are the most visible sign of agro-pastoralist settlement. Classification is based on techniques, shapes and internal divisions and within a larger framework that includes the relationships of features (Huffman, 2007, p. 31). Maggs (1976) demonstrates that various settlements types are present within Mpumalanga. Type V

settlements consist of the standard core of enclosures surrounded by additional free-standing structures, particularly huts, around the periphery (Huffman, 2007), but no surrounding wall is present. Corbelled huts may be present with this type of walling, but they are not a diagnostic feature. Type V settlements are the most common and widely distributed settlement pattern on the southern Highveld from the north-eastern Free State into the south east of Mpumalanga around Bethal and Ermelo. Though these settlements have been identified in the region, this part of the Eastern Highveld has not been extensively researched.

Another form of identification is through the material culture associated with archaeological sites, predominantly ceramics. Ceramics shards previously identified in the study area relate to the Moloko Branch of the Urewe Tradition (Huffman & Calabrese, 1996). No specific information was given as to which *facies* the identified shards were affiliated with. The earliest dated *facies* is Icon dating to between 1300 CE and 1500 CE originating from present day Limpopo Province. Based on this time range and distribution, it is unlikely that the identified ceramics are affiliated with the *Icon facies*. Possible affiliation may be with the *Olifantspoort facies*, dating to between 1500 CE and 1700 CE where diagnostic features include multiple bands of fine stamping or narrow incision separated by colour (Huffman, 2007). A diagnostic sample will need to be examined to confirm possible affiliations.

Ethnographically, these Late Iron Age farming communities in the region are suggested to be associated with the Sotho-Tswana and Ndebele. The earliest of these groups to move into the region relate to the BaKgatla (Tswana), who moved onto the Highveld during the 15th and 16th centuries. These groups were followers of Mokgatla where oral traditions suggest that Morolong, Masilo and Mokgatla were the founding fathers of all Tswana ruling nuclei (Makhura, 2007). During the 16th and 17th centuries, the BaKgatla ruling branch experienced internal fission and segmentation in which disputes amongst the sons of Chiefs Tabane, Diale and Matlaisane resulted in the development of numerous social groups, Batlokwa and BaPedi being the most documented offshoots. The Ndebele in the region refers to the migration of the Southern Ndebele (Chiefdoms under Manala and Ndzundza) that moved into the Sotho-Tswana area in the 17th century. Huffman (2007, p. 448) states that of the Ndebele that moved into the region, those that retained the Nguni language were Ndebele, whilst those who adopted Sotho-Tswana are referred to as Koni (Bakone). Huffman (2007, p. 41) links Type V walling with the Koni referring to it as Badfontein Type where its distribution extends over an enormous area along the escarpment south of Lydenburg. Makhura (2007, p. 99) disagrees with Huffman's claim that the Koni are '*Sotho-ised*' Nguni stating that this misinterpretation is based on:

- The phonological resemblance between the terms Koni and Nguni; and
- The social interactions and cultural borrowings between some dispersed groupings of Bakone.

These points do not prove that the Koni were originally Nguni. Rather, *Bokone* means 'northern region' where *Bakone* means 'people of, or from the north'. This grouping was widely spread over the Limpopo and Mpumalanga Provinces emphasised over the north and

north-east regions. Oral traditions suggest Mabula as their common ancestor and where their ancestors used to occupy the 'low country'. The main lineage appear to have fallen under the Matlala ruling lineage at the time of fragmentation in the 15th and 16th centuries where some groups ventured onto the Highveld.

During the 18th and 19th century, the relatively peaceful occupation of the region was disrupted by the events Difeqane (Sotho) / Mfecane (Zulu). Thought to be predominantly associated with the expansion of the Zulu Kingdom, the period is better characterised as the rise of power blocks with a wide range of political centralisation and waves of violent population displacements (Makhura, 2007). For example, the Pedi under King Thulare (1780 CE – 1822 CE) embarked on a process of centralisation in which subordinate communities retained their local independence under some tributary obligations allowing the Pedi to emerge as the strongest power in the north-east. In the wake of the defeat of the Pedi in 1822 by the Ndebele Mzilikazi, and the dispersion of the Sotho in the region, the Highveld of Mpumalanga was left to intrusive groups such as the Swazi.

It was during this period of unrest that Boers (Voortrekkers) started to move into the interior during the latter part of the 19th century. The Boers settled permanently and established farms. Historically, farmers in the vicinity exploited the coal deposits since the 1860s, but purely for domestic use. It was not until the discovery of diamonds in Kimberly in 1867 and gold on the Witwatersrand in 1886 that the exploitation of the coal deposits was for commercial purposes. It was due to this demand that the town Bethal was proclaimed in 1880 (Pistorius, 2008a). It was shortly after this that war erupted between the British Forces and Boers, resulting in the second Anglo-Boer War starting in 1899.

The most notable event to occur in the study area during this period was the Battle of Bakenlaagte on the 30th of October 1901. In retaliation to Colonel Benson's successful night raids on the Boer forces on the Highveld, General Botha ordered all available Boer soldiers to assemble at Bakenlaagte to attack Benson's British No. 3 Flying Column and eradicate the threat of night raids on the Boers (Pakenham, 1979; Willsworth, 2006). After performing farm clearing operations, the No. 3 Flying Column's return to their station was hampered by rainy and misty weather resulting in the spreading of the Column into troops. This provided General Botha with a great advantage when he arrived with his 800 reinforcements. The order was given by Botha for his mounted troop to attack the Columns rear-guard. Outnumbered four to one, the Columns rear guard was annihilated after a 20 minute gun battle. The result of this attack allowed the main Column time to deploy and set up a defensive perimeter under Lt Colonel Wools-Sampson. This deployment prevented the attacking Boer forces from riding on and capturing the main Column as originally planned. The Boers left the field with whatever spoils they could carry and the British carried in the 134 wounded to the entrenched camp during the night (Willsworth, 2006).

After the war, the area focussed on the coal mining industry as a source of cheap energy for gold mining activities on the Witwatersrand. The town of Trichardt, named after the son of famed Voortrekker Louis Trichardt was proclaimed in 1906. This was followed by the proclamation of the town Kinross in 1915. This town acted as the railhead for the line

between the mines in Springs and the coal fields in Breyten. The railway was constructed by Scottish engineers who named the town after Kinross in Scotland. It was not until the 1950s that mines in the area surrounding Kinross began to open, exploiting the coal fields (Pistorius, 2008b).

An agricultural census conducted in 1918 and again in 1993, showed that agriculture was the main form of livelihood across many of the districts in Mpumalanga. The general 20th century landscape may therefore be characterised as a large-scale agricultural landscape. This is confirmed through a review of historical cartographic sources.

Previous studies within the surrounding area (Huffman & Calabrese, 1997; Van Schalkwyk, 2003; Van Schalkwyk, 2003; Fourie, 2007; Murimbika, 2007) primarily identified sites associated with these types of settlements from the early 20th century. Heritage resources mainly include homesteads and burial grounds and graves. Historical layering (i.e. a chronological review of available historical maps) indicated that infrastructure associated with the agricultural economy within the Syferfontein Expansion Project Area was well established and present during the 1950s.

4.3 Summary of Identified Heritage Resources (EMP – 2010)

A heritage assessment was conducted in 2000 by the National Cultural History Museum and included in the Syferfontein Mine EMP in 2010. During the survey, a few Stone Age artefacts were identified. These artefacts were not considered to have any primary context and therefore were interpreted to have low significance value.

No Early Iron Age sites were identified. The Late Iron Age sites found here conform to those identified in the literature for the Southern Highveld area (former southern Transvaal, northern Orange Free State) as Type V sites. As the soil is mostly turf, Iron Age settlement usually took place on the various dolerite outcrops. The added benefit of choosing these locations was that it was located at the source of building material used in constructing the settlements. One such site shows interesting features as the living units were actually excavated to obtain enough building material for the surrounding walls.

A few of the farmsteads dating to early part of this century were identified as possibly having historical-architectural significance. A number of abandoned homesteads are located in the areas that were investigated. These seem to belong to farm labourers and were all abandoned within the last few years. They are therefore not viewed to be of cultural or historical significance. However, some graves are located in the vicinity of the homesteads and it is possible that more graves will be located nearby.

5 SOURCES OF RISK

Sources of risk to potential heritage resources may occur during the construction, operational and decommissioning phases of the project. Sources of risk during the three phases of the proposed project were primarily identified in terms of the project details discussed in Section 2.1 on Page 1.

5.1 Construction Phase

During the construction phase of the project, the only Listed Activity is the upgrade of the existing 22 kV powerline to a 132 kV powerline on the existing mining right area:

- The increased presence of workers required for the upgrade of the 22 kV powerline to a 132 kV powerline during the Construction Phase may result in intentional / unintentional damage to heritage resources.

This activity was identified as a short term risk that can be managed through implementing a Chance Find Procedure. Heritage studies were completed in support of the EMP (2010) for the existing Syferfontein Mine and therefore this activity will not require a HIA.

5.2 Operational Phase

No sources of risk were identified during the operational phase as this is an existing powerline.

5.3 Decommissioning Phase

During the decommissioning phase, there are negligible risks for heritage resources. However, if the operational period is longer than 60 years, any older than 60 years may be considered heritage resources. If this is the case, a HIA inclusive of a Built Environment Assessment may need to be conducted to assess the significance of the structures.

5.4 Cumulative Impacts

Cumulative impacts on heritage resources include the following:

- An increase in other developments such as the Kriel South Project, the Syferfontein Colliery and the Twistdraai Colliery will create an increase in human presence (i.e. pedestrian and vehicle traffic) within the area which may place added stress on heritage resources within the surrounding areas.

6 DISCUSSION OF FINDINGS

The current cultural landscape is primarily agrarian comprising mainly maize and vegetable crop lands and grazing. The landscape is gentle with low-lying hills interspersed with streams. Outcrops are generally not present

Based on the information contained in Section 4, it is evident that diverse heritage resources are expected to occur in the region. Tangible resources include resources generally protected under the NHRA in terms of:

- Section 34: historical structures older than 60 years;
- Section 35: archaeological and palaeontological resources; and
- Section 36: burial grounds and graves.

Sources of risk to heritage resources that may be present are limited to the immediate surrounding environment of the powerline that is scheduled to be upgraded from a 22 kV powerline to a 132 kV powerline. The sources of risk are short-term and can be managed by implementing Change Find Procedures. Therefore, a Heritage Impact Assessment (HIA) is not required for this activity.

7 RECOMMENDATIONS

During the construction phase of the project, infrastructure that will be upgraded includes the existing 22 kV powerline on the current mining right area. The existing 22 kV powerline will be upgraded to a 132 kV powerline. The increased presence of workers required for the upgrade of the 22 kV powerline to a 132 kV powerline during the construction phase may result in intentional / unintentional damage to heritage resources however this is a short term risk that can be managed through the implementation of Chance Find Procedures. It is therefore recommended that this aspect of the project be wholly exempted from a HIA including components such as:

- Built Environment Assessment;
- Archaeological Impact Assessment;
- Phase 1 Palaeontological Assessment; and
- Burial Grounds and Graves Assessment; and
- Visual Impact Assessment.

In the event that any heritage resources are identified, the client should adopt appropriate Chance Find Procedures that can be completed on request.

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Appendix A: Curriculum Vita

SHAHZAADEE KARODIA KHAN

Mrs Shahzaadee Karodia Khan

Assistant Heritage Consultant: Palaeontological Specialist

Social Science Department

Digby Wells Environmental

1 EDUCATION

- 2006 BA Anthropology & Archaeology, University of the Witwatersrand
- 2007 BSc Honours. Palaeontology, University of the Witwatersrand
 - Courses included: comparative vertebrate anatomy; cladistics analysis; primate and human evolution; Karoo biostratigraphy; dinosaurs and the origins of birds; Cenozoic mammals; taphonomy; and palaeoecology
 - Honours Thesis: "Encephalization and its relationship to orbit size in modern humans and a small bodied population from Palau, Micronesia".
- 2012 MSc Archaeology, University of the Witwatersrand
 - MSc Thesis: "Naturally mummified human remains from Historic Cave, Limpopo, South Africa".
 - Skills obtained during MSc included: stereo microscopy; light microscopy; scanning electron microscopy; and histology

2 LANGUAGE SKILLS

- English (read, write, speak)
- Currently completing French training for beginners

3 EMPLOYMENT

2012:	Archaeology consultant, Digby Wells Environmental
April 2012 – June 2012:	External archaeology research consultant, EcoAfrica
April 2011 – November 2011:	Archaeology intern, University of Pretoria
2007 – 2008:	Palaeontology collections assistant, BPI University of the Witwatersrand
2006 – 2007:	Tour guide, Sterkfontein Caves

4 EXPERIENCE

- Archaeology Field School in Klipriviersberg with Dr Karim Sadr, University of the Witwatersrand
- Archaeology Field School in Swartkrans and Maropeng with Dr Kathy Kuman, University of the Witwatersrand
- Archaeology Field School in Ottosdaal with Dr Thembi Russell, University of the Witwatersrand
- Palaeontology Field School in the Karoo with Professor Bruce Rubidge, University of the Witwatersrand
- Palaeontology Field School in Gladysvale with Professor Lee Berger, University of the Witwatersrand
- Palaeontology Field School in Wonderkrater with Dr Lucinda Backwell, University of the Witwatersrand

5 PROJECT EXPERIENCE

Project Title	Client	Role
Heritage Statement for the Central Basin, Witwatersrand AMD Project	AECOM	Heritage Specialist & Report Writer
Heritage Impact Assessment for the Witwatersrand Gold Fields Acid Mine Drainage Project (Western Basin)	AECOM	Heritage Specialist & Report Writer
Heritage Statement for the Dalyshope Project: Phase 1 NEMA Application, Lephalale, Limpopo Province	Anglo American Thermal Coal	Heritage Specialist & Report Writer
Archaeological Watching Brief on Access Road	Bokoni Platinum Mine	Heritage Specialist & Report Writer
Heritage Impact Assessment for the Proposed Bokoni Klipfontein Opencast Mine Project, Klipfontein 465 KS, Sekhukhune, Limpopo Province	Bokoni Platinum Mine	Heritage Specialist & Report Writer
Heritage Statement for Rhodium Reef Limited Platinum Operation, Limpopo Province	EastPlats Group	Palaeontological Specialist
Heritage Screening Assessment for the Kangra Coal Project	ERM	Palaeontological Specialist
Heritage Impact Assessment for the Kangra Coal Project	ERM	Heritage Specialist & Report Writer
Heritage Statement for the Thabametsi Project, Lephalale, Limpopo Province	Exxaro Coal	Heritage Specialist & Report Writer
Heritage Impact Assessment for the Proposed Thabametsi Project, Lephalale, Limpopo Province	Exxaro Coal	Heritage Specialist & Report Writer
Heritage Statement for Eskom Transmission Division – Roodepoort Strengthening Project	Fourth Element	Heritage Specialist & Report Writer

Project Title	Client	Role
Phase 1 Heritage Impact Assessment of the Proposed Geluksdal Tailings Storage Facility and Pipeline	Gold One International Limited	Heritage Specialist & Report Writer
Heritage Statement Report for the Kosmosdal Sewer Pipe Bridge Upgrade	Iliso Consulting	Palaeontological Specialist
Heritage Statement Report for the Wilgespruit Bridge Upgrade	Iliso Consulting	Palaeontological Specialist
Heritage Statement for Atcom And Tweefontein Dragline Relocation Project	Jones and Wagener Consulting Civil Engineers	Palaeontological Specialist
Heritage Statement for the Consbrey Colliery	Msobo Coal	Heritage Specialist & Report Writer
Heritage Statement for the Harwar Colliery	Msobo Coal	Heritage Specialist & Report Writer
Heritage Impact Assessment for the Consbrey Colliery Project, Mpumalanga Province	Msobo Coal	Palaeontological Specialist
Heritage Impact Assessment for the Harwar Colliery Project, Mpumalanga Province	Msobo Coal	Heritage Specialist & Report Writer
Heritage Statement for the Waterberg Prospecting Rights Application, Blouberg, Limpopo Province	Platinum Group Metals	Heritage Specialist & Report Writer
Heritage Statement for the Platreef Platinum Project, Mokopane, Limpopo Province	Platreef Resources	Heritage Specialist & Report Writer
Heritage Statement for the Rhodium Reef Limited Platinum Operation, Limpopo Province	Rhodium Reefs	Palaeontological Specialist
Heritage Statement for the Vedanta IPP Project, Lephalale, Limpopo Province	Vedanta Zinc International	Heritage Specialist & Report Writer

Project Title	Client	Role
Heritage Statement for the Zandbaken Coal Mine Project, Standerton, Mpumalanga Province	Xstrata Coal South Africa	Heritage Specialist & Report Writer

6 PROFESSIONAL AFFILIATIONS

- Association of Southern African Professional Archaeologists (ASAPA)
- Geological Survey of South Africa (GSSA)
- Golden Key Society
- Palaeontological Society of Southern Africa (PSSA)
- South African Archaeology Society (SAAS)
- Society of Africanist Archaeologists (SAfA)
- South African Society for Amateur Palaeontologists (SASAP)

JOHAN NEL

Mr Johan Nel

Unit manager: Heritage Resources Management

Social Sciences

Digby Wells Environmental

1 EDUCATION

Date	Degree(s) or Diploma(s) obtained	Institution
2014	Integrated Heritage Resources Management Certificate, NQF Level 6	Rhodes University
2002	BA (Honours) (Archaeology)	University of Pretoria
2001	BA	University of Pretoria
1997	Matric with exemption	Brandwag Hoërskool

2 LANGUAGE SKILLS

Language	Speaking	Writing	Reading
English	Excellent	Excellent	Excellent
Afrikaans	Excellent	Excellent	Excellent

3 EMPLOYMENT

Period	Company	Title/position
09/2011 to present	Digby Wells Environmental	Manager: Heritage Resources Management unit
05/2010-2011	Digby Wells Environmental	Archaeologist
10/2005-05/2010	Archaic Heritage Project Management	Manager and co-owner
2003-2007		Freelance archaeologist
	Rock Art Mapping Project	Resident archaeologist

2002-2003	Department of Anatomy, University of Pretoria	Special assistant: Anthropology
2001-2002	Department of Anatomy, University of Pretoria	Technical assistant
1999-2001	National Cultural History Museum & Department of Anthropology and Archaeology, UP	Assistant: Mapungubwe Project,

4 EXPERIENCE

Johan Nel has 13 years of combined experience in the field of cultural heritage resources management (HRM) including archaeological and heritage assessments, grave relocation, social consultation and mitigation of archaeological sites. I have gained experience both within urban settings and remote rural landscapes. Since 2010 I have been actively involved in environmental management that has allowed me to investigate and implement the integration of heritage resources management into environmental impact assessments (EIA). Many of the projects since have required compliance with International Finance Corporation (IFC) requirements and other World Bank standards. This exposure has allowed me to develop and implement a HRM approach that is founded on international best practice and leading international conservation bodies such as UNESCO and ICOMOS. I have worked in most South African Provinces, as well as Swaziland, the Democratic Republic of the Congo, Liberia and Sierra Leone. I am fluent in English and Afrikaans, with excellent writing and research skills.

5 PROFESSIONAL REGISTRATION

Position	Professional Body	Registration Number
Council member	Association for Southern African Professional Archaeologists (ASAPA); ASAPA Cultural Resources Management (CRM) section	095
Member	International Association of Impact Assessors (IAIA)	N/A
Member	International Council on Monuments and Sites (ICOMOS)	
Member	Society for Africanist Archaeologists (SAfA)	N/A

6 PUBLICATIONS AND CONFERENCE PAPERS

Authors and Year	Title	Published in/presented at
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Nel, J. (2001)	Cycles of Initiation in Traditional South African Cultures.	South African Encyclopaedia (MWEB).
Nel, J. 2001..	Social Consultation: Networking Human Remains and a Social Consultation Case Study	Research poster presentations at the. Bi-annual Conference (SA3) Association of Southern African Professional Archaeologists the National Museum, Cape Town
Nel, J. 2002.	Collections policy for the WG de Haas Anatomy museum and associated Collections.	Unpublished. Department of Anatomy, School of Medicine: University of Pretoria.
Nel, J. 2004..	Research and design of exhibition for Eloff Belting and Equipment CC	Institute of Quarrying 35th Conference and Exhibition on 24 – 27 March 2004
Nel, J. 2004.	Ritual and Symbolism in Archaeology, Does it exist?	Research paper presented at the Bi-annual Conference (SA3) Association of Southern African Professional Archaeologists: Kimberley
Nel, J & Tiley, S. 2004.	The Archaeology of Mapungubwe: a World Heritage Site in the Central Limpopo Valley, Republic of South Africa.	Archaeology World Report, (1) United Kingdom p.14-22.
Nel, J. 2007.	The Railway Code: Gautrain, NZASM and Heritage.	Public lecture for the South African Archaeological Society, Transvaal Branch: Roedean School, Parktown.
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Nel, J. 2011.	'Gods, Graves and Scholars' returning Mapungubwe human remains to their resting place.' In: Mapungubwe Remembered.	University of Pretoria commemorative publication: Johannesburg: Chris van Rensburg Publishers.
Nel, J. 2012	HIAs for EAPs.	. Paper presented at IAIA annual conference: Somerset West.

Nel, J. 2013.	The Matrix: A proposed method to evaluate significance of, and change to, heritage resources.	Paper presented at the 2013 ASAPA Biennial conference: Gaborone, Botswana.
Nel, J. 2013	HRM and EMS: Uncomfortable fit or separate process.	. Paper presented at the 2013 ASAPA Biennial conference: Gaborone, Botswana.

7 PROJECT EXPERIENCE

- 2003-2004. Freelance consulting archaeologist. Archaeological Impact Assessment. Roodt&Roodt. RSA. Limpopo, Mpumalanga, Northwest. Project manager/specialist
- 2004-2005. Resident archaeologist Rock Art Mapping Project. Archaeological surveys. UKZN. RSA. Didima, KZN. Specialist
- 2006. Exploratory excavation of an unknown cemetery at Du Preezhoek, Fountains Valley, Portion 383 of the farm Elandspoort 357 JR, Pretoria, Gauteng. Section 36 Grave relocation. Bombela Civil Joint Venture. RSA. Pretoria, Gauteng. Specialist
- 2006. Report on exhumation, relocation and re-internment of 49 graves on Portion 10 of the farm Tygervallei 334 JR, Kungwini Municipality, Gauteng. Section 36 Grave relocation. D. Georgiades East Farm (Pty) Ltd. RSA. Kungwini, Gauteng. Specialist
- 2006. Social consultation for Elawini Lifestyle Estate Grave Relocation. Section 36 Consultation. PGS (Pty) Ltd. RSA. Nelspruit, Mpumalanga. Project manager/specialist
- 2007-2008. Research report on the remains of kings Mampuru I and Nyabela. Research report. National Department of Arts and Culture. RSA. Graafwater, Western Cape. Specialist
- 2007. Summary report: Old dump on premises of the new Head Offices, Department of Foreign Affairs, Pretoria, Gauteng. Archaeological Impact Assessment. Imbumba-Aganang D & C Joint Venture. RSA. Pretoria, Gauteng. Project manager/specialist
- 2007. Final consolidated Heritage Impact Assessment report: Proposed development of high-cost housing and filling station, Portion of the farm Mooiplaats 147 JT. Heritage Impact Assessment. Go-Enviroscience. RSA. Schoemanskloof, Mpumalanga. Project manager/specialist
- 2007. Final consolidated report: Watching Brief on Soutpansberg Road Site for the new Head Offices of the Department of Foreign Affairs, Pretoria Gauteng. Section 35 Phase 2 Archaeological Mitigation. Imbumba-Aganang D & C Joint Venture. RSA. Pretoria, Gauteng. Project manager/specialist
- 2007. Recommendation of Exemption: Above ground SASOL fuel storage tanks located at grain silos in localities in the Eastern Free State. Request for Exemption. SASOL (Pty) Ltd. RSA. Eastern Free State. Project manager/specialist

- 2007. Final consolidated report: Phase 2 test excavations ascertaining the existence of alleged mass graves, Tlhabane West, Extension 2, Rustenburg, Northwest Province. Section 36 Test excavations. Bigen Africa Consulting Engineers. RSA. Rustenburg, Northwest. Project manager/specialist
- 2007. Archaeological investigation of Old Johannesburg Fort. Section 35 Phase 2 Archaeological Mitigation. JDA. RSA. Johannesburg, Gauteng. Project manager/specialist
- 2007. Social consultation for Motaganeng Residential Development Grave Relocation. Section 36 Consultation. PGS (Pty) Ltd. RSA. Burgersfort, Limpopo. Project manager/specialist
- 2007. Repatriation of Mapungubwe Human Remains. Repatriation. DEAT. RSA. Mapungubwe, Limpopo. Project manager/specialist
- 2007. Research report on cultural symbols. Research report. Ministry of Intelligence Services. RSA. Graafwater, Western Cape. Project manager/specialist
- 2008. Phase 1 Heritage and Archaeological Impact Assessment: Proposed establishment of an access road between Sapekoe Drive and Koedoe Street, Erf 3366 (Extension 22) and the Remainder of Erf 430 (Extension 4). Archaeological Impact Assessment. AGES (Polokwane). RSA. Tzaneen, Limpopo. Specialist
- 2008. Heritage Impact Assessment for proposed water pipeline routes, Mogalakwena District, Limpopo Province. Heritage Statement. AGES (Polokwane). RSA. Mogalakwena District Municipality, Limpopo. Specialist
- 2008. Final report: Heritage resources Scoping survey and preliminary assessment for the Transnet Freight Line EIA, Eastern Cape and Northern Cape. Heritage Statement. Transnet. RSA. Eastern Cape; Northern Cape. Specialist
- 2008. Heritage resources scoping survey and preliminary assessment: Proposed establishment of township on Portion 28 of the farm Kennedy's Vale 362 KT, Steelpoort, Limpopo Province. Heritage Statement. AGES (Polokwane). RSA. Steelpoort, Limpopo. Specialist
- 2008. Report on skeletal material found at Pier 30, R21 Jones Street offramp, Kempton Park. Heritage Statement. Bombela Civil Joint Venture. RSA. Kempton Park, Gauteng. Specialist
- 2008. Social consultation for Smoky Hills Platinum Mine Grave Relocation. Section 36 Consultation. PGS (Pty) Ltd. RSA. Maandagshoek, Limpopo. Specialist
- 2008. Southstock Collieries Grave Relocation. Section 36 Grave relocation. Doves Funerals, Witbank. RSA. Southstock, Mpumalanga. Specialist
- 2008. Social consultation for Zondagskraal Coal Mine Grave Relocation. Section 36 Consultation. PGS (Pty) Ltd. RSA. Zondagskraal, Mpumalanga. Specialist

- 2009. Proposed road upgrade of existing, and construction of new roads in Burgersfort, Limpopo Province. Archaeological Impact Assessment. AGES (Polokwane). RSA. Burgersfort, Limpopo. Specialist
- 2009. Randwater Vlakfontein-Mamelodi water pipeline survey. Heritage Impact Assessment. Archaeology Africa cc. RSA. Pretoria, Gauteng. Specialist
- 2009. Van Reenen Eco-Agri Development Project. Heritage Impact Assessment. Go-Enviroscience. RSA. Vanreenen, Freestate/KwaZulu-Natal. Specialist
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- 2009. Heritage Impact Assessment for conversion of PR to MRA. Heritage Impact Assessment. Georock Environmental. RSA. Musina, Limpopo. Specialist
- 2010-2012. Kibali Gold Mine Grave Relocation. International grave relocation project. Randgold Resources. DRC. Watsa, Province Orientale. Specialist
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- 2010. Heritage scoping survey for the amendment of the existing City Deep EMP for the reclamation of Slimes Dam 3/L/42 and 3/L/40. Heritage Statement. Crown Gold Recoveries. RSA. Johannesburg, Gauteng. Specialist
- 2010. Letter of Recommendation of Exemption for the proposed Crown Gold Recoveries (Pty) Ltd Pipeline Project. Request for Exemption. Crown Gold Recoveries. RSA. Johannesburg, Gauteng. Specialist
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- 2010. Heritage Impact Assessment for Temo Coal EIA. Heritage Impact Assessment. Temo Coal. RSA. Steenbokpan, Limpopo. Specialist
- 2011-2012. Platreef Platinum Mine Burial Grounds and Graves Census. Burial Grounds and Graves Census. Platreef (Pty) Ltd. RSA. Mokopane, Limpopo. Project manager/specialist
- 2011. Addendum to Phase 1 Archaeological Impact Assessment for the Boikarabelo Coal Mine (proposed railway link from the farm Kruishout to the farm Buffelsjagt). Archaeological Impact Assessment. Resources Generation. RSA. Lephalale, Limpopo. Project manager/specialist

- 2011. Heritage Impact Assessment for Koidu Diamond Mine. Heritage Impact Assessment. Koidu . Sierra Leone. Koidu, . Project manager/specialist
- 2011. Mitigation of an archaeological metalworking site for Koidu Diamond Mine. Archaeological mitigation. Koidu . Sierra Leone. Koidu, . Project manager/specialist
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- 2012. Phase 1 Archaeological Impact Assessment for MBET Pipeline. Archaeological Impact Assessment. Resources Generation. RSA. Lephalale, Limpopo. Project manager/specialist
- 2012. Heritage Impact Assessment for the Witwatersrand Goldfields Acid Mine Drainage Project (Western Basin). Heritage Impact Assessment. BKS (PTY) LTD. RSA. Johannesburg, Gauteng. Project manager/specialist
- 2012. Phase 1 Heritage Impact Assessment of the proposed Geluksdal Tailings Storage Facility and Pipeline Infrastructure. Heritage Impact Assessment. Gold One. RSA. Johannesburg, Gauteng. Project manager/specialist
- 2012. Heritage Statement for the Central Basin, Witwatersrand AMD Project. Heritage Statement. BKS (PTY) LTD. RSA. Johannesburg, Gauteng. Project manager/specialist
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Appendix B: Site List of Identified Heritage Resources in the Project and Study Areas

Site List of Identified Heritage Resources in the Project and Study Areas

Site ID	Site Type	Description	South	East	Reference
S.34-001	S.34	An old house.	26°22'15.91"	29°06'03.67"	Heritage Screening Assessment
S.36-001	S.36	One informal grave and one formal grave.	26°22'10.74"	29°05'59.32"	Heritage Screening Assessment
S.36-002	S.36	A formal burial ground next to an initiation site.	26°23'23.17"	29°06'08.67"	Heritage Screening Assessment
S.36-003	S.36	A formal burial ground.	26°24'28.69"	29°05'37.43"	Heritage Screening Assessment
S.34-002	S.34	A <i>werf</i> comprising an old house, stable, work shed.	26°25'44.12"	29°08'12.02"	Heritage Screening Assessment
S.36-004	S.36	Two formal graves.	26°25'32.57"	29°08'46.44"	Heritage Screening Assessment
S.34-003	S.34	A <i>werf</i> comprising an old house, stable, work shed with new additions and modifications.	26°23'00.23"	29°10'02.20"	Heritage Screening Assessment
S.34-004	S.34	A <i>werf</i> comprising an old house, stable, work shed with new additions and modifications.	26°26'28.49"	29°09'08.95"	Heritage Screening Assessment
Van Schalkwyk-2007/1	S.35 & S.36	One grave with headstone and inscription dating to 1928. This feature is located amongst the circular stone structures possibly dating to the Late Iron Age. The Late Iron Age walling probably dates to the last 200 years and can possibly be related to the Sotho/Tswana.	26°26'52.08"	29°16'08.00"	Van Schalkwyk, 2007
Van Schalkwyk-2007/2	S.36	Four graves marked with cairns. Just east of that, there are a number of circular stone structures that might be the foundations of old houses. These probably date to the early art of the century and can be related to the graves.	26°26'51.00"	29°16'13.01"	Van Schalkwyk, 2007
Van Schalkwyk-2007/3	S.34	Circular structures of stone. Possibly the foundations of houses dating to the middle part of this century.	26°26'46.00"	29°16'23.02"	Van Schalkwyk, 2007
Van Schalkwyk-2007/4	S.36	An informal cemetery containing about 50 graves, of which five have headstones.	26°26'28.00"	29°16'13.01"	Van Schalkwyk, 2007
Van Schalkwyk-2007/5	S.34	Circular stone structures of stone. Possibly the foundations of houses dating to the middle part of this century. These can probably be related to the graves in Van Schalkwyk-2007/4.	26°26'34.01"	29°16'32.99"	Van Schalkwyk, 2007
Van Schalkwyk-2007/6	S.35	Circular structures of stone, typical of Late Iron Age structures. The Late Iron Age walling probably dates to the last 200 years and can possibly be related to the Sotho/Tswana speaking people.	26°26'44.02"	29°16'14.99"	Van Schalkwyk, 2007
Van Schalkwyk-2007/7	S.35	Circular structures of stone, typical of Late Iron Age structures. The Late Iron Age walling probably dates to the last 200 years and can possibly be related to the Sotho/Tswana speaking people.	26°26'57.98"	29°15'41.00"	Van Schalkwyk, 2007
Van Schalkwyk-2007/8	S.34	An old homestead, with a number of other structures, possibly labourer houses, in the vicinity. Not much information would be gained from this structure.	26°27'09.00"	29°15'40.00"	Van Schalkwyk, 2007
Van Schalkwyk-2007/9	S.35	Circular structure of stone, typical of Late Iron Age structures. The Late Iron Age walling probably dates to the last 200 years and can possibly be related to the Sotho/Tswana speaking people.	26°26'43.01"	29°15'47.02"	Van Schalkwyk, 2007
Van Schalkwyk-2007/10	S.36	An informal cemetery (although part of an old fence is still in place) containing about four graves marked with cairns.	26°28'17.00"	29°14'43.01"	Van Schalkwyk, 2007
Van Schalkwyk-2007/11	S.36	An informal cemetery with about five graves. One of these has a headstone dating to 1980.	26°27'53.02"	29°18'56.02"	Van Schalkwyk, 2007
Van Schalkwyk-2007/12	S.35	A concentration of rocks that include a lower grindstone.	26°27'09.00"	29°19'28.99"	Van Schalkwyk, 2007
Van Schalkwyk-2007/13	S.34	Remains of houses occupied by farm labourers.	26°28'10.99"	29°20'10.00"	Van Schalkwyk, 2007
Van Schalkwyk-2007/14	S.36	One grave with a headstone and a low wall of stone built around it.	26°28'05.02"	29°18'29.99"	Van Schalkwyk, 2007
Van Schalkwyk-2007/15	S.34	Remains of houses occupied by farm labourers.	26°28'05.02"	29°18'24.01"	Van Schalkwyk, 2007

Site ID	Site Type	Description	South	East	Reference
Van Schalkwyk-2007/16	S.35	Stone walling	26°27'28.01"	29°15'00.00"	Van Schalkwyk, 2007
Van Schalkwyk-2007/17	S.36	An informal cemetery with about five graves, one of which has a headstone.	26°27'23.00"	29°16'35.00"	Van Schalkwyk, 2007
Van Schalkwyk-2007/18	S.34	An old farmstead with outbuildings. Currently occupied by farm labourers. It seems to be older than 50 years and is therefore protected by the National Monuments Act.	26°27'25.99"	29°16'43.00"	Van Schalkwyk, 2007
Van Schalkwyk-2007/19	S.35	A site with extensive stone walling.	26°27'23.62"	29°21'55.40"	Van Schalkwyk, 2007
Van Schalkwyk-2007/20	S.35	Five concentrations of soil with high ash content. Small sections of stone walling to one side. Grindstone in vicinity.	26°27'11.20"	29°22'31.33"	Van Schalkwyk, 2007
Van Schalkwyk-2007/21	S.36	An informal cemetery containing about ten graves, of which three have headstones. Inscriptions are basically illegible.	26°26'48.98"	29°12'51.01"	Van Schalkwyk, 2007
Van Schalkwyk-2007/22	S.34	Ruins of and old structure, possibly homestead.	26°26'48.98"	29°12'56.99"	Van Schalkwyk, 2007
Van Schalkwyk-2007/23	S.36	Possible graves marked by cairns.	26°26'42.00"	29°13'17.00"	Van Schalkwyk, 2007
Van Schalkwyk-2007/24	S.34	Remains of old farmstead. There is a possibility of graves in the area.	26°27'09.00"	29°13'18.98"	Van Schalkwyk, 2007
Van Schalkwyk-2007/25	S.36	An informal cemetery with about 80 graves. Most are marked with cairns and eight have headstones.	26°26'43.01"	29°14'04.99"	Van Schalkwyk, 2007
Van Schalkwyk-2007/26	S.35	Circular structures of stone, typical of Late Iron Age structures. The Late Iron Age walling probably dates to the last 200 years and can possibly be related to the Sotho/Tswana speaking people.	26°27'08.60"	29°13'52.90"	Van Schalkwyk, 2007
Van Schalkwyk-2007/27	S.35	Circular structures of stone, typical of Late Iron Age structures. The Late Iron Age walling probably dates to the last 200 years and can possibly be related to the Sotho/Tswana speaking people.	26°26'52.66"	29°16'06.74"	Van Schalkwyk, 2007
Van Schalkwyk-2007/28	S.36	Approximately 20 graves of farm labourers, most without names.	26°28'49.08"	29°22'15.85"	Van Schalkwyk, 2007
Van Schalkwyk-2007/29	S.36	An informal cemetery with about 30 graves. Most are marked with cairns and a few have headstones.	26°28'54.77"	29°22'09.91"	Van Schalkwyk, 2007
Van Schalkwyk-2007/30	S.34	An old farmhouse. Stylistically it dates to the 1920s, but can even be older.	26°27'18.07"	29°21'26.10"	Van Schalkwyk, 2007
Van Schalkwyk-2007/31	S.34	Old barns, sheds and stables, built in same style and bricks.	26°30'02.56"	29°17'54.20"	Van Schalkwyk, 2007
1996-SAHRA-0018/1	S.34	A Police Station Complex with 13 buildings dating back to 1902.	26°16'05.00"	29°14'14.40"	Van Schalkwyk et al. 1996
1996-SAHRA-0040/1	S.34	A European farm complex with a late 19th century house (the occupant dates house to 1896).	26°13'36.00"	29°17'56.00"	Huffman & Calabrese, 1996
1996-SAHRA-0040/2	S.34 & S.36	A labourers homestead with two, possibly three graves.	26°14'02.00"	29°18'13.00"	Huffman & Calabrese, 1996
1997-SAHRA-0051/2629AA1	S.36	Informal cemetery consisting of approximately 15 graves, five of which have headstones	26°11'54.20"	29°10'26.90"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA2	S.36	Approximately 25 graves, four of which have headstones	26°11'43.50"	29°10'32.30"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA3	S.34	Ruins of old homestead, demolished down to foundation level. Refuse midden containing recent artefacts occur.	26°11'43.90"	29°10'34.70"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA4	S.36	A single grave with headstone. Anna Schalekamp died February 1901.	26°11'42.40"	29°10'43.70"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA5	S.34	Ruin of an old farm labourer homestead, demolished down to foundation level. Refuse midden containing recent artefacts occur.	26°11'54.20"	29°10'40.20"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA6	S.34	An old farmstead outbuilding, built from blocks and ferricrete.	26°12'16.50"	29°09'24.40"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA7	S.36	Location of six possible graves.	26°12'16.50"	29°09'24.40"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA8	S.36	Headstone of grave, three possible stone covered graves.	26°12'13.90"	29°09'24.90"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA9	S.34	Remains of an old structure built of sandstone.	26°12'40.40"	29°07'55.00"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA10	S.34	Concrete bases on which machinery was mounted.	26°13'08.20"	29°08'37.50"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA11	S.34	Slabs of concrete as foundations - relates to mining activities	26°13'26.30"	29°08'36.50"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA12	S.34	Two farm labourer homesteads	26°13'32.50"	29°08'25.80"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA13	S.36	Informal cemetery consisting of approximately 30 graves, 15 of which have headstones	26°14'05.60"	29°08'17.50"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA14	S.36	Single grave with headstone.	26°12'44.90"	29°07'34.40"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA15	S.36	Cemetery containing more than 25 graves, 13 of which have headstones	26°11'39.20"	29°09'14.20"	Van Schalkwyk , 1997

Site ID	Site Type	Description	South	East	Reference
1997-SAHRA-0051/2629AA16	S.36	Cemetery containing more than 20 graves, with approximately 5 with headstones. The last dated headstone dated to 1950.	26°12'35.10"	29°09'20.80"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA17	S.34	A number of old homesteads, possibly originating as farm labourer houses.	26°12'04.40"	29°10'15.30"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA18	S.36	Cemetery containing approximately 12 graves, of which 4 have headstones.	26°12'04.40"	29°10'31.90"	Van Schalkwyk , 1997
1997-SAHRA-0051/2629AA19	S.36	Informal cemetery consisting of more than 50 graves, of which roughly 10 have headstones	26°10'36.00"	29°10'19.50"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC3	S.36	Informal cemetery containing approximately 10 graves, three of which have headstones.	26°26'49.20"	29°12'51.20"	Van Schalkwyk , 1998
1998-SAHRA-0029/2629AC4	S.34	Ruins of old structure, possibly homestead	26°26'49.40"	29°12'57.20"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC5	S.36	Informal cemetery, containing approximately 50 graves.	26°25'23.20"	29°10'53.90"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC6	S.36	Informal cemetery, containing approximately 20 graves.	26°22'38.90"	29°11'31.20"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC7	S.34	Number of privet trees planted in a rectangular format	26°22'39.90"	29°11'33.30"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC8	S.34	Old rubbish dump	26°22'30.80"	29°11'30.70"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC9	S.36	Informal cemetery containing approximately 60 graves, some with headstones.	26°22'23.90"	29°13'13.50"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC10	S.36	Informal cemetery containing approximately 10 graves.	26°22'18.50"	29°12'19.60"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC11	S.36	Informal cemetery containing approximately 5 graves, one with a headstone	26°24'35.40"	29°14'50.80"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC12	S.36	Formal cemetery, three, possibly more - le Roux family	26°23'50.40"	29°11'52.30"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC13	S.36	Informal cemetery containing approximately 25 graves	26°23'10.70"	29°11'56.80"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC14	S.34	Rudimentary stone walling amongst outcrop.	26°23'27.00"	29°10'58.40"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC15	S.36	Informal cemetery containing approximately 25 graves	26°23'26.40"	29°11'43.80"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC16	S.36	Formal cemetery, six graves - Smit and Zietsman family	26°22'56.80"	29°11'57.10"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC17	S.36	Possible graves, marked by cairns	26°26'41.70"	29°13'16.80"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC18	S.34	Remains of old farmstead, possibility of graves in the area	26°27'09.20"	29°13'18.80"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AC19	S.36	Informal cemetery with approximately 80 graves, 8 of which have headstones	26°26'43.00"	29°14'04.90"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD3	S.34	Old farmstead	26°24'26.80"	29°15'49.70"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD4	S.36	Informal cemetery consisting of 7 graves - Cilliers family	26°23'47.50"	29°15'27.10"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD5	S.34	Ruins of old structure, possibly homestead	26°23'44.80"	29°15'23.10"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD6	S.36	Formal cemetery with 10 graves - Erasmus family	26°24'40.90"	29°19'18.00"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD7	S.36	Formal cemetery containing approximately 100 graves, some with headstones. Majority have been relocated during Sasol Mining developments.	26°24'49.30"	29°15'12.50"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD8	S.35 & S.36	One grave with headstone dating to 1928. Stone walled structure affiliated with the LIA	26°26'51.60"	29°16'07.60"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD9	S.36	Four graves marked with cairns.	26°26'51.20"	29°16'12.50"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD10	S.34	Circular structures of stone dating to middle part of the 20th century	26°26'45.50"	29°16'22.90"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD11	S.36	Informal cemetery containing approximately 50 graves, five of which have headstones.	26°26'28.00"	29°16'30.60"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD12	S.34	Circular structures of stone dating to middle part of the 20th century	26°26'34.40"	29°16'32.70"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD13	S.35	Circular structures of stone typical of the LIA	26°26'44.20"	29°16'14.80"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD14	S.35	Circular structures of stone typical of the LIA	26°26'57.80"	29°15'40.50"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD15	S.34	Old homestead, with a number of other structures, possibly labourer houses, in the vicinity. Not much information would be gained from this structure.	26°27'09.20"	29°15'39.70"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD16	S.35	Circular structures of stone typical of the LIA	26°26'42.70"	29°15'47.10"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD17	S.34 & S.36	An old farmstead with 5 graves	26°26'21.90"	29°15'25.00"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD18	S.36	Two graves	26°26'19.60"	29°15'20.60"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD19	S.35	Circular structures of stone typical of the LIA	26°25'49.90"	29°15'46.70"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD20	S.36	Informal cemetery with approximately 50 graves, 5 of which have headstones and 15 are marked by concrete	26°25'13.70"	29°17'00.90"	Van Schalkwyk , 1997

Site ID	Site Type	Description	South	East	Reference
1998-SAHRA-0029/2629AD21	S.36	Single grave	26°25'30.30"	29°17'25.30"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD22	S.36	Two graves marked with cairns	26°25'37.40"	29°16'49.80"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD23	S.36	Informal cemetery containing approximately 20 graves	26°25'14.50"	29°17'26.00"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD24	S.36	Informal cemetery containing approximately 50 graves. One has a headstone	26°24'03.10"	29°18'12.40"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD25	S.36	Informal cemetery containing approximately 5 graves.	26°23'43.60"	29°18'22.40"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD26	S.34	Old farmstead with outbuildings. It seems to be older than 50 years and is therefore protected by the National Monuments Act	26°23'36.80"	29°18'15.90"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD27	S.36	Informal cemetery containing approximately 100 graves	26°24'19.10"	29°18'15.50"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD28	S.36	Single grave	26°23'33.20"	29°17'43.90"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD29	S.36	Informal cemetery containing approximately 10 graves, two of which have headstones	26°23'53.20"	29°17'08.80"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD30	S.36	Two cairns possibly indicators of graves	26°23'52.50"	29°17'01.40"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD31	S.36	Informal cemetery containing approximately 15 graves, five of which have headstones	26°24'14.80"	29°16'36.80"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD32	S.36	Informal cemetery containing approximately 40 graves, three of which have headstones	26°23'49.40"	29°16'29.30"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD33	S.36	Informal cemetery containing approximately 80 graves	26°24'33.60"	29°18'50.30"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD34	S.36	Informal cemetery containing approximately 20 graves	26°24'45.60"	29°18'14.90"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD35	S.36	Informal cemetery containing approximately 4 graves	26°28'17.20"	29°14'43.10"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD36	S.36	Informal cemetery containing approximately 5 graves, one with a headstone dating to 1980	26°27'56.10"	29°18'56.00"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD37	S.35	Concentration of rocks that include a lower grindstone	26°27'09.30"	29°19'29.30"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD38	S.34	Remains of houses occupied by farm labourers	26°28'11.20"	29°20'10.40"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD39	S.36	One grave with headstone, with a low wall of stone built around it	26°28'04.80"	29°18'30.40"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD40	S.34	Remains of houses occupied by farm labourers	26°28'05.20"	29°18'24.10"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD41	S.35	Circular structures of stone affiliated with the LIA	26°27'28.40"	29°15'59.90"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD42	S.36	Informal cemetery with approximately 5 graves, one of which has a headstone.	26°27'23.40"	29°16'34.70"	Van Schalkwyk , 1997
1998-SAHRA-0029/2629AD43	S.34	Old farmstead with outbuildings. Currently occupied by farm labourers. It seems to be older than 50 years and is therefore protected by the National Monuments Act	26°27'26.00"	29°16'42.50"	Van Schalkwyk , 1997
2003-SAHRA-0075/2629AD103	S.36	Cemetery containing 5 graves of the Van Zyl family, some dating back to 1918	26°26'10.10"	29°25'39.40"	Van Schalkwyk, 2003
2003-SAHRA-0075/2629AD104	S.34	Stone walled site dating to the Late Iron Age	26°27'23.60"	29°21'55.40"	Van Schalkwyk, 2003
2003-SAHRA-0075/2629AD105	S.34	A number of ash middens, probably remains of old cattle kraals. Short sections of stone walling occur among the middens	26°27'11.20"	29°22'31.30"	Van Schalkwyk, 2003
2003-SAHRA-0075/2629CA16	S.36	Single grave marked with stone	26°31'18.60"	29°14'13.50"	Van Schalkwyk, 2003
2008-SAHRA-0054/HH01	S.34	Historical House	26°12'33.24"	29°21'33.72"	Pistorius, 2008a
2008-SAHRA-0054/HH02	S.34	Historical House	26°12'32.40"	29°21'34.20"	Pistorius, 2008a
2008-SAHRA-0054/E	S.34	Enclosures (ferricrete)	26°12'30.16"	29°21'38.28"	Pistorius, 2008a
2008-SAHRA-0054/T	S.34	Trough (cement)	26°12'30.42"	29°21'38.34"	Pistorius, 2008a
2008-SAHRA-0054/Cement Bricks		Dairy (Cement bricks?)	26°11'48.06"	29°20'31.32"	Pistorius, 2008a
2008-SAHRA-0054/GY01	S.36	5 Graves	26°12'36.18"	29°21'32.94"	Pistorius, 2008a
2008-SAHRA-0054/GY02	S.36	At least 6 graves	26°11'28.20"	29°21'25.20"	Pistorius, 2008a
Pistorius-2008/GY04	S.36	Three informal graves next to the road near H. Smith's residence	26°31'42.06"	28°57'27.00"	Pistorius, 2008b
Van Vollenhoven & Pelser-2010/Site 1	S.36	This is a graveyard consisting of between 20 and 30 graves	26°32'23.30"	29°12'48.60"	Van Vollenhoven & Pelser, 2010
Van Schalkwyk-2000/2629AD44	S.34	Old farmstead built in 1904	26°20'49.10"	29°16'18.60"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD45	S.36	A formal cemetery containing approximately 10 graves	26°20'44.90"	29°16'24.10"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD46	S.34	An old farm labourer homestead	26°20'39.00"	29°16'26.6"	Van Schalkwyk, 2000

Site ID	Site Type	Description	South	East	Reference
Van Schalkwyk-2000/2629AD47	S.35	Late Iron Age stone walling with middens	26°20'29.40"	29°15'28.80"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD48	S.35	Late Iron Age stone walling	26°20'35.70"	29°15'28.90"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD49	S.35	Late Iron Age stone site	26°20'39.00"	29°15'20.40"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD50	S.35	Late Iron Age stone walling with middens	26°20'43.70"	29°15'25.60"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD51	S.35	Late Iron Age stone walling	26°21'37.40"	29°15'21.80"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD52	S.35	Late Iron Age stone walling	26°21'38.00"	29°15'28.20"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD53	S.34	Old farm labourer homestead	26°20'04.10"	29°15'01.60"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD54	S.36	Informal cemetery containing four graves	26°23'13.60"	29°17'33.20"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD55	S.36	Informal cemetery containing 10 graves	26°22'58.00"	29°17'30.80"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD56	S.34	An old farmstead	26°23'06.90"	29°17'30.70"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD57	S.36	Informal cemetery contain six graves	26°23'31.40"	29°17'41.70"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD58	S.36	Informal cemetery contain approximately 50 graves	26°22'27.50"	29°16'39.70"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD59	S.35	Historic stone walling	26°21'46.10"	29°15'28.10"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD60	S.36	Informal cemetery conatina approximately 15 graves	26°21'53.50"	29°15'52.30"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD61	S.35	Historic circular structure of stone	26°22'53.10"	29°15'40.80"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD62	S.35	Historic circular structure of stone	26°22'49.80"	29°15'35.40"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD63	S.34	Old farm labourer homestead	26°22'37.00"	29°15'23.20"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD64	S.34	Old farm labourer homestead	26°22'28.60"	29°15'31.90"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD65	S.34	Old farmstead	26°21'13.90"	29°18'21.10"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD66	S.34	Old farmstead	26°21'54.60"	29°18'28.70"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD67	S.36	Formal cemetery containing 12 graves	26°21'54.70"	29°18'32.40"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD68	S.36	Informal cemetery containing approximately 50 graves	26°21'21.50"	29°18'11.60"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD69	S.34	Old shaft where farmers mined coal	26°21'39.30"	29°18'14.50"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD70	S.34	Old shaft where farmers mined coal	26°21'43.10"	29°18'16.10"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD71	S.36	Formal cemetery with four graves	26°22'42.40"	29°19'15.60"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD72	S.36	Informal cemetery containing approximately 40 graves	26°22'55.60"	29°20'00.50"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD73	S.34	Old shaft where farmers mined coal	26°23'20.40"	29°19'58.40"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD74	S.35	Two small shelters showing evidence of being blocked off with stones	26°23'17.90"	29°19'57.30"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD75	S.36	Informal cemetery containing approximately 20 graves	26°22'34.90"	29°19'43.60"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD76	S.35	Late Iron Age site	26°22'47.70"	29°19'32.70"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD77	S.35	Late Iron Age site	26°22'52.10"	29°19'31.20"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD78	S.35	Late Iron Age site	26°22'49.40"	29°19'29.90"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD79	S.36	Cemetery containing approximately 30 graves	26°23'04.40"	29°20'34.10"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD80	S.36	Cemetery containing approximately 30 graves	26°18'33.40"	29°17'06.60"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD81	S.36	Cemetery containing approximately 50 graves	26°18'49.10"	29°17'06.20"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD82	S.36	Cemetery containing four graves	26°18'55.80"	29°15'18.60"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD83	S.34	Old farm labourer homestead	26°18'25.10"	29°16'13.80"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD84	S.34	Old shaft where farmers mined coal	26°18'15.50"	29°16'26.30"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD85	S.34	Old farmstead	26°19'37.80"	29°15'45.40"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD86	S.36	Cemetery containing four graves	26°19'41.90"	29°15'37.00"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD87	S.36	Cemetery containing five graves	26°19'35.20"	29°15'28.10"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD88	S.36	Cemetery containing four graves	26°19'48.70"	29°17'01.50"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD89	S.34	Old farm labourer homestead	26°18'49.70"	29°17'41.90"	Van Schalkwyk, 2000



Site ID	Site Type	Description	South	East	Reference
Van Schalkwyk-2000/2629AD90	S.36	Cemetery containing approximately 20 graves	26°19'19.50"	29°17'34.70"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD91	S.36	Cemetery containing approximately 30 graves	26°19'20"70	29°17'32.90"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD92	S.34	Old farm labourer homestead	26°19'25.80"	29°17'25.60"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD93	S.36	Cemetery containing approximately 30 graves	26°19'51.90"	29°17'31.80"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD94	S.36	Cemetery containing four graves	26°20'03.40"	29°17'32.50"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AD95	S.34	Old mine shafts	26°19'35.70"	29°17'20.00"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AC20	S.35	Late Iron Age stone walling	26°20'47.20"	29°14'49.00"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AC21	S.35	Late Iron Age stone walling	26°20'56.00"	29°14'40.20"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AC22	S.36	Formal cemetery contain three graves	26°20'51.20"	29°12'31.30"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AC23	S.36	Informal cemetery containing approximately 10 graves	26°20'49.70"	29°12'53.20"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AC24	S.34	Old farm labourer homestead	26°20'27.30"	29°14'36.70"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AC25	S.34	Old farm labourer homestead	26°20'42.10"	29°12'55.20"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AC26	S.34	Old farmstead	26°22'13.90"	29°14'58.10"	Van Schalkwyk, 2000
Van Schalkwyk-2000/2629AC27	S.34	Old farmstead	26°22'32.00"	29°14'32.60"	Van Schalkwyk, 2000

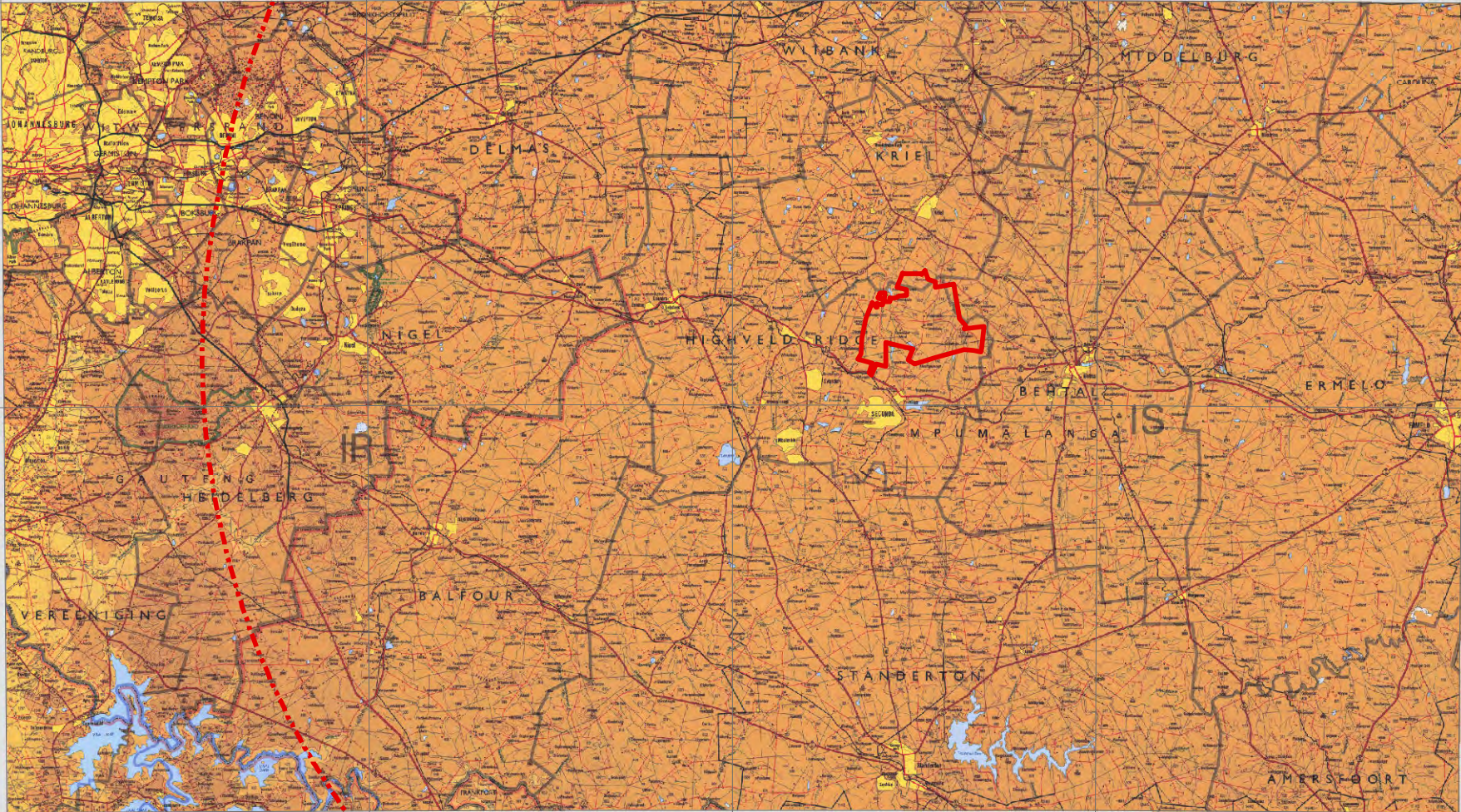
Appendix C: Location and Site Maps

Sasol Syferfontein Block 4 UG Mining

Regional Setting
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Legend

-  Syferfontein Project Area
-  100 km Buffer of Project Area



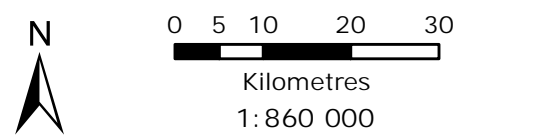
2628 East Rand



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Datum: Cape Revision Number: 1
Central Meridian: 29°E Date: 10/01/2013



Sasol Syferfontein Block 4 UG Mining

Regional Setting
1:50000

Legend

 Syferfontein Project Area

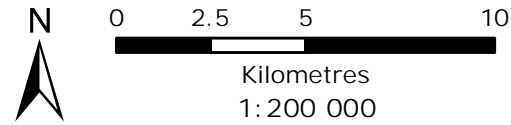
2629AC Evander
2629AD Bethal



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Datum: Cape Revision Number: 1
Central Meridian: 29°E Date: 10/01/2013



Sasol Syferfontein Block 4 UG Mining

Aerial Photograph
1:10000

Legend

 Syferfontein Project Area

Photo no.:
2629AC & 2629AD

sasol
reaching new frontiers



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Datum: Cape Revision Number: 1
Central Meridian: 29°E Date: 10/01/2013



0 2.5 5 10

Kilometres
1:200 000

Sasol Syferfontein Block 4 UG Mining

Regional Geology

Legend

-  Syferfontein Project Area
-  Major Town
-  Secondary Town
-  Other Town
-  Settlement
-  Main Road
-  Arterial / National Route
-  Perennial Stream
-  Non-Perennial Stream
-  Dam
- Regional Geology**
-  Daspoort Fm, Pretoria Grp
-  Dwarsofontein Cplx
-  Dwyka Grp, Karoo Spgrp
-  Government Sbgrp, West Rand Grp
-  Hospital Hill Sbgrp, West Rand Grp
-  Karoo Dolerite Sui
-  Klipriviersberg Grp, Ventersdorp Spgrp
-  Lebowa Granite Sui, Bushveld Cplx
-  Loskop Fm, Transvaal Spgrp
-  Madzaringwe Fm, Karoo Spgrp
-  Magaliesberg Fm, Pretoria Grp
-  Malmani Sbgrp, Chuniespoort Grp
-  Platberg Grp, Ventersdorp Spgrp
-  Pretoria Grp, Transvaal Spgrp
-  Rashoop Granophyre Sui, Bushveld Cplx
-  Rooiberg Grp, Transvaal Spgrp
-  Silverton Fm, Pretoria Grp
-  Strubenkop Fm, Pretoria Grp
-  Swazian Erathem
-  Turffontein Sbgrp, Central Rand Gr
-  Vaalian Erathem

sasol
reaching new frontiers



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Projection: Transverse Mercator Ref #: mpl.SAS1744.201301.018
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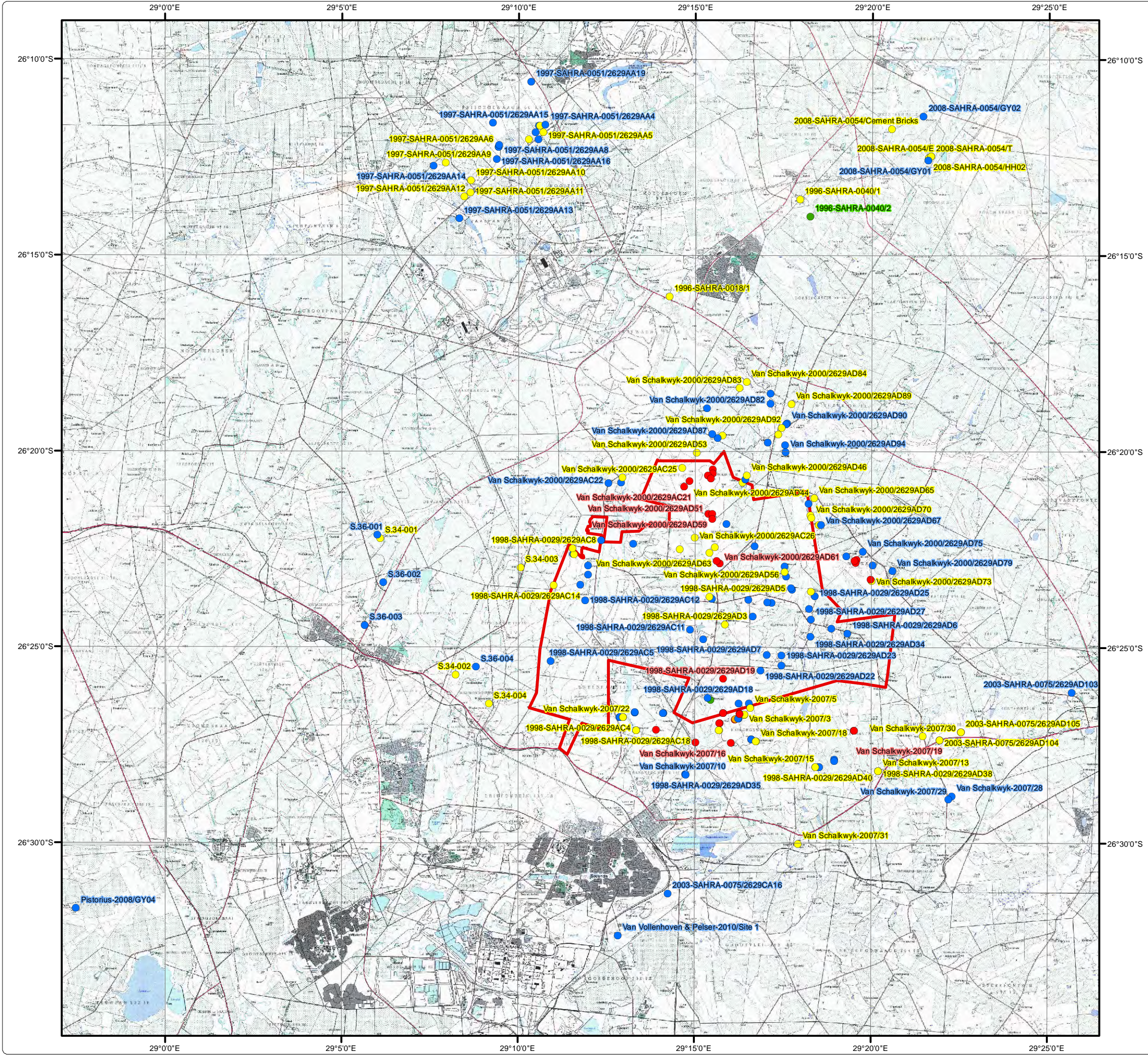
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Kilometres
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Sasol Syferfontein Block 4 UG Mining Identified Heritage Resources

Legend

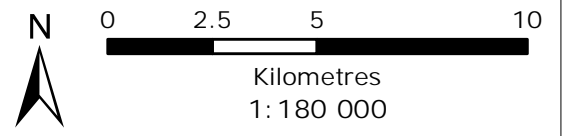
-  Syferfontein Project Area
-  Historical Sites
-  Archaeological Sites
-  Burial Grounds & Graves
-  Archaeological Sites, Burial Grounds & Graves
-  Historical Sites, Burial Grounds & Graves





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Projection: Transverse Mercator Ref #: mpl.SAS1744.201310.189
Datum: Cape Revision Number: 1
Central Meridian: 29°E Date: 28/10/2013






Sasol Syferfontein Block 4 UG Mining Identified Heritage Resources

Legend

- Syferfontein Project Area
- Arterial / National Route
- Main Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Non-Perennial Pan / Stream
- Perennial Pan

Identified Heritage Resources

- Historical Sites
- Archaeological Sites
- Burial Grounds & Graves





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Datum: Cape
Central Meridian: 29°E

Ref #: mpl.SAS1744.201310.188
Revision Number: 1
Date: 28/10/2013





Kilometres
1: 70 000

Sasol Syferfontein Block 4 UG Mining Identified Heritage Resources & Powerline

Legend



- Syferfontein Project Area
- Powerline Infrastructure Area
- Arterial / National Route
- Main Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Non-Perennial Pan / Stream
- Perennial Pan
- Identified Heritage Resources
 - Historical Sites
 - Archaeological Sites
 - Burial Grounds & Graves
- Poweline Infrastructure
 - Change House Expansion
 - Office Expansion
 - Sewerage Plant Expansion
 - Canal
 - 100m Line from Canal
 - Communication Fibre Optics
 - Construction Power
 - Material Handling System (Conveyor)
 - Permanent Access Road
 - Permanent Power
 - Portable Water
 - Service water System
 - Temporary Access Road
 - Construction Laydown Area
 - Permanent Power
 - Pit Floor
 - Soil Dump Area



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Projection: Transverse Mercator
Datum: Cape
Central Meridian: 29°E

Ref #: mpl.SAS1744.201310.190
Revision Number: 1
Date: 28/10/2013



Kilometres
1: 70 000