REPORT ON ARCHAEOLOGICAL WATCHING BRIEF FOR BOKONI PLATINUM

BOKONI PLATINUM

JULY 2012

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Report Title:	**Report on Archaeological Watching Brief for Bokoni Platinum**
Project Number:	**BOK 1824**

Name	Responsibility	Signature	Date
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EXECUTIVE SUMMARY

An archaeological Watching Brief was undertaken for Bokoni Platinum Mines (Pty) Ltd (BPM) on 12 July 2012. BPM constructed an access road connecting the current mine operations to a new development footprint. This report presents the results of the watching brief of the proposed project.

A total of 18 sites were identified and recorded, ranging from isolated artefact incidences to more complex archaeological settlements and graves. The sites were accorded value ratings based on criteria determining significance in Section 3 of the National Heritage Resources Act (Act No. 25 of 1999) (NHRA). A summary of identified heritage resources and their value ratings is provided in the table below.

SITE ID	SITE TYPE	DESCRIPTION	SAHRA GRADING	SIGNIFICANCE ASSESSMENT
BOK1824/2429BD/24	Scatter	MSA scraper	Grade C	1
BOK1824/2429BD/25	Scatter	Undecorated potsherds and eggshell remains	Grade C	1
BOK1824/2429BD/26a	Scatter	Stone artefacts and MSA handaxe	Grade C	1
BOK1824/2429BD/26b	Scatter	Undecorated and decorated potsherds	Grade C	1
BOK1824/2429BD/27	Scatter	Undecorated and decorated potsherds	Grade 4B	2
BOK1824/2429BD/28	Scatter	Undecorated and decorated potsherds	Grade 4B	2
BOK1824/2429BD/29	Scatter	Upper grind stone	Grade 4B	2
BOK1824/2429BD/33	Scatter	Collected a decorated potsherd possibly of the *Doornkop* or *Eiland* facies	Grade 4B	2
BOK1824/2429BD/34	Find spot	A possible cultural site defined by a grouping of stones. Often, grouping of stones such as this is more contemporary, used to store wood or grass above surface to prevent damp and termites	Grade 4B	2

SITE ID	SITE TYPE	DESCRIPTION	SAHRA GRADING	SIGNIFICANCE ASSESSMENT
BOK1824/2429BD/35	Scatter	Undecorated potsherd	Grade C	1
BOK1824/2429BD/36	Scatter	Collected a decorated potsherd possibly of the *Doornkop* or *Eiland* facies	Grade C	1
BOK1824/2429BD/43	Scatter	Collected a decorated potsherd possibly of the *Doornkop* or *Eiland* facies	Grade C	1
BOK1824/2429BD/45	Settlement	A possible pre-colonial or colonial settlement near the old agricultural fields along access route	Grade 4B	2
BOK1824/2429BD/44	Burial	A possible single informal grave with stone dressing	Grade 3B	4
BOK1824/2428BD/46	Burial	An informal grave with stone dressing	Grade 3B	4
BOK1824/2429BD/47	Burial	An informal grave with stone dressing	Grade 3B	4
BOK1824/2429BD/32	Settlement	An EIA or MIA site with six grain bin foundations	Grade 4A	3
BOK1824/2429BD/48	Settlement	An EIA or MIA site with grain bin foundations and lower grind stones	Grade 4A	3

Site significance is determined by Section 3(3) of the NHRA. Appropriate mitigation recommendations are made based on the site significance rating. The table below explains the significance rating, the SAHRA grading and the recommended mitigation.

SIGNIFICANCE RATING	DESCRIPTION	SAHRA RATING (RSA only)	RECOMMENDED MITIGATION
7	High	Grade 1	Conservation: National Site Nomination
6	High	Grade 2	Conservation: Provincial Site Nomination
5	High	Grade 3A	Conservation: Regional Site Nomination

SIGNIFICANCE RATING	DESCRIPTION	SAHRA RATING (RSA only)	RECOMMENDED MITIGATION
4	Medium	Grade 3B	Mitigation and partly conserved
3	Average	Grade 4A	Mitigation before destruction
2	Average	Grade 4B	Record before destruction
1	Low	Grade C	Destruction / none

During the Watching Brief discussed in this report, 18 heritage sites were identified and recorded. Based on the significance rating system, no mitigation was required for Grade C sites. Conversely, it was recommended that the route be realigned for Grade 4B, Grade 4A and Grade 3B sites.

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GLOSSARY OF ABBREVIATIONS AND TERMS

ASAPA	Association of South African Professional Archaeologists
EIA	Early Iron Age- 300-900 AD. Farmers with domestic stock and agriculture settle at permanent points and produce pottery, as well as trade with other groups. Metal artefacts such as iron and ivory are present. Communities were divided by status or rank.
EMP	Environmental Management Plan
ESA	Early Stone Age- ± 2 Million years and 250 000 years BP. Large hand axes and cleavers present within deposit.
EIA	Environmental Impact Assessment
HIA	Heritage Impact Assessment
LIA	Later Iron Age- 1300-1840 AD. Interaction with colonialists and the movement of groups with the landscapes.
LSA	Later Stone Age- ±20 000 BP to present. Artefacts include microliths such as scrapers, flakes and bladelets. Art in the form of paintings and engravings occur, and domesticated stock and early pottery are present.
MIA	Middle Iron Age- 900-1300 AD. Kingdom or capitals emerge with

	communities divided by class. Pottery, iron and agriculture are still present, with the addition of copper, gold and beads as trade items and the construction of stone walls.
MSA	Middle Stone Age- ±250 000 -20 000 BP. Stone tools such as blades and points, and other artefacts include shell beads, pendants and the use of ochre.
NHRA	National Heritage Resource Act, Act 25 of 1999
SAHRA	South Africa Heritage Resources Agency

1 INTRODUCTION

1.1 Project Background

Bokoni Platinum Mine (Pty) Ltd (BPM) is a subsidiary of Anooraq Resources Corporation (Anooraq), a black economic empowerment (BEE) platinum group metals (PGM) producing and exploration company. BPM is situated in the Bushveld Complex, to the north of and adjacent to the Ga-Phasha Project. BPM is in possession of two Mining Licenses (ML 6-2003 and ML 23-2003) which are underlain by the contiguous Merensky and UG2 Reefs. Gold and base minerals are mined from these reefs though underground and opencast mining methods. The ore is processed through the concentrator located on site and the PGMs concentrate is sent to a nearby facility for toll treatment.

1.2 Motivation for Watching Brief

BPM constructed an access road from the current mine operations to a proposed future mining footprint. Although a Heritage Impact Assessment will be conducted for the larger Anooraq Resources Corporation Delta 80 Project, the access route was urgently required. Digby Wells Environmental (Digby Wells) therefore recommended that a Watching Brief be undertaken.

Heritage Impact Assessments (HIA) have been conducted for the mine since 1996 (Roodt & Roodt, 1996; Roodt, 2002; Roodt, 2003; Roodt, 2006; Roodt, 2008). The Phase 1 Heritage Impact Assessment (HIA) conducted by Roodt (2003) on the Brakfontein 464 KS farm led to the identification of Middle Stone Age (MSA) artefacts and Iron Age sites. The location of the access route on the Brakfontein 464 KS farm further necessitated the recommended Watching Brief.

The Watching Brief included the on-site monitoring of construction activities as well as surveying the staked out access route. On-site recommendations were made and communicated to the Environmental, Health and Safety officer present. Recommendations included advice on alternate routes for the proposed access road. The Watching Brief was conducted on the 12th of July 2012 and the results are presented in this report.

1.3 Contact Details

The contact details of the client are summarized in Table 1.1.

Table 1.1: Contact details of the client

ITEM	DETAILS
Company:	Bokoni Platinum Mine (PTY) Ltd
Contact person:	Douglas Schultz
Tel. no:	(015) 620 0018

ITEM	DETAILS
Cell no:	083 300 4823
E-mail address:	douglas@atlatsa.com
Postal address:	P.O. Box 62179, Marshall Town

The contact details of the consultant are summarized in Table 1.2.

Table 1.2: Contact details of the consultant

ITEM	DETAILS
Company:	Digby Wells Environmental
Contact person:	Johan Nel
Tel. no:	011 789 9495
Fax no:	011 789 9498
E-mail address:	johan.nel@digbywells.com
Postal address:	Private Bag X10046, Randburg, 2125, South Africa

2 TERMS OF REFERENCE

The current requirement of the Watching Brief was to identify:

- Places, buildings, structures and equipment of cultural significance, to which oral traditions are attached or associated with living heritage;
- Historical settlements, townscapes, landscapes and natural features of cultural significance;
- Sites of geological or scientific importance and archaeological or palaeontological sites;
- Graves and burial grounds including –
  - Graves older than 60 years; and
  - Ancestral, royal, traditional leaders, victims of conflict and historical graves and cemeteries

- Movable objects including –
  - Archaeological and palaeontological objects and material, meteorites and rare geological specimens

3 LEGAL REQUIREMENTS

The Watching Brief was informed by national legislation, standards and guidelines as well as international standards and guidelines. These include the:

- National Heritage Resource Act (Act No. 25 of 1999) (NHRA);
- South African Heritage Resource Association (SAHRA) Minimum Standards;
- Association of Southern African Professional Archaeologists (ASAPA) Constitution and Code of Ethics; and
- ICOMOS Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (2010).

4 EXPERTISE OF THE SPECIALIST

Johan Nel has completed a Bachelor of Arts (BA) degree in archaeology and anthropology and a BA Honours degree in archaeology at the University of Pretoria. He is currently completing a Master of Arts (MA) degree in archaeology and he is specialising in the Iron Age. Mr Nel is currently the senior archaeologist and Unit Manager for Cultural Resource Management (CRM) in the Social Science Department at Digby Wells. Justin du Piesanie has completed a BA degree, a BA Honours degree and a Master of Science (MSc) degree in archaeology. Mr du Piesanie specialises in Iron Age archaeology. Mr du Piesanie is currently an archaeology consultant at Digby Wells. Shahzaadee Karodia has completed a BA degree in archaeology and anthropology, a Bachelor of Science (BSc) Honours degree in palaeontology, and an MSc in archaeology. Ms Karodia specialises in palaeoanthropology and historical archaeology. She is currently an archaeology consultant at Digby Wells. Curriculum Vitae of the specialists involved and the declaration of independence are attached in Appendix A.

5 SCOPE OF WORK

5.1 Aims and Objectives

The aims and objectives of this Watching Brief were to:

- Determine whether any heritage resources were located within the access road footprint;
- Document and record any identified heritage resources;

- Advise BPM of any identified heritage resources;
- Recommend alternatives and mitigate any immediate impacts on heritage resources; and
- Provide BPM with a report on the findings and submit this report to the relevant Heritage Resource Authorities.

5.2 Methodology

The methods employed during the Watching Brief included:

- Site survey:

A vehicle and pedestrian survey was undertaken on 12 July 2012 by two qualified and accredited archaeologist along the proposed access route. General site conditions and features on site were recorded by means of photographs, GPS location, and description. A physical and pedestrian survey was done to identify and record any sites found *in situ*.

- Desktop study:

The first step was aimed at gathering information relating to known heritage resources within and surrounding the project area. Project information and data was obtained through intensive research of a variety of primary and secondary sources such as academic journals, textbooks and records, national and provincial websites, archaeological field guides, national guidelines, maps, photographs and plans. Surveys of aerial photographs, topographical maps, satellite imagery and other cartographic material was undertaken to plot potential sites. Some older maps such as the major Jackson series of early 20th century topographical maps were also consulted. These are invaluable resources as they often include features and information not recorded on later maps.

- Assessment of Significance and Impacts:

The identified heritage resources were assessed to determine their significance in context of the National Estate in terms of Section 3 of the NHRA. Potential impacts on the heritage resources were assessed in terms of Digby Wells' standard Environmental Impact Assessment (EIA) methodology, as well as in terms of the impact assessment criteria and ratings as detailed in the ASAPA and SAHRA guidelines. The site significance and impact assessment were integrated into the final Watching Brief report.

6 STUDY AREA

The Delta 80 Project Area is situated 85 km east of Polokwane and 70 km west of Burgersfort in the Limpopo Province (Plan 1) Nearby towns include Malipsdrif, Zebediela, Mokopane and Polokwane. The access road was constructed on the Brakfontein 464 KS farm (Plan 2) Surrounding land-use activities within a 10 km radius include formal and informal settlement, commercial and subsistence farming, and commercial industry.

Table 6.1: Geographic details of the project area

Province	Municipal District	Nearest Towns	Map Sheet	GPS coordinates	
				Latitude	Longitude
Limpopo	Sekhukhune District	Malipsdrif Zebediela Mokopane Polokwane	2429BD Ga-Mankopane	-24.31608332	29.91973327

Plan 1

Watching Brief and Heritage Impact Assessment (HIA) on Access Road

Regional Setting

Legend

- Project Area
- City
- Major Town
- Secondary Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Railway Line
- Perennial Stream
- Dam / Lake

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Projection: Transverse Mercator	Ref #: anp.BOK1630.201206.069
Datum: Hartebeesthoek 1994	Revision Number: 1
Central Meridian: 29°E	Date: 11/06/2012

N

0 2.5 5 10 15 20

Kilometres

1:500 000

Plan 2

Watching Brief and Heritage Impact Assessment (HIA) on Access Road

Local Setting

Legend

- Project Area
- City
- Major Town
- Secondary Town
- Other Town
- Settlement
- Arterial Route
- Secondary Road
- Other Access Road
- Tracks & Footpath
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland
- Farm Portions
- Farm Boundaries

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Projection: Transverse Mercator	Ref #: anp.BOK1630.201206.073
Datum: Hartebeesthoek 1994	Revision Number: 1
Central Meridian: 29°E	Date: 12/06/2012

N

0 0.5 1 2 3 4 5

Kilometres

1:100 000

7 DESKTOP STUDY

7.1 Natural Environment

The project and surrounding areas form part of the larger Olifants River drainage and its tributary, the Rapholo River. The Rapholo River and its tributaries flow from the north to the south east of the BPM property. Tributaries of the Rapholo River are found on the northern parts of the Brakfontein 464 KS farm in which the access road is located.

7.2 Cultural Landscape

7.2.1 Literature Review

The literature review addressed the archaeology and heritage sites within the boundaries of the access route.

7.2.1.1 Stone Age

In southern Africa, the Stone Age is divided into three periods: Early Stone Age (ESA), Middle Stone Age (MSA), and Late Stone Age (LSA). The succession from the ESA to the MSA and LSA is a result of the physical, social and mental development of our ancestors whose use of stone tools allowed them to exploit food resources that were high in protein and that contributed to an increase in brain size. The ESA dates from 2.5 million years ago to 200 000 years ago and is characterised by large, fairly unsophisticated stone tool assemblages known as the Oldowan (simple flaked tools used as choppers) and the Acheulean (bifacially flaked hand axes and cleavers) (Mitchell, 2002).

The MSA to LSA sequence is marked by the manufacture and use of increasingly smaller stone tools. In southern Africa, early MSA stone tool technology is distinguished by the more prominent presence of blades but the overall characteristics of the MSA industries vary across the region. The LSA stone tool technology is highly sophisticated compared to the ESA and MSA industries. In the LSA, specific tools were being created for specific purposes and bone tools were introduced to assemblages thereby making the LSA a highly sophisticated tool technology compared to the ESA and MSA (Mitchell, 2002).

7.2.1.2 Iron Age

The Iron Age has been studied by classifying different ceramic styles into various facies. These facies help track the migration of different groups, as well as the shifting and dynamic identities within these various groups and time periods of the Iron Age (Hall, 1987). The Iron Age is divided into three periods: the Early Iron Age (EIA) spans from AD 300 to AD 900, the Middle Iron Age (MIA) spans a period from AD 900 to AD 1300), and the Late Iron Age (LIA) spans a period from AD 1300 to 1840.

In the BPM project area in which the access road is situated, the Rapholo River, which forms part of the greater Olifants River, is rich in EIA and MIA remains. According to Huffman (2007) this region encompasses various cultural groups originating from two distinct

traditions: the eastern stream of migration known as the Urewe tradition and the western stream of migration known as the Kalunda tradition. Using ceramic facies distributions outlined by Huffman (2007), six different ceramic styles may occur within the project area (Table 7.1).

Table 7.1: Possible ceramic facies occurring in the project area (Huffman, 2007)

Tradition	Branch/Sub-Branch	Ceramic facies	Period	Key features
Kalundu	**Happy Rest**	*Doornkop*	AD 750 – 1000 (Early Iron Age)	Multiple herringbone bands on the neck
		Eiland	AD 1000 – 1300 (Middle Iron Age)	Fine herringbone with ladder stamping

7.2.2 Archival and Database Survey

The following archives and databases were consulted:

- South African Archives
- South African Genealogical Database
- WITS Archaeological Site Database

A total of 43 sites on farms surrounding the access road were identified during the reports, archive and database survey. The South African Archives website was surveyed and no information was gathered. No sites were identified within the boundaries of the access road or in the surrounding area. The South African Genealogical Database was surveyed. All known cemeteries recorded on the South African Genealogical Database occurred outside of the access road boundaries and will not be impacted upon. The Wits Archaeological Site Database was consulted. No sites were identified within the boundaries of the access road or in the immediate surrounds.

7.2.3 Local Impact Assessment Reports

Archaeological studies have been undertaken for the mine since 1996**:**

- Roodt, F. & Roodt, H. 1996. Preliminary Report of an Archaeological Survey on the Farms Diamant, Zeekoegat, Middlepunt, and Umkoanes Stad. Unpublished report compiled for the Lebowa Platinum Mines.

- Roodt, F. 2002. Statement in Respect of Heritage Resources at the UG2 TSF. A Statement of Respect prepared for the Lebowa Platinum Mines.
- Roodt, F. 2003. Lebowa Platinum Mines: Atok Brakfontein Shaft and Associated Infrastructure, Limpopo Province. A Phase 1 Heritage Impact Assessment prepared for the Lebowa Platinum Mines.
- Roodt, F. 2006. Lebowa Platinum Mines (LPM) MPH 120 KTPM UG2 and Vertical Shaft 55 EMPR Amendment for the Proposed Expansion Project. A Heritage Impact Assessment report prepared for Lebowa Platinum Mines.
- Roodt, F. 2008. Heritage Impact Assessment of Ventilation Shafts and a Re-assessment of Previously Recorded Archaeological Sites. A Heritage Assessment prepared for the Lebowa Platinum Mines.

The Phase 1 Heritage Impact Assessment (HIA) conducted by Roodt (2003) on the Brakfontein 464 KS farm led to the identification of MSA and Iron Age archaeological and heritage remains (Table 7.2). MSA stone flakes were observed in a scattered distribution and no concentration of stone tools was found. The Iron Age remains consisted mainly of unidentified weathered pottery fragments in disturbed sites such as ploughed fields. Seven EIA and MIA sites were identified. These were:

- An EIA *Doornkop* site identified as a midden deposit with a high concentration of pottery, bone and some hut remains;
- A site located inside a village but that still contained midden deposits and hut floor remains. There was also a human skeleton eroding out of the village path;
- A MIA site with *Eiland* pottery and midden remains;
- An EIA *Doornkop* site with pottery, hut rubble and midden remains;
- A MIA *Eiland* site with pottery and midden remains;
- An EIA site with midden deposits; and
- A MIA *Eiland* site

In addition, 28 historical remains and graves were identified and recorded. These mainly consisted of informal graveyards, homestead ruins with graves, and yards amongst the houses with graves. Based on the significance of the archaeological sites and the historical sites and graves, mitigation methods were recommended. The location of all the sites are recorded and depicted in (Plan 6) These also include sites recorded on the Diamant, Zeekoegat, Middlepunt, and Umkoanes Stad farms.

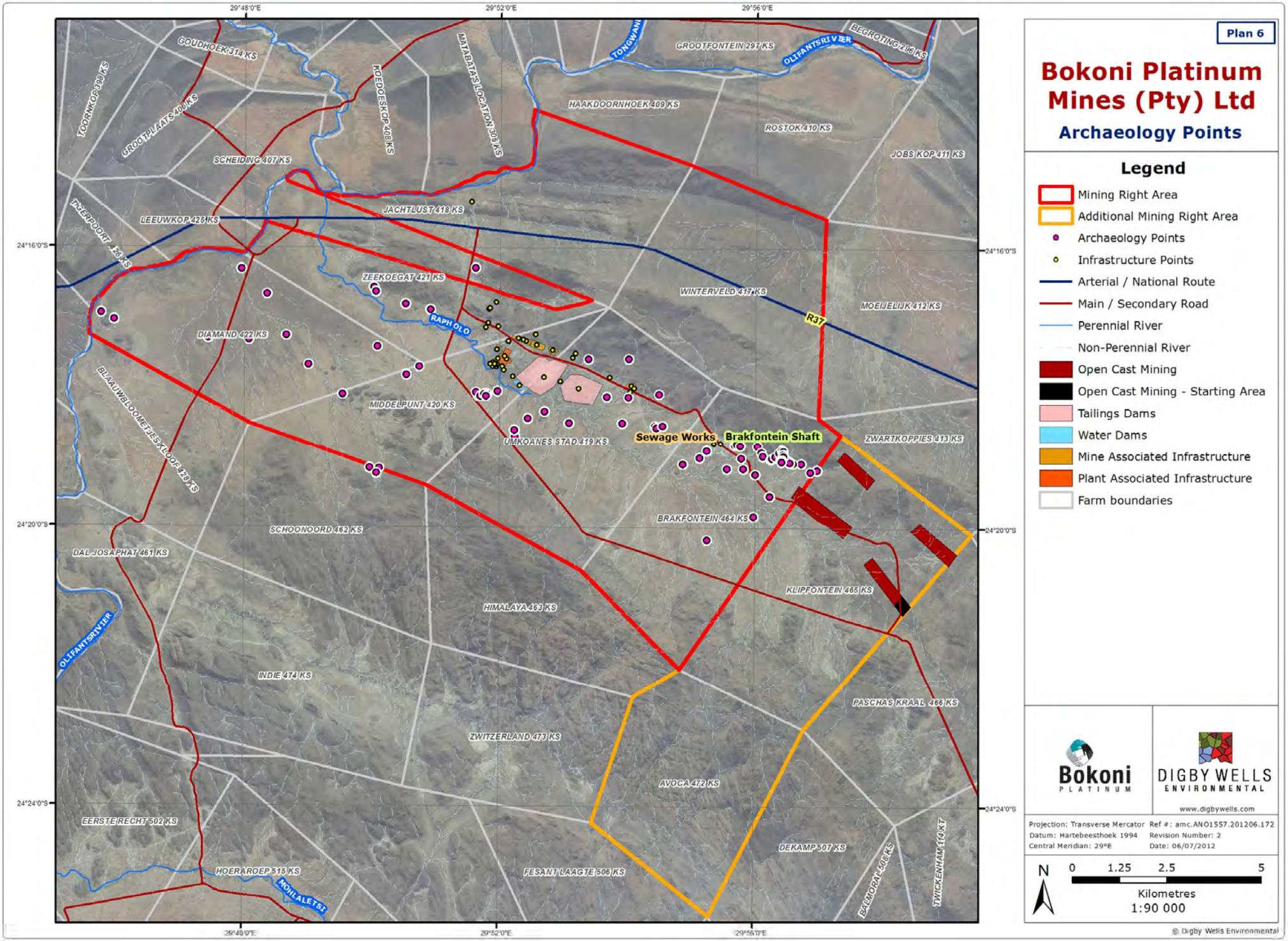
Table 7.2: A site list of all identified heritage resources within the BPM property (Roodt & Roodt, 1996; Roodt, 2002; Roodt, 2003; Roodt, 2006; Roodt, 2008)

SOURCE	SITE NAME	LATITUDE	LONGITIDE	DESCRIPTION
Roodt (2003)	**1**	-24.32588900	29.93719400	Weathered pottery fragments – unidentified
Roodt (2003)	**3**	-24.31933300	29.29605600	Weathered pottery fragments – unidentified
Roodt (2003)	**4**	-24.41672200	29.91894400	Weathered pottery fragments, grinding stone and Achatina shell bead. Probably an EIA site
Roodt (2003)	**5**	-24.31211100	29.92061100	Weathered pottery fragments in midden deposit - unidentified
Roodt (2003)	**6**	-24.31683300	29.92980600	Weathered pottery fragments – unidentified
Roodt (2003)	**33**	-24.30916700	29.90725000	Weathered pottery fragments – unidentified
Roodt (2003)	**39**	-24.33636100	29.92086100	MIA *Eiland* pottery
Roodt (2003)	**42**	-24.30227800	29.89466700	Weathered pottery fragments – unidentified

SOURCE	SITE NAME	LATITUDE	LONGITIDE	DESCRIPTION
Roodt (2003)	**2**	-24.31936100	29.93033300	EIA *Doornkop* site. Midden deposit with a high concentration of pottery, bone, and some hut rubble
Roodt (2003)	**12**	-24.31372200	29.92816700	Site located in village. The site has midden deposits and hut floor remains. The is a human skeleton eroding out in a village path
Roodt (2003)	**35**	-24.30911100	29.90922200	MIA *Eiland* pottery and midden remains
Roodt (2003)	**36**	-24.31133300	29.91591700	EIA *Doornkop* site with pottery, hut rubble, and midden remains
Roodt (2003)	**38**	-24.31500000	29.92080600	MIA *Eiland* pottery and midden remains
Roodt (2003)	**40**	-24.31833300	29.91447200	EIA midden deposits
Roodt (2003)	**41**	-24.30847200	29.89863900	MIA *Eiland* archaeological site
Roodt (2003)	**7**	-24.32069400	29.93341700	Informal graveyard with at least 22 graves
Roodt (2003)	**8**	-24.31811100	29.94538900	Homestead with 2 graves
Roodt (2003)	**9**	-24.31811100 & -24.31811100	29.94330600 & 29.94330600	Graves of Phasane Mathiba & Mohuba Magaleadi

SOURCE	SITE NAME	LATITUDE	LONGITIDE	DESCRIPTION
Roodt (2003)	**10**	-24.31747200	29.94222200	Grave of a certain Ditabe
Roodt (2003)	**11**	-24.31783300	29.94244400	1 Grave
Roodt (2003)	**12.1**	-24.31350000	29.92863900	8 Graves
Roodt (2003)	**12.2**	-24.31425000	29.92947200	Homestead with ruin & grave
Roodt (2003)	**13**	-24.31430600	29.93411100	Homestead ruin
Roodt (2003)	**14**	-24.31388900	29.93400000	Homestead ruin
Roodt (2003)	**15**	-24.33080600	29.93305600	Homestead ruin & 5 graves
Roodt (2003)	**16**	-24.31538900	29.93505600	2 Graves
Roodt (2003)	**17**	-24.31633300	29.93544400	1 Grave
Roodt (2003)	**18**	-24.31705600	29.93755600	3 Graves in homestead yard
Roodt (2003)	**19**	-24.31686100	29.93777800	3 Graves in homestead yard
Roodt (2003)	**20**	-24.316444400	29.93866700	5 Graves in homestead yard
Roodt (2003)	**21**	-24.31550000	29.93972200	2 Graves
Roodt (2003)	**22**	-24.31513900	29.93975000	2 Graves

SOURCE	SITE NAME	LATITUDE	LONGITIDE	DESCRIPTION
Roodt (2003)	**23**	-24.31486100	29.94036100	Homestead ruin & 3 Graves
Roodt (2003)	**24**	-24.31516700	29.94075000	1 Grave
Roodt (2003)	**25**	-24.31577800	29.94075000	1 Child grave in homestead yard
Roodt (2003)	**26**	-24.31588900	29.94063900	1 Grave
Roodt (2003)	**27**	-24.31641700	29.94080600	1 Grave of adult male in ruin of a hut
Roodt (2003)	**28**	-24.31716700	29.94019400	1 Grave
Roodt (2003)	**29**	-24.31727800	29.94038900	3 Graves in hut ruin
Roodt (2003)	**30**	-24.31769400	29.94030600	5 Graves
Roodt (2003)	**31**	-24.31972200	29.94961100	Homestead ruin & 3 graves
Roodt (2003)	**32**	-24.32011100	29.94783300	Informal graveyard with 12 graves
Roodt (2003)	**34**	-24.30963900	29.90761100	Graveyard with approximately 36 graves


Plan 6
Bokoni Platinum Mines (Pty) Ltd
Archaeology Points
Legend
Mining Right Area
Additional Mining Right Area
Archaeology Points
Infrastructure Points
Arterial / National Route
Main / Secondary Road
Perennial River
Non-Perennial River
Open Cast Mining
Open Cast Mining - Starting Area
Tailings Dams
Water Dams
Mine Associated Infrastructure
Plant Associated Infrastructure
Farm boundaries
Sewage Works
Brakfontein Shaft
GOUDHOEK 314 KS
TOORNKOP 399 KS
GROOTPLAATS 406 KS
KOEDOESKOP 408 KS
MATABATAS LOCATION 305 KS
TONGWANI
GROOTFONTEIN 297 KS
OLIFANTSRIVIER
BEGROTING 295 KS
HAAKDOORNHOEK 409 KS
ROSTOK 410 KS
JOBS KOP 411 KS
SCHEIDING 407 KS
JACHTLUST 418 KS
TIGERPOORT 281 KS
LEEUWKOP 425 KS
ZEEKOEGAT 421 KS
WINTERVELD 417 KS
MOEIJELIJK 412 KS
R37
RAPHOLO
DIAMAND 422 KS
BLAAUWBLOOMETJES-KLOOF 278 KS
MIDDELPUNT 420 KS
UMKOANES STAD 419 KS
ZWARTKOPPIES 413 KS
BRAKFONTEIN 464 KS
SCHOONOORD 462 KS
DAL JOSAPHAT 461 KS
KLIPFONTEIN 465 KS
HIMALAYA 463 KS
OLIFANTSRIVIER
INDIE 474 KS
PASCHAS KRAAL 466 KS
ZWITZERLAND 473 KS
AVOCA 472 KS
EERSTE RECHT 502 KS
DEKAMP 507 KS
HOERAROEP 515 KS
FESANT LAAGTE 506 KS
MOHLALETSI
PALMORA 456 KS
TWICKENHAM 114 KT
24°16'0"S
24°20'0"S
24°24'0"S
29°48'0"E
29°52'0"E
29°56'0"E
Bokoni PLATINUM
DIGBY WELLS ENVIRONMENTAL
www.digbywells.com
Projection: Transverse Mercator
Datum: Hartebeesthoek 1994
Central Meridian: 29°E
Ref #: amc.AN01557.201206.172
Revision Number: 2
Date: 06/07/2012
N
0 1.25 2.5 5
Kilometres
1:90 000
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8 WATCHING BRIEF RESULTS

The Watching Brief began on the western side of the access route with the archaeologist walking towards the south eastern side. The area was surveyed for possible heritage and archaeological material. All identified heritage resources were recorded and labelled according to Project Number, map reference number, and site number (BOK1824/2429BD/xxx). A list of all identified and recorded sites is presented in Table 8.1.

During the Watching Brief, stone artefacts were observed in a scattered distribution within the boundaries of the access road. The only Stone Age material observed was a scattering of MSA flakes, scrapers, a handaxe and the occasional grind stone at sites 24, 26a, and 29 (Figure 1 to Figure 3). No significant concentration had been recorded within the project area.

Where the Watching Brief began on the western side of the access road, potsherds were observed and recorded within the boundaries of the access road at sites 25, 26b, 27, 28 and 35 (Figure 4 to Figure 7). In this area of the access route, the potsherds were observed in a scattered distribution and no significant surface concentration could be identified.

Towards the north eastern section of the access route and at the base of a small hill, at least six grain bin foundations were identified at site 32 (Figure 8). The soil in the grain bin foundations was grey and ashy. Potsherds were observed near this site and one decorated potsherd was collected for a diagnostic analysis at site 33 (Figure 9). A possible cultural site was also identified along the northern boundary of the project area at site 34 (Figure 10). Often, grouping of stones such as this is more contemporary, used to store wood or grass above surface to prevent damp and termites. Another site with several grain bin foundations was identified along the access route at site 48. Criteria used for the positive identification of this site were lower grind stones (Figure 11). Near the old agricultural fields, a possible settlement was observed at site 45 (Figure 12). It is feasible to suggest that these sites were the point of origin of the scattered archaeological material that were deposited some distance away from the original settlement by water that acted as a transport medium.

Iron Age studies acknowledge pottery traditions and styles as diagnostic criteria for the identification of cultural groups. During the Watching Brief, decorated potsherds were recorded and examined. Three decorated potsherds were collected at sites 33, 36 and 43 for a diagnostic analysis (Figure 13 and Figure 14). It is suggested that the scattered distribution of archaeological material have their origins in the settlements recorded and described in the north eastern section of the access route. However, we cannot make an accurate assessment of any affiliation as we do not have a representative sample.

Previous local impact assessments in the area have identified several EIA and MIA sites belonging to the *Doornkop* facies and the *Eiland* facies respectively. Based on what was found during the watching brief and the literature review, the ceramics have a close affinity to the EIA *Doornkop* facies and the MIA *Eiland* facies. A conclusive identification of the specific tradition or culture of the pre-colonial or colonial people and whether or not they are ancestral to the community occupying the area today, can only possibly be determined from

a full assessment as the decorated potsherds collected from the surface is too small a sample from which to draw any confident conclusions.

One possible informal grave and two historic informal graves were identified in and near the old agricultural fields at sites 44, 46 and 47 (Figure 15 to Figure 17). The graves had stone surface dressing with no headstones. Based on experience and inferred from heritage assessments done in the wider region, it is suggested that these graves belong to the community currently residing in the area.

This watching brief identified and recorded 18 sites within the access route boundaries and its immediate surroundings. Scatters of potsherds and MSA stone artefacts occurred primarily along the existing line of servitude (Figure 18). Settlements were identified and recorded in the north eastern section of the access route. General site condition and features on site were recorded by means of photographs, GPS location, and description (Plan 4)

Table 8.1: A list of sites identified and recorded in previous Impact Assessments and in this Watching Brief report

SOURCE	SITE NAME	LATITUDE	LONGITIDE	DESCRIPTION
Digby Wells	**BOK1824/2429BD/24**	-24.32103653	29.92410025	MSA scraper
Digby Wells	**BOK1824/2429BD/25**	-24.32113920	29.92466242	Undecorated potsherds and eggshell remains
Digby Wells	**BOK1824/2429BD/26a**	-24.32092982	29.92538896	Unidentified stone artefact and MSA handaxe
Digby Wells	**BOK1826/2429BD/26b**	-24.32092982	29.92538896	Undecorated and decorated potsherds
Digby Wells	**BOK1824/2429BD/27**	-24.32085380	29.92470056	Undecorated and decorated potsherds
Digby Wells	**BOK1824/2429BD/28**	-24.32067174	29.92435849	Undecorated and decorated potsherds
Digby Wells	**BOK1824/2429BD/29**	-24.32045792	29.92381166	Upper grind stone
Digby Wells	**BOK1824/2429BD/33**	-24.32558899	29.94734913	Collected a decorated potsherd possibly of the *Doornkop* or *Eiland* facies
Digby Wells	**BOK1824/2429BD/34**	-24.32557080	29.946932247	A possible cultural site used for contemporary activities
Digby Wells	**BOK1824/2429BD/35**	-24.32365302	29.94229920	Undecorated potsherds

SOURCE	SITE NAME	LATITUDE	LONGITIDE	DESCRIPTION
Digby Wells	**BOK1824/2429BD/36**	-24.32356451	29.93995269	Collected a decorated potsherd possibly of the *Doornkop* or *Eiland* facies
Digby Wells	**BOK1824/2429BD/43**	-24.32146492	29.92934480	Collected a decorated potsherd possibly of the *Doornkop* or *Eiland* facies
Digby Wells	**BOK1824/2429BD/45**	-24.32304508	29.94217901	A possible pre-colonial or colonial settlement near the old agricultural fields.
Digby Wells	**BOK1824/2429BD/44**	-24.322.96369	29.94099380	A possible single informal grave with stone dressing
Digby Wells	**BOK1824/2429BD/46**	-24.32275716	29.94349446	An informal grave with stone dressing and no headstone
Digby Wells	**BOK1824/2429BD/47**	-24.32258416	29.94379353	An informal grave with stone dressing and no headstone
Digby Wells	**BOK1824/2429BD/32**	-24.32580750	29.94776043	An EIA or MIA site with at least six grain bin foundations
Digby Wells	**BOK1824/2429BD/48**	-24.32309076	29.94429418	An EIA or MIA site with grain bin foundations and lower grind stones

Figure 1: MSA scraper from site 24

Figure 2: Stone artefact (left) and MSA handaxe (right) at site 26a

Figure 3: Upper grind stone from site 29

Figure 4: Undecorated potsherds and eggshell remains from site 25

Figure 5: Undecorated potsherds (left) and decorated potsherd (far right) from site 26b

Figure 6: Undecorated potsherd (left) and decorated (right) from site 27

Figure 7: Decorated potsherd (extreme left) and undecorated potsherds (right) at site 28

Figure 8: EIA or MIA site with at least six grain bin foundations at site 32

Figure 9: A decorated potsherd (left), possibly of the *Doornkop* or *Eiland* facies, was collected at site 33

Figure 10: A possible cultural site (site 34)

Figure 11: Lower grind stones at site 48

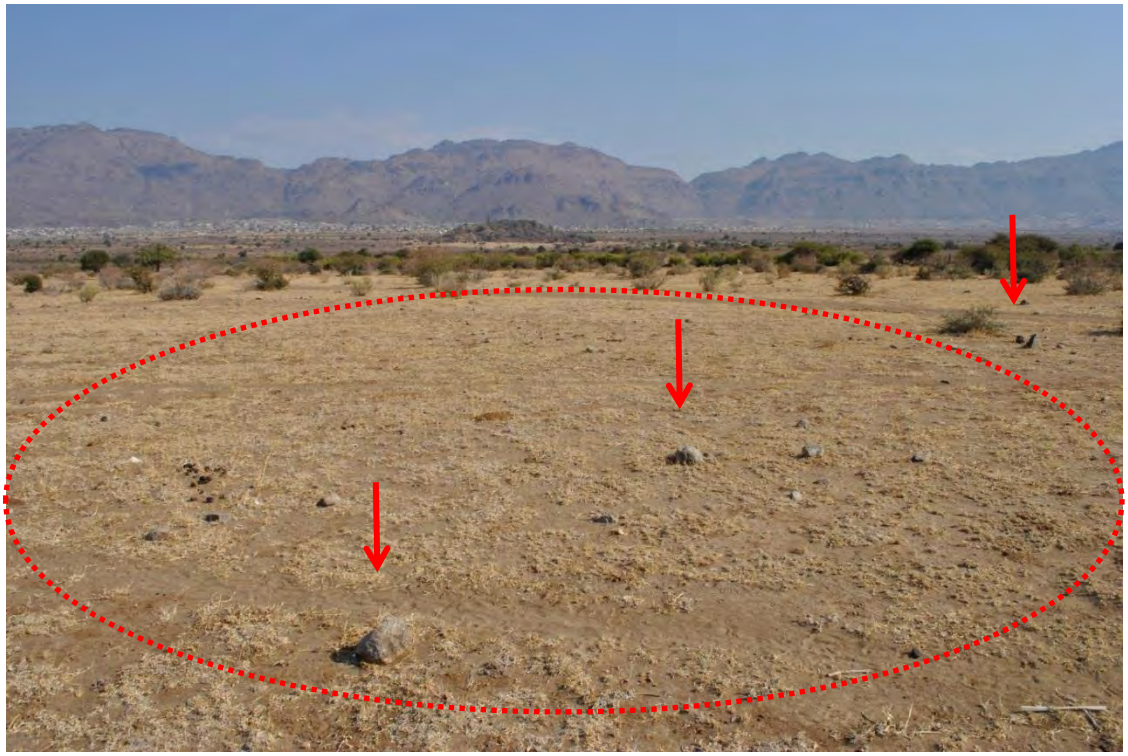

Figure 12: A possible settlement was observed near the old agricultural fields along the access route (site 45). The red dotted line indicates approximate settlement area and the arrows features within this area

Figure 13: A decorated potsherd possibly of the EIA *Doornkop* or MIA *Eiland* facies was collected at site 36

Figure 14: A decorated potsherd possible of the EIA *Doornkop* or MIA *Eiland* facies was collected at site 43

Figure 15: A possible single informal grave with stone dressing at site 44

Figure 16: An informal grave with stone dressing at site 46

Figure 17: An informal grave with stone dressing at site 47

Figure 18: The existing servitude line

Plan 4

Watching Brief and Heritage Impact Assessment (HIA) on Access Road

Archaeology

29°45'0"E 29°50'0"E 29°55'0"E

24°15'0"S 24°20'0"S 24°25'0"S

SCHEIDING 407 KS
OLIFANTSRIVIER
ROSTOK 410 KS
JOBS KOP 411 KS
KATKLOOF 396 KS
LEEUWKOP 425 KS
R37
JACHTLUST 418 KS
Zeekoegat
ZEEKOEGAT 421 KS
WINTERVELD 417 KS
MOGOHU
RAPHOLO
MONAMETSI
MOEIJELIJK 412 KS
DIAMAND 422 KS
MOSHASHANENG
TABAKSPLAATS 432 KS
GROOTDRAAI 429 KS
BLAAUWBLOOMEIJES KLOOF 428 KS
Bokoni
Platinum Mine
MIDDELPUNT 420 KS
RAPHALO
UMKOANES STAD 419 KS
ZWARTKOPPIES 413 KS
Brakfontein Shaft
HLAKARO
CHUNIESRIVIER
SCHOONOORD 462 KS
BRAKFONTEIN 464 KS
DAL JOSAPHAT 461 KS
PELANGWE
KLIPFONTEIN 465 KS
HIMALAYA 463 KS
INDIE 474 KS
BRAKFONTEIN 464 KS
KLIPFONTEIN 465 KS

Legend

- Old Archaeology Points (Roodt, 2003)
- New Archaeology Points
- Infrastructure Points
- City
- Major Town
- Secondary Town
- Other Town
- Settlement
- Project Area
- Farm Boundaries
- Arterial Route
- Secondary Road
- Other Access Road
- Tracks & Footpath
- New Archaeology Tracks
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland
- Open Cast Mining
- Open Cast Mining - Starting Area
- Mine Associated Infrastructure
- Plant Associated Infrastructure
- Tailings Dams
- Water Dams

DIGBY WELLS ENVIRONMENTAL
www.digbywells.com

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

Ref #: anp.BOK1824.201207.113
Revision Number: 1
Date: 24/07/2012

N

0 0.5 1 2 3 4 5
Kilometres
1:100 000

9 HERITAGE VALUE STATEMENT

The value of heritage resources is determined by criteria provided in Section 3(3) of the NHRA, No. 25 of 1999 (Table 9.1). These criteria are presented in Table 9.1 below.

Table 9.1: The value of heritage resources determined by criteria provided in Section 3(3) of the NHRA, No. 25 of 1999

Subsection	Description of defining criteria
(a)	its importance in the community, or pattern of South Africa's history;
(b)	its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
(c)	its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
(d)	its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
(e)	its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
(f)	its importance in demonstrating a high degree of creative or technical achievement at a particular period;
(g)	its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
(h)	its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
(i)	sites of significance relating to the history of slavery in South Africa.

The value of each heritage resource is measured against the above parameters, based on whether such an object, feature or structure conforms to the following criteria:

- Site integrity (e.g. extent of deposit, range of features,);
- Authenticity (i.e. primary vs. secondary context);
- Uniqueness; and
- Potential to answer present research questions.

A summary of the heritage significance ratings for each site identified and recorded during the Watching Brief is presented in Table 9.2 and Table 9.3. A detailed explanation of the site significance assessment methodology and archaeological impact assessment criteria and ratings is provided in Appendix B.

Table 9.2: Summary of Heritage Significance Ratings per Site

	PARAMETER													SIGNIFICANCE
Site number	(a) Importance	(b) Uncommon aspects	(c) Information potential	(d) Principle characteristics	(e) Aesthetic characteristics	(f) Technical / creative skill	(g) Social, cultural or spiritual association	(h) Association with life or work of a person, group or organisation	(i) Slavery	(A) Context	(B) Site integrity	(C) Extent	(D) Uniqueness	Rating (sum of A to D)
BOK1824/2429BD/24	1	1	1	2	2	1	1	1	1	1	2	1	1	1
BOK1824/2429BD/25	1	1	1	2	2	1	1	1	1	1	2	1	1	1
BOK1824/2429BD/26a	1	1	1	2	2	1	1	1	1	1	2	1	1	1
BOK1824/2429BD/26b	1	1	2	2	2	1	1	1	1	1	2	1	1	1
BOK1824/2429BD/27	1	1	2	2	2	1	2	1	1	2	2	1	1	2
BOK1824/2429BD/28	1	1	2	2	2	1	2	1	1	2	2	1	1	2
BOK1824/2429BD/29	1	1	2	2	2	1	2	1	1	2	2	1	1	2
BOK1824/2429BD/33	2	1	3	3	3	1	2	1	1	3	2	2	2	2
BOK1824/2429BD/34	2	1	2	2	2	1	2	1	1	2	3	2	1	2
BOK1824/2429BD/35	1	1	1	2	2	1	1	1	1	1	2	1	1	1
BOK1824/2429BD/36	1	1	3	3	3	1	2	1	1	1	2	1	1	1
BOK1824/2429BD/43	1	1	3	3	3	1	2	1	1	1	2	1	1	1
BOK1824/2429BD/45	2	2	3	3	3	1	2	1	1	3	3	2	1	2
BOK1824/2429BD/44	4	2	4	2	4	1	7	3	1	3	7	4	1	4
BOK1824/2428BD/46	4	2	4	2	4	1	7	3	1	3	7	4	1	4
BOK1824/2429BD/47	4	2	4	2	4	1	7	3	1	3	7	4	1	4
BOK1824/2429BD/32	2	1	3	3	3	1	3	1	1	3	3	3	1	3
BOK1824/2429BD/48	2	1	3	3	3	1	3	1	1	3	3	3	1	3

Table 9.3: A summary of identified heritage resources and their value ratings

SITE ID	SITE TYPE	DESCRIPTION	SAHRA GRADING	SIGNIFICANCE ASSESSMENT
BOK1824/2429BD/24	Scatter	MSA scraper	Grade C	1
BOK1824/2429BD/25	Scatter	Undecorated potsherds and eggshell remains	Grade C	1
BOK1824/2429BD/26a	Scatter	Stone artefacts and MSA handaxe	Grade C	1
BOK1824/2429BD/26b	Scatter	Undecorated and decorated potsherds	Grade C	1

SITE ID	SITE TYPE	DESCRIPTION	SAHRA GRADING	SIGNIFICANCE ASSESSMENT
BOK1824/2429BD/27	Scatter	Undecorated and decorated potsherds	Grade 4B	2
BOK1824/2429BD/28	Scatter	Undecorated and decorated potsherds	Grade 4B	2
BOK1824/2429BD/29	Scatter	Upper grind stone	Grade 4B	2
BOK1824/2429BD/33	Scatter	Collected a decorated potsherd possibly of the *Doornkop* or *Eiland* facies	Grade 4B	2
BOK1824/2429BD/34	Find spot	A possible cultural site defined by a grouping of stones. Often, grouping of stones such as this is more contemporary, used to store wood or grass above surface to prevent damp and termites	Grade 4B	2
BOK1824/2429BD/35	Scatter	Undecorated potsherd	Grade C	1
BOK1824/2429BD/36	Scatter	Collected a decorated potsherd possibly of the *Doornkop* or *Eiland* facies	Grade C	1
BOK1824/2429BD/43	Scatter	Collected a decorated potsherd possibly of the *Doornkop* or *Eiland* facies	Grade C	1
BOK1824/2429BD/45	Settlement	A possible pre-colonial or colonial settlement near the old agricultural fields along access route	Grade 4B	2
BOK1824/2429BD/44	Burial	A possible single informal grave with stone dressing	Grade 3B	4
BOK1824/2428BD/46	Burial	An informal grave with stone dressing	Grade 3B	4
BOK1824/2429BD/47	Burial	An informal grave with stone dressing	Grade 3B	4
BOK1824/2429BD/32	Settlement	An EIA or MIA site with six grain bin foundations	Grade 4A	3
BOK1824/2429BD/48	Settlement	An EIA or MIA site with grain bin foundations and lower grind stones	Grade 4A	3

10 RECOMMENDATIONS

The following recommendations were made:

- No mitigation required for the following sites:

SITE ID	SITE TYPE	DESCRIPTION
BOK1824/2429BD/24	Scatter	MSA scraper
BOK1824/2429BD/25	Scatter	Undecorated potsherds and eggshell remains

SITE ID	SITE TYPE	DESCRIPTION
BOK1824/2429BD/26a	Scatter	Stone artefacts and MSA handaxe
BOK1824/2429BD/26b	Scatter	Undecorated and decorated potsherds
BOK1824/2429BD/35	Scatter	Undecorated potsherd
BOK1824/2429BD/36	Scatter	Collected a decorated potsherd possibly of the Doornkop or Eiland facies
BOK1824/2429BD/43	Scatter	Collected a decorated potsherd possibly of the Doornkop or Eiland facies

- Route realignment required for the following sites:

SITE ID	SITE TYPE	DESCRIPTION
BOK1824/2429BD/27	Scatter	Undecorated and decorated potsherds
BOK1824/2429BD/28	Scatter	Undecorated and decorated potsherds
BOK1824/2429BD/29	Scatter	Upper grind stone
BOK1824/2429BD/33	Scatter	Collected a decorated potsherd possibly of the *Doornkop* or *Eiland* facies
BOK1824/2429BD/34	Find spot	A possible cultural site defined by a grouping of stones. Often, grouping of stones such as this is more contemporary, used to store wood or grass above surface to prevent damp and termites
BOK1824/2429BD/45	Settlement	A possible pre-colonial or colonial settlement near the old agricultural fields along access route
BOK1824/2429BD/44	Burial	A possible single informal grave with stone dressing

SITE ID	SITE TYPE	DESCRIPTION
BOK1824/2428BD/46	Burial	An informal grave with stone dressing
BOK1824/2429BD/47	Burial	An informal grave with stone dressing
BOK1824/2429BD/32	Settlement	An EIA or MIA site with six grain bin foundations
BOK1824/2429BD/48	Settlement	An EIA or MIA site with grain bin foundations and lower grind stones

- Due to the existence of a potential settlement north of the project area, it was recommended that the proposed access road follow the established line of servitude that exists on the southern side of the project area;
    - Where it was not possible to follow the established servitude route, it was recommended that the proposed access road go through the old agricultural fields and where necessary to stay at least 20 metres from any identified site

11 LIMITATIONS AND RESTRICTIONS

The following limitations and restrictions were identified:

- Cultural resources do not exclusively constitute visible and tangible remains such as archaeological features and artefacts that may have been recorded. It also includes oral histories, indigenous knowledge, and sacred places that may only be identified through consultation with local communities;
- The project area has been extensively disturbed in the past making it difficult to determine site integrity and authenticity. The study area is also in close proximity to existing servitudes which may have caused further disturbance and could have decreased the level of integrity and authenticity of the identified sites;
- Soil erosion has occurred extensively and huge ‘dongas’ cut through the valley;
- In places, the topsoil may affect visibility thus making it difficult to determine the presence of archaeological and cultural material; and
- Certain sections of the access route were obscured by impenetrable vegetation cover.

12 CONCLUSION

BPM constructed an access road from the current mine operations to a proposed future mining footprint. Based on previous HIAs conducted for the mine in the area, Digby Wells recommended that a Watching Brief be undertaken. The Watching Brief was conducted on 12 July 2012 for the access route. A total of 18 sites were identified and recorded. These included a surface scatter of potsherds and MSA stone artefacts, burials, and settlements. Site significance and potential impacts were assessed as ranging from low to medium. Sites with medium significance values (Grade 4B and Grade 4A) were rated as such due to a lack of knowledge about the occurrence and distribution of the Iron Age cultural traditions in this area. As a result scientific significance of archaeological sites must bear considerable weight. Recommendations included *in situ* preservation of the burial sites and a realignment of the access route to follow the existing line of servitude and old agricultural fields. Archaeological mitigation and grave relocation was avoided due to the implementation of recommendations presented in this report.

13 REFERENCES

Hall, M., 1987. *The Changing Past: Farmers, Kings and Traders in Southern Africa 2000 - 1860.* Cape Town: David Phillip Publishing.

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.

Mitchell, P., 2002. *The Archaeology of Southern Africa.* Cambridge: Cambridge University Press.

Roodt, F., 2002. *Statement in Respect of Heritage Resources at the UG2 TSF,* s.l.: A Statement of Respect prepared for the Lebowa Platinum Mines.

Roodt, F., 2003. *Lebowa Platinum Mines: Atok Brakfontein Shaft and Association Infrastructure, Limpopo Province,* s.l.: A Heritage Impact Assessment prepared for the Lebowa Platinum Mines.

Roodt, F., 2006. *Lebowa Platinum Mines (LPM) MPH 120 KTPM UG2 and Vertical Shaft 55 EMPR Amendment for the Proposed Expansion Project,* s.l.: A Heritage Impact Assessment report prepared for the Lebowa Platinum Mines.

Roodt, F., 2008. *Heritage Impact Assessment of Ventilation Shafts and a Re-assessment of Previously Recorded Archaeological Sites,* s.l.: A Heritage Assessment prepared for the Lebowa Platinum Mines.

Roodt, F. & Roodt, H., 1996. *Preliminary Report of an Archaeological Survey on the Farms Diamant, Zeekoegat, Middlepunt, and Umkoanes Stad,* s.l.: Unpublished report compiled for the Lebowa Platinum Mines.

Appendix A: Specialist CVs

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JOHAN NEL

Mr. Johan Nel

Archaeologist

Unit Manager: Cultural Resources Management

Social Sciences Department

Digby Wells Environmental

1 EDUCATION

- 2001 BA Anthropology & Archaeology, University of Pretoria
- 2002 BA Honours Archaeology, University of Pretoria (UP) (2002)
- Current MA Archaeology

2 EMPLOYMENT

2010 – present:	Archaeologist and CRM specialist, Digby Wells Environmental
2005 – 2010:	Co-owner and manager of Archaic Heritage Project Management, Cultural Heritage Resources Management consultancy company;
2004 – 2005:	Resident, professional archaeologist, Rock Art Mapping Project based at Didima / Cathedral Peak, Ukhahlamba-Drakensberg World Heritage Site, Department of Geomatics, University of KwaZulu-Natal;
2003 – 2004:	Freelance, professional archaeologist;
2002 – 2003:	Special Assistant, Physical Anthropology Unit, Department of Anatomy, University of Pretoria;
2000 – 2002:	Technical Assistant, Physical Anthropology Unit, Department of Anatomy, University of Pretoria;
1999 – 2000:	Assistant in Mapungubwe Project, Department of Anthropology and Archaeology, University of Pretoria;
1998 - 1999:	Volunteer at National Cultural History Museum, Pretoria, Writer for BAT ('By About Town) arts section in Perdeby, official University of Pretoria student newspaper.

3 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

ACADEMIC FIELDWORK

Five seasons hosted: survey, mapping and excavation historic / Late Farmer Community sites on farms Bivack 14 MR and Eerstekrans 16 MR for personal MA research, Department of Anthropology and Archaeology, UP.

Ten projects / seasons attended as Teaching Assistant / Member of Staff

Eight projects / field seasons attended on invitation as undergraduate and graduate student

4 PROFESSIONAL AFFILIATIONS

- Association of Southern African Professional Archaeologists (ASAPA): Professional Member
- ASAPA Cultural Resources Management (CRM) section: Accredited member
- International Association of Impact Assessors (South Africa)
- Society for Africanist Archaeologists (SAFA)

5 PUBLICATIONS

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. 2001. 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. 2007. The Railway Code: Gautrain, NZASM and Heritage. Public lecture for the South African Archaeological Society, Transvaal Branch: Roedean School, Parktown.

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Nel, J. 2011. ‘Gods, Graves and Scholars’ returning Mapungubwe human remains to their resting place.’ In: Mapungubwe Remembered. University of Pretoria commemorative publication: Johannesburg: Chris van Rensburg Publishers.

JUSTIN DU PIESANIE

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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 COURSES

- Introduction into ArcGIS. GIMS Ltd, Midrand. Received Certificate (2006)
- French Institute of South Africa (IFAS) GIS Workshop, University of the Witwatersrand. Received Certificate (2010)

3 CONFERENCES

- ASAPA, University of Botswana, Gabarone, Botswana (2005).
- Mupungubwe Symposium, University of Pretoria, Pretoria, South Africa (2006) - Presented paper titled, “Social Complexity in the Shashe Limpopo Basin: The Case of K2 and Leokwe”
- ASAPA, University of Cape Town, Cape Town, South Africa (2008).
- SAfA, University of Frankfurt, Frankfurt, Germany (2008) - Presented paper titled, “Social Complexity in the Shashe Limpopo Basin: Conclusions”

4 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

5 EMPLOYMENT

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.

6 PROJECT 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

Cultural Resource Management (CRM) Work

- 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 – Grave Relocation Project (GRP) for the Kibali Gold Project, Democratic Republic of Congo (Digby Wells)
- Phase 1 Mitigation – Survey for the proposed Kibali Hydro Power Stations, Democratic Republic of Congo (Digby Wells)

- Phase 1 Mitigation – Survey of the farm Vygenhoek for Sylvania Resources Everest North Mining Project, Steelpoort, Mpumalanga (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)

7 PROFESSIONAL AFFILIATIONS

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

Society for Africanist Archaeologists (SAfA) Member

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1 EDUCATION

- 2006 BA Anthropology & Archaeology, University of the Witwatersrand
- 2007 BSc Honours. Palaeontology, University of the Witwatersrand
- 2012 MSc Archaeology, University of the Witwatersrand

2 LANGUAGE SKILLS

- English (read, write, speak)

3 EMPLOYMENT

2012:	Archaeology consultant, Digby Wells Environmental
April 2012 – June 2012:	Archaeology consultant, EcoAfrica
April 2011 – November 2011:	Archaeology intern, University of Pretoria
2009 – 2011:	English tutor, Kip McGrath
2009 – 2011:	Online English tutor, Education First
2008 – 2009	English teacher, Yong Ju Elementary School
2007 – 2008:	Palaeontology collections assistant, BPI University of the Witwatersrand
2006 – 2007:	Tour guide, Sterkfontein Caves

4 EXPERIENCE

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

5 PROFESSIONAL AFFILIATIONS

- The South African Archaeology Society (SAAS)
- The South African Society for Amateur Palaeontologists (SASAP)

Appendix B: Statement of Significance and Impact Rating System

1.1 Archaeological Impact Assessment (AIA) and Heritage Impact Assessment (HIA) Methodology

Unlike the natural environment, the cultural environment or landscape is often localised. The impact is therefore limited to identified sites or heritage resources. However, it must be noted that heritage resources are not independent of the natural environment, nor can they be viewed in isolation of other heritage resources that may occur in the immediate environment or in the general landscape. It is thus necessary to determine the context of any identified heritage resource in relation to:

- • Known heritage resources; and
- • The potential of the identified resource to provide additional or new information regarding past environments and history.

In this regard, SAHRA has published minimum standards that must be complied with when undertaking Heritage and Archaeological Impact Assessments. The specialist is also required to rate identified heritage resources according to these minimum standards, which are based on criteria described in the NHRA. Although the NHRA is specifically South African legislation, it is based on international standards such as the Burra Charter, UNESCO guidelines and various other international heritage and cultural organisations that define significance of cultural heritage resources. The site significance rating is thus determined using certain parameters described in international standards and South African legislation, as well as the professional minimum standards of ASAPA and SAHRA.

1.1.1 Site significance identification

Site significance identification is determined by rating a heritage resource mainly in terms of its potential to supply or add information to an existing body of research. The heritage specialist is thus guided in assessing attributes that may influence a heritage resource's significance. The attributes generally describe qualities that can be attached to a heritage resource based on prior knowledge (obtained through baseline studies and literature reviews) of potential heritage resources that may occur in any given area. There are no impacts associated with determining site significance. In contrast to the EIA model, these attributes are unaffected by any environmental impact.

A total of thirteen attributes are used, divided into nine 'aspects' and four 'parameters'. The nine aspects provide a rating for the 'Site Integrity' parameter. The four parameters – Site Integrity, Authenticity, Uniqueness and Potential to answer research question – provide a site

significance rating out of seven. All ratings follow a seven tier system in an attempt to remain consistent with the EIA methodology and ratings used where one is the lowest and seven the highest. Descriptions of these aspects and parameters are provided in Table 1-1.

Appropriate mitigation recommendations are made based on the Site significance rating and the potential impacts identified in the EIA impact rating. However, it must be noted that mitigation measures are based primarily on the significance of resources and not necessarily the potential environmental impacts on those resources. For instance, where environmental impacts rated high on heritage resources rated low, may need no mitigation. Conversely, low environmental impacts on a high rated significant may have major mitigation implications or no-go options.

1.1.2 Site significance rating

These criteria have been adapted and incorporated into a Site significance matrix where significance is determined based on nine aspects and four parameters. The aim is that any identified heritage resource can be objectively measured against the aspects and parameters included in the matrix. A site's significance should ideally reflect an unbiased, objective and quantified rating, based on sound research and knowledge of heritage resources in any given area.

The rating is the sum of four parameters:

Site significance = (sum of Site Integrity + Authenticity + Uniqueness + Potential to answer research question) ÷ 4

Where *Context = (sum of aspects a to i) ÷ 9*

Each aspect and parameter is calculated out of seven to remain consistent with the standard EIA matrix used. The sum of the aspects making up Site Integrity is 63. The total is reduced to seven (63 ÷ 9 = 7) and added to Authenticity, Uniqueness and Potential to answer research question.

The Site significance matrix calculates the rating out of 28 and is reduced to a rating out of seven (28 ÷ 4 = 7). This rating is then added to the EIA matrix to reflect a site's significance in terms of heritage value. Therefore, high environmental impacts on a low significant site may be considered low; conversely, low environmental impacts on a high significant site may be high.

Table 1-1: Description of attributes determining significance of heritage resources.

ASPECTS DETERMINING CONTEXT									
Value	**a. Importance to community or pattern in country's history**	**b. Possession of uncommon, rare or endangered natural or cultural heritage aspects**	**c. Information potential**	**d. Importance in demonstrating principle characteristics**	**e. Importance in aesthetic characteristics**	**f. Degree of technical / creative skill at a particular period**	**g. Association to community or cultural group for social, cultural or spiritual reasons**	**h. Association with life or work of a person, group or organisation of importance in the history of the country**	**i. Site of significance relating to history of slavery**
7	Extremely important to the country's community or to the country's history on a national level.	Endemic / exclusive to very specific localities / other occurrences unknown	Extremely high information potential: national and international	Exceptional example, complete, unique	Exceptional example, complete, unique	Uncommon / unique skill for period	Exceptional high socio-cultural significance in terms of identity, custom, religion, ancestry, etc.	Exceptional high association	Exceptionally important site, great significance on national and international slavery
6	Extremely important to the country's community or to the country's history on a provincial level.	Endemic / exclusive to specific localities / other occurrence infrequent	Extremely high information potential: national	Exceptional example, mostly complete, rare	Exceptional example, mostly complete, rare	Exception degree of skill for period	Very high socio-cultural significance in terms of identity, custom, religion, ancestry, etc.	Very high association	Very important site, high significance on national and international slavery
5	Extremely important to the community or to the history on a regional level.	Localised to only few specific localities	High information potential: national	Exceptional example, incomplete, rare	Exceptional example, incomplete, rare	High degree of skill for period	High socio-cultural significance in terms of identity, custom, religion, ancestry, etc.	High association	Important site, high significance on national slavery
4	Very important to the community or to the history on a district level.	Rarely occurs at this locality	High information potential	Exceptional example, common	Exceptional example, common	Above average degree of skill for period	Above average socio-cultural significance in terms of identity, custom, religion, ancestry, etc.	Above average association	Important site, areas may have significance on national slavery
3	Important to the community or to the history on a municipal level.	Occurs at this locality, but occurrence unusual	Average Information potential	Good example, incomplete, common	Good example, incomplete, common	Average degree of skill for period	Average socio-cultural significance in terms of identity, custom, religion, ancestry, etc.	Average association	Site has a high likelihood of being associated with slavery
2	Important to the community or to the history on a local level.	Occurs at this locality, but not widespread	Low information potential	Common example, incomplete	Common example, incomplete	Limited degree of skill for period	Low socio-cultural significance in terms of identity, custom, religion, ancestry, etc.	Lesser association	Possible slavery site, but unlikely
1	Little importance to the community or to the history on any level.	Occurs widespread	No information potential	Damaged, destroyed, altered to extent where example is useless	Damaged, destroyed, altered to extent where example is useless	Common skill for period	No socio-cultural significance in terms of identity, custom, religion, ancestry, etc.	No association	No significance

Value	A. CONTEXT	B. INTEGRITY	C. EXTENT	D. UNIQUENESS		SIGNIFICANCE RATING	DESCRIPTION	SAHRA RATING (RSA only)	RECOMMENDED MITIGATION
7	Exceptional context and information potential.	Resource more than 80% intact, primary spatial context	Extensive resource: high site complexity, deep and various deposits, 5 or more features present, large surface area >1 ha	Unique in present environment / landscape; no other examples known.		7	High	Grade 1	Conservation: National Site Nomination
6	High context and information potential	Resource more than 60% intact, primary spatial context	Extensive resource: potential high site complexity, deep and various deposits, 3-5 features present, large surface area >0.5 ha	Unique in present environment / landscape; few examples known elsewhere.		6	High	Grade 2	Conservation: Provincial Site Nomination
5	Medium context and information potential.	Resource more than 50% intact, primary spatial context.	Extensive resource: potential complex site, shallow deposit present, at least 1 or more features present, large surface area >0.5 ha	Good example of uncommon resource in present environment / landscape; limited distribution / occurrence in other places.		5	High	Grade 3A	Conservation: Regional Site Nomination
4	Good context and information potential.	Resource ±50% intact, primary spatial context	Good resource: site complexity exists, shallow deposit, possible features present, large surface <0.5 ha	Good example of resource in present environment / landscape; occurs fairly commonly in other places.		4	Medium	Grade 3B	Mitigation and partly conserved
3	Average context and information potential	Resource less than 50% intact, primary spatial context.	Average resource: average site complexity, deposit present, possible features present, large surface >50 m2	Good examples of common resource in present environment / landscape; also occurs commonly in other places.		3	Average	Grade 4A	Mitigation before destruction
2	Low but significant context and information potential.	Resource partly intact, mostly secondary spatial context	Little to no site complexity, little to no deposit present, no features present, surface area <50 m2	Fair example of common resource in present environment / landscape; also occurs commonly in other places.		2	Average	Grade 4B	Record before destruction
1	No significant context or information potential.	Resource completely altered, damaged or destroyed OR in tertiary spatial context.	Single, isolated find; find spot	Very common or poor example of resource occurring throughout different environments; many similar and better examples exists elsewhere.		1	Low	Grade C	Destruction / none