PHASE I HERITAGE IMPACT ASSESSMENT (INCLUDING PALAEONTOLOGICAL ASSESSMEMT) REQUESTED IN TERMS OF SECTION 38 OF THE NATIONAL HERITAGE RESOURCES ACT (NO 25/1999) FOR THE PROPOSED MINE PROSPECTING ON THE REMAINING EXTENT OF PORTIONS 13 AND 9 OF THE OF THE FARM RIETFONTEIN 11, PRIESKA DISTRICT, NORTHERN CAPE PROVINCE

Prepared by

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(AHSA) Archaeological and Heritage Services Africa (Pty) Ltd

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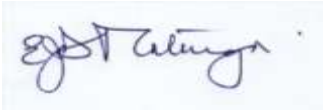
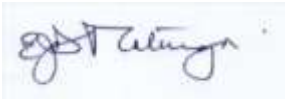
FIELD WORK & REPORT:	E. Matenga		14/02/2019

DECLARATION OF INDEPENDENCE

AHSA (Pty) Ltd is an independent consultancy: We hereby declare that we have no interest, be it business, financial, personal or other vested interest in the undertaking of the proposed activity, other than fair remuneration for work performed, in terms the National Heritage Resources Act (No 25 of 1999).

DISCLAIMER

All possible care was taken to identify and document heritage resources during the survey in accordance with best practices in archaeology and heritage management. However it is always possible that some hidden or subterranean sites are overlooked during a survey. AHSA will not be held liable for such oversights and additional costs thereof.



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ABBREVIATIONS

EIA	Environmental Impact Assessment
HIA	Heritage Impact Assessment
LSA	Late Stone Age
LIA	Later Iron Age
PHRA	Provincial Heritage Resources Authority
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency

GLOSSARY

Archaeological material: remains resulting from human activity left as evidence of their presence which, as proscribed by South African heritage legislation, are older than 100 years, which are in the form of artefacts, food remains and other traces such as rock paintings or engravings, burials, fireplaces and structures.

Artefact/Ecofact: Any movable object that has been used, modified or manufactured by humans.

Catalogue: An inventory or register of artefacts and/or sites.

Conservation: All the processes of looking after a site/heritage place or landscape including maintenance, preservation, restoration, reconstruction and adaptation.

Cultural Heritage Resources: refers to physical cultural properties such as archaeological sites, palaeolontological sites, historic and prehistorical places, buildings, structures and material remains, cultural sites such as places of rituals, burial sites or graves and their associated materials, geological or natural features of cultural importance or scientific significance. This include intangible resources such religion practices, ritual ceremonies, oral histories, memories indigenous knowledge.

Cultural landscape: "the combined works of nature and man" and demonstrate "the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both internal and external".

Cultural Significance: is the aesthetic, historical, scientific and social value for past, present and future generations.

Early Stone Age: Predominantly the Acheulean hand axe industry complex dating to + 2Myr yrs – 250 000 yrs. before present.

Early Iron Age: Refers cultural period of the first millennium AD associated with the introduction of metallurgy and agriculture in Eastern and Southern Africa

Later Iron Age: Refers to the period after 1000AD marked by increasing social and political complexity. Evidence of economic wealth through trade and livestock keeping especially cattle

Excavation: A method in which archaeological materials are extracted, involving systematic recovery of archaeological remains and their context by removing soil and any other material covering them.

Grave: a place of burial which include materials such as tombstone or other marker such as cross etc.

Historic material: means remains resulting from human activities, which are younger than 100 years and no longer in use, which include artefacts, human remains and artificial features and structures.

Intangible heritage: Something of cultural value that is not primarily expressed in a material form e.g. rituals, knowledge systems, oral traditions, transmitted between people and within communities.

***In situ* material:** means material culture and surrounding deposits in their original location and context, for instance archaeological remains that have not been disturbed.

Later Iron Age: The period from the beginning of the 2nd millennium AD marked by the emergence if complex state society and long-distance trade contacts.

Late Stone Age: The period from ± 30 000-yr. to the introduction of metals and farming technology

Middle Stone Age: Various stone using industries dating from ± 250 000 yr.-30 000 yrs. ago

Monuments: architectural works, buildings, sites, sculpture, elements or structures of an archaeological nature, inscriptions, cave dwellings which are outstanding from the point of view of history, art and science.

Place: means site, area, building or other work, group of buildings or other works, together with pertinent contents, surroundings and historical and archaeological deposits.

Preservation: means protecting and maintaining the fabric of a place in its existing state and retarding deterioration or change, and may include stabilization where necessary.

Sherd: ceramic fragment.

Significance grading: Grading of sites or artefacts according to their historical, cultural or scientific value.

Site: a spatial cluster of artefacts, structures, organic and environmental remains, as residues of past human activity.

EXECUTIVE SUMMARY

1. The Kimswa Mining Pty Ltd intends to lodge an application for a prospecting right on the Remaining Extent of Portions 13 and 9 of the Farm Rietfontein 11, Prieska District, Northern Cape Province. This report has been prepared in compliance with Section 38 of the National Heritage Resources Act (No 25/1999) and forms an integral part of an Environmental Impact Assessment (EIA) for the authorisation of the prospecting right.

2. Fifteen (15) sites were recorded and ranked in terms of their heritage value and the potential threat of the proposed development. The following is a summary of our findings:

3. *The Stone Age*
   Stone tools and associated waste material in varying densities have been recorded in thirteen (13) locations. The stone tools comprise mainly scrapers, points and flakes while a few blades and cores also occur. No significant concentrations were found to suggest a settlement or regular activity.

4. The occurrence of a crude pear-shaped hand-axe is of particular interest as it seems to confirm the presence of Acheulean material in the area dating between 2 million to 250 000 years BP.

5. *The Iron Age*
   No Iron Age relics were found on the property.

6. *Early mining and commercial farming*
   An asbestos ore crushing and loading site was seen. A small rectangular structure is built of dressed dolomite apparently locally sourced. There are no circumstances to warrant destruction of these two structures.

7. *Burial grounds*
   No graves or burial grounds were reported on the property.

8. Significance ranking of findings

The significance ranking (with a colour scheme) refers to value of the sites and perceived impacts and risk of the proposed development.

	RANKING	TYPOLOGY & SIGNIFICANCE	NO OF SITES
1	High	National and Provincial heritage sites (Section 7 of NHRA). All burials including those protected under Section 36 of NHRA. They must be protected.	0
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. Footprint of early modern mining. These may be protected at the recommendations of a heritage expert.	0
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	15 (2 historical structures to be protected)
4	Low	Heritage sites which have been recorded, but considered of minor importance relative to the proposed development.	0
		TOTAL	**15**

9. Conclusion and recommendations

The mine prospecting can go ahead subject to the precautions taken to protect the two historical structures on the property. The study is mindful that archaeological deposits are usually buried underground. Should archaeological artefacts or skeletal material be exposed in the area during development activities, such activities should be halted, and the heritage authorities notified in order for an investigation and evaluation of the finds to take place.

10. ***PHASE I HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED MINE PROSPECTING ON THE REMAINING EXTENT OF PORTION 9 OF THE OF THE FARM RIETFONTEIN 11***

DESKTOP ASSESSMENT

11. Physical setting

At the time of the field excursion to Rietfontein, permission for a ground reconnaissance on Portion 9 of the Farm Rietfontein had not been granted. The property Portion 13 and straddles the NW-SE ridge trending sedimentary ridge comprising dolomite, quartzite and calcrete. From the crest of the ridge the ground descends northward with a gentle to sharp slope into the Orange River Valley. Several streams run down the slope into Orange River creating incised valleys and cutting through the alluvial gravels in the wider plain along the river. Vegetation is predominantly acacia with a significant population of the multi-branched Quiver Aloe (*Aloe coredata*).

12. Literature Review

Although no previous heritage surveys have been conducted on Rietfontein, the survey on Portion 13 just undertaken and evaluation should provide a good theoretical basis from which to extrapolate the more likely scenarios.

13. Postulated heritage sensitivity of Portion 9 of Rietfontein 11

The area was obviously home to MSA/LSA hunter gatherers who left behind the scatters of stone tools and flake waste. As most pre-industrial communities would tend to gravitate to permanent water sources, Early Stone Age tools are likely to occur on the edge of the Vaal River, although these have rarely been encountered (c/o Morris 2009 cited earlier in this report). Although MSA/LSA finds have been seen in all surveys this team has conducted in the broader area, no occurrences have been deemed to warrant further action beyond primary documentation.

The Table below provides a confidence rating of the findings:

	HERITAGE TYPOLOGY	**PROBABILITY OF OCCURRENCE**	**CONFIDENCE RATING**
1	MSA/LSA	99.99%	High
2	EIA/LIA	0.01%	High
3	Burial grounds	60%	Medium
4	Mining structures / Farm buildings	75%	Medium

14. Conclusion and Recommendations

In light of this desk assessment, the mine prospecting can go ahead. The study is mindful that some important discoveries may be made during prospecting. If this happens operations should be halted, and the provincial heritage resources authority or SAHRA notified in order for an investigation and evaluation of the finds to take place.

1. INTRODUCTION

This Heritage Impact Assessment (HIA) report has been prepared on behalf of Kimswa Mining (Pty) Ltd for a mine prospecting right application on the Remaining Extent of Portions 13 and 9 of the Farm Rietfontein 11, Prieska District, Northern Cape Province. The impact evaluation is in accordance with Section 38 of the National Heritage Resources Act (25/1999). It entailed a site visit on 23 January 2019 and a ground reconnaissance to assess the heritage sensitivity of the area and to determine potential adverse impacts of the proposed activities on the heritage.

1.1. Nature of impacts

Prospecting for minerals may entail the following activities:

- Excavations and trenching
- Test pits
- Drilling
- Opening of temporary service roads
- Location of processing plant

Such physical works may result in the disturbance or destruction of heritage resources. It is therefore important to have a clear understanding of what heritage resources occur at a place and to prepare a heritage impact statement.

1.2. Location and physical setting

The farm Rietfontein is located south of the Orange River with its northern boundary on the banks of the river. For easy reference this location is between the towns of Prieska and Marydale in the Northern Cape Province (Lat: 29°25'35.45"S; Long: 22°18'46.79"E, the location of the farmstead). The property has been divided into several portions with Portion 13 itself situated a short distance from the banks of the Orange River (Figure 1). The superficial geology comprises a sedimentary ridge trending NW-SE which forms a northern and eastern backdrop, and lying to the west are flat plains covered by Kalahali sands on the western extremity of the property and a spread of stones and grit in a large area below the ridge. A number of streams drain the western slopes of the ridge converging at different points eventually forming a stream which takes a course northwest running parallel with the ridge and joins the

Orange River downstream of and near the point at which it breaches the ridge. The wet season channels transport hill-wash composed of stones/grit that cover the beds of these channels. There are exposures of solid calcrete and on the slopes of the ridge, dolomite bedrock occurs in some places. The grit covering the base of the ridge comes in a variety of colours, red-brown stones, grey calcretes and quartzite stones confined mainly to the south of the property.

Vegetation is sparse karoo scrub with acacia dominating. In places there is a significant presence of the short hooked thorn *Acacia mellifera subsp. Detinens* (*haakbos* in Afrikaans). On the slope of the hills stand the giant multi-branched aloe (*Aloe dichotoma* – Quiver Aloe) (Figures 2-7).

Fig 1. Google-Earth map shows the location the Portion 9 of the Farm Rietfontein 11 between the N10 highway and the Orange River, Northern Cape Province.

Figure 2: Landscape view shows the sedimentary ridge forming an eastern backdrop, flat terrain in the foreground, hooked thorn bushes (*Acacia mellifera subsp. Detinens).*

Figure 3: The graceful *Aloe dichotoma* (Quiver Aloe) on the western slope of the ridge.

Figure 4: Calcrete bedrock exposed on the bed of a channel in the central area of the farm.

Figure 5: Stone hill wash forms the bed of a dry stream descending from the ridge.


Figures 6a & b: Stones and grit covering the surface along the base of the ridge.


Figures 7a & b: View from the ridge west to the portion covered by Kalahali sands.

2. LEGAL FRAMEWORK

This heritage impact assessment relates specifically to Sections 34, 35, 36 and 38 of the National Heritage Resources Act (No 25 of 1999) form the legal framework in which this report has been prepared.

2.1. Section 38 of NHRA: Heritage Impact Assessments

Section 38 of the NHRA states the nature and scale of development which triggers a HIA:

38. *(1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—*

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50 m in length;

(c) any development or other activity which will change the character of a site—

(i) ***exceeding 5 000 m² in extent[1];*** *or*

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m² in extent; or

(e) any other category of development provided for in the regulations by SAHRA or a provincial heritage resources authority,

must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

2.2. Protection of buildings and structures older than 60 years

Section 34 provides automatic protection for buildings and structures more than 60 years old until it can be proven that they do not have heritage value:

(1) 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.

2.3. Protection of archaeological sites

Section 35 (4) of the NHRA prohibits the destruction of archaeological, palaeontological and meteorite sites:

No person may, without a permit issued by the responsible heritage resources authority—

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

[1] Areal extent of the proposed development triggers the HIA.

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
(c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

2.4. Graves and burial grounds

Section 36 of the NHRA provides for the protection of certain graves and burial grounds. Graves are generally classified under the following categories:

- Graves younger than 60 years;
- Graves older than 60 years, but younger than 100 years;
- Graves older than 100 years; and
- Graves of victims of conflict
- Graves of individuals of royal descent
- Graves that have been specified as important by the Ministers of Arts and Culture.

This study is however mindful of public sensibilities about the sanctity of graves and burial grounds whether they are protected by the law or not.

2.5. The National Environmental Management Act (No 107/1998)

This Act states that a survey and evaluation of cultural resources must be done in areas where development projects that will affect the environment will be undertaken. The impact of the development on these resources should be determined and proposals for the mitigation thereof are made. Environmental management is a much broader undertaking to cater for cultural and social needs of people. Any disturbance of landscapes and sites that constitute the nation's cultural heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

2.6. The Burra Charter on Conservation of Places of Cultural Significance

Some generic principles and standards for the protection of heritage resources in South Africa are drawn from international charters and conventions. In particular South Africa has adopted the **ICOMOS Australia Charter for the Conservation of Places of Cultural Significance (the Burra Charter 1999)** as a benchmark for best practice in heritage management.

3. METHODOLOGY AND THEORETICAL APPROACHES

3.1. Literature survey

A review of available relevant literature included reports of previous HIAs conducted in the broader area, historical books, and project planning maps. No impact assessment reports were found on internet relating specifically to the area between Prieska and Marydale. But the area between Douglas and Prieska is reasonably covered to provide important insight:

Gaigher, S. 2012. Heritage Impact Assessment Report for the proposed establishment of the Prieska Solar Energy facility located east of Prieska on Portion3 of the Farm Holsoot 47, Northern Cape Province.

Morris, D. 2009. Report on a Phase 1 Archaeological Impact Assessment at Bucklands Settlement near Douglas, Northern Cape.

Matenga, E. 2017. Phase I Heritage Impact Assessment (including Palaeontological Assessment) requested in terms of section 38 of the National heritage resources act (no 25/1999) for the proposed mine prospecting on the remaining extent of portion 1 of the farm Annex Viegulands Put 42, Prieska District, Northern Cape Province.

Matenga, E: 2018. Phase I Heritage Impact Assessment (including Palaeontological Assessment) requested in terms of Section 38 of the National Heritage Resources Act No 25/1999 for the proposed Mine Prospecting and Application for Mining Right on a Portion of the Remaining Extent of the Farm Kransfontein 19 & Portion 2 (De Rust) of the Farm Kransfontein 19, Prieska District, Northern Cape Province.

In the last two studies stone tools were found most dating to the MSA/LSA cultural period. A single occurrence of a pear-shaped hand-axe on the farm Annex Viegulands Put, 60 km east of Prieska, confirms the Early Stone Age in the area.

3.2. Fieldwork

An archaeologist and field assistant carried out a ground survey. In accordance with the farm's security protocols they were accompanied by the farm manager, Mr JDC Prinsloo, and later assigned to a farmworker, Mr Sam Mashava. The survey was facilitated by a vehicle and driving along the farm tracks areas were chosen at random for more detailed foot surveys. Photographs were taken to show the general character of the landscape as well as artefacts and features seen. A Catalogue of the findings is presented in Section 7 of this Report.

4. ARCHAEOLOGICAL AND HISTORICAL CONTEXT

The following is an outline of the cultural sequence in South Africa presented as a theoretical framework for the identification of features / structures and objects of archaeological, historical and cultural interest.

4.1. Cultural sequence summary (Table 1)[2]

PERIOD	EPOCH	ASSOCIATED CULTURAL GROUPS	TYPICAL MATERIAL EXPRESSIONS
Early Stone Age 2.5m – 250 000 YCE	Pleistocene	Early Hominids: *Australopithecines* *Homo habilis* *Homo erectus*	Typically large stone tools such as hand axes, choppers and cleavers.
Middle Stone Age 250 000 – 25 000 YCE	Pleistocene	First *Homo sapiens* species	Typically smaller stone tools such as scrapers, blades and points.
Late Stone Age 20 000 BC – present	Pleistocene / Holocene	*Homo sapiens* including San people	Typically small to minute stone tools such as arrow heads, points and bladelets.
Early Iron Age / Early Farmer Period c300 – 900 AD (or earlier)	Holocene	Iron Age Farmers	Typically distinct ceramics, bead ware, iron objects, grinding stones.
Later Iron Age 900ADff	Holocene	Iron Age Farmers, emergence of complex state systems	Typically distinct ceramics, evidence of long distance trade and contacts
(ii) Mapungubwe (K2)	1350AD		Metals including gold, long distance exchanges
(ii) Historical period	Tswana / Sotho, Nguni people	Iron Age Farmers	Stone walls Mfecance / Difaqane
(iii) Colonial period	19th Century	European settlers / farmers / missionaries/ industrialisation	Buildings, Missions, Mines, metals, glass, ceramics

4.2. Appearance of hominids

South Africa has a good record of fossil hominids. These are the footprint of the proto-humans which lived more than 3 million years ago. Three famous sites in Gauteng, Limpopo and Northwest Provinces have been collectively named the Cradle of Humankind and inscribed a UNESCO World Heritage Site as a serial nomination.[3]

[2] Adapted from Exigo Consultancy. 2015. Frances Baard District Municipality: Proposed Nkandla Extension 2 Township Establishment, Erf 258 Nkandla, Hartswater, Northern Cape Province.

[3] Deacon, J. and N. Lancaster. 1986. *Later Quaternary Palaeo-environments of Southern Africa*. Oxford: Oxford University Press.

One of these sites Taung near Vryburg is 360 km northwest of the study area. To our knowledge no hominid sites have been reported in the vicinity of the study area.

4.3. The Early Stone Age

4.3.1. The Early Stone Age (2 million to 250 000 years BP)

The Stone Age dates back more than 2 million years representing a clearer beginning of the cultural sequence divided into three epochs, the Early, Middle and Late Stone Ages. Material evidence of the ESA is found in caves, rock-shelters and on river sides and edges of streams, and very rarely seen in open country.[4] Such tools bore a consistent shape such as the pear-shaped hand-axe, cleavers and core tools (Deacon & Deacon, 1999). These tool industries have been called Oldowan and Acheulean and were probably used to butcher large animals such as elephants, rhinoceros and hippopotamus. Acheulean artefacts are usually found near sites where they were manufactured and thus in close proximity to the raw material or at kill sites. The early hunters are classified as hominids meaning that they had not evolved to the present human form.

Progressively a good profile of the Stone Age in the Northern Cape has been reconstructed from many heritage impact assessments that have been conducted in recent years. Locales along and adjacent to the Orange – Vaal River systems have yielded evidence of great interest.[5] Further north the Wonderwerk Cave has become a benchmark for the characterisation of the Stone Age. Excavations reveal a long sequence of occupation spanning the Early (ESA), Middle (MSA) and Later Stone Ages.[6]

4.3.2. Middle Stone Age (MSA) [250 000 yrs – 30 000 yrs BP]

The Middle Stone Age (MSA), which appeared 250 000 years ago, is marked by the introduction of a new tool kit which included prepared cores, parallel-sided blades and triangular points hafted to make spears. By then humans had become skilful hunters, especially of large grazers such as wildebeest, hartebeest and eland. It is also

[4] http://archaeology.about/od/bterms/g/bordercave.htm
[5] Morris, D. 2009. Phase 1 Archaeological Impact Assessment at Bucklands Settlement near Douglas, Northern Cape, p3.
[6] http://www.southafrica.net/za/en/articles/entry/article-southafrica.net-the-wonderwerk-cave.

believed that by then, humans had evolved significantly to become anatomically modern. Caves were used for shelter suggesting permanent or semi-permanent settlement. Furthermore there is archaeological evidence from some of the caves indicating that people had mastered the art of making fire.[7] A number of field surveys have been carried out around Danielskuil 130km northwest of Kimberley confirming significant hunter gatherer activity in the area from the MSA onwards.

4.3.3. Later Stone Age (LSA)[40 000 yrs to ca2000 yrs BP]

By the beginning of the LSA, humans are classified as *Homo sapiens* which refer to the modern physical form and thinking capabilities. Several behavioural traits are exhibited, such as rock art and purposeful burials with ornaments, became a regular practice. LSA technology is characterised by microlithic scrapers and segments made from very fine-grained rock. Spear hunting continued, but LSA people also hunted small game with bows and poisoned arrows. Because of poor preservation, open sites become of less value compared to rock shelters. The practitioners of the Late Stone Age as with Rock Art are ancestors of the Khoisan.[8] A number of rock engravings have been reported in the vicinity of Lime Acres and Danielskuil north of the Vaal River[9] and at Wildebeest Kuil 16 km west of Kimberley.

4.4. The Iron Age Culture [ca. 2000 years BP]

The Iron Age culture supplanted the Stone Age at least 2000 years ago, associated with the introduction of farming and use of several metals and pottery. Iron Age communities are believed to have been speakers of Bantu languages who practiced agriculture and kept domestic animals such as cattle, sheep, goat and chickens. There is however increasing evidence that sheep and probably cattle as well might have moved into the area much earlier than the Iron Age.[10]

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[7] Deacon, J & H. Deacon. 1999. *Human Beginnings in South Africa*. Cape Town: David Philip.

[8] Gaigher, S. 2012. Heritage Impact Assessment Report for the proposed establishment of the Prieska Solar Energy facility located east of Prieska on Portion 3 of the Farm Holsoot 47, Northern Cape Province, p15.

[9] Collins, S. 1973. Rock-engravings of the Danielskuil Townlands. *South African Archaeological Bulletin* 109-110: 49-57.; Eastwood, E.B. & Smith, B.W. 2005. Fingerprints of the Khoekhoen: geometric and hand-printed rock art in the Central Limpopo Basin, southern Africa. *South African Archaeological Society Goodwin Series* 9: 63–76.

[10] Evers, T. M. 1988. *Recognition of Groups in the Iron Age of Southern Africa*. Unpublished PhD Thesis, University of Witwatersrand. Huffman 2007. *A Handbook on the Iron Age*. Scottsville: UKZN Press

4.4.1. Early Iron Age

Two migration streams of Early Iron Age (EIA) communities have been postulated (Huffman (2007), coming from a source in central/western Africa converging in South Africa one originating in eastern Africa which has been called the *Urewe-Kwale Tradition* (or the eastern stream) and another from the west, spreading through Zambia and Angola, which he termed the *Kalundu Tradition* (or western stream). An alternative perspective is to see the IA as a gradual spread or expansion of settlement of different groups of people indigenous to the continent which took place over a long period of time. There are few if any sites attributed to the EIA in the western parts of the country. Most IA settlements are concentrated in the eastern part of South Africa. The woodland zone was preferred for settlement, but there is strong possibility that transhumant pastoralism was practiced and seasonal hunting camps were established in the inhospitable western regions of the country.

4.4.2. The Later Iron Age

The LIA is marked by the presence of extensive stonewalled settlements such as the Tlhaping capital at Dithakong near Kuruman.[11] Recently some pottery possibly dating to the terminal phase of the Later Iron Age has been seen at Schmidtsdrift on the northern bank of the Vaal River 80km downstream.[12]

4.5. Historical Context

The study area is historically home to various groups of Tswana speakers descending from the Iron Age and possibly some with roots in the preceding Stone Age.

The above is context for the identification of heritage resources in the study area.

5. FINDINGS OF THE HERITAGE SURVEY

[11] De Jong 2010: De Jong, R.C. 2010. Heritage impact assessment report: proposed manganese and iron ore mining right application in respect of the remainder of the farm Paling 434, Hay Registration Division, Northern Cape. Unpublished report prepared for Kai Batla Minerals Industry Consultants. Pretoria: Cultmatrix, p 36

[12] Matenga, E. 2018. Phase I Heritage Impact assessment (including Palaeontological Assessment) requested in terms of section 38 of the National Heritage Resources Act No 25/1999 for the proposed mine prospecting on the Remainder of the Farm Schmidtsdrift 248, Pixley Ka Seme District Municipality, Northern Cape Province.

Fifteen (15) sites were recorded (Figure 8, Table 2). The sites are ranked in terms of their heritage value and the potential threat of the proposed development. Site attributes are profiled in a Catalogue with photo illustrations in Section 7.2 of this Report.

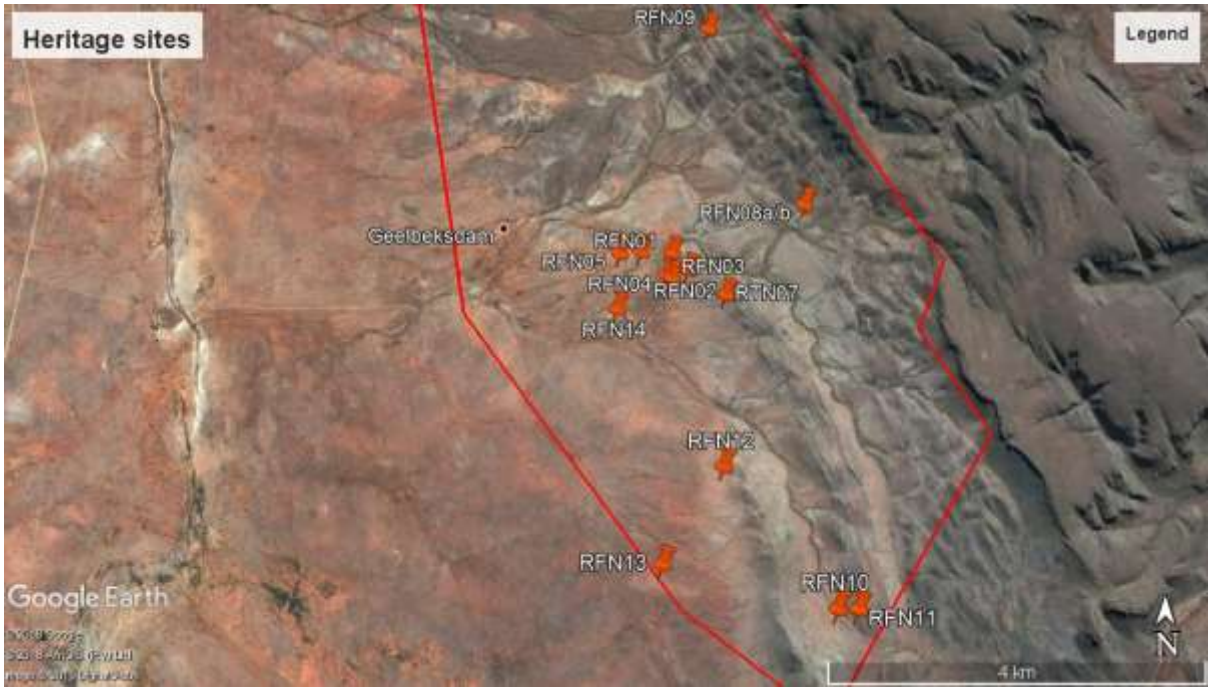


Fig 8. Google-Earth map shows location of stone Ages sites, building and structures.

5.1. The Stone Age

Stone tools were recorded in thirteen (13) locations with varying densities. The assemblages comprise mainly scrapers, points and flakes while a few blades and cores also occur. They are spread along the base of the ridge along the eastern boundary of the property. No significant concentrations were found to suggest a settlement or regular activity.

The occurrence of a crude pear-shaped hand-axe is of particular interest as it seems to confirm the presence of Acheulean material in the area dating between 2 million and 250 000 years BP (Site RFN04).

5.2. The Iron Age

No Iron Age relics were found on the property.

5.3. Early mining and commercial farming

An asbestos ore crushing and loading site was recorded (the block of a heavy steel machine and structures of stonework and concrete) (Site RFN07, Figure 9a/b). A small rectangular structure is built of dressed dolomite apparently locally sourced (Site RFN08a, Figure 10). There are no circumstances to warrant destruction of these two structures.

Figure 9a/b: derelict asbestos ore crushing/processing and loading bay of stonework and concrete.

Figure 10: A small rectangular structure of dressed dolomite blocks, low rough walling to the south.

5.4. Burial grounds

No graves or burial grounds were reported on the property.

5.5. Significance ranking of findings

The significance ranking (with a colour scheme) refers to value of the sites and perceived impacts and risk of the proposed development.

	RANKING	TYPOLOGY & SIGNIFICANCE	NO OF SITES
1	High	National and Provincial heritage sites (Section 7 of NHRA). All burials including those protected under Section 36 of NHRA. They must be protected.	0
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. Footprint of early modern mining. These may be protected at the recommendations of a heritage expert.	0
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	15 (2 historical structures to be protected)
4	Low	Heritage sites which have been recorded, but considered of minor importance relative to the proposed development.	0
		TOTAL	**15**

5.6. Section 38 of the NHRA

Section 38 (Subsection 3) of the National Heritage Resources Act also provides a schedule of tasks to be undertaken in an HIA process:

Section 38(3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

(a) The identification and mapping of all heritage resources in the area affected

Fifteen sites (15) sites were recorded of which four (13) date to the Stone Age and one (2) are of recent dating to within the last 120 years.

(b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7

There are no Grade I or Grade II sites.

(c) An assessment of the impact of the development on such heritage resources

The risk ranking defines potential risks based on perceived value of the heritage and potential threats posed by the proposed development. A portion of one site need to be protected.

(i) An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development

Investment in mining is expected to provide stimulus for local economic development. Mining is labour intensive and can contribute immensely to alleviate the current high rate of employment. General improvement in the quality of livelihoods in local communities is expected.

(j) The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources

N/A

(f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives

N/A

(g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.

In the event of discovery of other heritage resources during site preparation and mining phase, the Provincial Heritage Resources Authority or SAHRA will be informed immediately and an archaeologist or heritage expert called to attend.

5.7. Risk assessment of the findings

EVALUATION CRITERIA	RISK ASSESSMENT
Description of potential impact	Negative impacts range from partial to total destruction of surface and under-surface movable/immovable relics.
Nature of Impact	Negative impacts can both be direct or indirect.
Legal Requirements	Sections 34, 35, 36, 38 of National Heritage Resources Act (25/1999).
Stage/Phase	Prospecting for minerals (test pits, trenching and drilling). Mining by opencast or shaft methods
Nature of Impact	Negative, both direct & indirect impacts.
Extent of Impact	Test pits, drilling, opencast excavation and trenching have potential to damage heritage resources above and below the surface not seen during the survey.
Duration of Impact	Any accidental destruction of surface or subsurface relics is not reversible, but can be mitigated.
Intensity	Uncertain.
Probability of occurrence	Medium.
Confidence of assessment	High.
Level of significance of impacts before mitigation	High.
Mitigation measures	If heritage resources are discovered during prospecting the heritage resources authority must be informed and a heritage expert called to attend.
Level of significance of impacts after mitigation	Low.
Cumulative Impacts	None.
Comments or Discussion	None.

6. CONCLUSION AND RECOMMENDATIONS

The mine prospecting can go ahead subject to precautions taken to protect the two historical structures on the property. The study is mindful that archaeological deposits are usually buried underground. Should archaeological artefacts or skeletal material be exposed in the area during development activities, such activities should be halted, and the provincial heritage resources authority or SAHRA notified in order for an investigation and evaluation of the finds to take place.

7. CATALOGUE OF FINDINGS

7.1. Site inventory spreadsheet table

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING
RFN01	29°25'14.10"S	22°19'10.20"E	MSA/LSA	Open flat area, Kalahali sands. 3 lithics, chert waste material.	Medium B
RFN02	29°25'20.80"S	22°19'16.90"E	MSA/LSA	Open flat area, gritty with shrubs and few acacia. 6 lithics, 1 quartzite blade/scraper, 2 scrapers and waste material	Medium B
RFN03	29°25'23.80"S	22°19'10.10"E	MSA/LSA	Open flat area with shrubs. Kalahali sands overburden. 5 lithics including a point, broken blade, and scraper.	Medium B
RFN04	29°25'22.80"S	22°19'7.60"E	ESA	Open flat area with shrubs. 3 lithic including, quartzite tool roughly pear-shaped.	Medium B
RFN05	29°25'14.30"S	22°18'48.10"E	MSA/LSA	Open flat area. 5 lithics, including a small scraper and core.	Medium B
RFN06	29°25'13.70"S	22°18'57.00"E	MSA/LSA	Open flat area with shrubs, scattered acacia. 6 lithics, flake/waste material.	Medium B
RFN07	29°25'30.36"S	22°19'32.46"E	19th 20th C	Western slope of ridge, derelict asbestos ore crushing/process and the loading bay of stonework and concrete.	Medium B
RFN08a	29°24'55.70"S	22°20'7.10"E	19th 20th C	A saddle on the western slope of the ridge. A small rectangular structure of dressed dolomite blocks, low rough walling to the south.	Medium B
RFN08b	29°24'55.70"S	22°20'7.10"E	19th 20th C	Saddle on the western slope of the ridge, exposures of dolomite. Quiver aloes. 4 lithics – flakes/points and scrapers.	Medium B
RFN09	29°23'44.00"S	22°19'27.70"E	19th 20th C	Near the northwest boundary of the farm, foot of the ridge, exposures of dolomite bedrock. 3 lithics including a blade and scraper.	Medium B
RFN10	29°27'21.50"S	22°20'13.30"E	19th 20th C	Near the south-eastern end of the farm, gritty surface. 6 lithics, waste material.	Medium B
RFN11	29°27'21.50"S	22°20'21.40"E	19th 20th C	Near the southern end of the farm, gritty surface with calcretic waste. 5 lithics, flake waste.	Medium B

RFN12	29°26'32.90"S	22°19'30.00"E	19th 20th C	Near the southern end of the farm. Gritty surface predominantly quartzite. 2 lithics, chert and quartzite flakes.	Medium B
RFN13	29°27'6.70"S	22°19'4.80"E	19th 20th C	Western boundary of property near the southern end. Elevated stony area surrounded by Kalahali sands. 3 lithics including 2 scrapers and possible backed flake tool.	Medium B
RFN14	29°25'35.45"S	22°18'46.79"E	20th C	Farmstead. The main house has a hipped roof, two chimneys, red-brown face brick. A minor building was dated 31/5/1968 in wet cement.	Medium B

7.2. CATALOGUE OF SITES

SITE NO	COORDINATES		PERIOD
RFN01	29°25'14.10"S	22°19'10.20"E	MSA/LSA

OBSERVATIONS: Open flat area, Kalahali sands. 3 lithics, chert waste material.

HERITAGE STATUS	Evidence of stone tool manufacture and use during the MSA/LSA
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

SITE NO	COORDINATES		PERIOD
RFN02	29°25'20.80"S	22°19'16.90"E	MSA/LSA

OBSERVATIONS: Open flat area, gritty with shrubs and few acacia. 6 lithics, 1 quartzite blade/scraper, 2 scrapers and waste material

HERITAGE STATUS	Evidence of stone tool manufacture and use during the MSA/LSA
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

SITE NO	COORDINATES		PERIOD
RTN03	29°25'23.80"S	22°19'10.10"E	MSA/LSA

OBSERVATIONS: Open flat area with shrubs. Kalahali sands overburden. 5 lithics including a point, broken blade, and scraper.

HERITAGE STATUS	Evidence of stone tool manufacture and use during the MSA/LSA
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

SITE NO	COORDINATES		PERIOD
RTN04	29°25'22.80"S	22°19'7.60"E	MSA/LSA

OBSERVATIONS: Open flat area with shrubs. 3 lithic including, quartzite tool roughly pear-shaped.

HERITAGE STATUS	Evidence of stone tool manufacture possibly dating from the Early Stone Age (ESA).
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

SITE NO	COORDINATES		PERIOD
RFN05	29°25'14.30"S	22°18'48.10"E	MSA/LSA

OBSERVATIONS: Open flat area. 5 lithics, including a small scraper and core (in the middle).

HERITAGE STATUS	Evidence of stone tool manufacture and use during the MSA/LSA
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

SITE NO	COORDINATES		PERIOD
RTN06	29°25'13.70"S	22°18'57.00"E	MSA/LSA

OBSERVATIONS: Open flat area with shrubs, scattered acacia. 6 lithics, flake/waste material.

HERITAGE STATUS	Evidence of stone tool manufacture and use during the MSA/LSA
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

SITE NO	COORDINATES		PERIOD
RTN07	29°25'30.36"S	22°19'32.46"E	19th 20th C

OBSERVATIONS: Western slope of ridge, derelict asbestos ore crushing/process and the loading bay of stonework and concrete.

HERITAGE STATUS	Early modern mining
POTENTIAL IMPACTS & PROPOSED MITIGATION	Structure worthy of protection

SITE NO	COORDINATES		PERIOD
RTN08a	29°24'55.70"S	22°20'7.10"E	MSA/LSA

OBSERVATIONS: A saddle on the western slope of the ridge. A small rectangular structure of dressed dolomite blocks, low rough walling to the south.

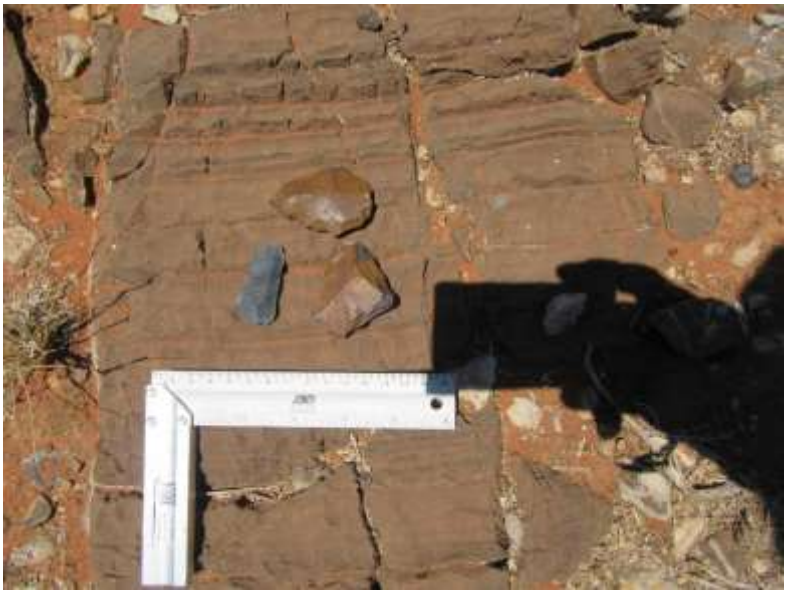
HERITAGE STATUS	Remains of a cattle post, or mining camp
POTENTIAL IMPACTS & PROPOSED MITIGATION	Worthy of protection

SITE NO	COORDINATES		PERIOD
RTN08b	29°24'55.70"S	22°20'7.10"E	MSA/LSA

OBSERVATIONS: Saddle on the western slope of the ridge, exposures of dolomite. Quiver aloes. 4 lithics – flakes/points and scrapers.

HERITAGE STATUS	Evidence of stone tool manufacture and use during the MSA/LSA
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

SITE NO	COORDINATES		PERIOD
RTN09	29°23'44.00"S	22°19'27.70"E	MSA/LSA



OBSERVATIONS: Near the northwest boundary of the farm, foot of the ridge, exposures of dolomite bedrock. 3 lithics including a blade and scraper.

HERITAGE STATUS	Evidence of stone tool manufacture and use during the MSA/LSA
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

SITE NO	COORDINATES		PERIOD
RTN10	29°27'21.50"S	22°20'13.30"E	MSA/LSA

OBSERVATIONS: Near the south-eastern end of the farm, gritty surface. 6 lithics, waste material.

HERITAGE STATUS	Evidence of stone tool manufacture and use during the MSA/LSA
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

SITE NO	COORDINATES		PERIOD
RTN11	29°27'21.50"S	22°20'21.40"E	MSA/LSA

OBSERVATIONS: Near the southern end of the farm, gritty surface with calcretic waste. 5 lithics, flake waste.

HERITAGE STATUS	Evidence of stone tool manufacture and use during the MSA/LSA
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

SITE NO	COORDINATES		PERIOD
RFN12	29°26'32.90"S	22°19'30.00"E	MSA/LSA

OBSERVATIONS: Near the southern end of the farm. Gritty surface predominantly quartzite. 2 lithics, chert and quartzite flakes.

HERITAGE STATUS	Evidence of stone tool manufacture and use during the MSA/LSA
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

SITE NO	COORDINATES		PERIOD
RFN13	29°27'6.70"S	22°19'4.80"E	MSA/LSA

OBSERVATIONS: Western boundary of property near the southern end. Elevated stony area surrounded by Kalahali sands. 3 lithics including 2 scrapers and possible backed flake tool.

HERITAGE STATUS	Evidence of stone tool manufacture and use during the MSA/LSA
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

SITE NO	COORDINATES		PERIOD
RFN14	29°25'35.45"S	22°18'46.79"E	MSA/LSA

OBSERVATIONS: Farmstead. The main house has a hipped roof, two chimneys, red-brown face brick. A minor building was dated 31/5/1968 in wet cement.

HERITAGE STATUS	Structures exemplify farmsteads in the broader area.
POTENTIAL IMPACTS & PROPOSED MITIGATION	-

8. PHASE I HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED MINE PROSPECTING ON THE REMAINING EXTENT OF PORTION 9 OF THE OF THE FARM RIETFONTEIN 11

DESKTOP ASSESSMENT

8.1. Physical setting

At the time of the field excursion to Rietfontein, permission for a ground reconnaissance on Portion 9 had not been granted. The property adjoins Portion 13 (which was surveyed) straddling the NW-SE trending sedimentary ridge comprising dolomite, quartzite and calcrete. From the crest of the ridge northward the ground descends with a gentle to sharp slope into the Orange River Valley. Several streams run down the slope into the Orange River creating incised valleys and cutting through alluvial gravels in the wider plain of the river. Vegetation configuration has been confirmed to be predominantly acacia with a significant population of the multi-branched Quiver Aloe (*Aloe dichotoma*).

8.2. Literature Review

Although no previous heritage surveys have been conducted on Rietfontein, the survey of Portion 13 and evaluation in this Report should provide a good theoretical basis from which to extrapolate the more likely scenarios.

8.3. Postulated heritage sensitivity of Portion 9 of Rietfontein

The area was obviously home to MSA/LSA hunter gatherers who left behind the scatters of stone tools and flake waste. As most pre-industrial communities would tend to gravitate to permanent water sources, Early Stone Age tools are likely to be occur on the edge of the Orange River, although these have rarely been encountered (c/o Morris 2009 cited earlier). Although these finds have been recorded in all surveys this team has conducted in the broader area, no occurrences have been deemed to warrant further action beyond the primary documentation.

The Table below provides a confidence rating of the findings:

	HERITAGE TYPOLOGY	PROBABILITY OF OCCURRENCE	CONFIDENCE RATING
1	MSA/LSA	99.99%	High
2	EIA/LIA	0.01%	High
3	Burial grounds	60%	Medium
4	Mining structures / Farm buildings	75%	Medium

8.4. Conclusion and Recommendations

In light of this desk assessment the mine prospecting can go ahead. The study is mindful that some important discoveries may be made during prospecting. If this happens operations should be halted, and the provincial heritage resources authority or SAHRA notified in order for an investigation and evaluation of the finds to take place.

9. REFERENCES

Deacon, J. and N. Lancaster. 1986. Later Quaternary Palaeo-environments of Southern Africa. Oxford: Oxford University Press.

De Jong, R. C. 2010. Heritage Impact Assessment Report: Proposed Manganese and Iron Ore Mining Right Application in Respect of the Remainder of the Farm Paling 434, Hay Registration Division, Northern Cape Province. Cultmatrix.

Evers, T. M. 1988. Recognition of Groups in the Iron Age of Southern Africa. Unpublished PhD Thesis, University of Witwatersrand. Huffman 2007. A Handbook on the Iron Age. Scottsville: UKZN Press

Gaigher, S. 2012. Heritage Impact Assessment Report for the proposed establishment of the Prieska Solar Energy facility located east of Prieska on Portion 3 of the Farm Holsoot 47, Northern Cape Province.

Huffman, T. N. 2007. A Handbook of the Iron Age. Cape Town: UKZN Press

The National Heritage Resource Act (25 of 1999)

Hutten, M. 2013. Heritage Impact Assessment for the Proposed Manlenox Solar Park west of Barkly West, Northern Cape.

Matenga, E. 2017. Phase I Heritage Impact Assessment (including Palaeontological Assessment) requested in terms of section 38 of the National heritage resources act (no 25/1999) for the proposed mine prospecting on the remaining extent of portion 1 of the farm Annex Viegulands Put 42, Prieska District, Northern Cape Province.

Matenga, E: 2018. Phase I Heritage Impact Assessment (including Palaeontological Assessment) requested in terms of Section 38 of the National Heritage Resources Act

No 25/1999 for the proposed Mine Prospecting and Application for Mining Right on a Portion of the Remaining Extent of the Farm Kransfontein 19 & Portion 2 (De Rust) of the Farm Kransfontein 19, Prieska District, Northern Cape Province**.**

Matenga, E. 2018. Phase I Heritage Impact assessment (including Palaeontological Assessment) requested in terms of section 38 of the national heritage resources act no 25/1999 for the proposed mine prospecting on the remainder of the farm Schmidtsdrift 248, Pixley Ka Seme District Municipality, Northern Cape Province.

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

Morris, D. 2009. Report on a Phase 1 Archaeological Impact Assessment at Bucklands Settlement near Douglas, Northern Cape.

Muller, C. F. J. 1986. *Five Hundred Years: A History of South Africa.* 5th Edition. Pretoria.

Schalkwyk, J 2015. Heritage scoping assessment for the proposed Perseus-Kronos 765kv Transmission Power Line and Substations Upgrade, Northern Cape and Free State Provinces.

Websites

http://www.southafrica.net/za/en/articles/entry/article-southafrica.net-the-wonderwerk-cave.

http://archaeology.about/od/bterms/g/bordercave.htm

Legislation and Policies

National Heritage Resources Act (No 25: 1999)

National Environmental Management Act (No 107/1998)

ICOMOS Australia Charter for the Conservation of Places of Cultural Significance (the Burra Charter 1999

10. ACKNOWLEDGEMENTS

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