

**HERITAGE IMPACT
ASSESSMENT REPORT FOR
THE FARMS WESSELS 227
PORTION 2 AND BOERDRAAI
228**

Report prepared for

BLUE LIMIT TRADING 21 (Pty) Ltd.

by

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EXECUTIVE SUMMARY

The authors were contracted by Blue Limit Trading 21 (Pty) Ltd. to conduct a phase 1 heritage impact assessment on the farms Boerdraai 228 and Wessels 227 Portion 2 that will form part of an Environmental Management Plan (EMP) (DMR Ref nr.: NC10060PR) application in anticipation of exploration drilling for manganese ore. The HIA is furthermore to satisfy the response made by the South African Heritage Resources Authority (SAHRA) that requested a Phase 1 assessment to be conducted.

The National Heritage Resource Act (Act 25 of 1999) (NHRA) “aims to promote good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed to future generations. Our heritage is unique and precious and it cannot be renewed.” Culture heritage resources are therefore unique and significant.

The developer must take note that archaeological or palaeontological sites or material could be identified during the proposed exploration drilling and associated activities and that the specific recommendations pertaining to it must be followed.

The following sites of culture heritage significance were identified on the farms Boerdraai 228 and Wessels 227 Portion 2:

Boerdraai 228

A number of sites containing lithic artefacts probably associated with the MSA or LSA were identified along the Kuruman River. The remains of a dilapidated farmhouse and its associated outbuildings and structures were identified. The farmhouse is older than 60 years and is therefore specifically protected under the NHRA.

A grave of baby, Johanna Maria du Plessis, was identified during the field survey.

Wessels 227 Portion 2

No sites of culture heritage significance were identified during the field survey.

Mitigation Measures for the sites identified on Boerdraai 228

The location of these identified sites must be noted and the developer or its appointed Environmental Control Officer (ECO) must demarcate the sites and monitor for any disturbances or impacts on the sites. Should any disturbances or impacts occur a qualified archaeologist must be contracted to evaluate the impact and make recommendations on the appropriate mitigation measures.

Recommendations

It is recommended that the exploration drilling and associated activities as set out in the EMP can commence on the farms Boerdraai 228 and Wessels 227 Portion 2 on condition that the specific recommendations and mitigation measures set out in this report be adhered to.

DISCLOSURE

The specialists act as independent consultants for the Heritage Assessment and have no past or present interest in this project capable of affecting their ability to give an unbiased opinion and do not receive any financial or other benefits in connection with this assignment, other than normal consulting fees.

The Client has warranted that it has openly provided all material information and to the best of its knowledge is completely accurate and true. The specialists undertake to disclose, to the competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required.

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1. INTRODUCTION

Blue Limit Trading 21 (Pty) Ltd. requested a phase 1 heritage impact assessment to be conducted on the farms Boerdraai 228 and Wessels 227 Portion 2 that will form part of an Environmental Management Plan (EMP) application in anticipation of exploration drilling for manganese ore. The HIA is furthermore to satisfy the response made by the South African Heritage Resources Authority (SAHRA) that requested a Phase 1 assessment to be conducted.

Various sites of culture heritage significance were identified on the farm Boerdraai 228 containing lithic artefacts probably associated with the MSA or LSA. The remains of a dilapidated farmhouse and its associated outbuildings and structures were identified. A grave of baby, Johanna Maria du Plessis, was also identified during the field survey.

No sites of culture heritage significance were identified during the field survey on the farm Wessels 227 Portion 2.

It is recommended that the exploration drilling and associated activities as set out in the EMP can commence on the farms Boerdraai 228 and Wessels 227 Portion 2 on condition that the specific recommendations and mitigation measures set out in this report be adhered to.

2. BACKGROUND INFORMATION ON THE PROJECT

2.1. Overview of the proposed activities

Blue Limit Trading 21 (Pty) Ltd proposes to prospect for manganese ore on the farms Boerdraai 228 and Wessels 227 Portion 2. The prospecting will be conducted by means of an exploration core drilling programme with a total of 30 cored boreholes to be drilled. Proposed drill sites of 15 m x 15 m will be temporarily demarcated during the drilling period. These sites will include temporary storage; chemical toilet; drilling machine; core area and water sump area. Rehabilitation of the drill sites will take place on completion of the drilling (Refer to Annexure 1 for EMP).

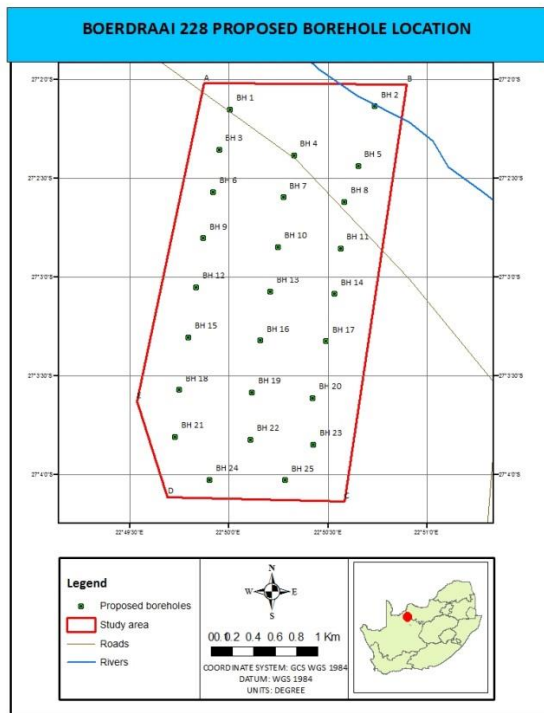


Figure 1. Boerdraai 228 proposed borehole locations

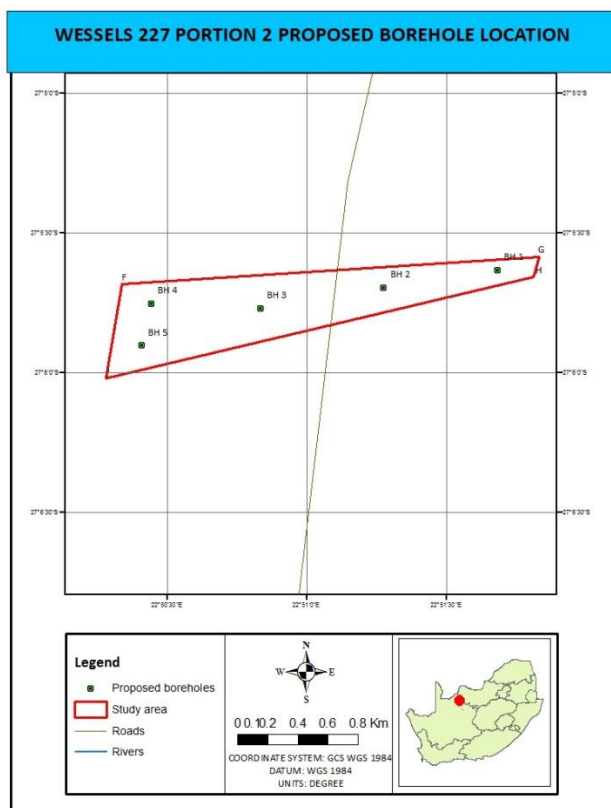


Figure 2. Wessels 227 Portion 2 proposed borehole location

2.2. Client, consultant and land-owner details

Client	
Blue Limit Trading 21 (Pty) Ltd.	Darcy Bower 011 793 5554 darcy.bower@absamail.co.za P.O. Box 3393 Honeydew 2040
Land-owners – Boerdraai 228	
Hester Magdalena Gertruida Stols	
Land Occupier – Boerdraai 228	
Gawie Stols	
Land-owner – Wessels 227 Portion 2	
Ntsimbintle Mining (Pty) Ltd.	
Consultants	
Louisa Hutten Willem Hutten	082 531 3253 / 021 556 6458 whutten44@gmail.com 2 Waterford Close Blaauwberg Rise 7441

2.3. Terms of reference

2.3.1. Aims

Blue Limit Trading 21 (Pty) Ltd. has requested a Heritage Impact Assessment to be conducted on the farms Boerdraai 228 and Wessels 227 Portion 2 in anticipation of a prospecting programme to be commenced. The HIA is furthermore to satisfy the response made by the South African Heritage Resources Authority (SAHRA) that requested a Phase 1 assessment to be conducted.

2.3.2. Objectives

- To fulfill in the requirements of the South African Heritage Resources Act (Act nr. 25 of 1999) Section 38.
- To identify, document and describe resources of cultural heritage importance that would be affected by proposed activities.
- To evaluate the significance of the identified cultural heritage resources.
- To identify and describe the impacts of activities and to evaluate the intensity on the identified cultural heritage resources.
- To make recommendations regarding the conservation of identified cultural heritage resources.
- To recommend mitigation on the affected identified cultural heritage resources.
- To identify and propose management measures.
- To recommend project specific measures to mitigate the possible negative impacts on identified cultural heritage resources.

2.4. Legislative requirements

The legislation, National Heritage Resources Act (Act No. 25 of 1999, section 35) requires that all objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance are protected. This includes, the protection of all these heritage components such as archaeology, shipwrecks, battlefields, graves and structures over 60 years, living heritage, and the collection of oral histories, historical settlements, landscapes, geological sites, paleontological sites and objects (SAHRA 2006).

The developer should take into consideration that the following legislation should be taken into account:

- National Environmental Management Act (NEMA) Act 107 of 1998
- National Heritage Resources Act (NHRA) Act 25 of 1999
- Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
- Development Facilitation Act (DFA) Act 67 of 1995

Sections referring directly to the identification, evaluation and assessment of cultural heritage resources in each Act are the following.

- National Environmental Management Act (NEMA) Act 107 of 1998
 - Basic Environmental Assessment (BEA) – Section (23) (2) (d)
 - Environmental Scoping Report (ESR) – Section (29) (1) (d)
 - Environmental Impacts Assessment (EIA) – Section (32) (2) (d)
 - Environmental Management Plan (EMP) – Section (34) (b)
- National Heritage Resources Act (NHRA) Act 25 of 1999
 - Protection of Heritage resources – Sections 34 to 36; and
 - Heritage Resources Management – Section 38
- Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
 - Section 39(3)
- Development Facilitation Act (DFA) Act 67 of 1995
 - The GNR.1 of 7 January 2000: Regulations and rules in terms of the Development Facilitation Act, 1995. Section 31

2.4.1. Mineral and Petroleum Resources Development Act (Act 28 of 2002)

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 Heritage Resources Act (Act 25 of 1999)

Section 35 of the National Heritage Resources Act (NHRA) provides for the general protection of archaeological and palaeontological resources, and meteorites. In the event that archaeological resources are discovered during the course of development, Section 38(3) specifically requires that the discovery must immediately be reported to the Provincial Heritage Resources Agency (PHRA), or local authority or museum who must notify the PHRA. Furthermore, no person may without permits issued by the South African Heritage

Resources Agency (SAHRA) destroy, excavate, or make any alterations to archaeological or palaeontological resources encapsulated in Section 38(4).

Section 36 of the NHRA allows for the general protection of burial grounds and graves. Should burial grounds or graves be found during the course of development, Section 36(6) stipulates that such activities must immediately cease and the discovery reported to the responsible heritage resources authority and the South African Police Service (SAPS). Furthermore, as specified in Section 38(3) no person may destroy, damage, exhume or alter any burial site without a permit issued by SAHRA.

Section 38(8) ensures cooperative governance between all responsible authorities through ensuring that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of Subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.

3. BACKGROUND TO THE ARCHAEOLOGICAL HISTORY

3.1. Terminology

A Heritage Assessment is not limited to artefacts, historical buildings and graves; it is far more encompassing and includes intangible and invisible resources such as places, oral traditions and rituals. A heritage resource can be described as any place or object of cultural significance i.e. aesthetic, architectural, historic, scientific, social, spiritual, linguistic or technological value or significance.

The following terminology is used when referring to cultural, historic and archaeological heritage:

Stone Age: The Stone Age began with the appearance of early humans. The Stone Age people were hunter-gatherers. Stone tools and rock art are found throughout South Africa. The Stone Age can be divided into the Early Stone Age (ESA) (2 000 000 – 150 000 Before Present); the Middle Stone Age (MSA) (150 000 – 30 000 BP) and the Late Stone Age (LSA) (30 000 until ca. AD 200).

Iron Age: This period covers the last 2000 years. Farming communities moved down from the eastern parts of Africa into the southern parts of Africa. These people settled permanently, practised agriculture and had domesticated animals. They introduced metal and mining to Southern Africa.

Historical period: This period falls into the last 300 years with the arrival of white settlers on the continent. These settlers moved into the interior of southern Africa to among other settle, farm and mine.

3.2. Literature review

Well known sites that ranges from Early to Late Stone Age as well as Late Iron Age that are found in the larger geographical area (north, north-west of Kimberley) have been extensively researched (Deacon and Deacon 1999). These sites include the Wonderwerk cave (Humphreys and Thackeray 1983; Beaumont 2006), Blinkklipkop (Beaumont and Morris 1990; Thackeray et al 1983; Humphreys and Thackeray 1983), Dikbosch 1 and 2 (Humphreys and Thackeray 1983), Little Witkrans (Humphreys and Thackeray 1983), Limerock 1 and 2 (Humphreys and Thackeray 1983), Doornlaagte (Beaumont and Morris 1990), Kathu pan (Beaumont 2004), Kathu Townlands site (Beaumont 2013). A number of rock engravings are distributed throughout the wider region (Wilman 1933; Morris 1988; Parkinton et al 2008). Morris (1988) also mentions some geometric rock paintings in the Langeberg and Korannaberg ranges.

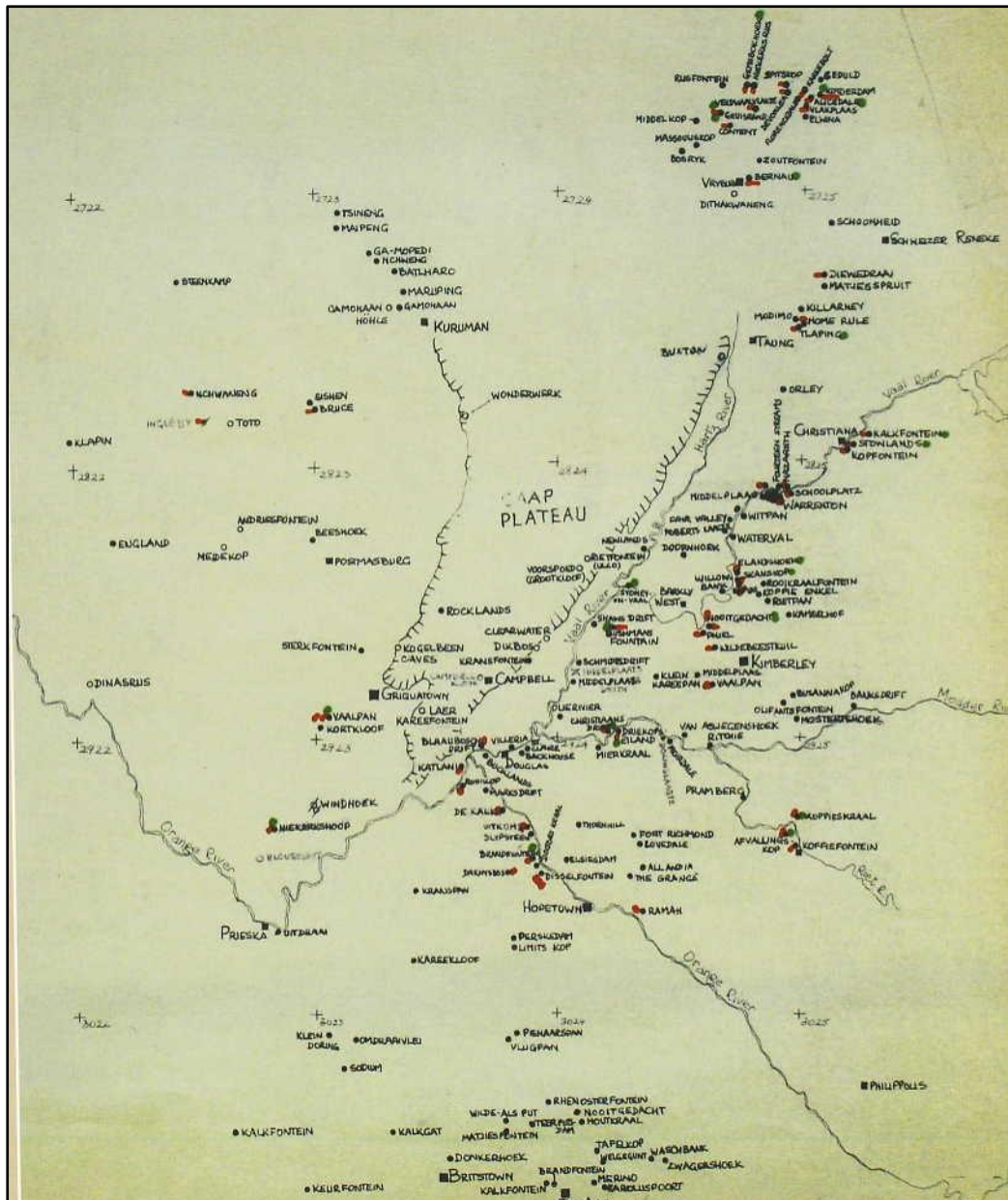


Figure 3. Engraving sites of the Kimberley area mapped by Gideon and Dora Focke (Parkington et al 2008)

Specularite workings were identified in the vicinity of Postmasburg (Beaumont and Boshier 1974; Morris 2005; Thackeray et al 1983). Additional specularite workings with associated Ceramic Later Stone Age material are also known from amongst others Mashwening, King, Rust & Vrede and Paling (Morris 2005). Stone and Iron Age communities mined specularite associated with iron ore for cosmetic purposes (De Jong 2010; Snyman 2000).

The earliest people to have settled in this area were the Tlhaping and Tlharo of Tswana-speaking origin. They settled mostly to the north and to the west of Kuruman. However, they continued spreading westward and by the late 18th century some groups occupied the Langeberg region for example on Dithagong (Maggs 1973; Beaumont and Morris 1990)

The interior of South Africa was infiltrated by white traders, hunters, explorers and missionaries. The first traders in the Northern Cape were PJ Truter's and William Somerville's journey of 1801 (De Jong 2010). Soon afterwards they were followed by Cowan, Donovan, Burchell and Campbell and this led to the founding of a London Mission Society station near Kuruman in 1817 by James Read (De Jong 2010). During the 1870's William Sanderson, John Ryan and John Ludwig passed through the area close to Postmasburg (Snyman 2000).

The Voortrekkers of The Great Trek from the Cape in 1836 saw white farmers move into the region known as Bechuanaland and Griqualand West. They came into conflict with the Tswana groups and some of the missionaries of the London Mission Society. The conflict between Boer and Tswana communities escalated in the 1860s and 1870s when the Koranna and Griqua communities became involved and later also the British government. At the end of the 18th century and the beginning of the 19th century Griqua tribes moved into the area away from the Orange River as it was encroached by white Afrikaner Trekboere. They established and settled in the town of Klaarwater, which was subsequently renamed Griquatown (Snyman 1986).

With the annexation of the Tswana areas by the British in 1885, the area became known as British Betchuana Land. In 1895 the Tswana-speakers rose up in resistance to the British authority as represented by the government of the Cape Colony. They were quickly subjected and their land was taken away, divided up into farms and given out to white farmers to settle on (Snyman 1986). The area known as Griqualand West was first 'roughly' surveyed by F. Orpen, from the British Intelligence and Mapping, and W. Stow, South African geologist and ethnologist, in 1872 (Burchell 1967).

3.3. HIA's conducted in the area

The SAHRA Database (SAHRIS) revealed several Heritage and Archaeology Impact Assessment (HIA/AIA) reports conducted in the area of Kuruman, Postmasburg, Kathu, Hotazel and Black Rock. These reports were compiled by Beaumont, Magoma, Morris, Van der Ryst, Fourie, Pelser and Van Vollenhoven, to name a few.

The following AIA/HIA reports were consulted in compiling this report:

3.3.1.1. Kathu/Sishen area

Beaumont, P.B., 2004. Kathu Pan and Kathu Townlands/Uitkoms. In: Morris, D. & Beaumont, P.B. (Eds.), *Archaeology in the Northern Cape: some key sites*. Southern African Association for Archaeologists post-conference excursion, Kimberley, McGregor Museum: pp. 50–53;

Beaumont, P. 2006. Phase 1 Heritage Impact Assessment Portions A and B of the farm Sims 462. Kgalagadi District, Northern Cape Province. Unpublished report.

Beaumont, P. 2008. Phase 1 Archaeological Impact Assessment report on three portions of the farm Lohattha 673 north of Postmasburg, Siyanda District Municipality, Northern Cape Province. Unpublished report.

Beaumont, P. 2008. Heritage Impact Assessment Report on Portion 463/8 of the farm Uitkoms 463, near Kathu. Kgalagadi District Municipality. Northern Cape. Unpublished report.

Beaumont, P. 2008. Heritage Impact Assessment Report on Portion of the Remainder of the Farm Sekgame 461, Kathu, Gamagara Municipality. Northern Cape. Unpublished report.

Beaumont, P. 2013. Phase 2 Archaeological permit mitigation report on a 0.7 ha portion of the farm Bestwood 549, situated on the eastern outskirts of Kathu, John Taolo Gaetsewe District Municipality, Northern Cape Province. Unpublished report.

Beaumont, P. and Morris, D. 1990. *Guide to the Archaeological Sites in the Northern Cape*. McGregor Museum: Kimberley.

Beaumont, P. B. and Vogel, J. C. 2006. On a timescale for the past million years of human history in central South Africa. *South African Journal of Science*. Vol 102: 217 - 228.

Beaumont, P. 2008. Heritage Impact Assessment Report on Portion 463/8 of the Farm Uitkoms 463, near Kathu. Kgalagadi District Municipality. Northern Cape. Unpublished report.

Beaumont, P. 2008. Heritage Impact Assessment Report on Portion of the Remainder of the farm Sekgame 461, Kathu, Gamagara Municipality. Northern Cape. Unpublished report.

Chazan, M., Hagai, R., Matmon, A., Porat, N., Goldberg, P., Yates, R., Avery, M., Summer, A., Yates., Horwitz, L. K. 2003. The Earlier Stone Age in the Northern Cape Province, South Africa: New Research at Wonderwerk Cave.

Chazan, M., Wilkins, J., Morris, D. & Berna, F. 2012. Bestwood 1: a newly discovered Earlier Stone Age living surface near Kathu, Northern Cape Province, South Africa. *Antiquity* 86(331): *Antiquity Gallery*;

Porat, N., Chazan, M., Grun, R., Aubert, M., Eisenmann, V., Kolska-Horwitz, L. 2009. New radiometric ages for the Fauresmith industry from Kathu Pan, Southern Africa: Implications for the Earlier to Middle Stone Age Transition. *Journal of Archaeological Science* 37: 269-283

3.3.1.2. Black Rock area

Fourie W. 2013. Heritage Impact Assessment for the proposed prospecting activities for Tshipi é Ntle Manganese Mining on the Remaining extent of the farm Wessels 227 and portions 1 and 2 and the remaining extent of the farm Dibiaghomo 226 in the Northern Cape Province. Unpublished report: PGS Heritage.

Fourie, W. 2013. Proposed Lehating Mining (Pty) Ltd underground manganese mine on Portions 1 of the Farm Lehating 714 and portion 2 of the farm Wessels 227, approximately 20km northwest of Hotazel, Northern Cape Province. Unpublished report: PGS Heritage.

Fourie, W. 2013. Heritage Impact Assessment for the proposed prospecting activities of Ntsimbintle Mining (Pty) Ltd on the farm Gloria 266, near Hotazel in the Northern Cape Province. Unpublished report: PGS Heritage.

Fourie, W. and Van der Walt, J. 2006 Heritage Assessment on Umtu 281, Olive Pan 282 and Gama 283 for Kalahari Manganese Mines. Unpublished report: Matakoma Heritage Consultants (Pty) Ltd.

Küsel, U., Van der Ryst M. and Küsel S. 2009. Cultural Heritage Resources Impact Assessment Of Manganese Mining Areas on the farms Belgravia 264, Santoy 230, Gloria 226 and Nchwaning 267, At Black Rock, north of Kuruman, Kgalagadi District Municipality, Northern Cape Province. Unpublished report: African Heritage Consultants.

Pelser, A.J. & A.C.van Vollenhoven. 2011. A Report on a Heritage Impact Assessment (HIA) for a proposed new rail crossing over the Gamagara River for the Gloria Mine Operations, Assmang Black Rock, on Gloria 266, north of Hotazel, Northern Cape. Unpublished Report.

Groenewald, G. 2013. Palaeontological Desktop Assessment of the farm Wessels 227 Portions 1 and 2 and the Remaining Extent of the Farm Dibiaghomo 226, near Hotazel Town in the John Toalo Gaetsewe District Municipality in the Northern Cape Province: Unpublished report: PGS Heritage.

Groenewald, G. 2013. Palaeontological desktop assessment of the farm Gloria 266, near Hotazel town in the John Toalo Gaetsewe District Municipality in the Northern Cape Province. Unpublished report: PGS Heritage.

Van Ryneveld K. 2010. The Black Rock Powerline Project, Black Rock near Hotazel in the Northern Cape, South Africa.

3.3.1.3. Hotazel area

Kussel, US. 2011. Phase II Heritage Impact Assessment Hotazel. Northern Cape Province. Unpublished report.

3.3.1.4. Kathu area

Beaumont, P.B., 2004. Kathu Pan and Kathu Townlands/Uitkoms. In: Morris, D. & Beaumont, P.B. (Eds.), Archaeology in the Northern Cape: Some Key Sites. Southern African Association for Archaeologists post-conference excursion, Kimberley, McGregor Museum: pp. 50–53.

Beaumont, P. 2006. Phase 1 Heritage Impact Assessment Portions A and B of the farm Sims 462. Kgalagadi District, Northern Cape Province.

Beaumont, P. 2008. Heritage Impact Assessment Report on Portion 463/8 of the Farm Uitkoms 463, near Kathu. Kgalagadi District Municipality. Northern Cape.

Beaumont, P. 2008. Heritage Impact Assessment Report on Portion of the Remainder of the Farm Sekgame 461, Kathu, Gamagara Municipality. Northern Cape.

Beaumont, P. 2013. Phase 2 Archaeological permit mitigation report on a 0.7 ha portion of the farm Bestwood 549, situated on the eastern outskirts of Kathu, John Taolo Gaetsewe District municipality, Northern Cape province.

Chazan, M., Wilkins, J., Morris, D. & Berna, F. 2012. Bestwood 1: a newly discovered Earlier Stone Age living surface near Kathu, Northern Cape Province, South Africa. *Antiquity* 86(331): Antiquity Gallery.

Kaplan, J. 2008. A Phase 1 Archaeological Impact Assessment of a proposed housing and retail development on Erf 5168 in Kathu. Northern Cape Province.

Magoma, M. 2013. Phase 1 Archaeological Impact Assessment Specialist Study: Report for the proposed development of prospecting rights of Iron ore and Manganese on remaining extent of Mashwening 557 in Kathu, within the local municipality of Gamagara, John Taolo Gaetsewe district, Northern Cape. Unpublished report:

Morris D. 2010. Proposed Kathu-Sishen Solar Energy Facilities Specialist Input For The Environmental Impact Assessment Phase And Environmental Management Plan For The Proposed Kathu-Sishen solar Energy Facilities, Northern Cape. Unpublished report.

Morris, D. 2010. Phase 1 Archaeological Impact Assessment for proposed upgrading of Sishen Mine de-watering pipeline capacity, Kathu, Northern Cape. Unpublished report.

Porat, N., Chazan, M., Grun, R., Aubert, M., Eisenmann, V., Kolska-Horwitz, L. 2009. New radiometric ages for the Fauresmith industry from Kathu Pan, Southern Africa: Implications for the Earlier to Middle Stone Age Transition. *Journal of Archaeological Science* 37: 269-283;

Wilkins, J, and Chazan, M. 2012. Blade production - 500 thousand years ago at Kathu Pan 1, South Africa: support for a multiple origins hypothesis for early Middle Pleistocene blade technologies. *Journal of Archaeological Science*, 39: 1883-1900. National Heritage.

Wilkins, J et al. Evidence for early hafted hunting technology. *Science*, Vol. 338, Nov. 16, 2012, p. 942. doi:10.1126/science.1227608.

3.3.1.5. Kuruman area

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Pelser, A. 2012 (a).A report on Archaeological Impact Assessments (AIA's) for proposed housing developments on Erven 83 and 2467, Kuruman, in the Northern Cape. Unpublished report:

Pelser, A. 2012 (beer). Archaeological Impact Assessment for the proposed housing hevelopment on Erf 675, Kuruman, in the Northern Cape. Unpublished Report:

Van der Walt, J. 2012. Archaeological Impact Assessment Report for the proposed extension of an abandoned gravel pit on the Farm Harvard 171, in the Kudumane Magisterial District 13km East of Kuruman. Unpublished report for Site Plan.

3.3.1.6. Postmasburg area

Beaumont, P. 2008. Phase 1 Archaeological Impact Assessment report on three portions of the Farm Lohatlha 673 norh of Postmasburg, Siyanda District Municipality, Northern Cape Province.

Morris, D. 2004. Tsantsabane: the Blinkklipkop specularite mine, and Doornfontein. In: Morris, D and Beaumont, P. *Archaeology in the Northern Cape: some key sites*. Kimberley: McGregor Museum, 54 – 60.

Morris, David. 2005. Report on a Phase 1 Archaeological Impact Assessment of proposed mining areas the farms Ploegfontein, Klipbankfontein, Welgevonden, Leeuwfontein,

Wolhaarkop and Kapsteevel, west of Postmasburg, Northern Cape. Kimberley: McGregor Museum.

Pelser, A. 2012. A 2nd report on a Heritage Impact Assessment for the upgrade of Transnet's Glosam Siding for PMG's Bishop Mine on Portion 2 and Remainder of Gloucester 674 near Postmansberg. Tsatsabane Municipality, in the Northern Cape. Unpublished Report.

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Fourie W. 2012. Heritage Impact Assessment for 132kV Power line connection to the Humansrus Solar thermal Energy Power Plant, Postmasburg.

Pelser, A. 2012. A report on an Archaeological Impact Assessment (AIA) for the proposed Boichoko township development on portions 11 & 12 of Pensfontein 449, Postmasburg, Northern Cape Province. Unpublished report:

Pelser, A. 2012. A report on a heritage impact assessment (AIA) for the proposed photovoltaic solar power generation plant on the farm Adams 328 near Hotazel in the Northern Cape.

3.4. Palaeontological desktop study

The farms of Boerdraai 228 and Wessels 227 Portion 2 are located within the LOW palaeontological sensitivity area according to the SAHRA – SAHRIS interactive map for palaeontological occurrence. No palaeontological studies are required however a protocol for finds is required.

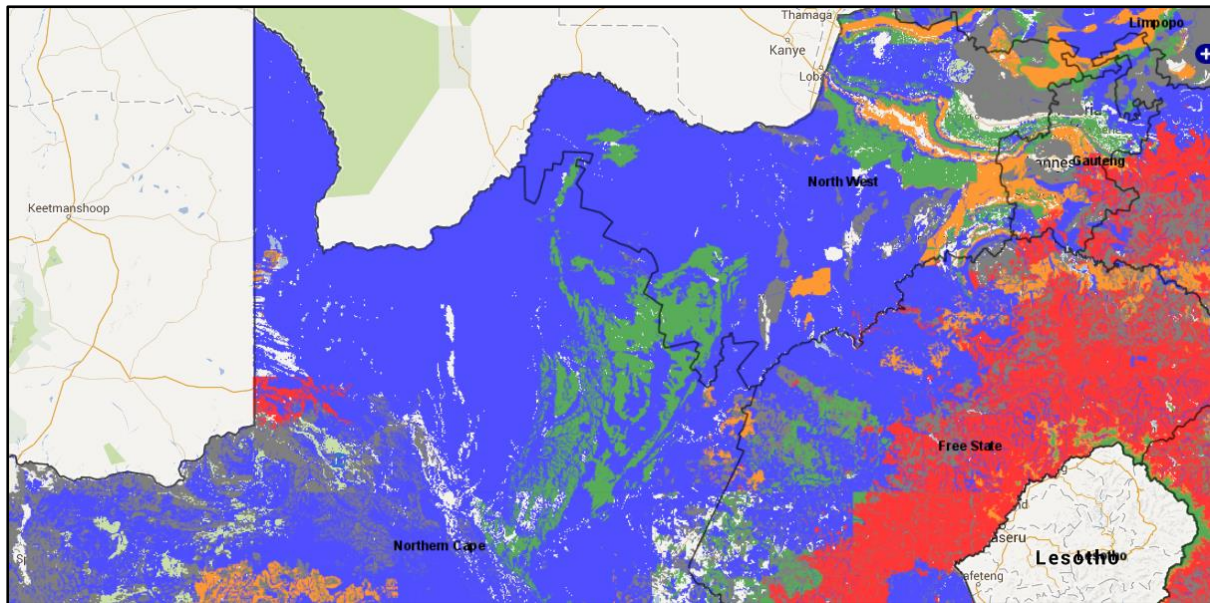


Figure 4. Selection of SAHRA - SAHRIS' Palaeontological sensitivity map

Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Various palaeontological studies for the larger areas have been commissioned by developers and can be referred to. These palaeontological studies for the area include:

Almond, J.E. & Pether, J. 2009. SAHRA Palaeo-technical report: palaeontological heritage of the Northern Cape.

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Almond, J.E. 2012. Proposed 16 Mtpa expansion of Transnet’s existing manganese ore export railway line & associated infrastructure between Hotazel and the Port of Ngqura,

Northern & Eastern Cape. Part 1: Hotazel to Kimberley, Northern Cape. Unpublished report: Natura Viva CC.

Groenewald, G. 2013. Palaeontological desktop assessment of the farm Gloria 266, near Hotazel town in the John Toalo Gaetsewe District Municipality in the Northern Cape Province. Unpublished report: PGS Heritage.

Groenewald, G. 2013. Palaeontological desktop assessment of the farm Wessels 227 Portions 1 and 2 and the remaining extent of the farm Dibiaghomo 226, near Hotazel town in the John Toalo Gaetsewe District Municipality in the Northern Cape Province: Unpublished report: PGS Heritage.

4. DESCRIPTION OF THE PROPERTY

4.1. Site location

The farms of Boerdraai 228 and Wessels 227 Portion 2 is situated approximately 80 km northwest of Kuruman along the R380 and approximately 80 km north of Kathu in the Joe Morolong Local Municipality within the John Taolo Gaetsewe District Municipality in the Northern Cape Province.

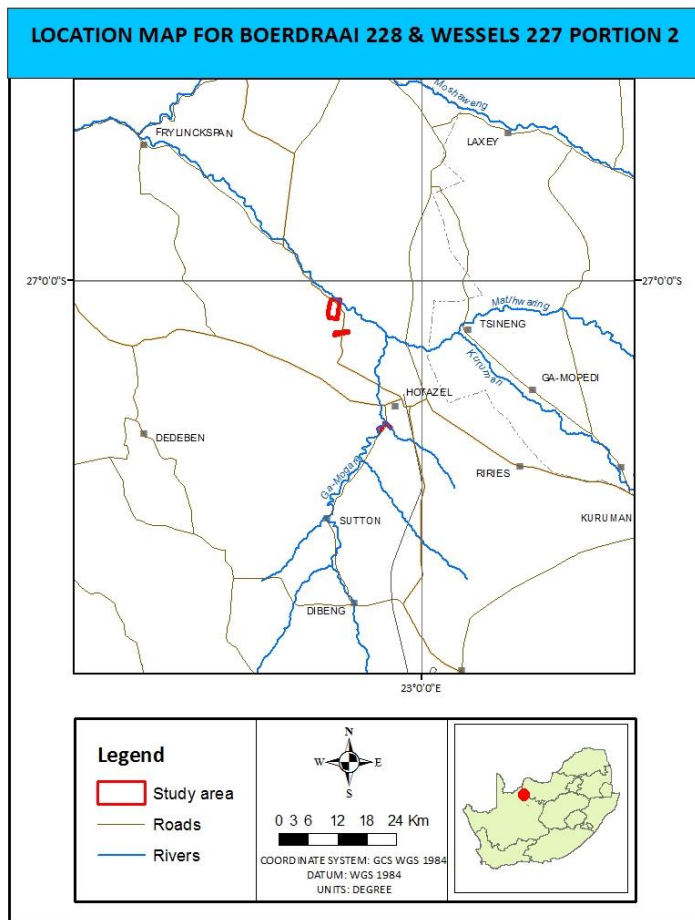


Figure 5. Location map for Boerdraai 228 and Wessels 227 Portion 2

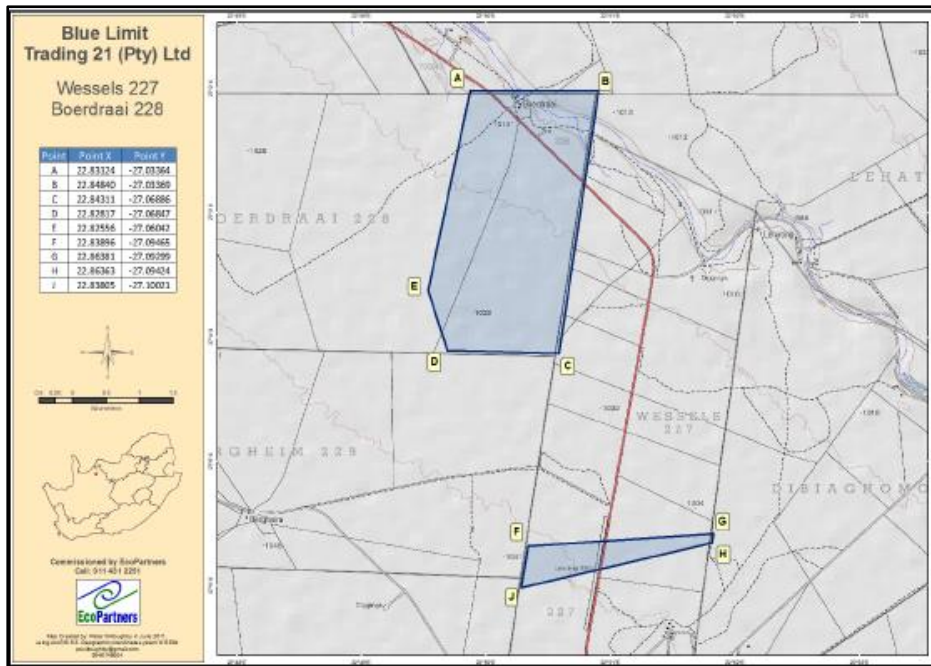


Figure 6. Location map for Boerdraai 228 and Wessels 227 Portion 2

4.2. Climate

The site is approximately 70km north of Kathu and was therefore used as a guide for the expected temperatures and rainfall for the site. Kathu receives an average of 240mm of rainfall per year, with the majority falling during the summer months. The highest rainfall occurs in February with an average of 55mm; while the lowest rainfall occurs in June with an average of 0mm (SA Explorer 2013).

The summer months in Kathu can generally be described as warm to hot with an average maximum midday temperature of 32°C for the months of December, January and February. The average minimum night temperature for these months is 17°C. The winters are cool with an average maximum midday temperature in June and July of 18°C and an average minimum night temperature of 0.2°C in July (SA Explorer 2013).

4.3. Land use

The farm Boerdraai 228 largely consists of natural vegetation (bushes and trees) but the area appears to be very dry. The Kuruman River transects the site’s north-eastern corner from south-east to north-west. The R380 road transects the site in north-east, and there are

other farm roads within the site as well as residential infrastructure. The majority of land is used as grazing for live-stock.

The farm Wessels 227 Portion 2 is bisected by the R380 and consists largely of natural vegetation. The farm is used as grazing for live-stock.

4.4. Geology and soils

The study areas of both Boerdraai 228 and Wessels 227 Portion 2 mainly consist of aeolian red sand and the occasional surface calcrete with deep sandy soils of Hutton and Clovelly soil forms. The Kuruman River and associated river banks are embedded within the Kalahari sediments that cover the Precambrian metamorphic crust. The riverbeds are silty, sandy and rocky and poorly drained. The Kuruman River must experience effective subsurface flow of water, judging from the belt of trees. (Mucina and Rutherford 2006)

4.5. Vegetation

The farm Boerdraai 228 falls within the Kathu Bushveld (SVk12) and the Kuruman River and adjacent areas falls within the Southern Kalahari Mekkacha (AZi3) vegetation units whilst Wessels 227 Portion 2 falls within the Kathu Bushveld (SVk12) (Mucina and Rutherford 2006)

5. METHODOLOGY

5.1. Desktop study

A desktop study and literature review were conducted to anticipate possible cultural heritage significant resources in the proposed development area. The desktop study is included in this report.

5.2. Field survey

The survey team consisting of Louisa Hutten and Willem Hutten visited the study area for a field survey on Saturday 2 November 2013. A foot survey on the farm Wessels 227 Portion 2 was planned and conducted to cover the majority of the study area.

As the field survey on the farm Wessels 227 Portion 2 yielded no identified sites of cultural heritage significance, it was decided to focus the survey on the area of Boerdraai 228 adjacent to the Kuruman River. The owner/occupier Mr Gawie Stols informed the team that he was unaware of any heritage resources in the portion of the farm south of the road. It was anticipated that no sites of cultural heritage significance would be identified in the portions of Boerdraai 228 that resembles the environment of Wessels 227 Portion 2, where no sites were identified.

After an initial meeting with the owner/occupier of the farm Boerdraai 228, Mr Gawie Stols, the team was guided to the Kuruman River and other parts of the study area from where the team conducted a planned and selective field survey of the site to identify sites of cultural heritage significance.

All sites/finds of cultural heritage significance located during the foot surveys were documented. The documentation included digital photographs and descriptions as to the nature and condition of the site and recovered materials. The sites/find spots were plotted using a Global Positioning System (GPS) (both units used were Garmin 62sc GPS's) and numbered accordingly.

No sampling was done during the surveys. No physical or other impediments had an impact on the survey.

5.3. Site naming

Cultural heritage resources identified during the field survey are numbered starting from 1, with an abbreviated prefix of the farm name. For this report the prefix used for sites identified on the farm Boerdraai 228 is **BD**, and for the farm Wessels 227 Portion 2 is **WS**.

6. DESCRIPTION OF SITES

6.1. Survey track logs

The following Google Earth imagery or maps indicate the tracks and route of the survey team during the farms' field surveys.



Figure 7. Field survey track logs for the farm Wessels 227 Portion 2

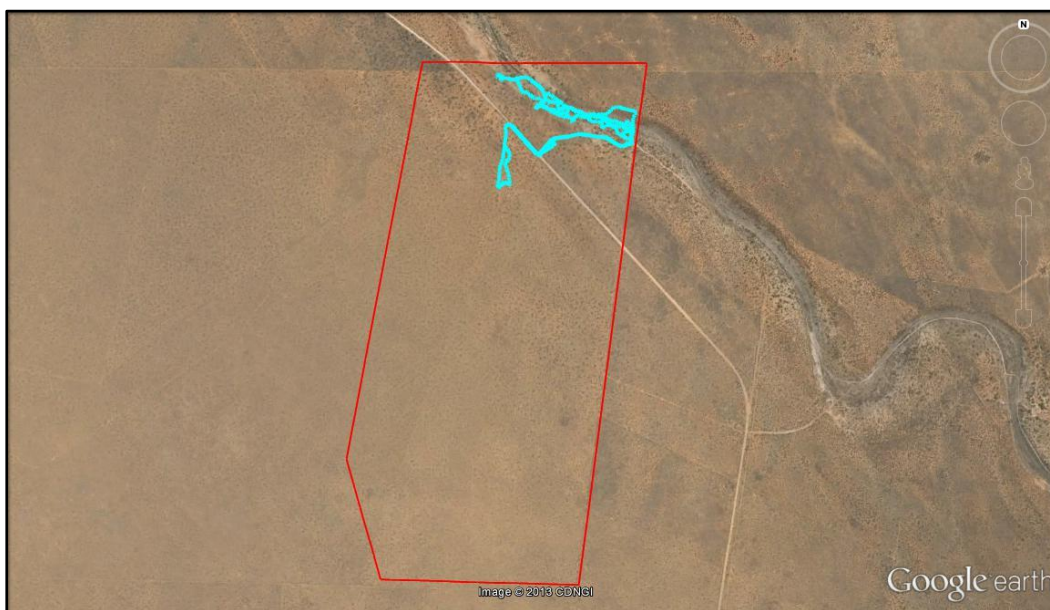


Figure 8. Field survey track logs for the farm Boerdraai 228

6.2. Wessels 227 site descriptions

During the field survey of Wessels 227 no sites of cultural and heritage significance was identified. It was noted that the environment consists of the red Kalahari sands with little vegetation cover.



Figure 9. General environment and surrounds on the farm Wessels 227 Portion 2

6.3. Boerdraai 228 site descriptions



Figure 10. Identified sites of cultural heritage significance

The area along the banks of the Kuruman River on the farm Boerdraai 228 was surveyed by the survey team and various sites of cultural and heritage significance were identified in this area. A small area to the south of the road was surveyed, but the environment consists of

the same red Kalahari sand as identified on the farm Wessels 227 Portion 2. No sites of cultural and heritage importance were identified on Wessels 227. From the satellite imagery it can be deduced that the Kalahari sands extend throughout this section of the study area. The team decided to abandon the survey on Boerdraai 228 because it was considered that no sites of cultural or heritage significance would be encountered.

Refer to Section 7 for description of significance and recommended ratings.

6.3.1. Site BD 1

GPS Coordinates: -27.03827603; 22.84729896

A number of lithic artefacts have been identified at this location. The scatter of lithic artefacts appears in an area of 15m x 15m in size on the sandy area along the banks of the Kuruman River. The artefacts were identified on the surface and are of a low quality and comprised of mostly lithic cores possibly associated with the MSA and LSA and one lithic flake also possibly from the MSA. No other features were identified in association with the lithic artefacts.

Site size:	Approximately 15m x 15m
Field Rating:	Generally Protected A (4A)
Heritage Significance:	High / Medium significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	B – Mapping of the site and controlled sampling required



Figure 11. Scatter of lithic artefacts

6.3.2. Site BD 2

GPS Coordinates: -27.0380750299; 22.8467099648

A single lithic core was identified at this location. The artefact was identified on the banks of the Kuruman River in a sandy area that consisted of a scatter of weathered rock. No other associated features were identified.

Site size:	Irrelevant
Field Rating:	Generally Protected C (4C)
Heritage Significance:	Low/no significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	A – no further action necessary



Figure 12. Lithic core

6.3.3. Site BD 3

GPS Coordinates: -27.0375380013; 22.8459550068

A single piece of ostrich shell was identified at this location. The shell was identified on the sandy banks of the Kuruman River and could possibly have been prepared to manufacture an egg shell bead. The egg shell fragment is roughly 1cm x 1cm in size with no further evidence drilling or rounding.

Site size:	Irrelevant
Field Rating:	Generally Protected C (4C)
Heritage Significance:	Low/no significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	A – no further action necessary

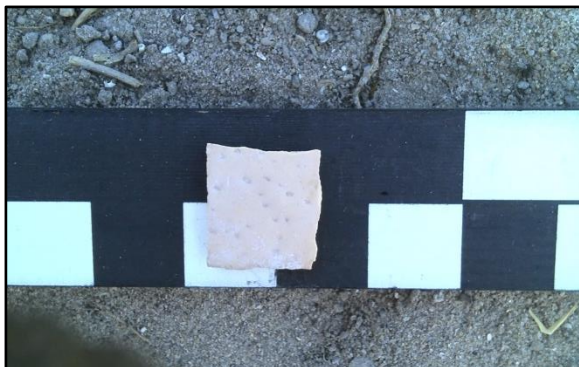


Figure 13. Single piece of ostrich shell

6.3.4. Site BD 4

GPS Coordinates: -27.0375840180; 22.8443000000

A single lithic flake was identified at this location on the banks of the Kuruman River. The lithic flake was identified on a rocky outcrop on the sandy banks of the river and is possibly associated with the MSA. No other associated features were identified.

Site size:	Irrelevant
Field Rating:	Generally Protected C (4C)
Heritage Significance:	Low/no significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	A – no further action necessary



Figure 14. Single lithic flake

6.3.5. Site BD 5

GPS Coordinates: -27.0373929944; 22.8439580183

A single lithic flake was identified at this location on the banks of the Kuruman River. The lithic flake was identified on the sandy banks of the river and is possibly associated with the MSA. No other associated features were identified.

Site size:	Irrelevant
Field Rating:	Generally Protected C (4C)
Heritage Significance:	Low/no significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	A – no further action necessary



Figure 15. Single lithic flake



Figure 16. Single lithic flake

6.3.6. Site BD 7

GPS Coordinates: -27.0374570321; 22.8427970409

A scatter of lithic flakes was identified at this location. The scatter of lithic artefacts appears in a gully or ditch on the banks of the Kuruman River. The lithic flakes are possibly associated with the MSA and LSA. No other associated features were identified.

Site size:	Approximately 5m x 10m
Field Rating:	Generally Protected A (4A)
Heritage Significance:	High / Medium significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	B – Mapping of the site and controlled sampling required



Figure 17. Scatter of lithic flakes



Figure 18. Location of scatter of lithic flakes

6.3.7. Site BD 8

GPS Coordinates: -27.0356759615; 22.8390149586

A single, formal grave was identified at this location. The grave was identified approximately 80m away from the Kuruman River and 250 m from the nearby house (Site BD 13). The grave has a formal dressing which consisted of a rectangular cement outline with metal hoops surrounding it. The grave was orientated from north to south and an inscribed headstone was placed at the southern end of the grave. It was the grave of a child, Johanna Maria du Plessis, who was born on 27/07/1927 and died on 10/09/1928. The grave has been enclosed by a wire fence, but this has been dilapidated with only the northern section still visible.

Site size:	Irrelevant
Field Rating:	Generally Protected A (4A)
Heritage Significance:	High Significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	D – Preserve site



Figure 19. Single dressed grave with headstone



Figure 20. Headstone of single grave



Figure 21. Location of single grave

6.3.8. Site BD 9

GPS Coordinates: -27.0356580243; 22.8388289642

Two large square cement blocks were identified at this location. Large pieces of calcrete are visible in the cement and were probably used as the aggregate in the casting of these blocks. The sizes of the blocks are 0.8m x 0.8m x 0.5m and one had metal bolts and the

remnants of a wooden post attached to it. This could possibly have been the entrance gate to the farm house (Site BD 13).

Site size:	Irrelevant
Field Rating:	Generally Protected C (4C)
Heritage Significance:	Low/no significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	A – no further action necessary



Figure 22. Square cement block with large pieces of calcrete



Figure 23. Square cement block with wood attached

6.3.9. Site BD 10

GPS Coordinates: -27.0348599833; 22.8384119645

A feeding and water trough was identified at this location most probably associated with the farming activities associated with the nearby farm house (Site BD 13). The feeding trough is 4m long and the water trough 10m long. It is clear that both these have been in unused for a long period of time. Both these have been built by making use of unbaked clay bricks.

Site size:	Irrelevant
Field Rating:	Generally Protected C (4C)
Heritage Significance:	Low/no significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	A – no further action necessary



Figure 24. Watering and feeding trough

6.3.10. Site BD 11

GPS Coordinates: -27.0346579794; 22.8383920155

A feeding and water trough was identified at this location most probably associated with the farming activities associated with the nearby farm house (Site BD 13). The feeding trough is 4m long and the water trough 10m long. It is clear that both these have been in unused for a long period of time. Both these have been built by making use of unbaked clay bricks.

Site size:	Irrelevant
Field Rating:	Generally Protected C (4C)
Heritage Significance:	Low/no significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	A – no further action necessary



Figure 25. Watering trough

6.3.11. Site BD 12

GPS Coordinates: 27.0348269586; 22.8383409698

The dilapidated foundation of a structure was identified at this location. The square foundation is 3m x 3m in size and barely protrudes out of the surface. It is constructed of unbaked clay bricks and could possibly be associated with the farming activities of the nearby farm house (Site BD 13). No building rubble was identified in association with this foundation.

Site size:	5m x 5m
Field Rating:	Generally Protected C (4C)
Heritage Significance:	Low/no significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	A – no further action necessary



Figure 26. Dilapidated foundations of a structure



Figure 27. Dilapidated foundations of a structure

6.3.12. Site BD 13

GPS Coordinates: -27.0345999766; 22.8372349776

The remains and structure of a dilapidated farm house and associated outbuildings were identified at this location higher up on the banks of the Kuruman River. The house was constructed prior to 1940 as the current occupier of the farm, Mr Gawie Stols, conveyed that his father bought the farm in 1940 and occupied the farm house. Some recent alterations were done to alter the existing house. The outbuildings consist of a large shed and a smaller room close to the house used for ironing (Gawie Stols pers. Communication). The house and buildings were constructed of unbaked clay bricks with corrugated iron roof covering. The flooring inside the house is of wood and cement with floor covering in some rooms. The house was evacuated in the 1980's, when the Stols family moved to the new homestead on the farm. The current state of the structures is severely dilapidated beyond repair and consist of various rooms a kitchen and a large stoep. A round dam constructed of

unbaked clay bricks and three associated wind pumps are situated in close proximity to the house.

Site Size:	50m x 50m
Field Rating:	Generally Protected C (4C)
Heritage Significance:	Low Significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	A – No further action necessary, but it is recommended that exploration drilling do not impact on the site



Figure 28. Dilapidated remains of a farm house



Figure 29. Dilapidated remains of an old shed



Figure 30. The "ironing room"

6.3.13. Site BD 14

GPS Coordinates: -27.0367100369; 22.8419140074

A number of lithic artefacts have been identified at this location. The scatter of lithic artefacts appears in an area of 25m x 25m in size on the sandy area along the banks of the Kuruman River. The artefacts were identified on the surface and comprised of mostly lithic cores possibly associated with the MSA and LSA and a couple of lithic flakes also possibly from the MSA/LSA. The lithic artefacts were identified in amongst a scatter of quarts, agate and jasper pebbles. No other features were identified in association with the lithic artefacts.

Site size:	Approximately 25m x 25m
Field Rating:	Generally Protected A (4A)
Heritage Significance:	High / Medium significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	B – Mapping of the site and controlled sampling required



Figure 31. Example of lithic artefacts identified in this area



Figure 32. Example of lithic artefacts identified in this area

6.3.14. Site BD 15

GPS Coordinates: -27.0362870023; 22.8410710394

A relative large area of 30m x 60m with scattered lithic artefacts has been identified at this location. A number of lithic cores possibly from the MSA have been identified in a red sandy patch on the banks of the Kuruman River. Against a slight slope, consisting of grey gravel, lithic cores and flakes probably associated with the MSA have been identified. A single lithic core possibly associated with the LSA has also been identified.

Site size:	Approximately 30m x 60m
Field Rating:	Generally Protected A (4A)
Heritage Significance:	High / Medium significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	B – Mapping of the site and controlled sampling required



Figure 33. Example of lithic artefacts identified in this area



Figure 34. Example of lithic artefacts identified in this area

6.3.15. Site BD 16

GPS Coordinates: -27.0358109940; 22.8408670239

A scatter of lithic artefacts has been identified in this location on the banks of the Kuruman River. The scatter comprises of flakes and cores possibly associated with the LSA in an area 25m x 25m. No other associated features were identified.

Site size:	Approximately 25m x 25m
Field Rating:	Generally Protected A (4A)
Heritage Significance:	High / Medium significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	B – Mapping of the site and controlled sampling required



Figure 35. Example of lithic artefacts identified in this area



Figure 36. Example of lithic artefacts identified in this area

6.3.16. Site BD 17

GPS Coordinates: -27.0392179862; 22.8413980175

A single lithic flake was identified at this location near the entrance gate to the farm house of Boerdraai farm. The flake is possibly associated with the MSA. No other associated features were identified.

Site size:	Irrelevant
Field Rating:	Generally Protected C (4C)
Heritage Significance:	Low/no significance
Impact:	Negative
Certainty:	Definite
Duration:	Short Term
Mitigation:	A – no further action necessary



Figure 37. Single lithic flake

6.3.17. Site BD 18

The casing of an exploration borehole protruding out of the surface was identified at this location. According to the farmer, Mr Gawie Stols, a number of boreholes, exceeding 10 in number, have been previously drilled across this property. Mr Stols also said that neither the drilling contractors nor the exploration companies rehabilitated the environmental damage caused by the exploration activities as agreed upon.

This site has no cultural heritage significance and was only included in this report to indicate that previous exploration drilling was conducted within the study area.

7. SIGNIFICANCE AND RECOMMENDED RATING

This section will deal with the significance and recommended rating of heritage sites. The following criteria were used to determine the significance of heritage sites.

- The unique nature of a site
- The amount/depth of the archaeological deposit and the range of features (stone walls, activity areas etc.)
- The wider historic, archaeological and geographic context of the site
- The preservation condition and integrity of the site
- The potential to answer present research questions

7.1. Site Significance

Site significance classification standards prescribed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used for the purpose of this report.

Low or No Significance:

The constraint is absent, but in instances where present, poses a negligible significance on the proposed development in terms of heritage concerns.

Moderate Significance:

The constraint is present and poses a notable but not major significance on the proposed development in terms of heritage concerns. If the constraint cannot be avoided, appropriate mitigation measures must be implemented to minimize the significance.

High Significance:

The constraint is present and poses a high significance on the proposed development in terms of heritage concerns. It is recommended that the constraint be avoided or appropriate mitigation measures must be implemented to minimize the significance.

7.2. Field Ratings

The following field ratings were used describing the significant archaeological heritage value of each site in term of the legislation NHRA, section 3 (3).

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	Grade 4A	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	Grade 4B	Medium Significance	Recording before destruction
Generally Protected C (GP.C)	Grade 4C	Low Significance	Destruction

7.3. Impact rating

7.3.1. Very High

These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or cultural) environment, and usually result in severe or very severe effects, or beneficial or very beneficial effects.

Example: The loss of a species would be viewed by informed society as being of *Very High* significance.

Example: The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with *Very High* significance.

7.3.2. High

These impacts will usually result in long term effects on the social and /or natural environment. Impacts rated as *High* will need to be considered by society as constituting an

important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.

Example: The loss of a diverse vegetation type, which is fairly common elsewhere, would have a significance rating of *high* over the long term, as the area could be rehabilitated.

Example: The change to soil conditions will impact the natural system, and the impact on affected parties (e.g. farmers) would be *high*.

7.3.3. Moderate

These impacts will usually result in medium- to long-term effects on the social and/or natural environment. Impacts rated as *moderate* will need to be considered by the public or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are real, but not substantial.

Example: The loss of a sparse, open vegetation type of low diversity may be regarded as *moderately* significant.

Example: The provision of a clinic in a rural area would result in a benefit of *moderate* significance.

7.3.4. Low

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as *low* will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.

Example: The temporary changes in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels.

Example: The increased earning potential of people employed as a result of a development would only result in benefits of *low* significance to people living some distance away.

7.3.5. No Significance

There are no primary or secondary effects at all that are important to scientists or the public.

Example: A change to the geology of a certain formation may be regarded as severe from a geological perspective, but is of *no significance* in the overall context.

7.4. Certainty of Prediction

DEFINITE: More than 90% sure of a particular fact. Substantial supportive data exist to verify the assessment.

PROBABLE: Over 70% sure of a particular fact, or of the likelihood of an impact occurring.

POSSIBLE: Only over 40% sure of a particular fact, or of the likelihood of an impact occurring.

UNSURE: Less than 40% sure of a particular fact, or of the likelihood of an impact occurring.

7.5. Duration of impact

SHORT TERM: 0 – 5 years

MEDIUM: 6 – 20 years

LONG TERM: more than 20 years

DEMOLISHED: site will be demolished or is already demolished

7.6. Mitigation measures

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be classified as follows:

A – No further action necessary

B – Mapping of the site and controlled sampling required

C – Preserve site, or extensive data collection and mapping required; and

D – Preserve site

8. RECOMMENDATIONS

The location of these identified sites must be noted and the developer or its appointed Environmental Control Officer (ECO) must demarcate the sites and monitor for any disturbances or impacts on the sites. Should any disturbances or impacts occur a qualified archaeologist must be contracted to evaluate the impact and make recommendations on the appropriate mitigation measures.

It is recommended that the exploration drilling and associated activities as set out in the EMP can commence on the farms Boerdraai 228 and Wessels 227 Portion 2 on condition that the specific recommendations and mitigation measures set out in this report be adhered to.

8.1. Recommendations for graves (Site BD 8)

The identified grave fell within the area intended for exploration drilling and associated activities, and the developer must take note of the location and recommendations regarding this grave.

Graves older than 60 years (or presumed older) and not in a municipal graveyard are protected in terms of the National Heritage Act (No. 25 of 1999). Human remains (graves) younger than 60 years may only be handled by a registered undertaker or institution declared under the Human Tissues Act.

It is recommended that no exploration drilling and associated activities be conducted in close proximity of the identified grave. It is recommended that the identified grave must be clearly marked with danger tape during the entire duration of the exploration project and especially during earth-moving/bush clearing activities and a 20m - 50m buffer zone must be allowed around the grave.

The developer is required to follow the process described in the legislation (section 36 and its associated regulations) if he wants to develop in an area where there are graves older than 60 years.

If the developer decides to plan the development around the graves and leave them undisturbed, adequate arrangements should be made to protect the graves from the impact of the development. These should include the following:

- It is important to understand that the identified grave could have significant heritage value to the relevant families (if identified) and should therefore be preserved.
- It is recommended that the identified grave should be clearly marked with danger tape during the entire duration of the project and especially during earth-moving/bush clearing activities and a 20m - 50m buffer zone must be allowed around the grave.
- It is advisable to fence the grave to prevent future mistakes.
- The relevant families should be identified (if possible) and should be informed about the proposed activities which could possibly affect their grave.
- The proposed earth-moving/bush clearing activities should be altered and should be planned around this grave in order to protect them from any damage or other negative impacts.
- Bush clearing crews should be made aware of the grave in order that the grave will not be damaged during the earth-moving activities.
- The planning team should ensure that access to the grave is not limited in any way. A small management plan should be set up to ensure the future safety, access and maintenance of the grave.

If the above recommendations cannot be adhered to, further steps and measures should be taken to move the grave and relocate it to one of the official graveyards in the area. This should only be done as last resort if no other options deem to be possible. The following process is then required:

- A process of consultation with the affected families and communities, if identified, should then be initiated to start the relocation of the grave.

- Various applications to various Departments should be put into motion to obtain the necessary permissions and permits to perform the relocation of the grave. These applications and permits are required by law.
- Only after all the required permissions and permits have been obtained, can the relocation of the grave continue as performed by professionals.

8.2. Recommendation relating to identified sites containing lithic artefacts and other archaeological material on the banks of the Kuruman River (Sites BD 1, BD 2, BD 3, BD 4, BD 5, BD 7, BD 14, BD 15, BD 16 and BD 17)

Various sites were identified during the field survey that proved to contain material of archaeological importance. These artefacts were duly documented and photographed and their position noted. The sites with the identified lithic artefacts fell within the area identified for exploration drilling and associated activities.

It is recommended that no exploration drilling and associated activities be conducted within the area including the banks of the Kuruman River. A relative medium density of lithic artefacts was identified within this area. It is advisable that exploration drilling and associated activities be planned to exclude these areas as to not impact upon the archaeological sites.



Figure 38. Recommended area to be excluded from exploration drilling and associated activities

Should the developer, however, decide to conduct exploration drilling within this area, the coordinates of the identified sites must be noted and exploration drilling and associated activities must not impact upon these sites. A buffer zone of 20m must be allowed around these sites.

8.3. Recommendations for dilapidated farmhouse (Site BD 13)

Structures *younger than 60 years* would not be protected under Section 34(1) of the National Heritage Resources Act (Act no. 25 of 1999). No further work or any other mitigation measures would be required as these structures have little or no heritage value and significance.

The identified farm house and its associated structures prove to *be 60 years and older* and are protected under Section 34(1) of the National Heritage Resources Act (Act no. 25 of 1999): “No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.”

A permit for the destruction and/or alteration of the structure is then required. A report and detailed documentation of the structures would need to accompany the application for such a permit. It is therefore recommended that a specialist, an architectural historian (or similar qualified person), should document the structures and compile relevant reports during a second phase of investigation.

The compiled reports and documentations should accompany any applications for destruction and/or alteration of the structures. The heritage specialist and/or architectural historian can assist the developer in the application of such a permit.

It is recommended that no exploration drilling and associated activities be conducted in close proximity to the identified structures. A buffer zone of 20m – 50m must be allowed around this site.

8.4. Recommendations for other identified sites (Sites BD 9, BD 10, BD 11 and BD 12)

The identified sites have little or no cultural heritage significance. No further site specific actions or mitigation measures are recommended for these sites.

8.5. Recommendations relating to as yet unidentified palaeontological, archaeological and cultural heritage

Procedures should be developed prior to exploration drilling and associated activities and should be implemented in the event that archaeological or cultural heritage significant sites or artefacts are discovered during operations.

Procedures should include the following:

- Employees and contractors should be notified that archaeological sites might be exposed during the exploration activities.
- Should any cultural heritage artefacts and sites be exposed during exploration activities, work in the area where the artefacts and sites were discovered shall cease immediately and the relevant authorities shall be notified as soon as possible.

- All discoveries shall be reported immediately to a museum, preferably one at which an archaeologist is available, so that an investigation and evaluation of the finds can be made. Acting on advice from these specialists, the relevant authorities will determine the necessary actions to be taken.
- Under no circumstances shall any artefacts and sites be removed, destroyed or interfered with by anyone on the site.
- Contractors and workers shall be advised of the penalties associated with the unlawful removal and destruction of cultural, historical, archaeological or paleontological artefacts and sites, as set out in NHRA (Act 25 of 1999), Section 51(1).

9. CONCLUSION

The Heritage assessment was conducted successfully and included a literature review of available resources and impact assessments conducted in the vicinity of the study area. The literature review focussed on historical, archaeological and palaeontological sources that could be used to anticipate possible significant culture heritage resources to be encountered during the field survey of the study area.

The team successfully conducted a field survey of the study areas and identified, documented, photographed and noted the location of significant culture heritage resources.

Recommendations pertaining to the protection of these resources were duly reported.

It is recommended that the exploration drilling and associated activities as set out in the EMP can commence on the farms Boerdraai 228 and Wessels 227 Portion 2 on condition that the specific recommendations and mitigation measures set out in this report be adhered to.

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11. ANNEXURES

11.1. Annexure A – Environmental Management Plan