



HERITAGE STATEMENT

FOR

THE DALYSHOPE PROJECT: PHASE 1

NEMA APPLICATION, LEPHALALE,

LIMPOPO PROVINCE

ANGLO AMERICAN THERMAL COAL

MARCH 2013

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Report Title: Heritage Statement for the Anglo Coal Dalyshope Project:
Phase 1 NEMA Application

Project type: Phase 1 NEMA Application

Project Number: VEN1590

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EXECUTIVE SUMMARY

Digby Wells Environmental (Digby Wells) was requested by Anglo American Thermal Coal (AATC) to undertake an Environmental and Social Impact Assessment (ESIA) in support of a Mining Right Application (MRA) for its proposed Dalyshope Project.

As part of the ESIA, a Heritage Statement was required for the proposed Dalyshope Project Phase 1 area. This Heritage Statement comprises the scoping report to be included into the Draft ESIA report in accordance with the MPRDA and NEMA.

The methods used to compile the Heritage Statement include the following:

- A literature review;
- Historical layering; and
- Ground truthing.

The study area is underlain by carbonaceous shales and coal of the Karoo Supergroup. The Dalyshope Project area is flat with little to no presence of hills, koppies or outcrops - features that are commonly used to determine the palaeontological potential of a project area. Although no published records of site locations of fossils in the study area exist, certain geological strata that occur in the study area are known to be fossiliferous and several palaeontological sites have been reported from the Tuli Basin in South Africa and the Tshipise Basin in Zimbabwe.

The published literature on the archaeology of the region indicates that the area surrounding the Dalyshope Project area is rich in Stone Age material suggesting that the area has been inhabited since the Early Stone Age (ESA) to the Middle Stone Age (MSA) and the Later Stone Age (LSA). During the ground truthing, numerous MSA lithics such as quartzite and shale flakes, cores and shale blades were recorded. These were either identified near animal burrows where they were uncovered due to animal digging actions, or on the surface surrounding pans.

Other artefacts that were recorded during the ground truthing include:

- Iron Age diagnostic, decorated and undiagnostic potsherds;
- Historical ruins;
- Historical features (fence posts); and
- Burials (historical and recent).

Based on the above findings, it is recommended that a Heritage Impact Assessment (HIA) be conducted for the infrastructure footprint in the proposed Dalyshope Project Phase 1 area on the farms Klaarwater 231 LQ and Dalyshope 232 LQ. This HIA should include an Archaeological Impact Assessment (AIA). A Burial Ground and Grave Census is recommended for the entire Dalyshope Project Phase 1 area on the farms Klaarwater 231 LQ and Dalyshope 232 LQ.



Due to the relatively flat nature of the landscape and the near absence of hills, koppies and/or outcrops, the palaeontological potential can only be determined through a survey of the surrounding receiving environment in which koppies and outcrops may occur. It is therefore also recommended that a Palaeontological Impact Assessment (PIA) be conducted and included as a component of the HIA.

GLOSSARY OF ABBREVIATIONS AND TERMS

AATC	Anglo America Thermal Coal
AIA	Archaeological Impact Assessment
DEA	Department of Environmental Affairs
EA	Environmental Authorisation
EAPs	Environmental Authorisation Policies
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPs	Equator Principles
EPIFs	Equator Principles Financial Institutions
ESA	Early Stone Age
ESIA	Environmental and Social Impact Assessment
GN	Government Notice
IFC	International Finance Corporation
IPP	Independent Power Producer
IWULA	Integrated Water Use License Application
LSA	Late Stone Age
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MRA	Mining Right Application
MSA	Middle Stone Age
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMAQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NEMPA	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
NHRA	National Heritage Resources Management Act, 1999 (Act No. 25 of 1999)
NPA	National Priority Area
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PIA	Palaeontological Impact Assessment
PPP	Public Participation Process
OECD	Organisation for Economic Co-operation and Development
SEP	Stakeholder Engagement Plan
SoER	State of the Environmental Report
SoW	Scope of Work
VIA	Visual Impact Assessment



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1 INTRODUCTION

Digby Wells Environmental (Digby Wells) was requested by Anglo American Thermal Coal (AATC) to undertake an Environmental and Social Impact Assessment (ESIA) in support of a Mining Right Application (MRA) for its proposed Dalyshope Project.

2 PROJECT BACKGROUND

2.1 Project Details

The Dalyshope Project is divided into two phases and the current scope of work includes only Phase 1. The first phase of operation will be to supply coal to a local Independent Power Producer (IPP). This phase will require limited infrastructure. Phase 1 will be an open-cast strip mining operation on the farms Klaarwater 231 LQ and Dalyshope 232 LQ in which selective mining techniques will be employed and combined with roll-over mining. Processing and handling of material will include coal being road hauled to a pit-head tip, transported an overland conveyor to the IPP and limited stacking of carbonaceous material.

Infrastructure in addition to the open-cast mine will include:

- Administrative and operational infrastructure. This could include:
 - Parking;
 - Office buildings; and
 - Store.
- Waste management infrastructure. This could include:
 - Discard dump;
 - Pit waste dump;
 - Subsoil dump;
 - Topsoil dump;
 - Overburden dump; and/or
 - Mining waste and recycle yard.
- Infrastructure associated with water supply. This could include:
 - Pollution control dams;
 - Construction dam;
 - Raw water dam;
 - Stormwater dam; and/or
 - Water pollution dam.
- Electricity infrastructure; and
- Access roads.

2.2 Description of Property and/or Affected Environment

2.2.1 Location Data

The Dalyshope Project is located near the Limpopo River in the Waterberg Coalfield approximately 60 km to the west of Lephalale in the Limpopo Province. It is an area consisting of low mountain ranges and escarpments with poor soils and a relatively low level of economic activity. It occurs within the savannah biome of Southern Africa and contains a high level of biological diversity including many Red Data and orange listed species of conservation concern, and many endemic species (Anonymous, 2012).

2.2.2 Location Maps

Location maps are provided in Appendix B: Location and Site Maps. Plan 1 to Plan 3 places the Dalyshope Project within the regional and local context. Plan 4 displays the geological context of the project area.

2.2.3 Site Maps

The site map is provided in Appendix B: Location and Site Maps as Plan 5. The site map depicts identified heritage resources from review of the relevant literature, and those identified during ground truthing. Additionally, the track log from ground truthing is also shown.

2.3 Relevant Contact Details

2.3.1 Developer/Client

Table 2-1: Contact details of the client

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2.3.2 Consultant

Table 2-2: Contact details of the consultant

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3 TERMS OF REFERENCE

3.1 Legislative Framework

The Heritage Statement is governed by national legislation and standards; and International Best Practise. These are discussed below.

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

The MPRDA stipulates under section 5(4) 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.

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

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

3.1.3 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 Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), 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.

3.1.4 World Bank

3.1.4.1 World Bank Operational Policies

The World Bank Operational Policies for cultural resources (OP4.11) fall within the broader Environmental Authorisation Policies (EAPs). Physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. This policy assists countries to avoid or mitigate adverse impacts on physical cultural resources from development projects that are financed through the World Bank. The impacts on physical cultural resources resulting from project activities, including mitigating measures, may not

contravene either the borrower's national legislation, or its obligations under relevant international environmental treaties and agreements.

3.1.4.2 Equator Principles (EPs)

The Equator Principles Financial Institutions (EPFIs) adopted principles in order to ensure that the projects financed are developed in a manner that is socially responsible and reflects sound environmental management practices. By doing so, negative impacts on project-affected ecosystems and communities should be avoided where possible, and if these impacts are unavoidable, they should be reduced, mitigated and/or compensated for appropriately.

Principle 2: Social and Environmental Assessment

For each project assessed as being either Category A or Category B, the borrower has conducted a Social and Environmental Assessment ("Assessment") process to address, as appropriate and to the EPFI's satisfaction, the relevant social and environmental impacts and risks of the proposed project. The Assessment should also propose mitigation and management measures relevant and appropriate to the nature and scale of the proposed project.

Principle 3: Applicable Social and Environmental Standards

For projects located in non-OECD (Organisation for Economic Co-operation and Development) countries, and those located in OECD countries not designated as High-Income, as defined by the World Bank Development Indicators Database, the Assessment will refer to the then applicable IFC Performance Standards and the then applicable Industry Specific Environmental Health and Safety (EHS) Guidelines ("EHS Guidelines"). The Assessment will establish to a participating EPFI's satisfaction the project's overall compliance with, or justified deviation from, the respective Performance Standards and EHS Guidelines.

3.1.4.3 International Finance Corporation (IFC)

The IFC's Performance Standards form part of the EP's and aims to manage social and environmental risks (and impacts) to enhance development opportunities in its private sector financing in its member countries eligible for financing (IFC, 2012). The main focus of the risk assessment of a proposed development is primarily on the potential impacts associated with the project activities during construction, operation, and decommissioning and closure phases.

3.1.5 Summary of Public Participation Process (PPP)

A Stakeholder Engagement Plan (SEP) is required for the Dalyshope Project. Through public consultation, stakeholders will be provided with the platform to contribute essential local knowledge to project planning and design, and thereby influence the decision making process. As such, the PPP will be implemented to comply with the requirements for consultation in accordance with the:

- MPRDA Section 5(4),10;
- NEMA Section 2; and
- World Bank Operation Policies OP4.11 (11).

3.2 Terms of Reference

AATC is applying for a MRA in terms of the MPRDA. The MRA is subject to Environmental Authorisation (EA). Relevant as follows:

- An approved Environmental Impact Assessment (EIA) that should inform and be employed to develop an Environmental Management Programme (EMP) in terms of the MPRDA;
- Listed activities according to the NEMA;
- Integrated Water Use Licence Application (IWULA) for water uses listed in Section 21 of the National Water Act, 1998 (Act No. 36 of 1998) (NWA); and
- Integrated waste management license application in compliance with the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA).

In addition, it is also required that the EIA study comply with international requirements consisting of the EPs, IFC Performance Standards and World Bank standards.

3.3 Scope of Work

In terms of the Scope of Work (SoW) dated February 2012, and to comply with the above-mentioned legislation, the following heritage work is required:

- State of the Environmental Report (SoER) to place the project within the greater historical context of the region and country; and
- Heritage Scoping Assessment in support of the EIA study compliant to the MPRDA, NEMA and international requirements.

4 METHODOLOGY

4.1 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.

4.2 Historical Layering

A review of historical maps, such as the Major Jackson Series, 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 examined.

4.3 Ground Truthing

Ground truthing was undertaken from the 12th to the 19th of November 2012 to identify and record heritage resources within the Dalyshope Project boundaries.

4.3.1 Site Naming

Sites identified during the ground truthing will be 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.

VEN1590/2327CB/S.35-001



This number may be shortened on any plans or maps to the NHRA reference number suffixed with the site number: **S.35-001**.

5 STATE OF RECEIVING ENVIRONMENT/CULTURAL LANDSCAPE

The study area is underlain by carbonaceous shales and coal of the Karoo Supergroup. The coal found in this area is collectively known as the Waterberg coal field which is believed to hold more than 40% of South Africa's *in situ* mineable coal reserves (Wilson, 2012). In the northern part of the Limpopo Province, the Karoo Supergroup is much attenuated and incomplete compared to the Main Karoo Basin to the south. The Karoo-aged rocks occur in two areas in the Limpopo Province named the Tuli and Tshipise Basins. The Dalyshope study area lies on the western limit of the Tuli Basin. Although no published records of site locations of fossils in the study area exist, certain geological strata that occur in the study area are known to be fossiliferous. The available literature shows that the Karoo strata of the Limpopo Province are exceptionally rich in fossils. Several palaeontological sites have been reported from the Tuli Basin in South Africa and Zimbabwe and from the Tshipise Basin (Van Eeden & Keyser, 1971; Van den Berg, 1980; Durand, 1996; Durand, 2001; Brandl, 2002; Durand, 2005).

Evidence suggests that the region surrounding the Dalyshope Project area has been inhabited since the Early Stone Age (ESA). In addition to the identification of an Acheulean hand-axe reported in Nel (2012), several stone scatters associated with the Middle Stone Age (MSA) were also identified within the surrounding areas. These finds are commonly associated with water sources, such as the Limpopo River and pans.

Late Stone Age (LSA) finds have also been noted. The LSA is associated with hunter-gatherers, such as the San, known to have been active in the region. This is evident at sites such as Nelson Kop approximately 30 km to the east where rock engravings have been recorded (Pistorius, 2010). This period is followed by the Iron Age.

The Iron Age around the Dalyshope Project is comprised of both the Early and Late Iron Age based on ceramic distributions. Possible Early Iron Age is limited to *Bambata facies* with fine decoration of multiple bands and cross hatching on thin walled vessels dating to between 150 CE – 650 CE. Identified Late Iron Age was characterised by cattle posts along the escarpment and briefly occupied settlements close to the arable soil along the Limpopo River (Huffman & van der Walt, 2010; Nel, 2012). Cattle posts have been suggested to be associated with Letsibogo ceramic users. *Letsibogo* ceramics are characterised by lines of punctates separated by black and red zones and date to 1500 CE – 1700 CE (Huffman, 2007; Huffman & van der Walt, 2010; Beimond, 2012). Ethnographically, it is believed that *Letsibogo* ceramic users were the baKaa (Schapera, 1953; Beimond, 2012).

The agricultural settlements spanning the Late Iron Age through to the historical period are believed to be associated with the baTswana. Extensive archaeological excavations conducted on nearby farms during 2011 and 2012 indicated that occupation may have been brief (Nel, 2012). As demonstrated in the history of the baKwena, periods of political turbulence caused disruptions during the 18th and 19th centuries (Schapera, 1980). It is these disruptions that are suggested to be the cause of the ephemeral remains of the sites (Nel, 2012).

The distribution of Tsetse fly (Plug, 2000) and the influx of Europeans could have also contributed to the brief occupations of these sites. Europeans first started to divide up the land and proclaim farms toward the late 19th century. Information gathered from the National Archives of South Africa in Pretoria and the Chief Surveyor General database indicate that the Dalyshope Project area was first occupied by Europeans in 1870 on the farms

Dalyshope 232 LQ, Wynberg 215 LQ and Canada 229 LQ. Review of historical imagery indicated that the area was primarily used for agricultural purposes with very little infrastructure. However, focus has shifted from agriculture to game farming.

The town Ellisras was established in 1960 and renamed Lephalale in 2002. Lephalale is primarily a mining and industrial town with the main economic drivers being the Grooteegeluk Coal Mine, the Matimba Power Station, and agriculture and tourism (Lephalale Municipality, 2012). A large portion of the Lephalale Municipality is designated as a Biosphere Reserve. The area has been inhabited over hundreds of thousand years and is one of the most important San Rock Art areas in South Africa. Tourism is the major source of income. The biosphere reserve concept helps a balance to be struck between the pressures of the tourist industry, the need to generate direct benefits to the local communities and the conservation of the cultural and natural heritage assets (Anonymous, 2012). In 2012, the area was also deemed a National Priority Area (NPA) under section 18(1) of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEMAQA). This entails that the area requires specific air quality management actions to address the negative impacts of the air quality as a proactive approach to support future sustainable development in the area.

The following heritage resources were identified during the course of the ground truthing survey:

- MSA lithics;
- Iron Age diagnostic, undiagnostic and decorated potsherds;
- Historical ruins;
- Historical features (fence posts); and
- Burials (historical and recent).

MSA lithics such as quartzite and shale flakes, cores and a shale blade (Figure 5-1 and Figure 5-2) were recorded during the ground truthing. These were identified either near animal burrows where they were uncovered due to the animal digging actions, or on the surface near surrounding pans.



Figure 5-1: MSA shale flakes identified at VEN1590/2327CB/S.35-028



Figure 5-2: MSA flakes identified at VEN1590/2327CB/S.35-029

The Iron Age potsherds that were recorded included diagnostic, undiagnostic and decorated potsherds. Decorated potsherds include:

- *Letsibogo* facies (Figure 5-3);
- *Madikwe* facies (Figure 5-4);
- *Mambo* facies (Figure 5-5); and
- *Baratani* or *Happy Rest* facies (Figure 5-6).

These were identified either near animal burrows where they were uncovered due to the animal digging actions or at the edge of floodplains where they were uncovered due to flooding action.



Figure 5-3: *Letsibogo* facies potsherd identified at VEN1590/2327CB/S.35-031



Figure 5-4: *Madikwe* facies potsherd identified at VEN1590/2327CB/S.35-032. Note the red burnish on three of the potsherds



Figure 5-5: Possible *Mambo* facies potsherd identified at VEN1590/2327CB/S.35-016



Figure 5-6: Either *Baratani*, *Happy Rest* or *Mambo* facies potsherds identified at VEN1590/2327CB/S.35-038



The historical ruins include cement foundations with sun-baked brick rubble (Figure 5-7) and associated metal and glass fragments. There are also surface scatters of sun-baked bricks. Two burials were found to be associated with the historical ruins. Both historical ruins and surface scatters were identified to be in close proximity to pans.



Figure 5-7: Cement and brick foundations identified at VEN1590/2327CB/S.34-042

Historical features include fence posts that would have indicated the previous farm boundary. These were identified to be in close proximity to the ruins and to existing farm roads (Figure 5-8 and Figure 5-9).



Figure 5-8: Surveyor post identified at VEN1590/2327CB/S.34-036

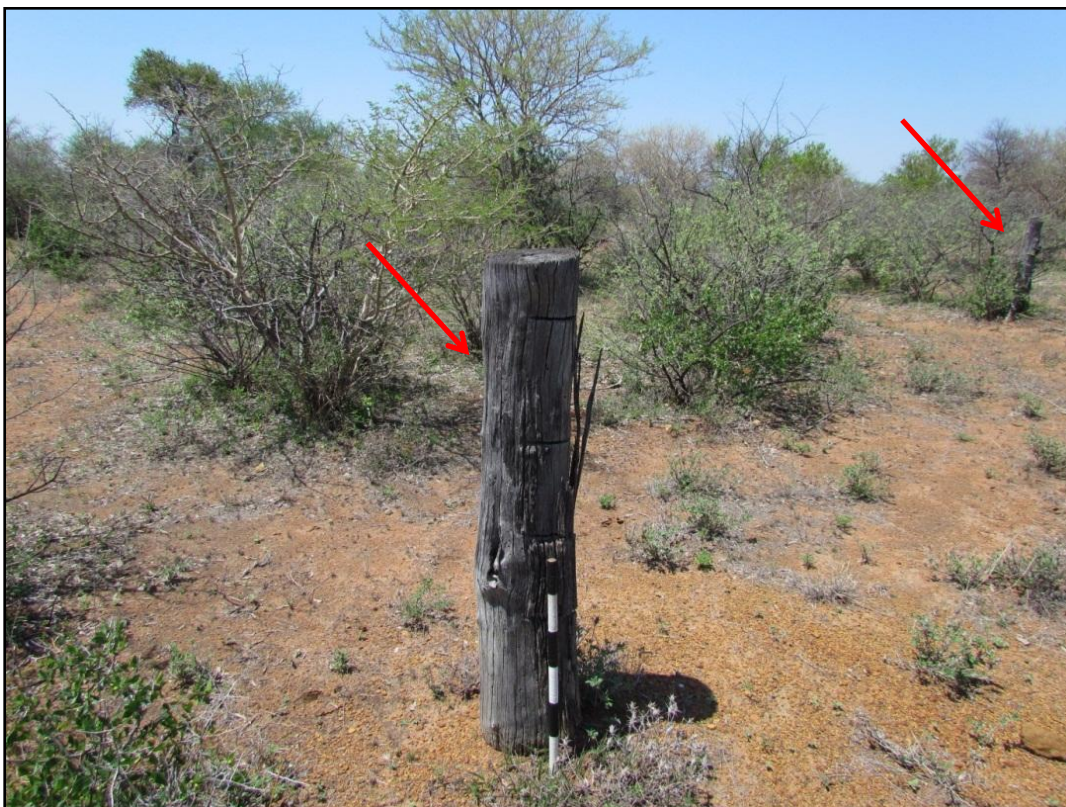


Figure 5-9: Fence posts identified at VEN1590/2327CB/S.34-040



VEN1590

The identified burials include one historical burial (Figure 5-10) and two recent burials (Figure 5-12). The burials were found to be in close proximity to pans and historical ruins and associated surface scatters. The historical burial dates to 1927 (VEN1590/2327CB/S.36-059), while the recent burials date to approximately 1994 (VEN1590/2327CB/S.36-061). According to the owner of the farm Wynberg 215 LQ who was consulted about the burials, the two recent burials are associated with previous farm workers who previously inhabited the structure that once stood on the cement foundations at VEN1590/2327CB/S.34-042.



Figure 5-10: Burial dating to 1927 identified at VEN1590/2327CB/S.36-059



Figure 5-11: Close-up of tombstone on the burial identified at VEN1590/2327CB/S.36-059

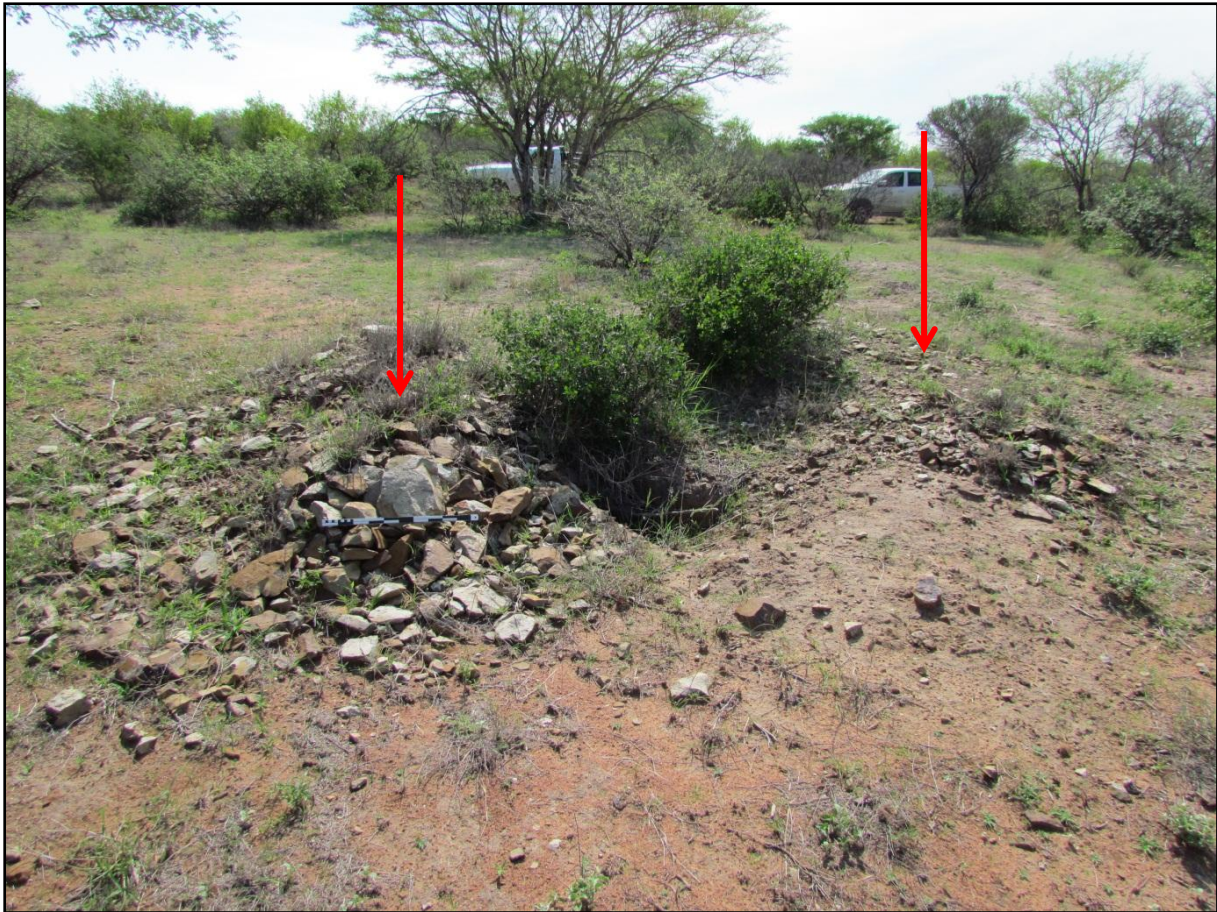


Figure 5-12: Two burials dating to approximately 1994 identified at VEN1590/2327CB/S.36-041



6 SOURCES OF RISK

NEMA Listed Activity	Potential risk
Linear development	
GNR 544 (22) The construction of a road, outside urban areas.	<ul style="list-style-type: none"> ■ Site clearance that will be required to prepare construction sites may destroy or damage physical heritage resources, including but not limited to, archaeological sites, palaeontological resources, burial grounds and graves;
GNR 545 (10) The construction of facilities or infrastructure for the transfer of 50 000 cubic meters or more water per day.	<ul style="list-style-type: none"> ■ Site clearance and construction will increase human traffic, increasing the risk to nearby heritage resources in terms of accidental or purposeful damage or destruction; ■ Blasting that may be required may result in damage to or loss of structures, including monuments; ■ Operation and maintenance of facilities will create long-term risk associated with more regular and increased human traffic, allowing access to nearby heritage resources; ■ Construction of facilities may change the landscape character and may impact on the integrity of remaining nearby heritage resources.
Non-linear development	
GN R 545/8 The construction of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.	<ul style="list-style-type: none"> ■ Site clearance that will be required to prepare construction sites may destroy or damage physical heritage resources, including but not limited to, archaeological sites, palaeontological resources, burial grounds and graves; ■ Site clearance and construction will increase human traffic, increasing the risk to nearby heritage resources in terms of accidental or purposeful damage or destruction; ■ Operation and maintenance of facilities will create long-term risk associated with more regular and increased human traffic, allowing access to nearby heritage resources; ■ Increased emissions that may include effluent, dust, ash and other forms of pollution may result in a change to the integrity of certain types of tangible heritage resources; ■ Use and/or diversion of local water sources may result in change to the integrity of archaeological sites such as drying out or flooding, potentially altering the integrity of deposit; ■ Construction of facilities may change the



NEMA Listed Activity	Potential risk
	landscape character and may impact on the integrity of remaining nearby heritage resources. Powerlines may be routed through heritage sites.

7 RECOMMENDATIONS

Although the ground truthing was conducted on the entire Dalyshope Project area, the recommendations presented here are only applicable for the Phase 1 NEMA Application on the farms Klaarwater 231 LQ and Dalyshope 232 LQ.

It is recommended that a Heritage Impact Assessment (HIA) be conducted for the Phase 1 process of the Dalyshope Project. This HIA is recommended for the infrastructure footprint on the farms Klaarwater 231 LQ and Dalyshope 232 LQ.

The HIA should be conducted on, but not limited to, the following infrastructure footprints as discussed in Section 2.1 on Page 9:

- The opencast areas;
- Administrative and operational infrastructure;
- Waste management infrastructure;
- Infrastructure associated with water supply;
- Electricity infrastructure; and
- Access roads.

The HIA would therefore require detailed project plans from AATC.

The following components should be included in the HIA:

- An Archaeological Impact Assessment (AIA) on the infrastructure footprint in the Phase 1 Dalyshope Project area;
- A Palaeontological Impact Assessment (PIA) on the infrastructure footprint in the Phase 1 Dalyshope Project area; and
- A Burial Grounds and Graves Survey for the entire Phase 1 Dalyshope Project area.

Exemption from a Historical Townscape assessment will be requested from SAHRA as there is no historical townscape in the vicinity of the Dalyshope Project that will be impacted on.

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Appendix A: Curriculum Vitae



DIGBY WELLS
ENVIRONMENTAL

SHAHZAADEE KARODIA

Ms Shahzaadee Karodia
Archaeology Consultant
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

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Directors: AR Wilke, LF Koeslag, PD Tanner (British)*, AJ Reynolds (Chairman) (British)*, J Leaver*, GE Trusler (C.E.O)
*Non-Executive



2009 – 2011:	English tutor, Kip McGrath
2009 – 2011:	Online English tutor, Education First
2008 – 2009	English teacher, Yong Ju Elementary School
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

- Heritage Statement and Letter of Recommendation from Exemption for the Central Basin, Witwatersrand Acid Mine Drainage Project
- Heritage Impact Assessment for the Witwatersrand Gold Fields Acid Mine Drainage Project (Western Basin)
- Archaeological Watching Brief on Access Road for Bokoni Platinum Ltd
- Heritage Statement and Notification of Intent to Develop for Eskom Transmission Division – Roodepoort Strengthening Project;
- Heritage Statement and Notification of Intent to Develop for the Zandbaken Coal Mine Project, Zandbaken 585 IR, Sandbaken 363 IR and Bosmans Spruit 364 IS, Standerton, Mpumalanga

- Heritage Statement and Notification of Intent to Develop for Rhodium Reef Limited Platinum Operation, 2430 CA & CC, De Goedverwachting 332 KT, Boschkloof 331 KT and Belvedere 362 KT
- Heritage Statement and Notification of Intent to Develop for the Thabametsi Project, 2327CB, Vaalpensloop 313 LQ, Lephalale, Limpopo Province
- Heritage Impact Assessment for the Proposed Thabametsi Project, Lephalale, Limpopo Province

6 PROFESSIONAL AFFILIATIONS

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

7 REFERENCES

7.1 Johan Nel

Digby Wells Environmental

HRM Unit Manager

johan.nel@digbywells.com

7.1.1 Dr Amanda Esterhuysen

University of the Witwatersrand

School of Geography, Archaeology and Environmental Studies

Email: amanda.esterhuysen@wits.ac.za

7.1.2 Dr James Phillips

National Institute for Occupational Health (NIOH)

Department of Pathology

Email: jim.phillips@nioh.nhls.ac.za

7.1.3 Dr Ceri Ashley

University of Pretoria

Department of Anthropology and Archaeology



Email: ceriashley@up.ac.za

7.1.4 Professor Bruce Rubidge

University of the Witwatersrand

Bernard Price Institute for Palaeontological Studies

Email: bruce.rubidge@wits.ac.za

7.1.5 Professor Lee R. Berger

University of the Witwatersrand

Institute of Human Evolution

Email: lee.berger@wits.ac.za

7.1.6 Lucinda Ruth Backwell

University of the Witwatersrand

Institute of Human Evolution

Email: lucinda.backwell@wits.ac.za



DIGBY WELLS
ENVIRONMENTAL

NATASHA HIGGITT

Ms Natasha Higgitt
Archaeology Consultant
Social Department
Digby Wells Environmental

1 EDUCATION

- University of Pretoria
- BA Degree (2008)
- Archaeology Honours (2009)
- Title of Dissertation- Pass the Salt: An Archaeological analysis of lithics and ceramics from Salt Pan Ledge, Soutpansberg, for evidence of salt working and interaction.

2 LANGUAGE SKILLS

- English - Excellent (read, write and speak)
- Afrikaans - Fair (read, write and speak)
- Italian – Poor (Speaking only)

3 EMPLOYMENT

- July 2011 to Present: Archaeology Consultant at Digby Wells Environmental
- April 2011 to June 2011: Lab assistant at the Albany Museum Archaeology Department, Grahamstown, Eastern Cape
- April 2010 to March 2011: Intern at the Archaeology Department, Albany Museum, Grahamstown, Eastern Cape under the Department of Sports, Recreation, Arts and Culture, Eastern Cape Government, South Africa (DSRAC)

4 EXPERIENCE

- Human remains rescue excavation at St Francis Bay, Eastern Cape
- Human remains rescue excavation at Wolwefontein, Eastern Cape

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Directors: A Sing*, AR Wilke, LF Koeslag, PD Tanner (British)*, AJ Reynolds (Chairman) (British)*, J Leaver*, GE Trusler (C.E.O)

*Non-Executive

- Recorded two rock art sites at Blaauwbosch Private Game Reserve, Eastern Cape
- Attended a 2 week excavation/study tour in the Friuli Region in Italy, organised by the *Società Friulana di Archeologia*, sponsored by *Ente Friuli nel Mondo*, and excavated a 12th century medieval castle
- Attended a 2 week excavation in Limpopo, Waterpoort Archaeological Project organised by Xander Antonites (Yale PhD Candidate)
- A total of 5 University of Pretoria Archaeology field schools in Limpopo and Gauteng spanning over 4 years

5 PROJECT EXPERIENCE

- Phase 1 Heritage Impact Assessment for the Thabametsi Coal Mine, Lephalale, Limpopo for Exxaro Coal (Digby Wells Environmental)
- Heritage Statement for the Zandbaken Coal Mine Project, Zandbaken 585 IR, Sandbaken 363 IR and Bosmans Spruit 364 IS, Standerton, Mpumalanga for Xtrata Coal South Africa (Digby Wells Environmental)
- Phase 1 Heritage Impact Assessment for the Brakfontein Thermal Coal Mine, Mpumalanga for Universal Coal (Digby Wells Environmental)
- Development of a RAP for Aureus Mining for the New Liberty Gold Mine Project, Liberia (Digby Wells Environmental)
- Phase 1 Archaeological Impact Assessment for the MBET Pipeline, Steenbokpan, Limpopo (Digby Wells Environmental)
- Notice of Intent to Develop and Cultural Resources Pre-Assessment for Orlight SA (PTY) Ltd Solar PV Project. 2012. (Digby Wells Environmental)
- Agricultural Survey for Platreef ESIA, Mokopane, Limpopo. 2011. (Digby Wells Environmental)
- Cultural Resources Pre-Assessment for the Proposed Sylvania Everest North Mining Development in Mpumalanga, near Lydenburg. 2011. (Digby Wells Environmental)
- Phase 2 Mitigation of Archaeological sites at Boikarabelo Coal Mine, Steenbokpan, Limpopo. 2011. (Digby Wells Environmental)
- Cultural Resources Pre-Assessment for Proposed Platinum Mine Prospecting in Mpumalanga, near Bethal for Anglo Platinum. 2011. (Digby Wells Environmental)
- Cultural Resources Pre-Assessment for proposed Platinum Mine at Mokopane, Limpopo for Ivanhoe Platinum. 2011. (Digby Wells Environmental)
- Phase 1 AIA Mixed-use housing Development, Kwanobuhle, Extension 11, Uitenhage, Eastern Cape. 2011.
- Phase 1 AIA Centane to Qholora and Kei River mouth road upgrade survey, Mnquma Municipality, Eastern Cape. 2011. (SRK Consulting)



- Phase 1 AIA Clidet Data Cable survey, Western Cape, Northern Cape, Free State and Eastern Cape. 2011. (SRK Consulting)
- Phase 1 AIA Karoo Renewable Energy Facility, Victoria West, Northern Cape. 2011. (Savannah Environmental)
- Phase 1 AIA Windfarm survey in Hamburg, Eastern Cape. 2010. (Savannah Environmental)
- Phase 1 AIA Windfarm survey in Molteno, Eastern Cape. 2010. (Savannah Environmental)
- Phase 1 AIA Housing Development at Motherwell, P.E. 2010. (SRK Consulting)
- Phase 1 AIA Sand quarry survey in Paterson, Eastern Cape. 2010. (SRK Consulting)
- Phase 1 AIA Quarry Survey at Victoria West. 2010. (Acer [Africa] Environmental Management Consultants)
- Phase 1 AIA Quarry Survey at Port Elizabeth. 2010. (E.P Brickfields)

6 PROFESSIONAL AFFILIATIONS

- Association of Southern African Professional Archaeologists (ASAPA): Professional member
- Association of Southern African Professional Archaeologists (ASAPA): CRM Practitioner (Field Supervisor: Stone Age, Iron Age and Rock Art)
- South African Museums Association: Member



JOHAN NEL

Mr. Johan Nel

Unit manager: Heritage Resources Management

Social Sciences

Digby Wells Environmental

1 EDUCATION

2002 BA Honors - Archaeology

2001 BA Anthropology & Archaeology

1997 Matriculated Brandwag Hoërskool

2 LANGUAGE SKILLS

Fluent in English and Afrikaans

3 EMPLOYMENT

2011 to present Unit manager: Heritage Resources Management, Digby Wells Environmental

2010-2011 Archaeologist, Digby Wells Environmental

2005-2010 Manager and co-owner, Archaic Heritage Project Management

2003-2005 Freelance archaeologist

Resident archaeologist, Rock Art Mapping Project, Ndidima, Ukhahlamba-Drakensberg World Heritage Site

2002-2003 Special Assistant: Anthropology, Department of Anatomy, University of Pretoria

2001-2002 Technical Assistant: Department of Anatomy, University of Pretoria

1999-2001 Assistant: Mapungubwe Project, National Cultural History Museum & Department of Anthropology and Archaeology, UP

4 EXPERIENCE

I have 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

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*Non-Executive

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 and Sierra Leone. I am fluent in English and Afrikaans, with excellent writing and research skills.

5 PROJECT EXPERIENCE

PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENTS:

- Above Ground Storage Tanks survey, SASOL Oil (Pty) Ltd, Free State Province, South Africa
- Access road establishment , AGES-SA, Tzaneen, South Africa
- Boikarabelo Railway Link, Resgen South Africa, Steenbokpan, South Africa
- Conversion of prospecting rights to mining rights, Georock Environmental, Musina, South Africa
- Galaxy Gold Agnes Mine, Barberton, South Africa
- HCI Khusela Palesa Extension, Bronkhorstspuit, South Africa
- Kennedy's Vale township establishment, AGES-SA, Steelpoort, South Africa
- Koidu Diamond Mine, Koidu Holdings, Koidu, Sierra Leone
- Lonmin Platinum Mine water pipeline survey, AGES-SA, Lebowakgomo, South Africa
- Mining right application, DERA Environmental, Hekpoort, South Africa
- Mogalakwena water pipeline survey, AGES-SA, Limpopo Province, South Africa
- Nzoro Hydropower Station, Environmental and Social Impact Assessment, DRC
- Randgold Kibali Gold Project, Environmental and Social Impact Assessment, Kibali, Democratic Republic of the Congo
- Randwater Vlakfontein-Mamelodi water pipeline survey, Archaeology Africa cc, Gauteng, South Africa
- Residential and commercial development, GO Enviroscience, Schoemanskloof, South Africa
- Temo Coal, Limpopo, South Africa
- Transnet Freight Line survey, Eastern Cape and Northern Cape, ERM, South Africa
- Van Reenen Eco-Agri Development Project, GO Enviroscience, South Africa
- Platreef Platinum Mine, Ivanhoe Nickel & Platinum, Mokopane, South Africa

MITIGATION PROJECTS:

- Mitigation of Iron Age archaeological sites: Kibali Gold Project, DRC
- Mitigation of Iron Age metalworking site: Koidu Diamond Mine, Sierra Leone
- Mitigation of Iron Age sites: Boikarabelo Coal Mine, South Africa
- Exploratory test excavations of alleged mass burial site: Rustenburg, Bigen Africa Consulting Engineers, South Africa
- Mitigation of Old Johannesburg Fort: Johannesburg Development Agency (JDA), South Africa
- Site monitoring and watching brief: Department of Foreign Affairs Head Office, Imbumba-Aganang Design & Construction Joint Venture, South Africa

GRAVE RELOCATION

- Du Preezhoek-Gautrain Construction, Bombela JV, Pretoria, South Africa
- Elawini Lifestyle Estate social consultation, PGS (Pty) Ltd, Nelspruit, South Africa;
- Motaganeng social consultation, PGS (Pty) Ltd Burgersfort, South Africa
- Randgold Kibali Mine, Relocation Action Plan, Kibali, DRC
- Repatriation of Mapungubwe National Park and World Heritage Site, DEAT, South Africa
- Smoky Hills Platinum Mine social consultation, PGS (Pty) Ltd Maandagshoek South Africa
- Southstock Colliery, Doves Funerals, Witbank, South Africa
- Tygervallei. D Georgiades East Farm (Pty) Ltd, Pretoria, South Africa
- Willowbrook Ext. 22, Ruimsig Manor cc, Ruimsig, South Africa
- Zondagskraal social consultation, PGS (Pty) Ltd, Ogies, South Africa
- Zonkezizwe Gautrain, PGS, (Pty) Ltd, Midrand, South Africa

OTHER HERITAGE ASSESSMENTS AND REVIEWS:

- Heritage Scoping Report on historical landscape and buildings in Port Elizabeth: ERM South Africa
- Heritage Statement and Cultural Resources Pre-assessment scoping report on Platreef Platinum Mine, Mokopane: Platreef Ltd
- Heritage Statement and Scoping Report on five proposed Photo Voltaic Solar Power farms, Northern Cape and Western Cape: Orlight SA
- Land claim research Badenhorst family vs Makokwe family regarding Makokskraal, Van Staden, Vorster & Nysschen Attorneys, Ventersdorp South Africa
- Research report on Cultural Symbols, Ministry for Intelligence Services, Pretoria, South Africa
- Research report on the location of the remains of kings Mampuru I and Nyabela, National Department of Arts and Culture, Pretoria, South Africa
- Review of Archaeological Assessment: Resources Generation, Coal Mine Project in the Waterberg area, Limpopo Province

- Review of CRM study and compilation of Impact Assessment report, Zod Gold Mine, Armenia

6 PROFESSIONAL AFFILIATIONS

Society for Africanist Archaeologists (SAfA)

7 PROFESSIONAL REGISTRATION

Association for Southern African Professional Archaeologists (ASAPA)

Accredited by ASAPA Cultural Resources Management section

International Association of Impact Assessors (IAIA)

8 PUBLICATIONS

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: 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 for the 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.

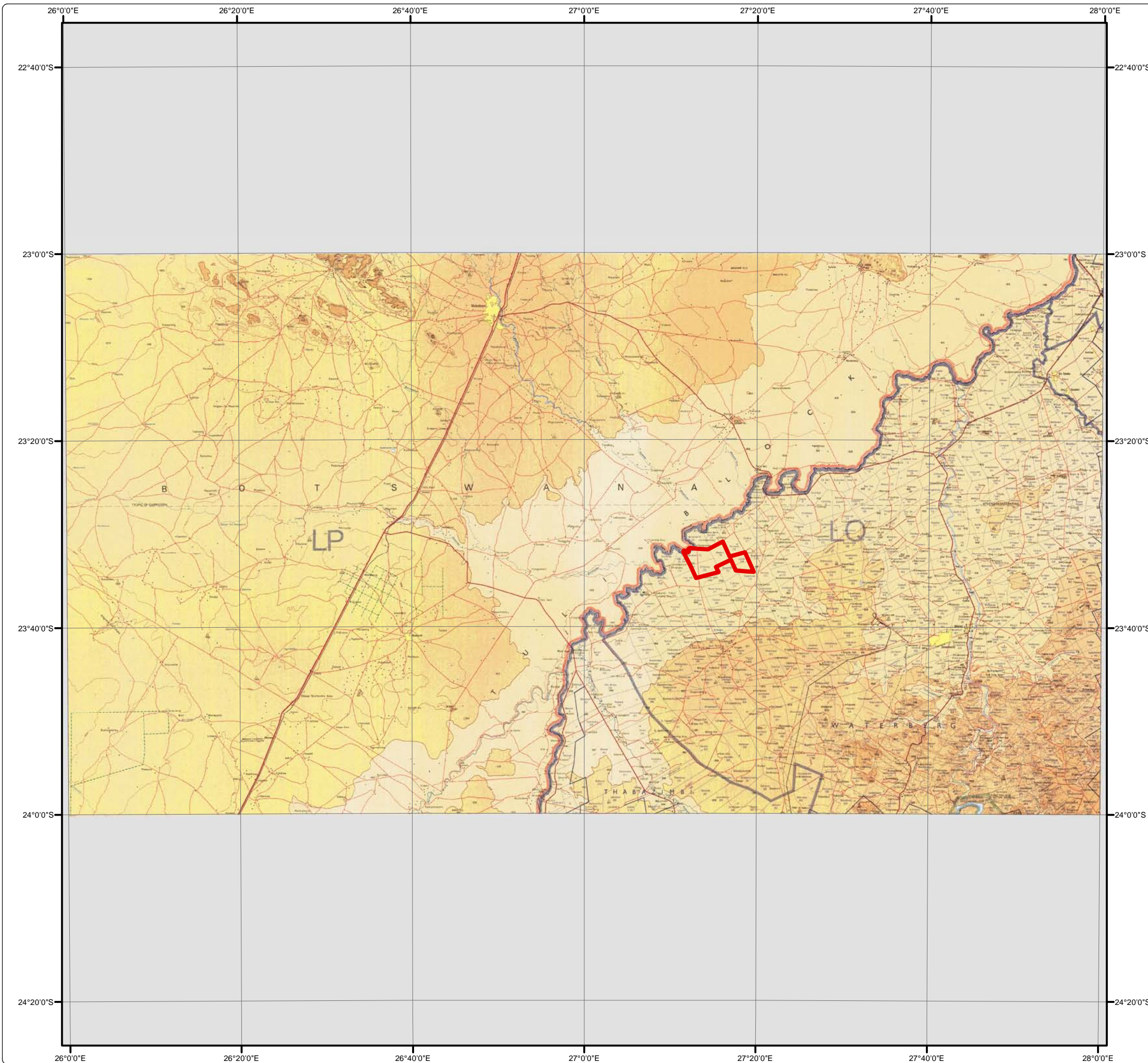


Appendix B: Location and Site Maps

Anglo Coal Dalyshope ESI A Topographical Map 1:250 000

Legend

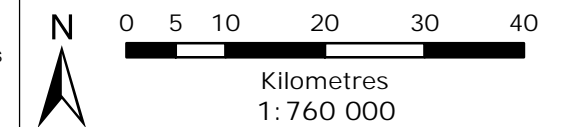
 Project Area



2326 Lephalale

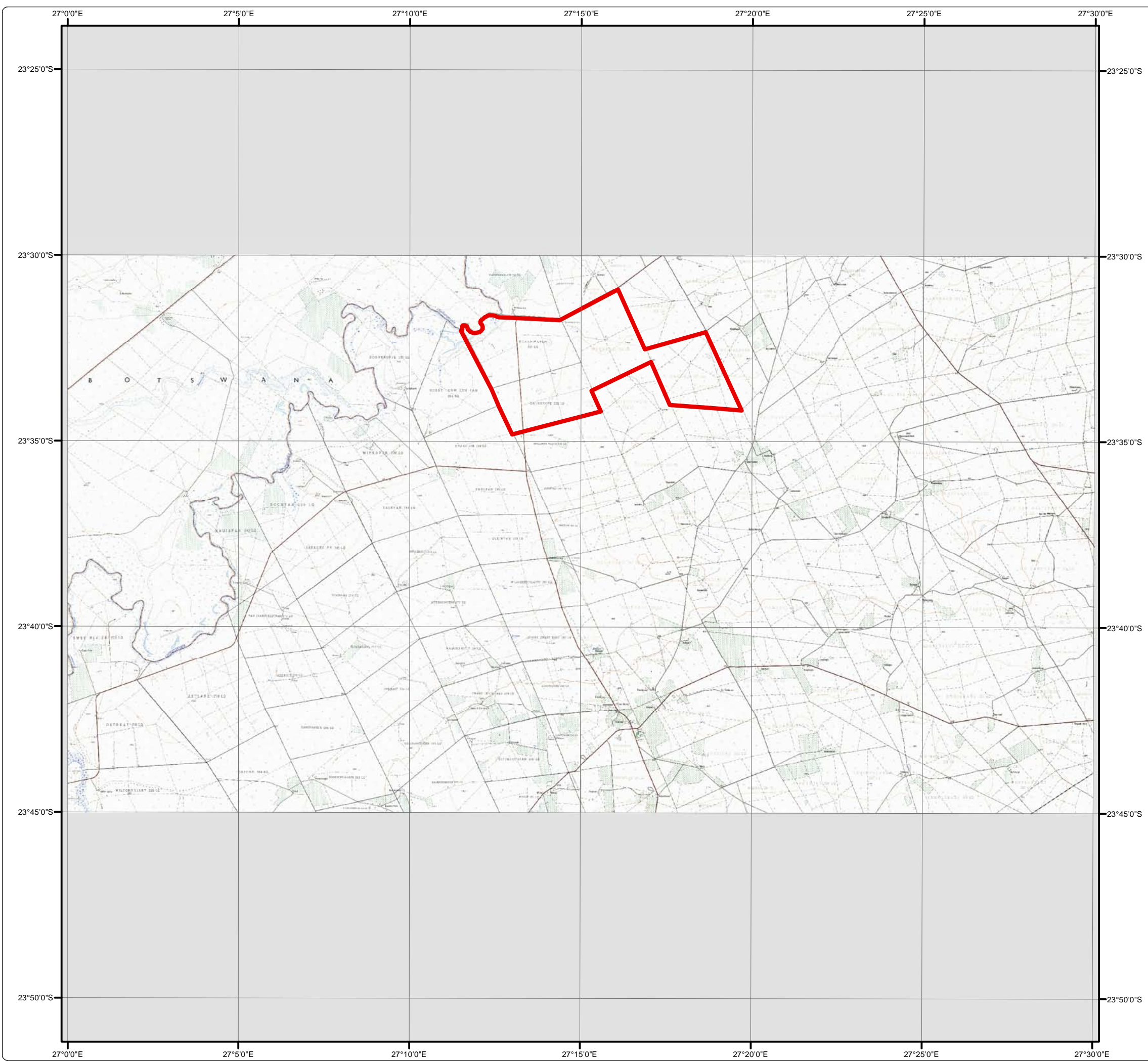


Projection: Transverse Mercator Ref #: scc.VEN1590.201210.237
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Central Meridian: 27°E Date: 31/10/2012



Anglo Coal Dalyshope ESI A Topographical Map 1:50 000

Legend

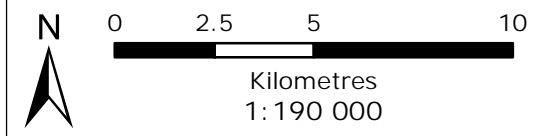


2327CA Hardekraaltjie
2327CB Steenbokpan



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Projection: Transverse Mercator Ref #: scc.VEN1590.201210.238
Datum: Hartebeesthoek 1994 Revision Number: 1
Central Meridian: 27°E Date: 31/10/2012



Anglo Coal Dalyshope ESI A Aerial Photograph 1:10 000

Legend

 Project Area

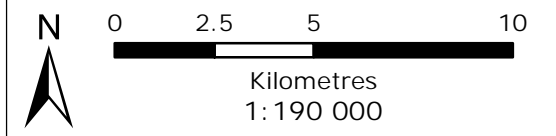


2327CA
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








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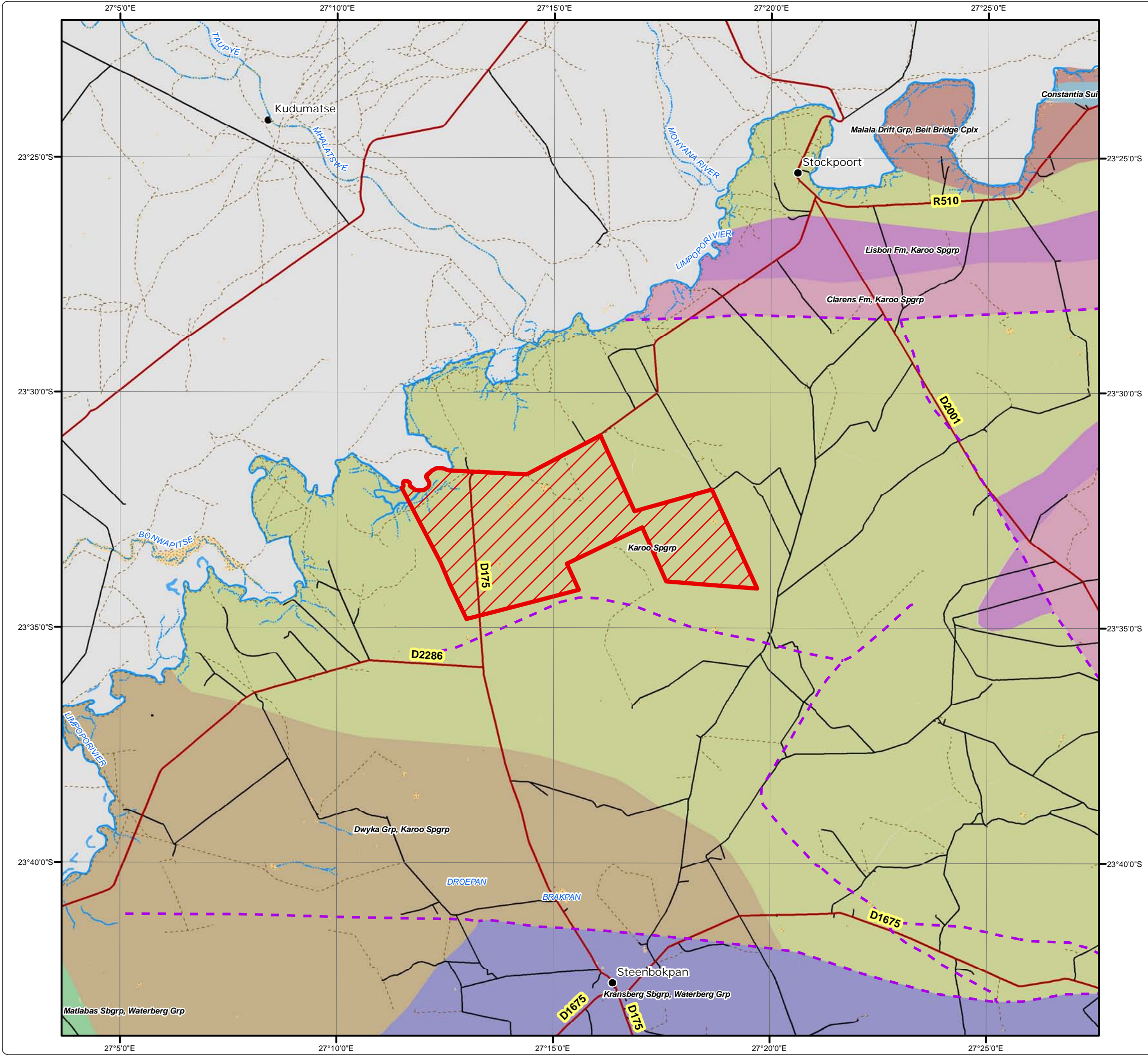
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Datum: Hartebeesthoek 1994 Revision Number: 1
Central Meridian: 27°E Date: 31/10/2012



Anglo Coal Dalyshope ESI A Regional Geology

Legend

-  Project Area
-  Settlement
-  Fault
-  Main Road
-  Minor Road
-  Track
-  Dam Wall
-  Non-Perennial Stream
-  Perennial Stream
-  Dam / Lake
-  Non-Perennial Pan / Stream
-  Perennial Pan
- Geology**
-  Clarens Fm, Karoo Spgrp
-  Constantia Sui
-  Dwyka Grp, Karoo Spgrp
-  Karoo Spgrp
-  Kransberg Sbgrp, Waterberg Grp
-  Lisbon Fm, Karoo Spgrp
-  Malala Drift Grp, Beit Bridge Cplx
-  Matlabas Sbgrp, Waterberg Grp





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 Central Meridian: 27°E Date: 31/10/2012

