HERITAGE STATEMENT FOR THE PLATREEF PLATINUM PROJECT ON THE FARMS TURFSPRUIT 241 KR, MACALACASKOP 243 KR AND RIETFONTEIN 2 KS IN MOKOPANE, LIMPOPO PROVINCE

PLATREEF RESOURCES (PTY) LTD

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DIGBY WELLS ENVIRONMENTAL

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

Report Title: **Heritage Statement for the Platreef Platinum Project on the farms Turfspruit 241 KR, Macalacaskop 243 KR and Rietfontein 2 KS in Mokopane, Limpopo Province**

Project Number: **PLA1677**

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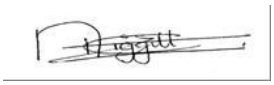
Shahzaadee Karodia Natasha Higgitt *Junior Archaeology Consultants*	Specialists	 	2013-06-18
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EXECUTIVE SUMMARY

Digby Wells Environmental (Digby Wells) was requested by Platreef Resources (Pty) Ltd (Platreef) to conduct an Environmental and Social Impact Assessment (ESIA), public consultation process and specialist studies for the proposed Platreef Underground Mine in accordance with the Mineral and Petroleum Resources Development Act, 2002 (Act No.28 of 2002) (MPRDA), National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), and National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA) for submission to the Department of Mineral Resources (DMR). A primarily desktop-based heritage study was completed, informed in part by a heritage screening assessment. Data that were collected during the desktop and field visit were collated and presented in a Heritage Statement report. The Heritage Statement was summarised and submitted in support of a Notification of Intent to Develop (NID) in terms of Section 38 of the National Heritage Resources Act, 1999 (Act No 25 of 1999) (NHRA) and in compliance with requirements for an ESIA in terms of the MPRDA, NEMA and NEMWA in support of the Mining Right Application (MRA).

Through a literature review, archival and database search, cartographic and aerial imagery survey, field screening assessment, as well as a review of previous impact assessments in the area, the following heritage resources were found to occur in the area:

- Potential fossil deposits in the Duitschland Formation and the Malmani Supergroup in the Project Area;
- Early, Middle and Late Stone Age;
- Iron Age (mostly Eiland and Madikwe facies);
- Boer War; and
- Historical settlements

The proposed Platreef Platinum Project is likely to have a significant impact on heritage resources, specifically burial grounds and graves during the construction and operational phases of the Platreef Platinum Project. Sources of risk were identified that may impact on heritage resources. These risks will be primarily associated with clearing of vegetation and topsoil. It is recommended that a Heritage Impact Assessment (HIA) be conducted for the Platreef Platinum Project. This HIA is recommended for the entire proposed Project Area including alternative locations for the plant and TSF as there is no finalised mine plan for the Project.

The following components should be included in the HIA:

- Archaeological Impact Assessment (AIA);
- A Phase 1 Palaeontological Assessment:

- A Phase 1 Palaeontological Assessment recommended for the Project Area and is restricted to the areas overlying rocks of the Duitschland Formation and the Malmani Supergroup of the Chuniespoort Group; and
- It is recommended that the areas overlying the Rustenberg Layered Suite of the Bushveld Complex be exempted from the Phase 1 Palaeontological Assessment.

- Burial Grounds and Graves Impact Assessment; and
- Visual Impact Assessment (VIA).

A Chance Find Procedure, a Fossil Find Procedure, and Fossil Monitoring must also be implemented during the Construction and Operational Phases of the Platreef Project.

GLOSSARY OF ABBREVIATIONS AND TERMS

Ag	Silver
AIA	Archaeological Impact Assessment
Au	Gold
BIC	Bushveld Igneous Complex
CE	Common Era
Co	Cobalt
Cr	Chrome
Cu	Copper
DMR	Department of Mineral Resources
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESA	Early Stone Age
ESIA	Environmental and Social Impact Assessment
GNR	Government Notice Regulation
HIA	Heritage Impact Assessment
HRA	Heritage Resources Authority
HAS	Heritage Screening Assessment
I&APs	Interested and Affected Parties
ICOMOS	International Council on Monuments and Sites
Ir	Iridium
IWULA	Integrated Waste Management Licence Application
LHD	Load-Haul Dumper
LIHRA	Limpopo Heritage Resources Authority
LSA	Later Stone Age
MJS	Major Jackson Series
MLM-IDP	Mogalakwena Local Municipality Independent Development Plan
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, Act No. 107 of 1998)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
Ni	Nickel
NID	Notification of Intent to Develop
Os	Osmium
Pd	Palladium

PGMs	Platinum Group Metals
Pt	Platinum
Rh	Rhodium
RLS	Rustenburg Layered Suite
Ru	Ruthenium
SAHRA	South African Heritage Resources Agency
SEP	Stakeholder Engagement Plan
TCLEC	Transvaal Consolidated Land and Exploration Company
ToR	Terms of Reference
VIA	Visual Impact Assessment
WD-IDP	Waterberg District Independent Development Plan
WITS	University of the Witwatersrand

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1 INTRODUCTION

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2 BACKGROUND INFORMATION OF PROJECT

2.1 Project Details

Platreef is the holder of a prospecting right registered in the Mineral and Petroleum Titles Registration Office under MPT 55/2006 PRC, prospecting right LP30/5/111/2/872PR over the farms Macalacaskop 243 KR and Turfspruit 241 KR.

An underground mining method will be employed in the proposed Platreef Platinum Project. Primary access to the underground mine will be via production and service shaft (Shaft No. 1). This shaft will have a diameter of 7.25 m and a depths of 1 250 m. Three additional ventilation shafts will also be developed – Shaft No. 2, 3 and 4.

Access from the production shaft to the ore zones will be provided by four main access levels developed at below surface depths of 650 m, 750 m, 900 m and 1 100 m. Stope access will be provided by ramps and additional mining sublevels located near the individual ore zones.

Ore will be removed from stopes using a diesel-powered Load-Haul-Dumper (LHDs) and dumped in an orepass located nearby. It will be later loaded from the orepasses into trucks and hauled to ore bins located near the production shaft. It will be fed from the ore bins to a crusher located below the 1 100 Level. The crusher discharges the ore into a fine ore bin. The ore will then be fed onto a conveyor located on the 1 200 Level that transfers it to a skip loading station at the Shaft No 1.

The current mine plan assumes that the deposit will be mined using the sublevel blast hole stoping method. The ore zones are divided into individual stopes. Access drifts are driven through the ore zone at the top and bottom of each stope from the mining sublevels. At the bottom of the stope, a number of drawpoints are mined and equipped to extract the ore. The ore is drilled and blasted from the access drifts and the ore is removed from the stope using a diesel-powered LHD and dumped in an orepass located nearby.

Table 2-1: Particulars of the resource to be mined

Type of mineral	The target minerals are: Platinum Group Metals (PGMs) Platinum (Pt), Palladium (Pd), Rhodium (Rh), Iridium (Ir), Ruthenium (Ru), and Osmium (Os) All Other Associated Metals and Minerals, including but not limited to: Gold (Au), Silver (Ag), Nickel (Ni), Copper (Cu), Cobalt (Co) and Chrome (Cr).
Locality (Direction and distance from nearest town)	The nearest town is Mokopane, located 10 km south of the Project Area in the Limpopo Province.
Extent of the area required for mining	Total area is 7 841.264 ha.
Extent of the area required for infrastructure, roads, servitudes etc.	Approximately 2 247 ha.
Depth of the mineral below surface	The reef outcrops and dips to a depth of approximately 1 100 m below surface.
Geological formation	The Platreef Platinum Project is located on the Bushveld Igneous Complex (BIC). The BIC consists of a lower sequence of layered mafic and ultramafic rocks known as the Rustenburg Layer Suite (RLS) and an overlying unit of granites known as the Lebowa Granite Suite. These layered rocks occur in four areas known as the Western, Northern, Eastern, and Bethal limbs. The Platreef Platinum Project is located in the Northern Limb, on the reef known as the Platreef which has unique geological characteristics as defined in Section 4 of this Report.

2.2 Description of Property and/or Affected Environment

2.2.1 Location data

The proposed Project Area is located on the Northern Limb of the Bushveld Igneous Complex (BIC). The Platreef Platinum Project is located approximately 280 km north-east of Johannesburg and 10 km north of the town of Mokopane (formerly known as Potgietersrus) in the Limpopo Province of South Africa. The Platreef Platinum Project centroid is located at

about latitude -24.134072 and longitude 28.962264 on three properties listed in Table 2-2 below. The properties fall within the Mogalakwena Local Municipal boundaries in the Waterberg District Municipality of Limpopo Province. The Platreef Platinum Project is located approximately 5 km south of Anglo American's Mogalakwena Platinum Mine.

The land is currently utilised for agricultural activities as well as settlement by several communities. The proposed Platreef Platinum Project will have a direct impact on eight of these communities. No resettlement is expected to take place.

Table 2-2: List of affected properties and landowners

Farm Name and Number	Land Owner
Turfspruit 241 KR Portion 0	Republic of South Africa, Department of Rural Development and Land Reform
Macalacaskop 243 KR Portion 0	Republic of South Africa, Department of Rural Development and Land Reform
Rietfontein 2 KS Portion 1	Republic of South Africa, Department of Rural Development and Land Reform

2.2.2 Location maps

The Heritage Statement makes reference to the 'Study Area' and the 'Project Area'. The Study Area was considered to include the cultural landscape in an approximately 100 km radius of the Project Area within the borders of South Africa. The Project Area was defined as the landscape contained within Project boundaries supplied by Platreef.

Location maps are provided in Appendix B: Location and Site Maps:

- Plan 1 to Plan 3 illustrates the Project and Study Areas;
- Plan 4 presents the geological setting of the Project and Study Areas;
- Plan 5 presents the identified heritage resources in the Project and Study Areas; and
- Plan 6 presents the results of historical layering.

2.2.3 Rezoning and/or land subdivision

The properties are currently zoned for residential and agricultural purposes. Rezoning for mining will be required.

2.2.4 Development context of Study Area

The development context of the Study Area was characterised and taken into account in order to:

- Identify possible impacts on heritage resources and on the cultural landscape;

- Predict and assess the intensity of potential impact of heritage resources and the cultural landscape; and
- Identify and describe possible cumulative impacts.

The Mogalakwena Local Municipality Independent Development Plan (MLM-IDP) and the Waterberg District (WD-IDP) identified tourism as a potential for growth and development. The following tourist attractions are listed in the Mokopane area:

- The Makapan Valley World Heritage Site;
- The Mokopane Game Breeding Centre; and
- The Nylsvley Wetland which is a registered Ramsar site extending some 70 km between the towns of Modimolle and Mokopane.

2.3 Relevant Contact Details

The contact details of the developer, consultant and landowners are provided in Table 2-3, Table 2-4 and Table 2-5 respectively.

Table 2-3: Client contact details

ITEM	COMPANY CONTACT DETAILS
Company	Platreef Resources (Pty) Ltd
Contact person	Gerick Mouton
Tel no	011 088 4300
Fax no	086 687 2018
Cell no	083 708 0999
E-mail address	gerickm@ivanplats.com
Postal address	PO Box 782078, Sandton, 2146

Table 2-4: Consultant contact details

ITEM	COMPANY CONTACT DETAILS
Company	Digby Wells Environmental
Contact person	Barbara Wessels
Tel no	011 789 9495
Fax no	011 789 9498
Cell no	082 838 6092
E-mail address	barbara.wessels@digbywells.com
Postal address	Private Bag X10046, Randburg, 2125

Table 2-5: Land owner contact details for Turfspruit 241 KR, Macalacaskop 243 KR and Rietfontein 2 KS

ITEM	CONTACT DETAILS
Title Deed Owner	National Government of the Republic of South Africa
Contact person	Moduku Khwene
Tel no	015 297 3539
Fax no	015 297 4988
Email address	anmagada@ruraldevelopment.gov.za
Postal address	Private Bag X9312, Polokwane, 0700

2.4 Legislative Framework

2.4.1 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.

2.4.2 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.

2.4.3 National Environmental Management: Waste Act, 2009 (Act No. 59 of 2009) (NEMWA)

The NEMWA requires in terms of Section 48(b) that the likely effect of pollution on existing cultural heritage be taken into account. Section 48(c)(ii) requires that cultural heritage be protected from adverse change due to pollution.

2.4.4 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.

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

Table 2-6: Listed triggers according to the NHRA

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

2.5 Summary of Stakeholder Engagement Plan (SEP)

Stakeholder engagement is an essential and legislative requirement for environmental authorisation in a number of the major Acts applicable to the proposed Platreef Platinum Project. The principles that demand communication with society at large are best embodied in the principles of the NEMA. In addition, the Stakeholder Engagement Plan (SEP) will be conducted in line with the Equator Principles.

The objectives of the SEP 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.

2.6 Terms of Reference

Platreef is applying for a MRA in terms of the MPRDA, NEMA and NEMWA. In support of the MRA application, a HIA can only commence subsequent to the submission to the responsible Heritage Resources Authorities (HRA) 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 heritage resources authority 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 notification in terms of Subsection (1)' inform the client whether an impact assessment is required or not. If an impact assessment is required, based on the information contained in the NID, the client must be provided with Terms of Reference (ToR) by the HRA as stipulated in Subsection 38(3).

In order to comply with the above, a Heritage Statement must be compiled that should inform the NID. The Heritage Statement should include sufficient information regarding existing and potential heritage resources that may occur in the Platreef Platinum Project location. The nature and extent of the development must also be described in sufficient detail to enable the HRA to determine whether an impact assessment is required. If an impact assessment is required, the Heritage Statement should provide sufficient detail on which the HRA can base its ToR. The NID and Heritage Statement should thus be considered the actual first phase of a Heritage Impact Assessment.

The NID and Heritage Statement will therefore include 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 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 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 of 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 a HIA is required.

A Terms of Reference report will be compiled following Statutory Comment received from the South African Heritage Resources Authority (SAHRA) and/or the Limpopo Heritage Resources Agency (LIHRA). This report will present the requirements contained in the

Statutory Comment in relation to the proposed Project as well as provide Platreef with proposed measures and estimated costs to comply with the Comment requirements.

2.7 Scope of Work

A primarily desktop-based heritage study, informed in part by a heritage screening assessment was completed. Data that were collected during the desktop and field visit were collated and presented in a Heritage Statement report. The Heritage Statement was summarised and submitted in support of a NID in terms of Section 38 of the NHRA and in compliance with requirements for an EIA/EMP.

3 METHODOLOGY

In order to accurately describe the historical/cultural landscape of the Platreef Platinum Project, several research methods were employed. These methods are discussed individually below.

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), 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.

3.3 Heritage Screening Assessment

A heritage screening assessment (HAS) was completed on 15 August 2011 to 16 of August 2011 to ground truth heritage resources within the Platreef Platinum Project boundaries and to record to the current state of the cultural environment. The HAS was completed by three qualified archaeologists. The team consisted of Johan Nel, Natasha Higgitt and Guy Thomas. The area was surveyed using both vehicle and pedestrian techniques. Although the HSA was completed in August 2011, the report could not be submitted due to Section 93 of the MPRDA. Specialist studies had to be halted, exploration was stopped and no applications could be submitted.

3.4 Site Naming

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 suffixed with the relevant SAHRA report number if available, for example a heritage resource identified in Fourie (2002) described as an archaeological site and numbered Site 1 in that report will be: **2002-SAHRA-0004/Site 1**.

3.4.2 Unconfirmed sites identified during desktop study

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: **PLA1677/2327CB/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**.

3.4.3 Sites identified during screening assessment

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

4 STATE OF THE RECEIVING ENVIRONMENT/CULTURAL LANDSCAPE

Most if the development area is underlain by Precambrian igneous rocks of the Rustenburg Layered Suite of the Bushveld Complex. The south-west section part of the property is underlain by the Molendraai Magnetite Gabbro of the Rustenburg Layered Suite. The south-eastern portions of the property are underlain by the Duitschland Formation and the Malmani Subgroup of the Chuniespoort Group. To the extreme south-east, a small section of the property is underlain by the Uitloop Granites of the Mashashane Suite. The Bushveld Complex is a layered igneous intrusion containing a large reserve of platinum group metals (Lee, 1996; Eales & Cawthorn, 1996). Associated with this complex is the Rustenburg Layered Suite known to be the oldest mafic layered complex on earth (Wilson, 2012). As these rocks are of igneous origin it is unlikely that fossils will be present. The Malmani Subgroup generally comprises dolomite, interbedded chert and shales, quartzite, and a variety of stromatolite structures. The dolomitic rocks this subgroup will contain stromatolites and will also have the potential to have sinkholes and caves which may have Quaternary deposits.

Evidence suggests that the region surrounding the Project Area has been inhabited during all periods of the Stone Age, including the Early Stone Age (ESA), Middle Stone Age (MSA) and Later Stone Age (LSA). This is most evident and extensively documented at the Cave of Hearths in the Makapans Valley some 20 km to the east (McNabb & Binyon, 2004;

Phillipson, 2005). Previous impact assessments (Huffman, 1997; Fourie, 2002; Pistorius, 2002; Roodt, 2007; Roodt, 2008a; Roodt, 2008b; Van Schalkwyk, 2011) conducted within and surrounding the Project Area have all reported stone tool scatters associated with the MSA and LSA. Fourie (2002) also reported on a possible ESA core found on the surface. These finds are commonly asscoiated with water sources, such as rivers and pans. LSA stone tools are commonly assocaited with hunter-gathers, but are also known to occur with Iron Age communities.

Based on ceramic distributions as defined in Huffman (2007), the Project Area may possibly produce sites that span from the Early Iron Age through to the Late Iron Age. Several *Eiland facies* ceramics have been identified in the region surrounding the Project Area (WITS, 2010). Huffman (1997) identified two 'Moloko' settlements in the region dating to approximately 1500 CE – 1600 CE and several have been recorded by the University of the Witwatersrand. Based on these dates and ceramic distributions, these sites are likely associated with the *Madikwe facies* of the western Sotho-Tswana. It is also possible that these ceramics belonged to the Ndebele that also occupied the area but whose ceramics belonged to the Letaba or Moloko Traditions (Loubser, 1994). Sites recorded on the University of the Witwatersrand (WITS) Archaeological Database indicate that several Ndebele sites occur around this Project Area. Ethnographically, the Ndebele of the region are divided into two groups with claims to similar origin in the north-west of Kwa-Zulu Natal. It is from here that they moved into the Gauteng and Limpopo region during the 16th – 17th century where they settled and subdivided into separate groups.

By the 19th century, several local Ndebele communities occupied the region around the Project Area, one of the most prominent being the Kekana. In 1837, the Boers arrived at Louis Trichardt marking the first contact between the Boers and Ndebele (Naidoo, 1987). During the latter part of the 19th century the Boers assumed control over the slave and ivory trade after the establishment of the town Pietpotgietersrus (later Potgietersrus and today Mokopane) in the 1850's causing tension between the two groups (Tobias, 1945; Bonner, 1983; Delius & Trapido, 1983; Hofmeyr, 1988; Esterhuysen, et al., 2009; Esterhuysen, 2010; Morton, 2005). Three incidents resulting from tensions between the Ndebele and the Boers culminated in the infamous Mugombane siege of 1854 at Historic Cave in the Makapans Valley (Tobias, 1945). After this siege in 1858 a second group of Ndebele, the Langa of Hlubi (Nguni) origin under the Chief Mankopane, were attacked by a Boer expedition. Approximately 800 Langa Ndebele were killed. After their defeat, Chief Mankopane settled on Thutlwane Hill which is today located on the farm Kromkloof 744 LR, approximately 40 km north-west of the Project Area (Jackson, 1969; Jackson, 1982). After these incidents, the Ndebele wanted nothing to do with Boers or Europeans.

With regards to literacy, writing was seen as 'Boer business' and in 1864 the Ndebele refused to adopt it (Hofmeyr, 1991). Despite this, in 1865 the Berlin Mission Station was given permission to establish a mission under W. Moschutz at the foot of Sefakaola Hill (Macalacaskop) on whose summit resided the capital of Mokopane's chiefdom. Tensions between the Boers and Ndebele resulted in the mission stations abandonment and use by

the Boers as a garrison where they could fire upon Mokopane's chiefdom, ultimately resulting in the destruction of the mission station. The mission was reoccupied in 1868 but in 1877, Mokopane exercised his authority and ousted the missionaries as he decided that it was a good vantage point for his enemies to spy on him. The chief erected an iron structure from the remains of the station as a symbol of his resistance to European interference. In 1890, Mokopane died and his successor was Lekgobo Valtyn. Valtyn's view of literacy was different to that of Mokopane as he embraced the idea of literacy and saw it as a resource that could be exploited (Hofmeyr, 1991) and therefore allowed the mission station to be rebuilt.

Also in 1890, a 'location' was unofficially established named after Chief Valtyn. By the early 20th century the Berlin Mission Society began to fence of portions of land which again caused tension between local inhabitants and Europeans resulting in what was termed 'The Fence War' (Hofmeyr, 1990). It was believed that Europeans were stealing land from local inhabitants. Plans for the official establishment and expansion of the location are evident in a letter dated 6 January 1937 between the Controller of Native Settlements and the Deputy Director of Native Agriculture, where it was discussed that the establishment of the Valtyn Location on the edge of Potgietersrus was intended to provide the growing town with a large cheap labour supply (National Archives and Record Service, 1996). Some measures at mitigating this tightening of control over the land in the area were attempted by Chief Kutter Seleka in the early 1930s. This included the proposed purchase of farms bordering the location, in order to try and extend the pasture for cattle. The farm Rietfontein was eventually bought with the aid of a bond taken out at the Transvaal Consolidated Land and Exploration Company (Ltd) (TCLEC) by Chief Kutter Seleka, and his followers. The bond was granted with interest set at 6%. Rietfontein was bought by the Kekana under Chief Seleka for a sum total of £1983 in November 1929 (National Archives and Record Service, 1996).

The present day settlements of Tshamahansi, Mahwereleng, GaMadiba, Maroteng and Masodi are situated on the three farms, Rietfontein, Turfspruit, and Macalacaskop that were originally expropriated from the local farmers.

4.1 Heritage Screening Assessment Results

The HSA was completed over two days from 15 August 2011 to 16 August 2011. The HSA focused on areas within the Project Area that have remained relatively undisturbed. An extensive adaptive survey technique was employed to identify heritage resources within and surrounding the Platreef Platinum Project boundaries. Heritage resources identified during this survey are detailed below.

Table 4-1: Screening site visit findings

Site Name	Latitude	Longitude	Type
S.35-001	-24.085472	28.999111	Iron Age
S.35-002	-24.086500	29.001472	Iron Age
S.36-003	-24.086417	29.001972	Single Grave
S.36-004	-24.086333	29.002028	Single Grave
S.36-005	-24.085028	29.000028	Single Grave
S.35-006	-24.082417	29.001083	MSA, LSA, Iron Age
S.35-007	-24.080500	28.999500	Iron Age
S.35-008	-24.080583	28.997722	Iron Age
S.35-009	-24.080139	28.997306	Iron Age
S.35-010	-24.144806	28.964694	LIA, Historic
S.35-011	-24.145889	28.964639	LIA, Historic
S.36-012	-24.092667	28.960611	Burial Ground
S.36--013	-24.088500	28.963222	Burial Ground
S.35-014	-24.144361	28.965278	Iron Age
S.35-015	-24.132665	28.924976	LIA, Historic
S.35-016	-24.109755	28.983779	LIA, Historic
S.35-017	-24.106081	28.987236	LIA, Historic
S.35-018	-24.050427	28.985547	Iron Age
S.35-019	-24.090898	28.961245	Historic
S.35-020	-24.150384	28.969462	Historic
S.35-021	-24.069145	29.012548	Historic, Industrial
S.35-022	-24.145390	28.965641	Iron Age

Site Name	Latitude	Longitude	Type
S.35-023	-24.051400	28.989610	Stone Age
S.36-024	-24.098600	28.991170	Burial Ground
S.36-025	-24.080190	28.961359	Burial Ground
S.36-026	-24.080340	28.963431	Burial Ground
S.36-027	-24.078105	28.958794	Burial Ground
S.36-028	-24.088524	28.963286	Burial Ground
S.36-029	-24.089939	28.963251	Burial Ground
S.36-030	-24.082707	28.969505	Burial Ground
S.36-031	-24.082591	28.965630	Burial Ground
S.36-032	-24.081565	28.965277	Burial Ground
S.36-033	-24.082823	28.965238	Burial Ground
S.36-034	-24.074054	28.962338	Burial Ground
S.36-035	-24.074860	28.962619	Burial Ground
S.36-036	-24.074711	28.963395	Burial Ground
S.36-037	-24.075068	28.959432	Burial Ground
S.36-038	-24.090127	28.963029	Burial Ground
S.36-039	-24.092743	28.961814	Burial Ground
S.36-040	-24.092586	28.960643	Burial Ground
S.36-041	-24.076683	28.964709	Burial Ground
S.36-042	-24.079643	28.956231	Burial Ground
S.36-043	-24.073230	28.954965	Burial Ground
S.36-044	-24.080346	28.944910	Burial Ground
S.36-045	-24.093168	28.946168	Burial Ground

Site Name	Latitude	Longitude	Type
S.36-046	-24.096722	28.944786	Burial Ground
S.36-047	-24.097283	28.938760	Burial Ground
S.36-048	-24.097938	28.937844	Burial Ground
S.36-049	-24.097825	28.937666	Burial Ground
S.36-050	-24.097373	28.937747	Burial Ground
S.36-051	-24.098081	28.935026	Burial Ground
S.36-052	-24.100152	28.934174	Burial Ground
S.36-053	-24.100201	28.932222	Burial Ground
S.36-054	-24.104257	28.930337	Burial Ground
S.36-055	-24.104286	28.928290	Burial Ground
S.36-056	-24.104532	28.928027	Burial Ground
S.36-057	-24.099158	28.929468	Burial Ground
S.36-058	-24.109643	28.929354	Burial Ground
S.36-059	-24.110713	28.933189	Burial Ground
S.36-060	-24.098609	28.991124	Burial Ground
S.36-061	-24.099291	28.994485	Burial Ground
S.36-062	-24.093743	28.970289	Burial Ground
S.36-063	-24.094935	28.969741	Burial Ground
S.36-064	-24.095246	28.969411	Burial Ground
S.36-065	-24.101853	28.997909	Burial Ground
S.36-066	-24.111822	29.000123	Burial Ground
S.36-067	-24.111685	28.981682	Burial Ground
S.36-068	-24.132775	28.970259	Burial Ground

Site Name	Latitude	Longitude	Type
S.36-069	-24.126591	28.966633	Burial Ground
S.36-070	-24.120750	28.967201	Burial Ground
S.36-071	-24.113428	28.952810	Burial Ground
S.36-072	-24.113702	28.952150	Burial Ground
S.36-073	-24.111938	28.947799	Burial Ground
S.36-074	-24.111463	28.947589	Burial Ground
S.36-075	-24.111108	28.947915	Burial Ground
S.36-076	-24.110938	28.950014	Burial Ground
S.36-077	-24.080371	28.963412	Burial Ground
S.36-078	-24.082645	28.965630	Burial Ground
S.36-079	-24.088451	28.963236	Burial Ground
S.36-080	-24.082780	28.965223	Burial Ground
S.36-081	-24.081648	28.948439	Burial Ground
S.36-082	-24.082371	28.94869	Burial Ground
S.35-083	-24.082874	28.951282	Iron Age Find Spot
S.36-084	-24.082883	28.950858	Burial Ground
S.36-085	-24.079611	28.956215	Burial Ground
S.35-086	-24.089726	28.962312	Iron Age Find Spot
S.36-087	-24.081593	28.965299	Burial Ground
S.36-088	-24.081675	28.964468	Burial Ground
S.36-089	-24.080206	28.961302	Burial Ground
S.36-090	-24.078115	28.958797	Burial Ground
S.36-091	-24.075093	28.959434	Burial Ground

Site Name	Latitude	Longitude	Type
S.36-092	-24.074713	28.963396	Burial Ground
S.36-093	-24.074961	28.962666	Burial Ground
S.36-094	-24.074052	28.962343	Burial Ground
S.36-095	-24.076703	28.964744	Burial Ground

5 SOURCES OF RISK

Sources of risk to potential heritage resources were identified in relation to the construction, operational and decommissioning phases of the Platreef Platinum Project. Sources of risk were defined as any Project-related activity or cumulative effect that would impact on potential heritage resources resulting on adverse changes to resources' integrity. Sources of risk during the three phases of the proposed Platreef Platinum Project were primarily identified in terms of Listed Activities, summarised in Table 5-1 below.

Table 5-1: Summary of Listed Activities (NEMA)

Activity Number	Activity Description
Government Notice No. R544 of 18 June: Listing Notice 1	
Activity 9	Construction of pipelines for the transportation of sewage, bulk water supply and stormwater will be longer than 1 km.
Activity 12	Infrastructure for offstream storage of water, including a tailings storage facility will be constructed.
Activity 13	Infrastructure for the storage and/or handling of dangerous goods, including petroleum, explosives and oil may be constructed.
Activity 22	Construction of internal haul roads in rural area where the reserve will be wider than 13.5 meters. Where there are no reserves, the road will be wider than 8 meters.
Government Notice No. R545 of 18 June: Listing Notice 2	
Activity 5	A sewage treatment plant will be constructed for the treatment of sewage, in addition to a smelter plant for which an air emissions license will be required.
Activity 15	Undeveloped land in excess of 20 hectares or more (combined) will be altered for mining infrastructure construction and operation.

Activity Number	Activity Description
Activity 19	Storm water management, tailings storage facilities and pollution control dams will be constructed of which the highest part of the dam wall may be higher than 5 meters, and the dams, combined, will be larger than 10 hectares.
Activity 26	The construction of a smelter plant anticipated. The emissions from this plant will require an air emissions license to be applied for.
Government Notice No. R546 of 18 June: Listing Notice 3	
Activity 2	The construction of bulk water reservoirs with a capacity of more than 250 cubic meters will be constructed outside an urban area within 5 km of a protected area (Witfinger Nature Reserve).
Activity 4	Roads wider than 4 meters with a reserve less than 13.5 meters will be constructed outside an urban area within 5 km of a protected area (Witfinger Nature Reserve).
Activity 9	The construction of above ground conveyors will take place outside an urban area.
Activity 10	The construction of facilities for the storage and handling of dangerous goods, including petroleum, explosive and oil may be constructed, with a combined capacity of more than 30 but less than 80 cubic meters, outside an urban area.
Activity 13	To accommodate the construction of surface infrastructure, internal roads and waste storage facilities, clearance of more than 1 hectare of which 75% or more may be indigenous vegetation.
Activity 16	The construction of infrastructure and buildings covering an area more than 10 square meters in size will be constructed outside an urban area, possibly within 32 meters of a water course, within 5 km of a protected area (Witfinger Nature Reserve).
Activity 19	The widening of existing roads by more than 4 meters, or the lengthening of such roads by more than 1 km may be done, outside an urban area, within 5 km of a protected area (Witfinger Nature Reserve).
Activity 23	The expansion of existing infrastructure for the storage and/or handling of dangerous goods, operated during prospecting, may be done where such an expansion will be more than 30 but less than 80 cubic meters. Such expansions will be outside an urban area, within 5 km of a protected area (Witfinger Nature Reserve).

5.1 Construction Phase

During the Construction Phase, Listed Activities under GN R544 including 9, 12, 13 and 22; GN R545 including 19 and 26; and GN R546 including 2, 4, 9, 10, 13, 16, 19, 23 were identified as sources of risk.

- These activities may result in visual impacts on the landscape as well as potential impacts sense of place.
- Site clearance required for the construction of infrastructure larger than 5 ha may result in the destruction and/or alteration of heritage resources that may be present.
- The construction of linear infrastructure longer than 300 m may be routed through heritage sites resulting in the destruction and/or alteration of heritage resources that may be present.
- In addition, the increased presence of workers in the Project Area during the Construction Phase may result in intentional/unintentional damage to heritage resources.

5.2 Operational Phase

During the Operational Phase, there is a reduced risk of impacts on heritage resources as the majority of impacts would occur during the Construction Phase. Only three Listed Activities under GN R545 including 5, 15 and 26 were identified as sources of risk.

- The presence and operation of infrastructure in the relatively flat landscape would result in visual impacts on the cultural landscape and to sense of place.
- The operation of the infrastructure could also create long-term risk associated with more regular and increased human presence (i.e. pedestrian and vehicle traffic) allowing access to nearby heritage resources which may result in vandalism.
- In addition, the operation of the sewage plant would lead to 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.

5.3 Decommissioning Phase

During the decommissioning phase, there are negligible risks for impacts on 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, an HIA inclusive of a Built Environment Assessment may need to be conducted to assess the significance of the structures.

5.4 Cumulative Impacts

Cumulative impacts on heritage resources include the following:

- 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; and
- An increase in job seekers and the subsequent development of the surrounding areas i.e. Mokopane, will increase human presence and settlement in the area that may result in intentional/unintentional damage to heritage resources.

6 DISCUSSION OF FINDINGS

Based on the information collected during the desktop research and the heritage screening assessment it is evident that the Platreef Platinum Project is located in a significant landscape that has cultural heritage resources. Evidence suggests that the cultural landscape contains heritage resources indicative of past human occupation from the Stone Age through to the historical period.

Due to the nature of the heritage screening assessment, field survey was extensive rather than intensive. Regardless, a representative sample of archaeological and other heritage resources were identified. Intangible heritage resources associated with living heritage may be present in the area. These would include areas currently being used for religious or traditional purposes, as well as burial grounds and graves. This requires further investigation during the HIA.

The proposed Platreef Platinum Project is likely to have a significant impact on heritage resources, specifically burial grounds and graves during the construction and operational phases of the Project. Sources of risk were identified that may impact on heritage resources. These risks will be primarily associated with clearing of vegetation and topsoil. Appropriate assessment of the impacts and recommendations for the mitigation of these impacts on identified heritage resources will be addressed during the HIA.

7 RECOMMENDATIONS

Considering the findings discussed in this report it is recommended that a Heritage Impact Assessment (HIA) be conducted for the Platreef Platinum Project. The proposed HIA is recommended for the entire proposed Project Area, including alternative site locations for the plant and TSF, as there is no finalised mine plan for the Project. Identification of heritage resources and the associated impacts, both on the surface and underground, will assist in the planning of infrastructure location.

The proposed HIA should be inclusive of relevant specialist studies. These specialist studies may include:

- An archaeological impact assessment (AIA);

- A Phase 1 Palaeontological Assessment:
  - A Phase 1 Palaeontological Assessment recommended for the Project Area and is restricted to the areas overlying rocks of the Duitschland Formation and the Malmani Supergroup of the Chuniespoort Group; and
  - It is recommended that the areas overlying the Rustenberg Layered Suite of the Bushveld Complex be exempted from the Phase 1 Palaeontological Assessment as this igneous rock formation will not contain any fossils.
- A Burial Grounds and Graves Impact Assessment.

In addition to the proposed specialist studies above, sound integration of other relevant specialist studies should be completed to address aspects of intangible and living heritage that may exist in the Project Area. Specialist studies that should be integrated may include:

- A Visual Impact Assessment (VIA).

A Chance Find Procedure, a Fossil Find Procedure, and Fossil Monitoring must also be implemented during the Construction and Operational Phases of the Platreef Project. See Appendix C.

8 REFERENCES

Bonner, P., 1983. *Kings, commoners and concessionaires. The evolution and dissolution of the nineteenth century Swazi State. African Study Series, Volume 31.* Cambridge: Cambridge University Press.

Delius, P. & Trapido, S., 1983. Inboekselings and oorlams: The creation and transformation of a servile class. In: B. Bozzoli, ed. *Town and Countryside in the Transvaal. Capitalist Penetration and Popular Response.* Johannesburg: Ravan Press.

Eales, H. V. & Cawthorn, R. G., 1996. The Bushveld Complex. *Developments in Petrology,* Volume 15, pp. 181 - 229.

Esterhuysen, A. B., 2010. Excavation at Historic Cave, Makanpans Valley, Limpopo. *South African Archaeological Bulletin,* 65(191), pp. 67 - 83.

Esterhuysen, A. B., Sanders, V. M. & Smith, J. M., 2009. Human skeletal and mummified remains from the AD1854 siege of Mugombane, Limpopo South Africa. *Journal of Archaeological Science,* Volume 36, pp. 1038 - 1049.

Fourie, W., 2002. *Cultural Heritage Assesment of Volspruit 326 KR, District of Potgietersrus, Limpopo Province,* Unpublished Report by: Matakoma Consultants.

Hofmeyr, I., 1988. Oral and written versions of the Makapansgat Siege. In: R. Mason, ed. *Cave of Hearths, Makapansgat, Transvaal.* Johannesburg: University of the Witwatersrand, Archaeological Research Unit, pp. 417 - 426.

Hofmeyr, I., 1990. *'Nterata'/'The Wire': Fences, boundaries and cultural resistance in the Potgietersrus District.* Johannesburg, University of the Witwatersrand.

Hofmeyr, I., 1991. Jonah and the Swallowing Monster: Orality and literacy on a Berlin Mission Station in the Transvaal. *Journal of South African Studies,* 17(4), pp. 633 - 653.

Huffman, T. N., 1997. *Archeaological Survey of the Doorndrai Dam, Potgietersrus pipeline,* Unpublished Report by: Archeaological Resource Management.

Huffman, T. N., 2007. *Handbook to the Iron Age: The Archaeology of Pre-Colonial Farming Societies in Southern Africa.* Cape Town: University of KwaZulu-Natal Press.

Jackson, A. O., 1969. *The history and political structure of the Mapela Chiefdom of the Potgietersrus District,* s.l.: s.n.

Jackson, A. O., 1982. *The Ndebele of Langa,* s.l.: s.n.

Lee, C. A., 1996. A review of mineralization in the Bushveld Complex and some other layered intrusions. *Developments in Petrology,* Volume 15, pp. 103 - 145.

Loubser, J. N., 1994. Ndebele archaeology of the Pietersburg area. *Navorsinge van die Nasionale Museum (Bloemfontein),* Volume 10, pp. 61-147.

McNabb, J. & Binyon, F. &. H. L., 2004. *The large cutting tools from the South African Acheulean and the question of social traditions,* Current Anthropology: 45(5): 653-677.

Morton, F., 2005. Female inboekelinge in the South African republic. *Slavery and Abolition,* 26(2), pp. 199 - 215.

Naidoo, J., 1987. The siege of Makapansgat: a massacre? and a Trekker victory?. *History in Africa,* Volume 14, pp. 173 - 187.

National Archives and Record Service, 1996. *National Archives Repository.* Viewed August 2011: NARS Database.

Phillipson, D. W., 2005. *African Archaeology.* Cambridge: Cambridge University Press.

Pistorius, J. C., 2002. *A Cultural Heritage Impact Assessment for the Proposed Overysel Zwartfontein (PPRust North) Project. Amendment to Potgietersrust Platinums LTD's (PPRust) Environmental Management Programme Report (EMPR) Report,* Unpublished Report by: SRK Consulting Engineers and Scientists Potgietersrust Platinum Mine.

Roodt, F., 2007. *Phase 1 Heritage Resource Impact Assessment: Access Road Zebetiela Engen One-Stop Complex North Statement With Regard to Heritage Resources Management ,* Unpublished Report by: Synergistics Environmental Services.

Roodt, F., 2008a. *Phase 1 Heritage Resource Impact Assesment (Scoping & Evaluation): Mooiplaas Residential Development Mokopane, Limpopo,* Unpublished Report for: Envirosolutions.

Roodt, F., 2008b. *Phase 1 Heritage Resource Impact Assesment (Scoping & Evaluation): Landfill and Salvage Yard Anglo Platinum: Mogalakwena Section, Limpopo,* Unpublished Report for: SRK Consulting.

Tobias, P. V., 1945. Student scientific expedition to the Makapan. *WU's Views,* 9(5), p. 1.

Van Schalkwyk, J., 2011. *Heritage Impact Assessment for the Proposed Upgrade of a Section of the N11 National Route North of Mokopane, Limpopo Province,* Unpublished Report by: SSI Environmental Consultants.

Wilson, M. G. C., 2012. *Summary of Economic Geology of Provinces: Limpopo Province.* [Online]
Available at: http://www.geoscience.org.za
[Accessed 5 November 2012].

WITS, 2010. *Archaeological Site Database,* Johannesburg: Department of Geography, Archaeology and Environmental Science.

Appendix A: Curriculum Vitae

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

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)

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

- 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

JUSTIN DU PIESANIE

Mr. Justin du Piesanie

Archaeology Consultant

Social Sciences Department

Digby Wells Environmental

1 EDUCATION

University of the Witwatersrand

- BA Degree (2004)
- BA Honours Degree (2005) - Archaeology
    - Title of Dissertation - Seal Skeletal Distribution of Herder and Forager Sites at Kasteelberg, Western Cape Province of South Africa.
- Master of Science (MSc) Degree (2008) – Archaeology
    - Title of Dissertation – Understanding the Socio-Political Complexity of Leokwe Society during the Middle Iron Age in the Shashe-Limpopo Basin through a Landscape Approach

2 LANGUAGE SKILLS

English First Language

Afrikaans Second Language

3 EMPLOYMENT

2011 to Present:	Archaeology Consultant at Digby Wells Environmental
2009 to 2011:	Archaeology Collections Manager at the University of the Witwatersrand.
2009 to 2011:	Freelance Archaeologist for Archaeology Resource Management (ARM), Matakoma Heritage Consultants, Wits Heritage Contracts Unit & Umlando Heritage Consultants.
2006 to 2007:	Tour Guide at Sterkfontein Caves World Heritage Site.

4 EXPERIENCE

- Wits Fieldschool - Excavation at Meyersdal, Klipriviersberg Johannesburg (Late Iron Age Settlement).
- Wits Fieldschool - Phase 1 Survey of Prentjiesberg in Ugie / Maclear area, Eastern Cape.
- Wits Fieldschool – Excavation at Kudu Kopje, Mapungubwe National Park Limpopo Province.
- Wits Fieldschool – Excavation of Weipe 508 (2229 AB 508) on farm Weipe, Limpopo Province.
- Survey at Meyerdal, Klipriviersberg Johannesburg.
- Mapping of Rock Art Engravings at Klipbak 1 & 2, Kalahari.
- Survey at Sonop Mines, Windsorton Northern Cape (Vaal Archaeological Research Unit).
- Excavation of Kudu Kopje, Mapungubwe National Park Limpopo Province.
- Excavation of KK (2229 AD 110), VK (2229 AD 109), VK2 (2229 AD 108) & Weipe 508 (2229 AB 508) (Origins of Mapungubwe Project)
- Phase 1 Survey of farms Venetia, Hamilton, Den Staat and Little Muck, Limpopo Province (Origins of Mapungubwe Project)
- Excavation of Canteen Kopje Stone Age site, Barkley West, Northern Cape
- Excavation of Khami Period site AB32 (2229 AB 32), Den Staat Farm, Limpopo Province

5 PROJECT EXPERIENCE

- Phase 2 Mitigation at Meyersdal, Klipriviersberg Johannesburg (ARM)
- Phase 1 Mitigation – Mapping of Late Iron Age Site in Pilansberg, Sun City (ARM)
- Phase 1 Mitigation – Survey of Witbank dam development (ARM)
- Phase 1 Mitigation – Survey of Glen Austin AH, Johannesburg (Matakoma)
- Phase 1 Mitigation – Survey of Modderfontein AH Holding 34, Johannesburg (Matakoma)
- Phase 1 Mitigation – Survey of Modderfontein AH Holding 38, Johannesburg (Matakoma)
- Phase 1 Mitigation – Survey of Modderfontein AH Holding 44, Johannesburg (Matakoma)
- Phase 1 Mitigation – Survey of Modderfontein AH Holding 46, Johannesburg (Matakoma)
- Phase 1 Mitigation – Survey of Modderfontein AH Holding 47, Johannesburg (Matakoma)
- Phase 1 Mitigation – Survey of Modderfontein AH Holding 48, Johannesburg (Matakoma)
- Phase 1 Mitigation – Survey of Modderfontein AH Holding 49, Johannesburg (Matakoma)
- Phase 1 Mitigation – Survey of Modderfontein AH Holding 50, Johannesburg (Matakoma)

- Phase 1 Mitigation – Survey of Modderfontein AH Holding 61, Johannesburg (Matakoma)
- Phase 1 Mitigation – Survey of Modderfontein AH Holding 62, Johannesburg (Matakoma)
- Phase 1 Mitigation – Survey of Modderfontein AH Holding 71, Johannesburg (Matakoma).
- Phase 1 Mitigation – Survey of Modderfontein AH Holding 72, Johannesburg (Matakoma)
- Phase 1 Mitigation – Survey of Modderfontein 35IR Portion 40, Johannesburg (Matakoma)
- Phase 1 Mitigation – Survey of Rhino Mines, Thabazimbi Limpopo Province (ARM)
- Phase 1 Mitigation – Survey of Moddergat 389KQ, Schilpadnest 385KQ, Swartkop 369KQ, Cronimet Project, Thabazimbi Limpopo Province (Matakoma)
- Desktop Study – Desktop study for the Eskom Thohoyandou SEA Project, Limpopo Province (Matakoma)
- Phase 2 Mitigation – Excavation of Iron Age site on Wenzelrust, Shoshanguve Gauteng (Heritage Contracts Unit)
- Phase 1 Mitigation – Mapping of Late Stone Age shelter, Parys, Free State
- Phase 1 Mitigation – Survey of Vaalkrans Battlefield for the Transnet NMPP Line (Umlando)
- Phase 1 Mitigation – Survey of Portion 222 of Mindale Ext 7 Witpoortjie 254 IQ & Portion 14 of Nooitgedacht 534 IQ, Johannesburg (ARM)
- Phase 2 Mitigation – Excavation of Site 19 for the Anglo Platinum Mines Der Brochen & Booysendal, Steelpoort, Mpumalanga (Heritage Contracts Unit)
- Phase 1 Mitigation – Mapping of sites 23, 26, 27, 28a & b for the Anglo Platinum Mines Der Brochen & Booysendal, Steelpoort, Mpumalanga (Heritage Contracts Unit)
- Desktop Study - Desktop study for the inclusion into the Thohoyandou Electricity Master Network for Eskom, Limpopo Province (Strategic Environmental Focus)
- Phase 1 Mitigation – Mapping of historical sites as part of the mitigation for the expansion of the Bathlako Mine's impact area (Heritage Contracts Unit).
- Phase 2 Mitigation – Kibali Grave Relocation Project (KGRP) for the Kibali Gold Project, Democratic Republic of Congo (Digby Wells)
- Phase 1 Mitigation – Heritage Assessment and Survey for the proposed Kibali Hydro Power Stations, Democratic Republic of Congo (Digby Wells)
- Phase 1 Mitigation – Heritage Impact Assessment & Survey of the farm Vygenhoek for Aquarius Resources Everest North Mining Project, Steelpoort, Mpumalanga (Digby Wells)
- Phase 1 Mitigation – Heritage Impact Assessment for the Gold One International Ltd Proposed Geluksdal Tailings Storage Facility and Pipeline Infrastructure, Johannesburg, Gauteng Province (Digby Wells)
- Phase 1 Mitigation – Burial Grounds and Graves Survey (BGGS) for Platreef Resources, Mokopane, Limpopo Province (Digby Wells)
- Phase 2 Mitigation – Archaeological Impact Assessment of sites for Resource Generation Boikarabelo Mine, Steenbokpan, Limpopo Province (Digby Wells)

- Phase 1 Mitigation – Watching Brief for Bokoni Platinum Mines (Pty) Ltd, Burgersfort, Limpopo Province (Digby Wells)
- Heritage Statement for Rhodium Reefs Limited Platinum Operations on the Farm Kennedy's Vale 361 KT, Steelpoort, Mpumalanga Province (Digby Wells).
- Socio-Economic and Asset Survey, SEGA Gold Mining Project, Cluff Gold PLC, Burkina Faso (Digby Wells)

6 PROFESSIONAL AFFILIATIONS

Society for Africanist Archaeologists (SAfA) Member

7 PROFESSIONAL REGISTRATION

Association of Southern African Professional Archaeologists (ASAPA): Professional & CRM Member

8 PUBLICATIONS

- Huffman, T.N. & du Piesanie, J.J. 2011. Khami and the Venda in the Mapungubwe Landscape. Journal of African Archaeology 9(2): 189-206

JOHAN NEL

Mr Johan Nel

Unit manager: Heritage Resources Management

Social Sciences

Digby Wells Environmental

1 EDUCATION

2002 BA Honours - 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 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 wells 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, Bronkhorstspruit, 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 fo 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.

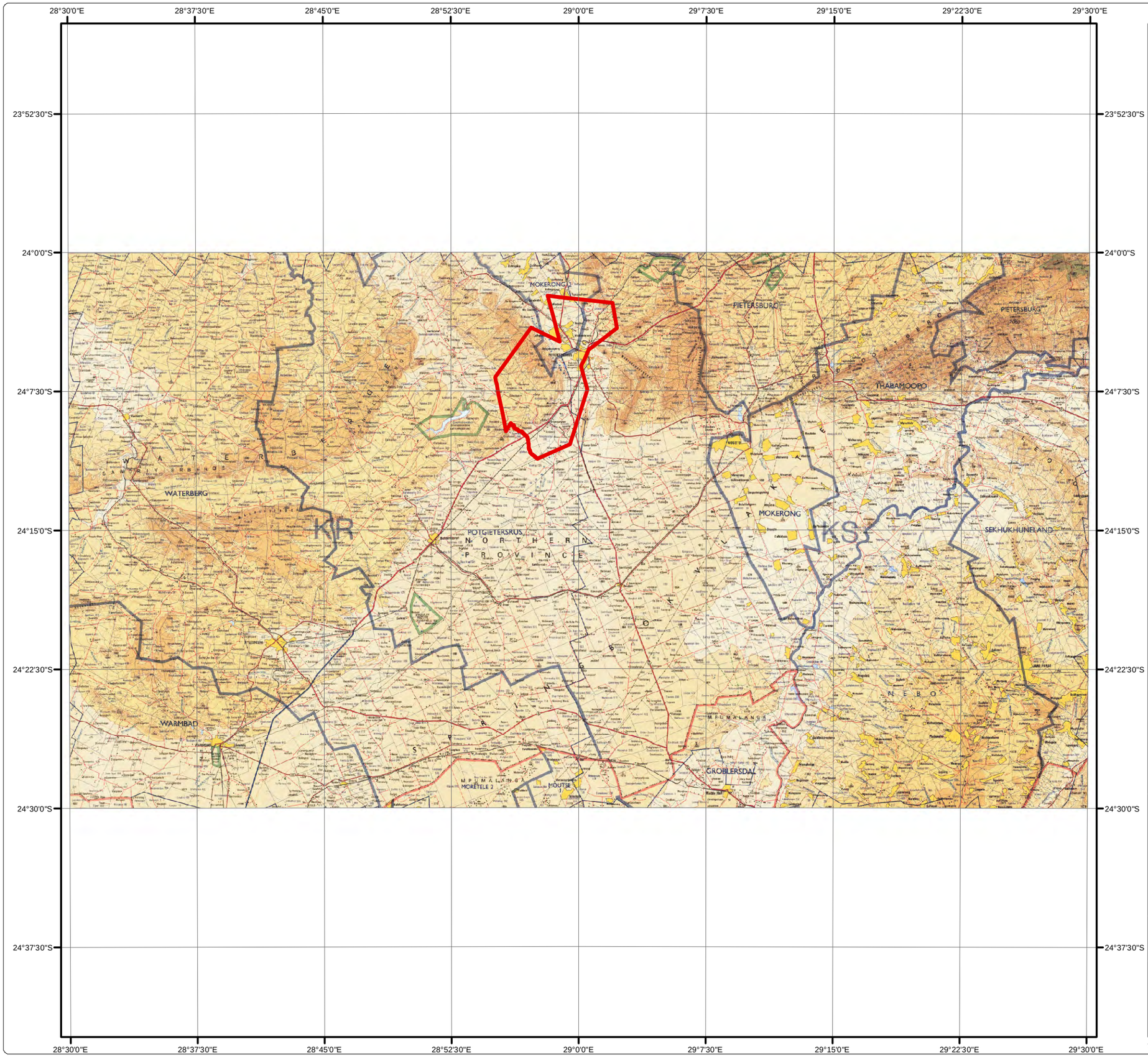
Nel, J. 2012. *HIAs for EAPs*. Paper presented at IAIA annual conference: Somerset West.

Appendix B: Location and Site Maps

Plan 1

Platreef Resources (Pty) Ltd

Regional Setting
1:250 000



Legend

Project Area

2428 Modimolle

DIGBY WELLS ENVIRONMENTAL

• Sustainability • Service • Positive Change • Professionalism • Future Focused • Integrity

Projection: Transverse Mercator	Ref #: scc.PLA1677.201305.346
Datum: Hartebeesthoek 1994	Revision Number: 1
Central Meridian: 29°E	Date: 27/05/2013

N

0 2.5 5 10 15 20

Kilometres

1:380 000

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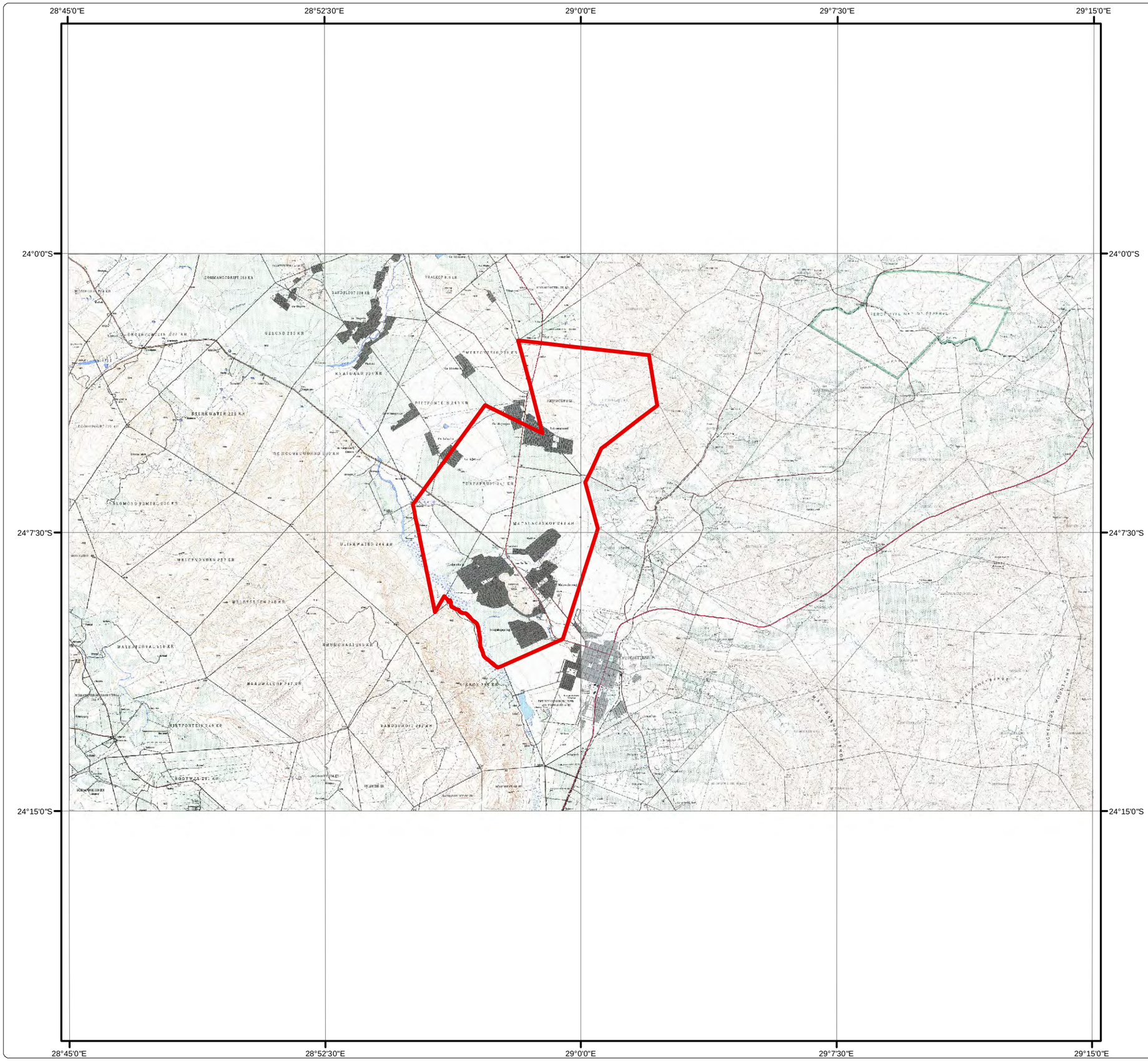
Plan 2

Platreef Resources (Pty) Ltd

Regional Setting
1:50 000



Legend

Project Area

2428BB Tinmyne
2429AA Mokopane

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Projection: Transverse Mercator	Ref #: scc.PLA1677.201305.347
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Central Meridian: 29°E	Date: 27/05/2013

N

0 2.5 5 10

Kilometres

1:190 000

Plan 3

Platreef Resources (Pty) Ltd

Regional Setting
1:10 000

Legend

Project Area

2428BB
2429AA

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Projection: Transverse Mercator	Ref #: scc.PLA1677.201305.348
Datum: Hartebeesthoek 1994	Revision Number: 1
Central Meridian: 29°E	Date: 27/05/2013

N

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Kilometres

1:190 000

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Plan 4

Platreef Resources (Pty) Ltd

Regional Geology

28°54'0"E 28°57'0"E 29°0'0"E 29°3'0"E

24°3'0"S 24°6'0"S 24°9'0"S 24°12'0"S

Mapela
Ga-Magongoa
Tshamahansi
Sekgoboko
Ga-Kgubudi
Mzumbani
Masodi
Madiba
Masehlaneng
Mahwelereng
Mokopane

N11
R518
PHOLOTSI
DITHOKENG
KLEIN-SANDSLOOT
KLEIN-SLOOT
ROOISLOOT
MOGALAKWENA
NGWADITSE
DORPSRIVIER
NYLRIVIER
THABO MBEKI

Malmani Sbgrp, Chuniespoort Grp
Uitloop Granite, Mashashane Sui
Hout River Gneiss
Lunsklip Granite, Mashashane Sui
Molendraai Magnetite Gabbro, Rustb. Layer. Sui
Pretoria Grp, Transvaal Spgrp
Duitschland Fm, Chuniespoort Grp
Main Zone, Rustenburg. Layered Sui, Bushveld C
Zoetveld Sbsuii, Rustenburg Layered Sui
Black Reef Fm, Transvaal Spgrp
Pietersburg Grp
Malmani Sbgrp, Chuniespoort Grp
Lebowa Granite Sui, Bushveld Cplx
Rashoop Granophyre Sui, Bushveld Cplx
Kwaggasnek Fm, Rooiberg Grp
Daspoort Fm, Pretoria Grp
Silverton Fm, Pretoria Grp

Legend

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

Geology

- Black Reef Fm, Transvaal Spgrp
- Daspoort Fm, Pretoria Grp
- Duitschland Fm, Chuniespoort Grp
- Dwaalheuwel Fm, Pretoria Grp
- Hout River Gneiss
- Kwaggasnek Fm, Rooiberg Grp
- Lebowa Granite Sui, Bushveld Cplx
- Lunsklip Granite, Mashashane Sui
- Magaliesberg Fm, Pretoria Grp
- Main Zone, Rustenburg. Layered Sui, Bushveld C
- Malmani Sbgrp, Chuniespoort Grp
- Molendraai Magnetite Gabbro, Rustb. Layer. Sui
- Pietersburg Grp
- Pretoria Grp, Transvaal Spgrp
- Rashoop Granophyre Sui, Bushveld Cplx
- Silverton Fm, Pretoria Grp
- Swaershoek Fm, Nylstroom Sbgrp
- Uitloop Granite, Mashashane Sui
- Zoetveld Sbsui, Rustenburg Layered Sui

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Revision Number: 1
Date: 27/05/2013

N

0 0.5 1 2 3 4

Kilometres

1:80 000

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Plan 5

Platreef Resources (Pty) Ltd

Heritage Points

28°54'0"E 28°57'0"E 29°0'0"E 29°3'0"E

24°3'0"S 24°6'0"S 24°9'0"S

Mapela
Ga-Magongoa
Tshamahansi
Sekgoboko
Ga-Kgubudi
Mzumbani
Masodi
Madiba
Masehlaneng
Mahwelereng
Mokopane

PHOLOTSI
DITHOKENG
KLEIN-SANDSLOOT
ROOISLOOT
MOGALAKWENA
NGWADITSE
DORPSRIVIER
NYLRIVIER

R518
N1
NELSONMANDELA
THABOMBEKI

S.35-018 S.35-023 S.35-021 S.35-009 S.35-006 S.35-008 S.35-005 S.35-004 S.35-001 S.35-002 S.35-083 S.35-086 S.35-019 S.35-017 S.35-016 S.35-015 S.35-014 S.35-022 S.35-011 S.35-020

S.36-043 S.36-094 S.36-092 S.36-091 S.36-090 S.36-095 S.36-044 S.36-085 S.36-087 S.36-081 S.36-030 S.36-088 S.36-082 S.36-084 S.36-033 S.36-079 S.36-028 S.36-045 S.36-012 S.36-038 S.36-062 S.36-039 S.36-064 S.36-063 S.36-047 S.36-046 S.36-051 S.36-057 S.36-052 S.36-055 S.36-054 S.36-056 S.36-058 S.36-059 S.36-075 S.36-076 S.36-074 S.36-071 S.36-072 S.36-060 S.36-061 S.36-065 S.36-067 S.36-066 S.36-070 S.36-069 S.36-068

Legend

Heritage Points

- S.35 Archaeological / Paleo Sites
- S.36 Burial Grounds & Graves
- Project Area
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Dam Wall
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Non-Perennial Pan / Stream
- Perennial Pan
- Wetland

DIGBY WELLS ENVIRONMENTAL

• Sustainability • Service • Positive Change • Professionalism • Future Focused • Integrity

Projection: Transverse Mercator	Ref #: scc.PLA1677.201305.350
Datum: Hartebeesthoek 1994	Revision Number: 1
Central Meridian: 29°E	Date: 27/05/2013

N

0 0.5 1 2 3

Kilometres

1:70 000

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Plan 6

Platreef Resources (Pty) Ltd

Historical Layering Overview

28°54'0"E
28°57'0"E
29°0'0"E
29°3'0"E
24°3'0"S
24°6'0"S
24°9'0"S

Legend

- Project Area
- 1948 Points
- 1953 Points
- 1963 Points
- 1965 Points
- 1970 Points
- 1972 Points
- 1979 Points
- 1980 Points
- 1992 Points
- 1995 Points
- 1948 Polygons
- 1953 Polygons
- 1963 Polygons
- 1965 Polygons
- 1970 Polygons
- 1972 Polygons
- 1979 Polygons
- 1980 Polygons
- 1987 Polygons
- 1995 Polygons
- 1992 Polygons

DIGBY WELLS ENVIRONMENTAL

• Sustainability • Service • Positive Change • Professionalism • Future Focused • Integrity

Projection: Transverse Mercator
Datum: Hartebeesthoek 1994
Central Meridian: 29°E

Ref #: scc.PLA1677.201306.092
Revision Number: 1
Date: 11/06/2013

N

0 0.5 1 2 3

Kilometres

1:70 000

Appendix C: Chance Find Procedure, Fossil Find Procedure, and Fossil Monitoring

CHANCE FIND PROCEDURES (CFPS) FOR THE PLATREEF RESOURCES (PTY) LTD PROJECT, LIMPOPO PROVINCE, SOUTH AFRICA

PLATREEF RESOURCES (PTY) LTD

JUNE 2013

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Tel: +27 11 789 9495, Fax: +27 11 789 9498, info@digbywells.com, www.digbywells.com

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

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

Report Title:	**Chance Find Procedures (CFPs) for the Platreef Resources (Pty) Ltd Project, Limpopo Province, South Africa**
Project Number:	**PLA1677 CFPs Document**

Name	Responsibility	Signature	Date
Justin du Piesanie: HRM Specialist	CFPs Compiler		June 2013

ACRONYMS

BGG	Burial Grounds and Graves
CFPs	Chance Find Procedures
CL	Community Liaison
Digby Wells	Digby Wells Environmental
EC	Environmental Control
HIA	Heritage Impact Assessment
HRM	HRM Resources Management
HS	Health and Safety
ICOMOS	International Council on Monuments and Sites
LIHRA	Limpopo Heritage Resources Authority
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
Platreef	Platreef Resources (Pty) Ltd
SAHRA	South African Heritage Resources Authority
SAPS	South African Police Service
UNESCO	United Nations Educational, Scientific and Cultural Organisation

TABLE OF CONTENTS

1 INTRODUCTION

The purpose of this document is to provide Platreef Resources (Pty) Ltd (Platreef) and their contractors with the appropriate response guidelines (extracted and adapted from the National Heritage Resources Act (Act No. 25 of 1999) Regulations Reg No. 6820, GN: 548, taking into consideration international best practice based on World Bank, Equator Principles and the International Finance Corporation Performance Standards, 1972 UNESCO Convention on the Protection of World Cultural and Natural Heritage (World Heritage Convention), ICOMOS Guideline on Heritage Impact Assessment and the Australian ICOMOS Burra Charter (1999)) that should be implemented in the event of chance discovery of heritage resources. These guidelines or chance find procedures (CFPs) can be incorporated into Platreef policies that may have relevance during construction and operational phases

The CFPs presented by Digby Wells Environmental (Digby Wells) aim to avoid and/or reduce project risks that may result due to chance finds, whilst considering international best practice.

2 DEFINITIONS

For simplicity, the term 'heritage resource' includes structures, archaeology, palaeontology, meteors, and public monuments as defined in the South African National Heritage Resources Act (Act No. 25 of 1999) (NHRA) Sections 34, 35, and 37. Procedures specific to burial grounds and graves (BGG) as defined under NHRA Section 36 will be discussed separately as these require the implementation of separate criteria for CFPs.

3 CHANCE FIND PROCEDURES

The following procedural guidelines must be considered in the event that previously unknown heritage resources or BGG are exposed or found during the life of the project.

3.1 Initial Identification and/or Exposure

Heritage resources or BGG may be identified during construction or accidently exposed. The initial procedure when such sites are found aim to avoid any further damage. The following steps and reporting structure must be observed in both instances:

1. The person or group (identifier) who identified or exposed the burial ground must cease all activity in the immediate vicinity of the site;
2. The identifier must immediately inform his/her supervisor of the discovery;
3. The supervisor must ensure that the site is secured and control access; and

4. The supervisor must then inform the relevant Platreef personnel responsible for at least the following portfolios: Community Liaison (CL), Environmental Control (EC) and Health and Safety (HS).

3.2 Chance Find Procedures: Heritage Resources

In the event that previously unidentified heritage resources are identified and/or exposed during construction or operation of the Platreef Project, the following steps must be implemented subsequent to those outlined under Section 3.1 above:

1. The Digby Wells Environmental (Digby Wells) project manager and/or Heritage Resources Management (HRM) Unit must be notified of the discovery;
2. Digby Wells will assign a qualified specialist to consider the heritage resource, either via communicating with the EC Officer via telephone or email, or based on a site visit;
3. Appropriate measures will then be presented to Platreef;
4. Should the specialist conclude that the find is a heritage resource protected in terms of the NHRA (1999) Sections 34, 35, 37 and NHRA (1999) Regulations (Regulation 38, 39, 40), Digby Wells will notify the South African Heritage Resources Agency (SAHRA) and/or the Limpopo Provincial Heritage Resources Agency (LIHRA) on behalf of Platreef; and
5. Based on the comments received from SAHRA and/or LIHRA, Digby Wells will provide Platreef with a Terms of References Report and relevant associated costs if necessary.

3.3 Chance Find Procedures: BGG

In the event that previously unidentified BGG are identified and/or exposed during construction or operation of the Platreef Project, the following steps must be implemented subsequent to those outlined under Section 3.1 above:

1. The Digby Wells project manager and/or the HRM Unit must immediately be notified of the discovery in order to take the required further steps:
    i. The local South African Police Service (SAPS) will be notified on behalf of Platreef;
    ii. Digby Wells will deploy a suitably qualified specialist to inspect the exposed burial and determine in consultation with the SAPS:
        - The temporal context of the remains, i.e.:
            a. forensic,

b. authentic burial grave (informal or older than 60 years, NHRA (1999) Section 36); or
c. archaeological (older than 100 years, NHRA (1999) Section 38); and

- If any additional graves may exist in the vicinity.

2. Should the specialist conclude that the find is a heritage resource protected in terms of the NHRA (1999) Section 36 and NHRA (1999) Regulations (Regulation 38, 39, 40), Digby Wells will notify SAHRA and/or LIHRA on behalf of Platreef;
3. SAHRA/LIHRA may require that an identification of interested parties, consultation and /or grave relocation take place;
4. Consultation must take place in terms of NHRA (1999) Regulations 39, 40, 42; and
5. Grave relocation must take place in terms of NHRA (1999) Regulations 34.

4 CONCLUSION

The CFP's presented in this document serve as international best practice policy for the accidental discovery of heritage resources and BGG. Based on the definitions provided within this document and the proposed lines of communication, Platreef will be able to mitigate the accidental discovery of heritage resources and BGG throughout the various phases of the project. Where necessary, Digby Wells is available to assist with the recommendation of mitigations for the accidental discovery of heritage resources and BGG.

FOSSIL FIND PROCEDURES (FFPS) FOR PLATREEF RESOURCES (PTY) LTD PROJECT, LIMPOPO PROVINCE,

SOUTH AFRICA

PLATREEF RESOURCES (PTY) LTD

JUNE 2013

Digby Wells and Associates (South Africa) (Pty) Ltd (Subsidiary of Digby Wells & Associates (Pty) Ltd). Co. Reg. No. 2010/008577/07. Fern Isle, Section 10, 359 Pretoria Ave Randburg Private Bag X10046, Randburg, 2125, South Africa
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DIGBY WELLS ENVIRONMENTAL

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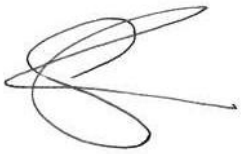
Report Title: **Fossil Find Procedures (FFPs) for Platreef Resources (Pty) Ltd Project, Limpopo Province, South Africa**

Project Number: **PLA1677 FFP Document**

Name	Responsibility	Signature	Date
Shahzaadee Karodia *Palaeontology a& Archaeology Consultant*	FFP compiler		2013-06-18

ACRONYMS

ECO	Environmental Control Officer
FFP	Fossil Find Procedure
MA	Monitoring for Fossils

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1 INTRODUCTION

In the context under consideration, it is improbable that fossil finds will require declarations of permanent “no go” zones. At most, a temporary pause in activity at a limited locale may be required. The strategy is to rescue the material as quickly as possible.

The procedures suggested below are in general terms, to be adapted as befits a context. They are described in terms of finds of fossil bones that usually occur sparsely. However, they may also serve as a guideline for other fossil material that may occur.

Bone finds can be classified as two types: isolated bone finds and bone cluster finds.

2 ISOLATED BONE FINDS

In the process of digging excavations, isolated bones may be spotted in the hole sides or bottom, or as they appear on the spoil heap. By this is meant bones that occur singly, in different parts of the excavation. If the number of distinct bones exceeds six pieces, the finds must be treated as a bone cluster (below).

2.1 Response by personnel in the event of isolated bone finds

The following responses should be undertaken by personnel in the event of isolated bone finds:

- **Action 1:** An isolated bone exposed in an excavation or spoil heap must be retrieved before it is covered by further spoil from the excavation and set aside;
- **Action 2:** The site foreman and Environmental Control Officer (ECO) must be informed;
- **Action 3:** The responsible field person (site foreman or ECO) must take custody of the fossil. The following information is to be recorded:
  - Position (excavation position);
  - Depth of find in hole;
  - Digital image of hole showing vertical section (side); and
  - Digital image of fossil.
- **Action 4:** The fossil should be placed in a bag (e.g. a Ziploc bag), along with any detached fragments. A label must be included with the date of the find, position information, and depth; and
- **Action 5:** The ECO is to inform the developer who then contacts the archaeologist and/or palaeontologist contracted to be on standby. The ECO is to describe the occurrence and provide images via email.

2.2 Response by Palaeontologist in the event of isolated bone finds

The palaeontologist will assess the information and liaise with the developer and the ECO and a suitable response will be established.

3 BONE CLUSTER FINDS

A bone cluster is a major find of bones (e.g. several bones in close proximity or bones resembling parts of a skeleton). These bones will likely be seen in broken sections of the sides of the hole and as bones appearing in the bottom of the hole and on the spoil heap.

3.1 Response by personnel in the event of a bone cluster find

The following responses should be undertaken by personnel in the event of bone cluster finds:

- **Action 1:** Immediately stop excavation in the vicinity of the potential material. Mark or flag the position as well as the spoil heap that may contain fossils;
- **Action 2:** Inform the site foreman and the ECO; and
- **Action 3:** The ECO is to inform the developer who must then contact the archaeologist and/or palaeontologist contracted to be on standby. The ECO is then to describe the occurrence and provide images via email.

3.2 Response by Palaeontologist in the event of a bone cluster find

The palaeontologist will assess the information and liaise with the developer and the ECO and a suitable response will be established. It is likely that a Field Assessment by the palaeontologist will be carried out.

It will be probably be feasible to avoid the find and continue to the excavation farther along, or proceed to the next excavation, so that the work schedule is minimally disrupted. The response time/scheduling of the Field Assessment is to be decided in consultation with the developer/owner and the environmental consultant.

The Field Assessment could have the following outcomes:

- If a human burial, the appropriate authority is to be contacted. The find must be evaluated by a human burial specialist to decide if Rescue Excavation is feasible, or if it is a Major Find.
- If the fossils are in an archaeological context, an archaeologist must be contacted to evaluate the site and decide if Rescue Excavation is feasible, or if it is a Major Find.
- If the fossils are in a palaeontological context, the palaeontologist must evaluate the site and decide if Rescue Excavation is feasible, or if it is a Major Find.

4 RESCUE EXCAVATION

Rescue Excavation refers to the removal of the material from the "design" excavation. This would apply if the amount or significance of the exposed material appears to be relatively circumscribed and it is feasible to remove it without compromising contextual data. The time span for Rescue Excavation should be reasonable rapid to avoid any undue delays, e.g. one to three days and definitely less than one week.

In principle, the strategy during the mitigation is to "rescue" the fossil material as quickly as possible. The strategy to be adopted depends on the nature of the occurrence, particularly the density of the fossils. The methods of collection would depend on the preservation or fragility of the fossil and whether in loose or in lithified sediment. These could include:

- On-site selection and sieving in the case of robust material in sand; and
- Fragile material in loose sediment would be encased in blocks using Plaster-of-Paris or reinforced mortar.

If the fossil occurrence is dense and is assessed to be a "Major Find", a carefully controlled excavation is required.

5 MAJOR FINDS

A Major Find is the occurrence of material that, by virtue of quantity, importance and time constraints, cannot be feasibly rescued without compromise of detailed material recovery and contextual observations.

5.1 Management Options for Major Finds

In consultation with the developer/owner and the environmental consultant, the following options should be considered when deciding on how to proceed in the event of a Major Find.

Option 1: Avoidance

Avoidance of the Major Find through project redesign or relocation. This ensures minimal impact to the site and is the preferred option from a heritage resource management perspective. When feasible, it can also be the least expensive option from a construction perspective.

The find site will require site protection measures, such as erecting fencing or barricades. Alternatively, the exposed finds can be stabilised and the site refilled or capped. The latter is preferred if excavation of the find will be delayed substantially or indefinitely. Appropriate protection measures should be identified on a site-specific basis and in wider consultation with the heritage and scientific communities.

This option is preferred as it will allow the later excavation of the finds with due scientific care and diligence.

Option 2: Emergency Excavation

Emergency excavation refers to the "no option" situation where avoidance is not feasible due to design, financial and time constraints. It can delay construction and emergency excavation itself will take place under tight time constraints, with the potential for irrevocable compromise of scientific quality. It could involve the removal of a large, disturbed sample by an excavator and conveying this by truck from the immediate site to a suitable place for "stockpiling". This material could then be processed later.

Consequently, the emergency excavation is not the preferred option for a Major Find.

6 EXPOSURE OF FOSSIL SHELL BEDS

6.1 Response be personnel in the event of intersection of fossil shell beds

The following responses should be undertaken by personnel in the event of intersection with fossil shell beds:

- **Action 1:** The site foreman and ECO must be informed;
- **Action 2:** The responsible field person (site foreman or ECO) must record the following information:
  - Position (excavation position);
  - Depth of find in hole;
  - Digital image of the hole showing the vertical section (side); and
  - Digital images of the fossiliferous material.
- **Action 3:** A generous quantity of the excavated material containing the fossils should be stockpiled near the site, for later examination and sampling;
- **Action 4:** The ECO is to inform the developer who must then contact the archaeologist and/or palaeontologist contracted to be on standby. The ECO is to describe the occurrence and provide images via email.

6.2 Response by the palaeontologist in the event of fossil shell bed finds

The palaeontologist will assess the information and liaise with the developer and the ECO and a suitable response will be established. This will most likely be a site visit to document and sample the exposure in detail, before it is covered up.

7 EXPOSURE OF FOSSIL WOOD AND PEATS

7.1 Response be personnel in the event of exposure of fossil wood and peats

The following responses should be undertaken by personnel in the event of exposure of fossil wood and peats:

- **Action 1:** The site foreman and ECO must be informed;
- **Action 2:** The responsible field person (site foreman or ECO) must record the following information:
  - Position (excavation position);
  - Depth of find in hole;
  - Digital image of the hole showing the vertical section (side); and
  - Digital images of the fossiliferous material.
- **Action 3:** A generous quantity of the excavated material containing the fossils should be stockpiled near the site, for later examination and sampling;
- **Action 4:** The ECO is to inform the developer who must then contact the archaeologist and/or palaeontologist contracted to be on standby. The ECO is to describe the occurrence and provide images via email.

7.2 Response by the palaeontologist in the event of exposure of fossil wood and peats

The palaeontologist will assess the information and liaise with the developer and the ECO and a suitable response will be established. This will most likely be a site visit to document and sample the exposure in detail, before it is covered up.

8 MONITORING FOR FOSSILS

A regular monitoring presence over the period during which excavations are made, by either an archaeologist or palaeontologist, is generally not practical.

The field supervisor or foreman and workers involved in digging excavations must be encouraged and informed of the need to watch for potential fossil and buried archaeological material. Workers seeing potential objects are to report to the field supervisor who, in turn, will report to the ECO. The ECO will inform the archaeologist and/or palaeontologist contracted to be on standby in the case of fossil finds.

To this end, responsible persons must be designated. This will include hierarchically:

- The field supervisor or foreman who is going to be most often in the field;
- The ECO for the project;

- The Project Manager

Should the monitoring of excavations be stipulated in the Archaeological Impact Assessment and/or the Heritage Impact Assessment, the contracted Monitoring Archaeologist (MA) can also monitor for the presence of fossils and a make field assessment of any material brought to attention. The MA is usually sufficiently informed to identify fossil material and this avoids additional monitoring by a palaeontologist. In shallow coastal excavations, the fossils encountered are usually in an archaeological context.

The MA then becomes the responsible field person and fulfils the role of liaison with the palaeontologist and coordinates with the developer and the ECO. If fossils are exposed in non-archaeological contexts, the palaeontologist should be summoned to document and sample/collect them.