



**HERITAGE STATEMENT FOR THE  
SYFERFONTEIN EXPANSION PROJECT,  
DIEPLAAGTE 123 IS, LANGSLOOT 99 IS,  
VAALBANK 96 IS,  
WILDEBEESTFONTEIN 122 IS,  
ZONDAGSFONTEIN 124 IS AND  
ZONDAGSKRAAL 125 IS, SECUNDA,  
MPUMALANGA PROVINCE**

**SASOL MINING (PTY) LTD**

**FEBRUARY 2014**




SAS1744



This document has been prepared by **Digby Wells Environmental**.

**Report Title:** **Heritage Statement for the Syferfontein Expansion Project,  
 Dieplaagte 123 IS, Langsloot 99 IS, Vaalbank 96 IS,  
 Wildebeestfontein 122 IS, Zondagsfontein 124 IS and  
 Zondagskraal 125 IS, 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 an Environmental Impact Assessment (EIA) and associated studies for the proposed new brown fields operation near Secunda, Mpumalanga Province. The project is referred to as the Syferfontein Expansion project.

Sasol Mining is planning to extend the existing Syferfontein Mine into the adjacent Block 4 reserves towards the north-west of the Syferfontein reserves. The proposed Block 4 reserves will be mined via underground methods. An Environmental Management Programme (EMP) and Integrated Water Use License Application (IWULA) for the existing Syferfontein Mine are available. Once the EIA / EMP for the proposed Block 4 operations is submitted, these documents are to be combined with the approved environmental authorisations obtained for the new Block 4 operation, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA).

The project area is approximately 8 987 ha. There will be no surface impacts as no infrastructure will be constructed on site.

Based on desktop research and a heritage screening assessment (HSA) of the study and project areas, it is evident that diverse heritage resources are expected to occur in the proposed project area. 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.

Due to the absence of the construction of surface infrastructure sources of risk on potential heritage resources in the project area is limited to subsidence. Underground mining through the bord and pillar technique will not impact on archaeological, palaeontological, and built environment resources and burial grounds and graves that may exist on the surface and therefore an HIA is not required for this activity. However, a monitoring programme for inclusion into the Environmental Management Plan (EMP) must be established to assess possible impacts on heritage resource by subsidence.

Underground mining presents a source of risk to potential palaeontological resources that may exist beneath the surface. Palaeontological resources that may exist between the shales and coals beneath the surface include plant fossils. According to Section 2 (xxxii) of the NHRA, however, palaeontological resources are defined as any fossilised remains or fossil trace of animals or plants other than fossil fuels or fossiliferous rock intended for industrial use. Furthermore, the fossils associated with the underground coal seams will be poorly preserved as the plants are greatly altered by the natural process of coalification. The

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risk presented by underground mining on potential subsurface palaeontological material, can however, be mitigated through Chance Find Procedures.

## GLOSSARY OF ABBREVIATIONS AND TERMS

<b>BA</b>	Bachelor of Arts
<b>BSc</b>	Bachelor of Science
<b>CE</b>	Common Era
<b>EIA</b>	Environmental Impact Assessment
<b>EMP</b>	Environmental Management Plan
<b>GMLM</b>	Govan Mbeki Local Municipality
<b>GMM-IDP</b>	Govan Mbeki Municipality Integrated Development Plan
<b>GS-IDP</b>	Gert Sibande Integrated Development Plan
<b>HIA</b>	Heritage Impact Assessment
<b>HRA</b>	Heritage Resources Authority
<b>HRM</b>	Heritage Resources Management
<b>HSA</b>	Heritage Screening Assessment
<b>I&amp;APs</b>	Interested and Affected Parties
<b>IWULA</b>	Integrated Water Use Licence Application
<b>KPA</b>	Key Performance Area
<b>LSA</b>	Later Stone Age
<b>MGDP</b>	Mpumalanga Growth and Development Path
<b>MJS</b>	Major Jackson Series
<b>MPHRA</b>	Mpumalanga Provincial Heritage Resources Agency
<b>MPRDA</b>	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
<b>MSA</b>	Middle Stone Age
<b>MSc</b>	Master of Science
<b>NEMA</b>	National Environmental Management Act, 1998 (Act No. 107 of 1998)
<b>NHRA</b>	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
<b>NID</b>	Notification of Intent to Develop
<b>SAHRA</b>	South African Heritage Resources Agency
<b>ToR</b>	Terms of Reference
<b>WITS</b>	University of the Witwatersrand

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## 1 INTRODUCTION

Sasol Mining (Pty) Ltd (Sasol) has commissioned Digby Wells Environmental (Digby Wells) to conduct an Environmental Impact Assessment (EIA) and associated studies for the proposed new brown fields operation near Secunda, Mpumalanga Province. The proposed operation is referred to as the Syferfontein Expansion project<sup>1</sup>.

## 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. The proposed Block 4 reserves will be mined via underground bord and pillar method. The Block 4 reserves will be accessed via the existing vent shaft and vertical incline shaft at the present Syferfontein Mine.

The project area is approximately 8 987 ha. The proposed project will not generate any impact to surface heritage resources as no infrastructure will be constructed in the project area.

An Environmental Management Programme (EMP) and Integrated Water Use License Application (IWULA) for the existing Syferfontein Mine are available. Once the EIA / EMP for the proposed Block 4 operations is submitted, these documents are to be combined with the approved environmental authorisations obtained for the new Block 4 operation, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA).

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<sup>1</sup> Please note that the term “project” refers to the proposed underground operation on the farms Dieplaagte 123 IS, Langsloot 99 IS, Vaalbank 96 IS, Wildebessfontein 122 IS, Zondagsfontein 124 IS and Zondagskraal 125 IS.

## 2.2 Relevant Contact Details

The contact details of the developer, consultant and landowners are provided in Table 2-1, Table 2-2 and Table 2-3 respectively.

**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	<a href="mailto:gamieldien@sasol.com">gamieldien@sasol.com</a>

**Table 2-2: Consultant contact details**

ITEM	COMPANY CONTACT DETAILS
Company	Digby Wells Environmental
Contact person	Casper Joubert
Tel no	011 789 9495
Fax no	011 789 9498
Cell no	083 643 2479
E-mail address	<a href="mailto:casper.joubert@digbywells.com">casper.joubert@digbywells.com</a>
Postal address	Private Bag X10046, Randburg, 2125

**Table 2-3: Land owner contact details**

<b>Dieplaagte 123 IS Portions 1 &amp; 7</b>	
<b>Title Deed owner</b>	Vosstoffel (Pty) Ltd
<b>Contact person</b>	Nicol de Vos
<b>Tell no</b>	0132623481
<b>Cell no</b>	082 880 0106
<b>Email address</b>	<a href="mailto:vossof@mweb.co.za">vossof@mweb.co.za</a>
<b>Postal address</b>	PO Box 212, Groblersdal, 0470
<b>Langsloot 99 IS Portions 16 &amp; 17</b>	
<b>Title Deed owner</b>	Vosstoffel (Pty) Ltd
<b>Contact person</b>	Nicol de Vos
<b>Tell no</b>	0132623481
<b>Cell no</b>	082 880 0106
<b>Email address</b>	<a href="mailto:vossof@mweb.co.za">vossof@mweb.co.za</a>
<b>Postal address</b>	PO Box 212, Groblersdal, 0470
<b>Vaalbank 96 IS Portion 2</b>	
<b>Title Deed owner</b>	Highland Night Inc. 59 (Pty) Ltd
<b>Contact person</b>	Johan Barnard
<b>Cell no</b>	082 945 7563
<b>Wildebeestfontein 122 IS Portion 1 &amp; 3</b>	
<b>Title Deed owner</b>	Highveld Bargains & Deals CC
<b>Contact person</b>	Gustaf Heymans
<b>Cell no</b>	083 226 0006

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<b>Wildebeestfontein 122 IS Portions 4 &amp; 7</b>	
<b>Title Deed owner</b>	G. du Toit
<b>Contact person</b>	George du Toit
<b>Cell no</b>	082 577 6579
<b>Wildebeestfontein 122 IS Portion 13</b>	
<b>Title Deed owner</b>	Anton Engelbrecht Boerdery (Pty) Ltd
<b>Contact person</b>	Anton Engelbrecht
<b>Cell no</b>	082 567 8524
<b>Wildebeestfontein 122 IS Portion 14</b>	
<b>Title Deed owner</b>	GOR Konstruksie CC
<b>Contact person</b>	George du Toit
<b>Cell no</b>	082 577 6579
<b>Zondagsfontein 124 IS Portions 2 &amp; 8</b>	
<b>Title Deed owner</b>	LJB Potgieter
<b>Contact person</b>	Lukas Potgieter
<b>Cell no</b>	082 903 8304
<b>Zondagsfontein 124 IS Portions 1, 3 to 7, 9 &amp; 21</b>	
<b>Title Deed owner</b>	Vosstoffel (Pty) Ltd
<b>Contact person</b>	Nicol de Vos
<b>Tell no</b>	0132623481
<b>Cell no</b>	082 880 0106
<b>Email address</b>	<a href="mailto:vossof@mweb.co.za">vossof@mweb.co.za</a>
<b>Postal address</b>	PO Box 212, Groblersdal, 0470

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<b>Zondagskraal 125 IS Portion 2</b>	
<b>Title Deed owner</b>	Orambamba 25 (Pty) Ltd
<b>Contact person</b>	Johan Barnard
<b>Cell no.</b>	082 945 7563
<b>Zondagskraal 125 IS Portion 15</b>	
<b>Title Deed owner</b>	Republic of South Africa (RSA)
<b>Contact person</b>	N/A
<b>Cell no</b>	N/A
<b>Zondagskraal 125 IS Portion 24</b>	
<b>Title Deed owner</b>	Vosstoffel (Pty) Ltd
<b>Contact person</b>	Nicol de Vos
<b>Tell no</b>	0132623481
<b>Cell no</b>	082 880 0106
<b>Email address</b>	<a href="mailto:vossof@mweb.co.za">vossof@mweb.co.za</a>
<b>Postal address</b>	PO Box 212, Groblersdal, 0470

## 2.3 Legislative Framework

### 2.3.1 Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA)

The MPRDA stipulates under section 5(4) that no person may prospect for or remove, mine, conduct technical co-operation operations, reconnaissance operations, explore for and produce any mineral or petroleum or commence with any work incidental thereto on any area without (a) an approved environmental management programme or approved environmental management plan, as the case may be.

### 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 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 2-4: Listed triggers according to the NHRA**

NHRA (1999) Trigger	Description
<b>Basic Assessment, Scoping and Full EIA</b>	
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

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## 2.4 Terms of Reference

Sasol has requested Digby Wells to undertake the following:

- An EIA / EMP for the underground mining operation in accordance with the MPRDA.

To comply with the legislative requirements necessary for the EIA / EMP application, 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 and MPRDA processes.

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.

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## 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 HIA 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.



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## **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 Screening Assessment**

A heritage screening assessment (HSA) was conducted for the project on 10 June 2013 on the directly affected portions of the farms Dieplaagte 123 IS, Langsloot 99 IS, Vaalbank 96 IS, Wildebessfontein 122 IS, Zondagsfontein 124 IS and Zondagskraal 125 IS. The aim of the HSA was to identify and record heritage resources on the farms. The results of the HSA are discussed in Section 4.3 of this Heritage Statement.

### **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**

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### **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.

## **3.5 Summary of Stakeholder Engagement**

Stakeholder engagement is an essential and legislative requirement for environmental authorisation in a number of the major Acts applicable to the proposed project.

The objectives of stakeholder engagement are to ensure that all stakeholders and interested and affected parties (I&APs) are given accurate and timeous project information, and are given an opportunity to raise comments and concerns.

## **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.

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#### 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
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#### 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 MGDP 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

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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.

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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 KPA's 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-Morgenon 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;

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#### 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,

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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 & Pelsler, 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

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into the region relate to the BaKgatla (Tswana), who moved onto the Highveld during the 15<sup>th</sup> and 16<sup>th</sup> 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 16<sup>th</sup> and 17<sup>th</sup> 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 17<sup>th</sup> 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 15<sup>th</sup> and 16<sup>th</sup> centuries where some groups ventured onto the Highveld.

During the 18<sup>th</sup> and 19<sup>th</sup> 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 19<sup>th</sup> 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



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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 30<sup>th</sup> 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 20<sup>th</sup> 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 20<sup>th</sup> 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.

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### 4.3 Heritage Screening Assessment Results

A HSA was conducted for the project on 10 June 2013 on the farms Dieplaagte 123 IS, Langsloot 99 IS, Vaalbank 96 IS, Wildebeestfontein 122 IS, Zondagsfontein 124 IS and Zondagskraal 125 IS. The aim of this HSA was to verify possible heritage resources identified through the desktop study as well as providing a first-hand record of the current state of the cultural landscape.



**Figure 4-1: General view of the project area taken from Wildebeestfontein 122 IS Portion 14. Note extensive agricultural fields in the background.**

Heritage resources identified in the project area include burial grounds and graves, and farmsteads or *werwe* (sing. *werf*). These ranged from obvious historical to more recent sites.

The farms Vaalbank 96 IS and Zondagskraal 125 IS were surveyed during the HSA. The identified heritage resources include an old house and two graves (Figure 4-2, Figure 4-3 and Figure 4-4). The old house may have been part of a *werf* that was identified on a 1955 Kinross-Trichardt aerial photograph during historical layering.

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**Figure 4-2: An old house (SAS1744/2629AC/S.34-001) on Vaalbank 96 IS Portion 2.**

There are two graves approximately 200 m north of the old house at site SAS1744/2629AC/S.36-001 (Figure 4-3 and Figure 4-4). The two graves comprise a single informal, stone-packed grave (S.36-001/1) and a formal grave dating to 1882 (S.36-001/2). The age of the grave suggests that the old house and/or *werf* on Vaalbank 96 IS may be between 131 and 58 years old.



**Figure 4-3: A single, informal grave at Site S.36-001/1.**

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**Figure 4-4: A single, formal grave at Site S.36-001/2.**

Two burial grounds were identified and recorded on Zondagskraal 125 IS Portion 2. The burial ground SAS1744/2926AC/S.36-002 comprises approximately 26 formal and informal graves (Figure 4-5). The graves date between 1961 and 1996. The burial ground SAS1744/2629AC/S.36-003 comprises approximately 68 formal and informal graves (Figure 4-6).



**Figure 4-5: A formal grave at burial ground S.36-002 on Zondagskraal 125 IS Portion 2.**

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**Figure 4-6: A formal grave at burial ground S.36-003 on Zondagskraal 125 IS Portion 2**

The farm Wildebeestfontein 122 IS Portions 1 and 3 were surveyed during the HSA. The identified heritage resources include a *werf* and two formal graves. The *werf* comprising a stable, a house and a work shed that have been modified with new additions. During the historical layering, a homestead corresponding to the exact location of the *werf* at Site SAS1744/2629AC/S.34-002 was identified in a 1954 aerial photograph of Bethal. This suggests that the *werf* S.34-002 may be 59 years or older.



**Figure 4-7: An old stable converted into a house at Site S.34-002.**

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**Figure 4-8: A formal grave at Site SAS1744/2629AC/S.36-004.**

A *werf* was identified and recorded on the farm Langsloot 99 IS Portion 16 during the HSA. During the historical layering, a homestead corresponding to the exact location of the *werf* at Site SAS1744/2629AC/S.34-003 was identified in a 1954 aerial photograph of Bethal. This suggests that the *werf* S.34-003 may be 59 years or older. The *werf* comprises a house, a stable and a work shed and many of these structures have been modified.



**Figure 4-9: According to the owner, the old house at Site S.34-003 was broken down to accommodate for this new house.**

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**Figure 4-10: A work shed at Site S.34-003 that is part of the *werf* on Langsloot 99 IS.**

## **4.4 Stakeholder Engagement**

### **4.4.1 Results of social consultation during the HSA**

Due to time constraints and the unavailability of some landowners at the time of the HSA, the farms Dieplaagte 123 IS, Langsloot 99 IS and Zondagsfontein 124 IS were not surveyed during the HSA. However, during the HSA available landowners were consulted on possible burial grounds and graves, built structures, and archaeological resources such as stone walls that may exist on their properties within the project area.

During the HSA on Zondagskraal 125 IS Portion 2, the landowner Johan Barnard was consulted on possible burial grounds and graves that may exist on the farm. Mr Barnard indicated two burial grounds on Zondagskraal 125 IS Portion 2: S.36-002 and S.36-003 (See Figure 4-5 and Figure 4-6 in Section 4.3). According to Mr Barnard, there is an initiation site associated with the burial ground S.36-002.

During the HSA on Langsloot 99 IS, the landowner Nicol de Vos was consulted on possible burial grounds and graves, stone wall, and built structures that may be present on his property. Mr de Vos confirmed the presence of a sandstone wall on the farm Dieplaagte 123 IS and a burial ground on the farm Langsloot 99 IS. An archive search of the property Dieplaagte 123 IS showed that there is a title deed dating to 1879 for the farm Dieplaagte 123 IS. This suggests that the sandstone wall may have been part of a sandstone house that dates to 1879.

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## **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, there are no long-term risks to potential heritage resources as no infrastructure will be constructed in the Syferfontein Expansion project area.

### **5.2 Operational Phase**

Underground mining through the bord and pillar technique will not impact on archaeological, palaeontological, and built environment resources and burial grounds and graves that may exist on the surface as there will be no blasting. This activity will not require a HIA.

During the Operational Phase, underground mining was identified as a source of risk to subsurface palaeontological resources:

- Potential subsurface palaeontological resources may be exposed during underground mining activities.

In terms of Section 2 (xxxi) of the NHRA, fossiliferous deposits that have commercial value are exempt from assessments. Furthermore it is not possible to assess any potential, value, and impact of fossils that may be found during especially underground mining. This activity will therefore not require an HIA however a Fossil Find Procedure must be implemented during this phase.

### **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 structures including buildings, dumps, and industrial structures 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.



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## 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. Industrial and commercial nodes exist, particularly on Wildebeestfontein 122 IS Portion 14, whilst isolated parts of the landscape are reserved for public works such as the sewage treatment plant on Zondagsfontein 124 IS Portions 2 and 8. 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 proposed Syferfontein Expansion project area. 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.

However, due to the absence of the construction of surface infrastructure sources of risk on potential heritage resources in the project area is limited to subsidence.

Underground mining through the bord and pillar technique will not impact on archaeological, palaeontological, and built environment resources and burial grounds and graves that may exist on the surface and therefore an HIA is not required for this activity.

Underground mining presents a source of risk to potential palaeontological resources that may exist beneath the surface. Palaeontological resources that may exist between the shales and coals beneath the surface include plant fossils. According to Section 2 (xxxi) of the NHRA, however, palaeontological resources are defined as any fossilised remains or fossil trace of animals or plants other than fossil fuels or fossiliferous rock intended for industrial use. Furthermore, the fossils associated with the underground coal seams will be poorly preserved as the plants are greatly altered by the natural process of coalification. The risk presented by underground mining on potential subsurface palaeontological material, can however, be mitigated through Chance Find Procedures.

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## 7 RECOMMENDATIONS

During the construction phase of the project, there will be no surface impacts as no infrastructure will be constructed on site. It is therefore recommended that the proposed project be wholly exempted from a HIA including components such as:

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

A monitoring programme for inclusion into the Environmental Management Plan (EMP) must be established to assess possible impacts on heritage resource by subsidence.

Fossils can occur underground, especially in coal fields, however it is not possible to predict the buried fossil content of an area other than in general terms. Furthermore, the fossil plants associated with the underground coal seams will be poorly preserved and the most important fossil bone material is generally sparsely scattered in most deposits. It is therefore recommended that the proposed project be exempted from a Phase 1 Palaeontological 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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Secunda, Mpumalanga Province

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**DIGBY WELLS**  
ENVIRONMENTAL

## **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





<b>Project Title</b>	<b>Client</b>	<b>Role</b>
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, Lephale, Limpopo Province	Vedanta Zinc International	Heritage Specialist & Report Writer

<b>Project Title</b>	<b>Client</b>	<b>Role</b>
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	Rock Art Mapping Project	Freelance archaeologist 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.
Nel, J. 2009.	Un-archaeologically speaking: the use, abuse and misuse of archaeology in popular culture.	The Digging Stick. April 2009. 26(1): 11-13: Johannesburg: The South African Archaeological Society.
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 Elandsport 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 newroads 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
- 2009. Social consultation for Zonkezizwe Grave Relocation. Section 36 Consultation. PGS (Pty) Ltd. RSA. Midrand, Gauteng. Specialist
- 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
- 2010. Archaeological Impact Assessment for Galaxy Gold Mine Tailings Dam Extension, Barberton, Mpumalanga Province. Archaeological Impact Assessment. Galaxy Gold. RSA. Barberton, Mpumalanga. Specialist
- 2010. Archaeological Impact Assessment for the HCI Khusela Coal: Palesa Extension ESIA Update on portions of the farm Roodepoort 349 JR, Thembisile Local Municipality (Mpumalanga) and Kungwini Municipality (Gauteng). Archaeological Impact Assessment. HCI Khusela. RSA. Mpumalanga; Gauteng. Specialist
- 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
- 2010. Mitigation of an archaeological metalworking site for Kibali Gold Mine. Archaeological mitigation. Randgold Resources. DRC. Watsa, Province Orientale. Specialist
- 2010. Heritage Impact Assessment for Nzoro Hydropower Station. Heritage Impact Assessment. Randgold Resources. DRC. Watsa, Province Orientale. Specialist
- 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
- 2011. Nzoro hydropower station ESIA. Heritage Impact Assessment. Randgold Resources. DRC. Watsa, Province Orientale. Project manager/specialist
- 2011. Specialist review of Heritage Impact Assessment report for Zod Gold Mine, Armenia. Review report. Zod Gold Mine. Armenia. Desktop review. Project manager/specialist
- 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
- 2012. Heritage Statement for Rhodium Reefs Ltd Platinum Operation, 2430CA & CC, De Goedeverwaching 332 KT; Boschkloof 331 KT; Belvedere 362 KT; Kennedy's Vale 361 KT; and Tweefontein 360 KT, Limpopo. Heritage Statement. Eastplats Group. RSA. Steelpoort, Limpopo. Project manager/specialist
- 2012. Notification of Intent to Develop: Proposed Aggeneys Photo-voltaic solar power plant on Portion 1 of the farm Aroams 57 RD, Northern Cape (DEA ref: 12/12/20/2630). Heritage Statement. Orlight Solar. RSA. Aggeneys, Northern Cape. Specialist
- 2012. Notification of Intent to Develop: Proposed Kenhardt Photo-voltaic solar power plant on RE of the farm Klein Zwartbast 188 RD, Northern Cape (DEA ref: 12/12/20/2631). Heritage Statement. Orlight Solar. RSA. Kenhardt, Northern Cape. Project manager/specialist
- 2012. Notification of Intent to Develop: Proposed Loeriesfontein Photo-voltaic solar power plant on Portion 1 of the farm Klein Rooiberg 227 RD, Northern Cape (DEA ref: 12/12/20/2632). Heritage Statement. Orlight Solar. RSA. Loeriesfontein, Northern Cape. Specialist
- 2012. Notification of Intent to Develop: Proposed Vanrhynsdorp Photo-voltaic solar power plant on RE of the farm Paddock 257 RD, Western Cape (DEA ref: 12/12/20/2633). Heritage Statement. Orlight Solar. RSA. Vanrhynsdorp, Western Cape. Project manager/specialist
- 2012. Notification of Intent to Develop: Proposed Graafwater Photo-voltaic solar power plant on Portion 1 of the farm Graafwater 97 RD and RE of Bueroskraal 220 RD, Western Cape



(DEA ref: 12/12/20/2636). Heritage Statement. Orlight Solar. RSA. Graafwater, Western Cape. Specialist

- 2012. Phase 2 archaeological impact assessment mitigation for Boikarabelo Coal Mine (SAHRA Permit No: 80/11/07/015/51). . Section 35 Phase 2 Archaeological Mitigation. Resources Generation. RSA. Steenbokpan, Limpopo. Project manager/specialist
- 2012. Final Phase 2 archaeological impact assessment mitigation report for Boikarabelo Coal Mine, Limpopo (SAHRA Permit No: 80/11/07/015/51). . Section 35 Phase 2 Archaeological Mitigation. Resources Generation. RSA. Steenbokpan, Limpopo. Specialist
- 2012. Holder of Destruction Permit No. 84 for archaeological sites at Boikarabelo Coal Mine. Section 35 Destruction permit. Resources Generation. RSA. Steenbokpan, Limpopo. Project manager/specialist
- 2012. Specialist review of Heritage Impact Assessment report for Mkuju Uranium Mine. Review report. Uranex . Zambia. Desktop review. Project manager/specialist
- 2013. Heritage Impact Assessment for the proposed Consbrey Colliery Project, 2629BB and 2629BD, Mpumalanga Province. Heritage Impact Assessment. Msobo Coal. RSA. Breyten, Mpumalanga. Project manager/specialist
- 2013. Heritage Impact Assessment for Rhodium Reef Limited Platinum Operation, 2430CC Kennedys Vale, De Goedevoering 332 KT, Limpopo Province. Heritage Impact Assessment. Rhodium Reefs Limited. RSA. Steelpoort, Limpopo. Project manager/specialist
- 2013. Heritage Statement for the Consbrey Colliery. Heritage Statement. Msobo Coal. RSA. Chrissiesmeer, Mpumalanga. Project manager/specialist
- 2013. Heritage Statement for the Harwar Colliery. Heritage Statement. Msobo Coal. RSA. Chrissiesmeer, Mpumalanga. Project manager/specialist
- 2013. Heritage Statement for the Waterberg Prospecting Rights Application, Blouberg, Limpopo Province. Heritage Statement. Platinum Group Metals Ltd. RSA. Breyten, Mpumalanga. Specialist
- 2013. Destruction Permit Application Report for Kangala Coal Project. Section 34 Built Environment Permit. Universal Coal (Pty) Ltd. RSA. Delmas, Mpumalanga. Specialist
- 2013. Holder of Destruction Permit No. 399 for archaeological sites at Boikarabelo Coal Mine. Section 35 Destruction permit. Resources Generation. RSA. Steenbokpan, Limpopo. Project manager/specialist
- 2013. Relocation of graves in Kinjor and Larjor for Aureus New Liberty Gold Mine. International grave relocation project. Aureus Mining. Liberia. Kinjor. Specialist
- 2013. New Liberty Gold Mine Grave Relocation Plan. International grave relocation project. Aureus Mining. Liberia. Kinjor. Project manager/specialist
- 2013. Thabametsi Coal Mine Burial Grounds and Graves Census. Burial Grounds and Graves Census. Exxaro Coal. RSA. Lephalale, Limpopo. Specialist



- 2013. Bokoni Platinum Mine Burial Grounds and Graves Census. Burial Grounds and Graves Census. Bokoni Platinum. RSA. Atok, Limpopo. Specialist
- 2013. Specialist review of Heritage Impacts Assessment for Songwe REE project. Review report. Mkango Resources. Malawi. Desktop review. Project manager/specialist
- 2013: Heritage Impact Assessment for the Platreef Platinum Mine EIA project. Platreef Resources. RSA. Mokopane, Limpopo. Specialist project manager.

Heritage Statement for the Syferfontein Expansion Project,  
Dieplaagte 123 IS, Langsloot 99 IS, Vaalbank 96 IS,  
Wildebeestfontein 122 IS, Zondagsfontein 124 IS and Zondagskraal 125 IS,  
Secunda, Mpumalanga Province

SAS1744



**DIGBY WELLS**  
ENVIRONMENTAL

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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 part 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
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 an old structure possibly homestead.	26°26'48.98"	29°12'56.99"	Van Schalkwyk, 2007

Site ID	Site Type	Description	South	East	Reference
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
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 privit 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

Site ID	Site Type	Description	South	East	Reference
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
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

Site ID	Site Type	Description	South	East	Reference
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
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



Site ID	Site Type	Description	South	East	Reference
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
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

Heritage Statement for the Syferfontein Expansion Project,  
Dieplaagte 123 IS, Langsloot 99 IS, Vaalbank 96 IS,  
Wildebeestfontein 122 IS, Zondagsfontein 124 IS and Zondagskraal 125 IS,  
Secunda, Mpumalanga Province

SAS1744





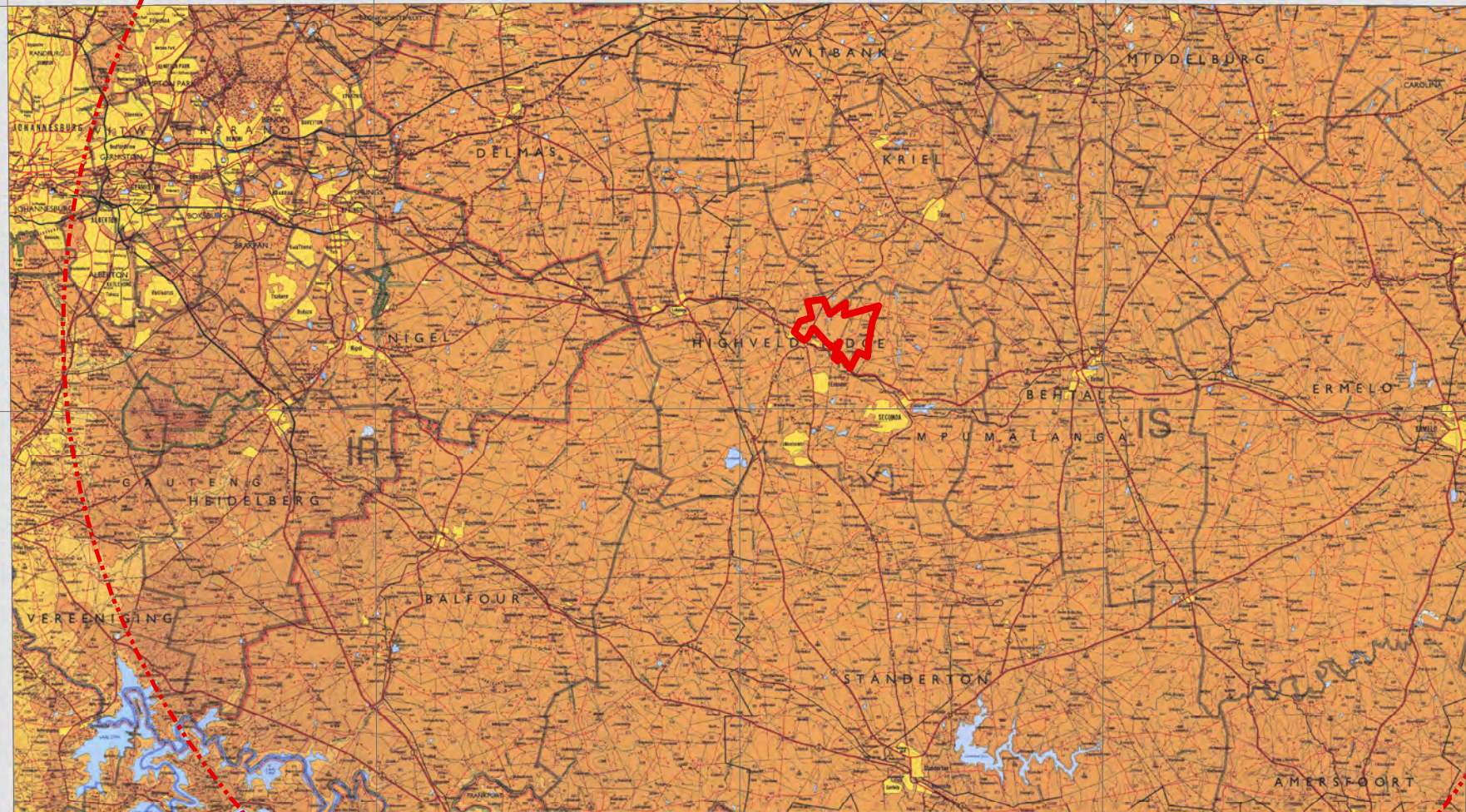
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ENVIRONMENTAL

## **Appendix C: Location and Site Maps**

# Sasol Syferfontein Block 4 UG Mining Regional Setting 1:250000

## Legend

-  Block 4 Project Area
-  100 km Buffer of Project Area



2628 East Rand



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Projection: Transverse Mercator Ref #: mpl.SAS1744.201301.028  
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 Central Meridian: 29°E Date: 10/01/2013

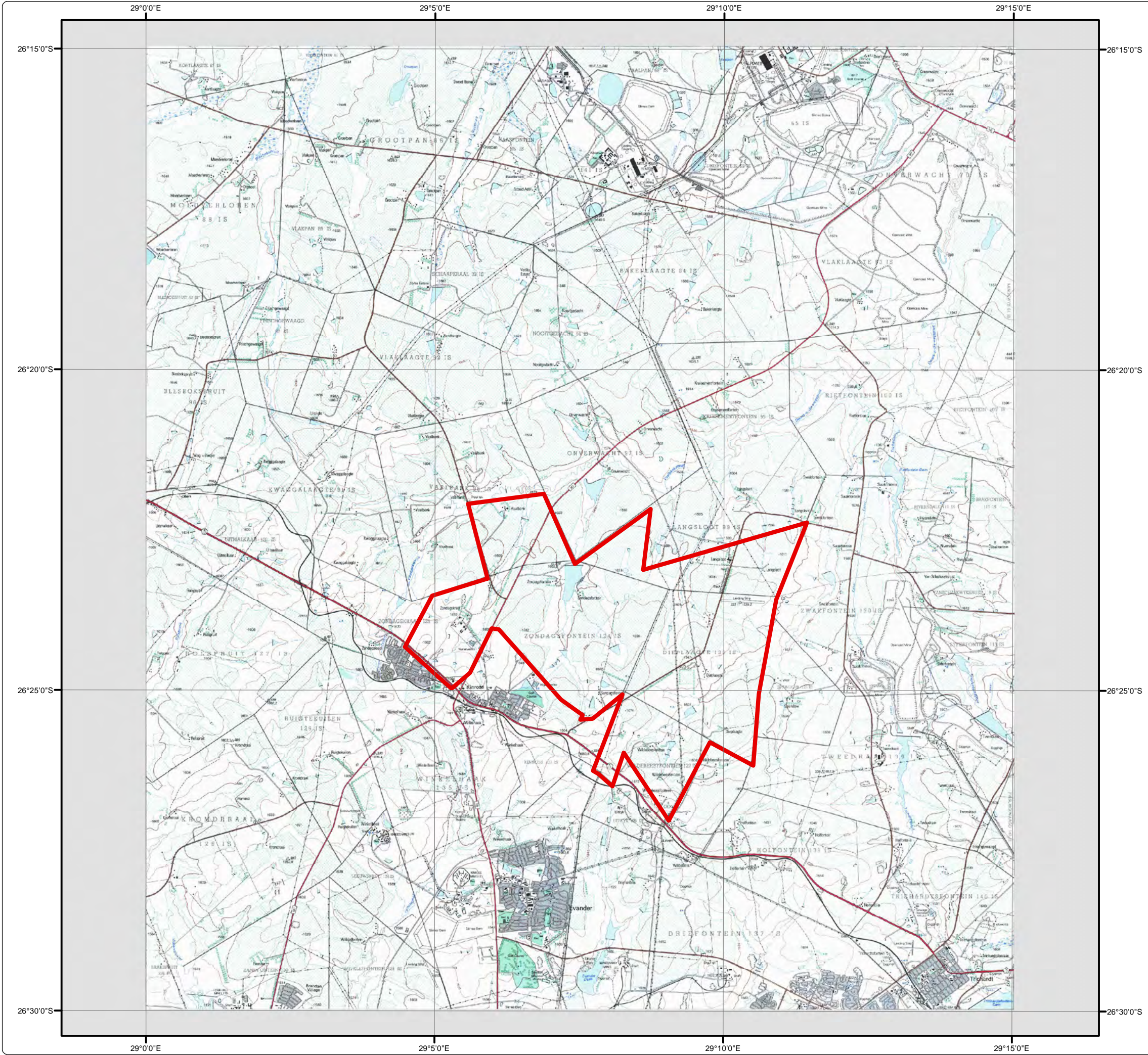


Kilometres  
1:860 000

# Sasol Syferfontein Block 4 UG Mining Regional Setting 1:50000

## Legend

 Block 4 Project Area



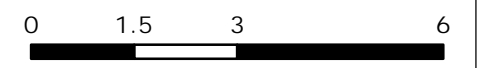
2629AC Evander



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Projection: Transverse Mercator Ref #: mpl.SAS1744.201301.029  
Datum: Cape Revision Number: 1  
Central Meridian: 29°E Date: 10/01/2013



Kilometres  
1:110 000

# Sasol Syferfontein Block 4 UG Mining Regional Setting 1:10000

## Legend


 Block 4 Project Area



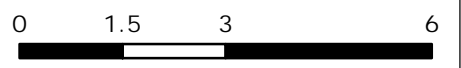
Photo no.: 2629AC



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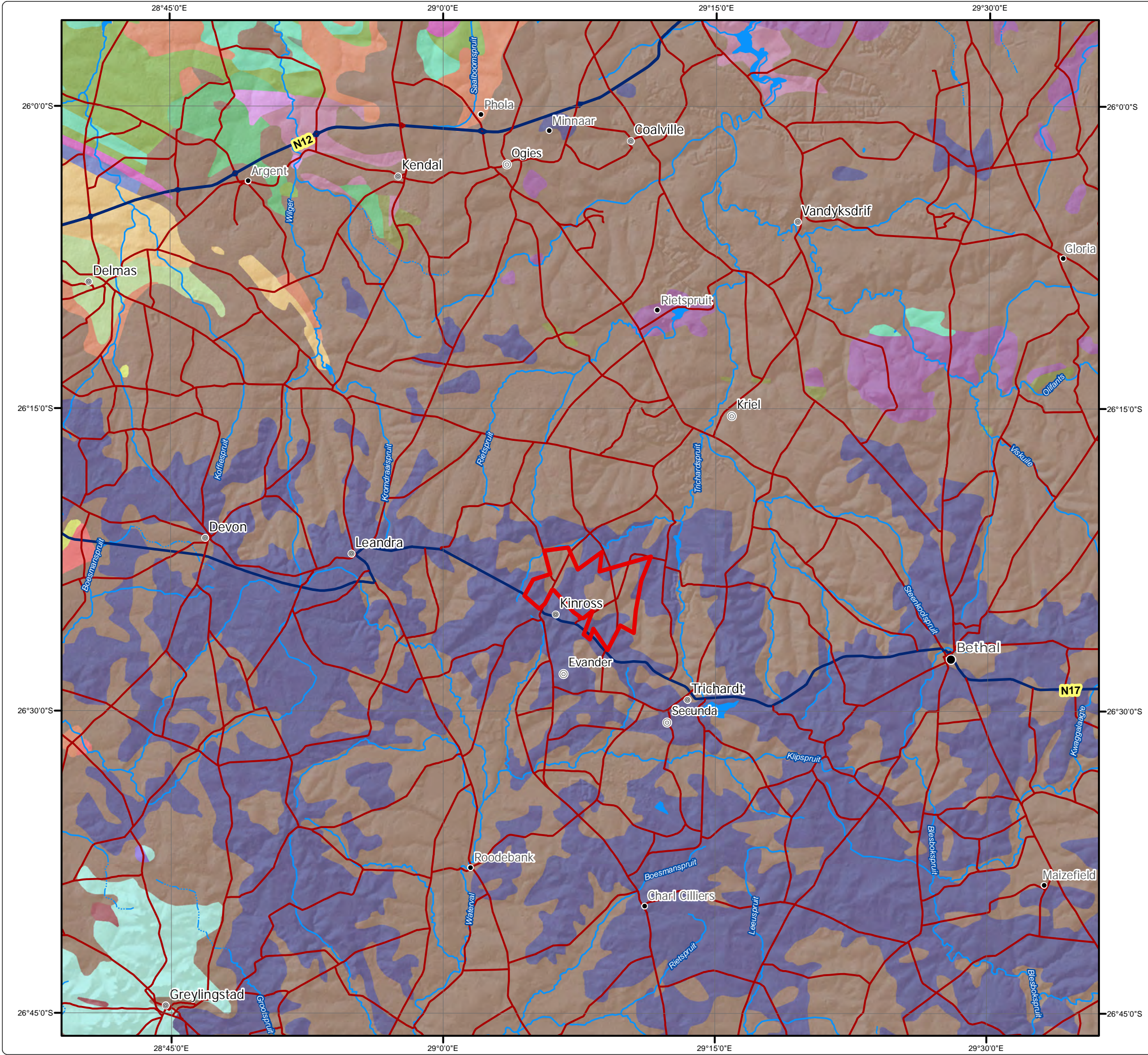
[www.digbywells.com](http://www.digbywells.com)

Projection: Transverse Mercator Ref #: mpl.SAS1744.201301.030  
Datum: Cape Revision Number: 1  
Central Meridian: 29°E Date: 10/01/2013



Kilometres  
1:110 000

# Sasol Syferfontein Block 4 UG Mining Regional Geology



### Legend

- Block 4 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
  - Dwarfontein 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
  - Rашoop Granophyre Sui, Bushveld Cplx
  - Rooiberg Grp, Transvaal Spgrp
  - Silverton Fm, Pretoria Grp
  - Strubenkop Fm, Pretoria Grp
  - Swazian Erathem
  - Turffontein Sbgrp, Central Rand Grp
  - Vaalian Erathem



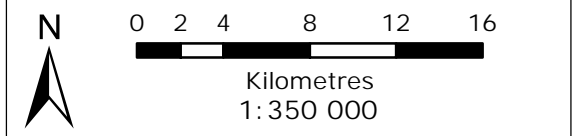
reaching new frontiers



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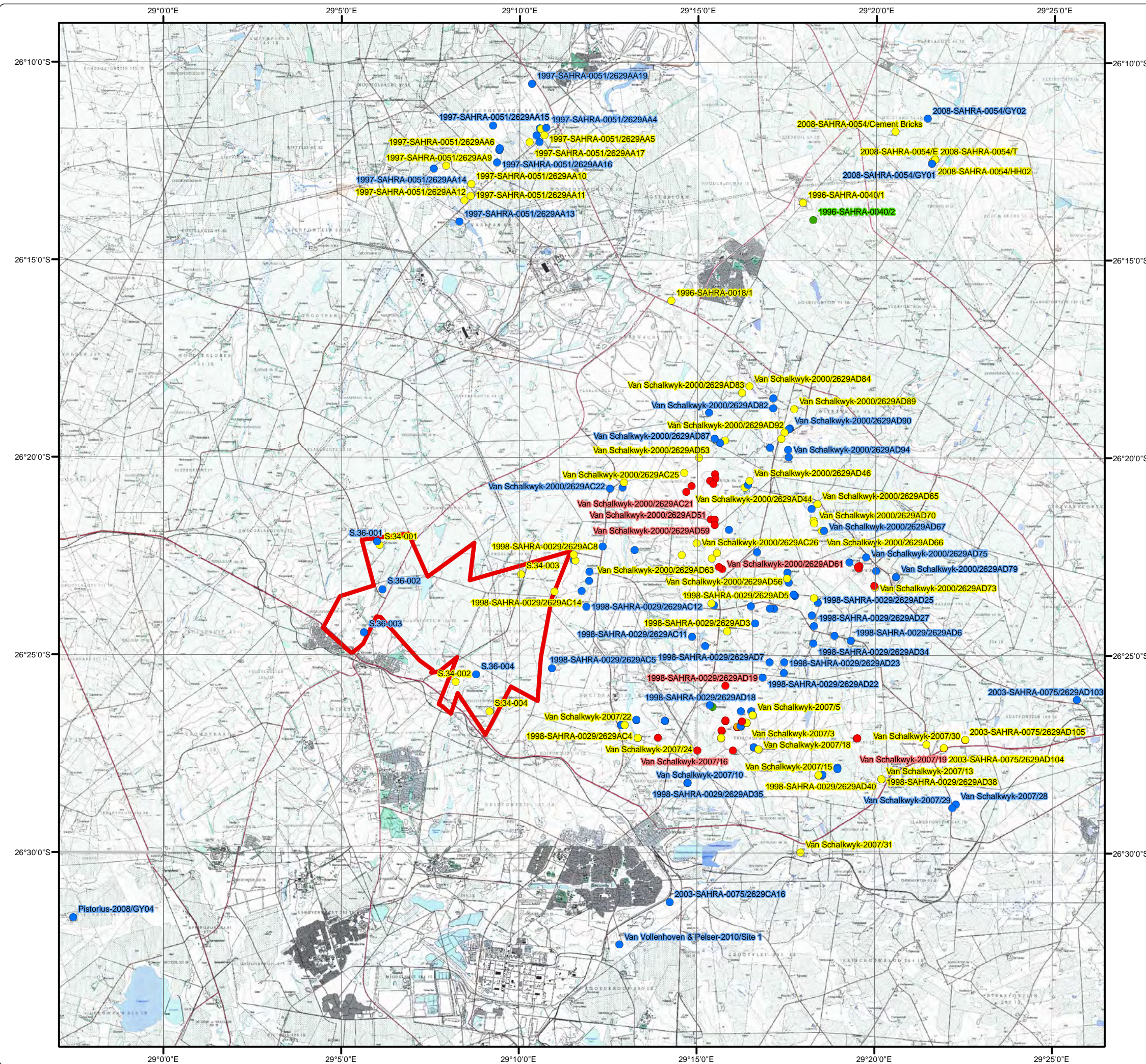
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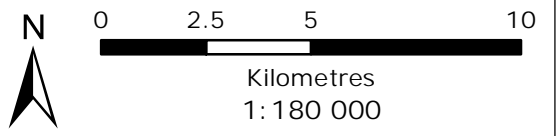


# Sasol Syferfontein Block 4 UG Mining Identified Heritage Resources

## Legend











-  Block 4 Project Area
- Identified Heritage Resources**
-  Historical Sites
-  Archaeological Sites
-  Burial Grounds & Graves
-  Archaeological Sites, Burial Grounds & Graves
-  Historical Sites, Burial Grounds & Graves





 	
<a href="http://www.digbywells.com">www.digbywells.com</a>	
Projection: Transverse Mercator Datum: Cape Central Meridian: 29°E	Ref #: mpl.SAS1744.201310.189 Revision Number: 1 Date: 28/10/2013
 <p style="text-align: center;">Kilometres 1: 180 000</p>	
<small>© Digby Wells Environmental</small>	

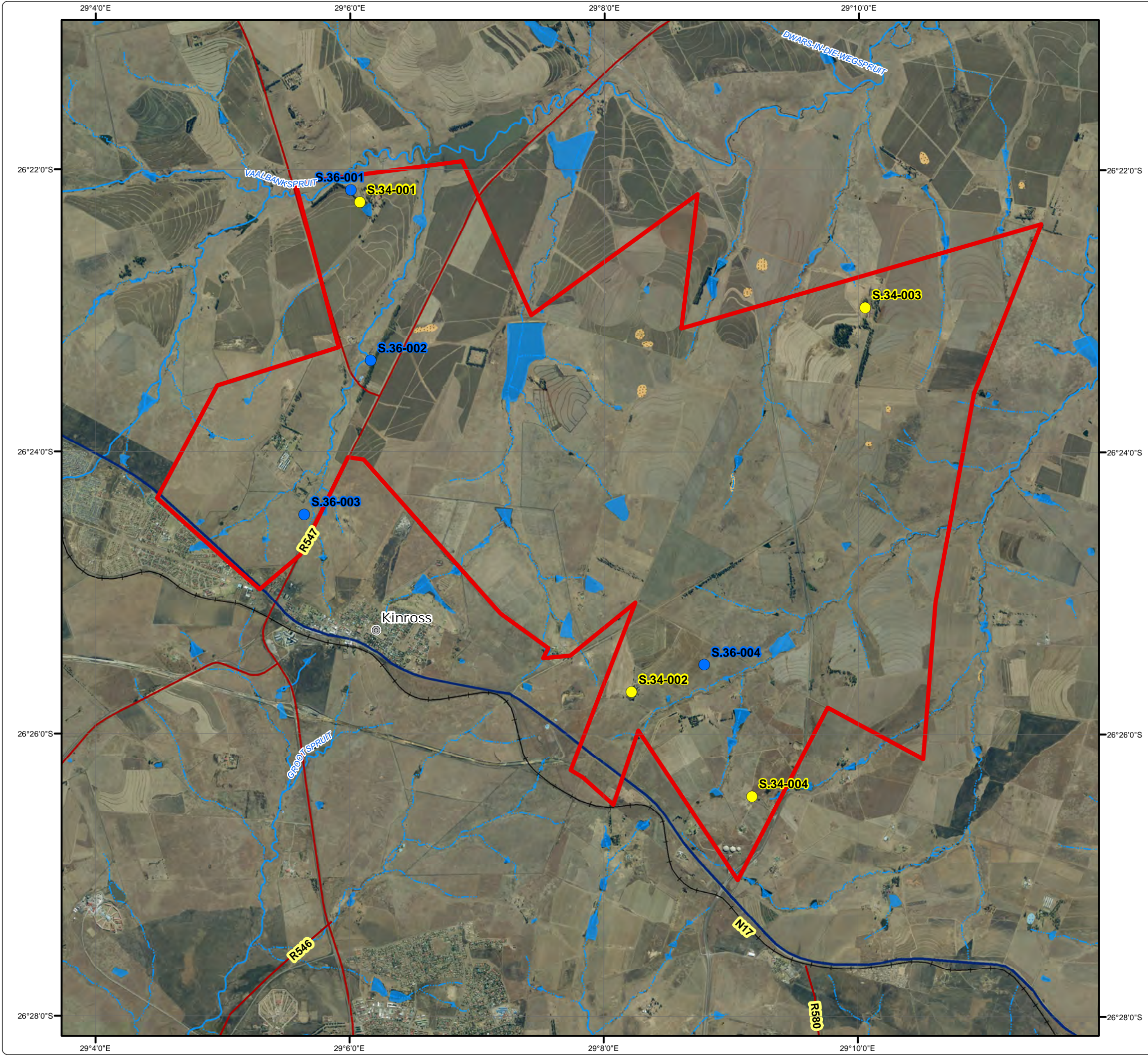
# Sasol Syferfontein Block 4 UG Mining Identified Heritage Resources

## Legend

-  Block 4 Project Area
-  Other Town
-  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
-  Burial Grounds & Graves





reaching new frontiers



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Projection: Transverse Mercator Ref #: mpl.SAS1744.201310.188  
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