HERITAGE IMPACT ASSESSMENT AND PALAEONTOLOGICAL DESKTOP ASSESSMENT FOR A PROSPECTING RIGHT APPLICATION ON THE REMAINING EXTENT OF THE FARM ROOIDAM 101 AND PORTION 101/1 OF THE FARM ROOIDAM NEAR WINDSORTON, BARKLY WEST DISTRICT, NORTHERN CAPE PROVINCE

Prepared by

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07 December 2020

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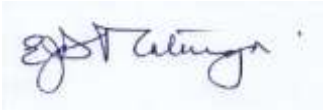
FIELD WORK & REPORT	E. Matenga		07/12/2020

DECLARATION OF INDEPENDENCE

AHSA Pty Ltd is an independent consultancy: We hereby declare that I 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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EXECUTIVE SUMMARY

1. A Heritage Impact Assessment report has been prepared in support a mining permit application on the Remaining Extent of the Farm Rooidam 101 and Portion 101/1 of the farm Rooidam, Barkly West District, Northern Cape Province. On 23 November 2020 an archaeologist and field assistant visited the property and conducted a ground survey as required in terms of Section 38(8) of the National Heritage Resources Act (No 25 of 1999). Archaeological and historical material of cultural significance was recorded and forms the basis of mitigation measures recommended in this report, which will be considered as part of Environmental Impact Assessment.

2. The heritage sensitivity of the property is summarised as follows:

3. *The Stone Age*

   The Stone Age yield was far much lower compared to other surveys which have been carried out by the same author in the Vaal-Orange River valleys. However the finding of a hand axe and cleaver together (RDM01) is instructive, as it shows the Early Stone Age origins of the stone tool making cultures which became well established in subsequent epochs of the Stone Age, i.e. the Middle and Late State Age. None of the finds warrants further action.

4. *The Iron Age*

   No material dating to the Iron Age was found.

   Historic buildings

   Foundations of Koranna mission station and graves (RDM06): The Morija Mission Station was established in 1892 by Heinrich Christian Kalllenberg and abandoned after his death in1901 (Rossouw 2026, p7). As recommended by Rossouw (2016 p8) the graves and structural remains of the Koranna mission station must be fenced off and avoided. In addition a buffer zone of 100m must be maintained around the graves. The stone cattle enclosure (RDM04), which lies a few metres east of the prospecting area must be preserved with 10m buffer zone prescribed.

Table 1: Inventory of heritage sites

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
RDM01	28°14'50.10"S	24°41'56.00"E	MSA/LSA	Flat terrain, scattered thorn bushes. Thin veneer of sandy soil overlying gravel. A hand axe and cleaver.	Medium B	No further action required But finds collectible.
RDM02	28°13'45.50"S	24°40'36.50"E	MSA/LSA	Flat terrain, red brown soils. Scattered acacia bushes. A large scraper.	Medium B	No further action required
RDM03	28°13'59.90"S	24°41'54.00"E	MSA/LSA	Flat terrain, red brown soils. Scattered acacia bushes. A short blade made from chert.	Medium B	No further action required
RDM04	28°15'0.20"S	24°42'25.20"E	MSA/LSA	Two cattle enclosures that appear to have been joined in a tangent. Each enclosure has a small square enclosure appended on the west side (also reported by Rossouw 2016, pp11, 25).	Medium A	Site must be fenced off, 10m buffer maintained around the site
RDM05	28°14'53.60"S	24°42'53.60"E	MSA/LSA	Situated immediately west of the dolerite ridges flanking the Vaal River. Square foundation of a building measuring 4m x 4m.		No further action required
				SITES REPORTED BY ROSSOUW 2020		
RDM 06	28°12'47.20"S	24°40'16.40"E	19th C	Graves and remains of the old Morija Mission station (adapted from Rossouw 2016, p19).	High	Site must be fenced off and a 100m buffer maintained around the graves
RDM07	28°13'11.00"S	24°39'26.60"E		Stone Tool Surface Scatter	Medium B	
RDM08	28°15'16.20"	24°42'45.70"E		Rectangular Stone-walled structure	Medium A	Outside the prospecting area

5. Ranking of Findings

	RANKING	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.	1 (burial ground)
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.	2 (stone enclosures)
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	4
4	Low	Heritage sites which have been recorded, but considered of minor value relative to the proposed development.	1
		TOTAL	**8**

6. Conclusions and Recommendations

The mine prospecting application may be given a green light to go ahead with the recommendations heeded to avoid the sites which have been identified for protection. As a standard procedure, in the event of other heritage resources being discovered in future phases of the project, the Provincial Heritage Resources Authority or SAHRA must be alerted immediately and an archaeologist or heritage expert called to attend.

TABLE OF CONTENTS

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

DEFINITIONS

Archaeological material: remains older than 100 years, resulting from human activities left as evidence of their presence, which are in the form of structure, artefacts, food remains and other traces such as rock paintings or engravings, burials, fireplaces etc.

Artefact: 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 or place including maintenance, preservation, restoration, reconstruction and adaptation.

Cultural Heritage Resources: refers to physical cultural properties such as archaeological sites, palaeontological sites, historic and prehistoric 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. These include intangible resources such as religious practices, ritual ceremonies, oral histories, memories, indigenous knowledge.

Cultural landscape: a stretch of land that reflects "the combined works of nature and man" and demonstrates "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".[1]

[1] This definition is taken from current terminology as listed on the World Heritage Convention website, URL: http://whc.unesco.org/en/culturallandscape/#1 accessed 17 March 2016.

Cultural Resources Management (CRM): the conservation of cultural heritage resources, management and sustainable utilization for present and future generations.

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

Early Iron Age: refers to cultural remains dating to the first millennium AD associated with the introduction of metallurgy and agriculture.

Early Stone Age: a long and broad period of stone tool cultures with chronology ranging from around 3 million years ago up to the transition to the Middle Stone Age around 250 000 years ago.

Excavation: a method in which archaeological materials are extracted from the ground, which involves systematic recovery of archaeological remains and their context by removing soil and any other material covering them.

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

Historical: means belonging to the past, but often specifically the more recent past, and often used to refer to the period beginning with the appearance of written texts.

Intangible heritage: something of cultural value that is not primarily expressed in material form e.g. rituals, knowledge systems, oral traditions or memories, 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 of complex state society and long-distance trade contacts.

Late Stone Age: The period from ± 30 000 years ago up until the introduction of metals and farming technology around 2000 years ago, but overlapping with the Iron Age in many areas up until the historical period.

Middle Stone Age: a period of stone tool cultures with complex chronologies marked by a shift towards lighter, more mobile toolkit, following the Early Stone Age and preceding the Late Stone Age; the transition from the Early Stone Age was a long process rather than a specific event, and the Middle Stone Age is considered to have begun around 250 000 years ago, seeing the emergence of anatomically modern humans from about 150 000 years ago, and lasting until around 30 000 years ago.

Monuments: architectural works, buildings, sites, sculpture, elements, structures, inscriptions or cave dwellings of an archaeological nature, 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 the protecting and maintaining of the fabric of a place in its existing state and retarding deterioration or change, and may include stabilization where necessary.

Rock Art: various patterned practices of placing markings on rock surfaces, ranging in Southern Africa from engravings to finger paintings to brush-painted imagery.

Sherds: ceramic fragments.

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.

Site Recording Template: a standard document format for site recording.

1. INTRODUCTION

A Heritage Impact Assessment (HIA) has been prepared on behalf of Rooidam Plaas (Pty) Ltd in support a mining permit application on the Remaining Extent of the Farm Rooidam 101 and Portion 101/1 of the farm Rooidam, Barkly West District, Northern Cape Province. On 23 November 2020 an archaeologist and field assistant visited the property and conducted a ground survey as required in terms of Section 38(8) of the National Heritage Resources Act (No 25 of 1999). Archaeological and historical material of cultural significance was recorded and forms the basis of mitigation measures recommended in this report, which will be considered as part of Environmental Impact Assessment.

1.1. Nature of development and expected impacts

Diamonds are expected to be found in old alluvial gravels on the west side of Vaal River. Prospecting and mining activities carry the risk of damaging or destroying heritage resources. Excavation of test pits and trenches, opencast stripping processes, opening of access roads, establishment of plant and other support infrastructure are such activities with a potentially harmful impact on heritage resources.

2. LOCATION AND PHYSICAL SETTING

The farm Rooidam is set against the west bank of the Vaal River (28°13'29.05"S 24°41'7.18"E, approximate centre of the property). The nearest service centre is Windsorton located on the banks of the Vaal River a distance of 12km by a gravel road. The Vaal River trends south cutting across andesite lavas of the Ventersdorp Supergroup; these are exposed black rocks flanking the river channel creating a landscape of remarkable scenic beauty. The Vaal River charts a long course west across higveld plains to the Atlantic Ocean from a source on the western foot of the Drakensberg Mountains, 240km from the Indian Ocean. From ancient times the river has been of strategic importance providing needful water supplies to human communities in the semi-arid Karoo plains. It is apparent that it has through this long time span influenced settlement behaviour and migration patterns.

The present river channel is flanked by an old flood plain on which gravels were deposited by shifting channels, evidence of a long process of erosion and deposition.

Moving away west from the river there are ridges of dolerite rock another of the volcanic rocks which define the shoulders of the river valley. Beyond the ridges, the ground gradually levels out to a plain. Windblown silt forms a superficial upper horizon c. 1m deep, below which are alluvial gravels of an ancient flood plain. The gravels are the target of the proposed prospecting and mining.

Vegetation on the property represents a natural karoo biome of mixed tree species with acacias predominating. The commonest species *swarthaak (Senegalia mellifera)* (Figures 1 – 6)

Figure 1a: Google-Earth map shows the location of the farm Rooidam 101 on the banks of the Vaal River.

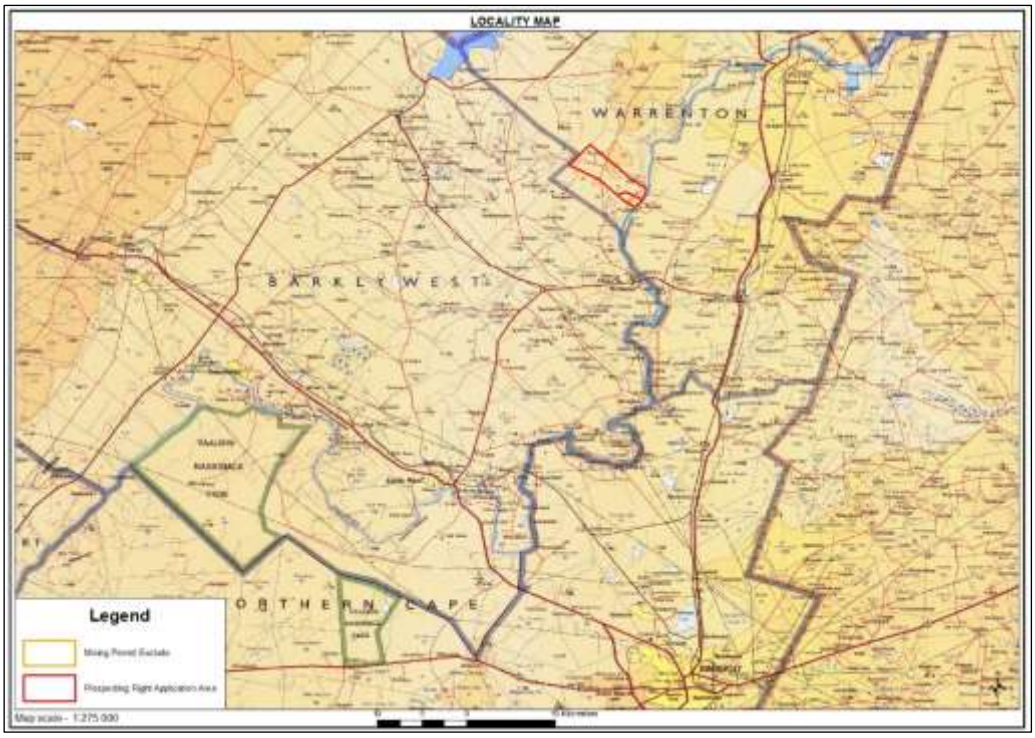

Figure 1b: Location of the property in a standard map.

Figure 2: A view of the Vaal River between trees shows the channel and the flanking andesite rocks.

Figure 3. Dolerite ridges define the shoulders of the Vaal River.

Figure 4: The Karoo plain above the river valley is overlain by sandy soils below which are alluvial gravels. Vegetation is predominantly Karoo *swarthaak (Senegalia mellifera).*

Figure 5: Red-brown silty soil and karoo scrub vegetation dominated by *swarthaak* (*Senegalia mellifera).*

Figure 6: Dolerite close to the western boundary of the property.

3. LEGAL FRAMEWORK

3.1. The National Heritage Resources Act (25 of 1999)

Section 38 lists thresholds of impact of a development which trigger a Heritage Impact Assessment:

Section 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, power line, 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 50m in length;

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

(i) exceeding 5 000m² in extent; 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 regulations by SAHRA or a provincial heritage resources authority.

Other Sections of the **National Heritage Resources Act** (No. 25 of 1999) NHRA of relevant application are:

Section 34 of the NHRA for provisional protection of all structures and features older than 60 years.

Section 35 (4) of the **NHRA** prohibits the destruction of archaeological, palaeontological and meteorite sites. A palaeontological desktop assessment is appended to this HIA report as one of the requirements to comply with this clause.

Section 36 of the **NHRA** gives priority for the protection of Graves and Burial Grounds graves and burial grounds more than 60 years old, and graves and burial ground of victims of conflict.

3.2. International principles and policies on graves

Heritage management advocates respect of the sanctity of all graves regardless of their age wherever possible preservation *in situ*. The the **Vermillion Accord on Human Remains** adopted by the **World Archaeological Congress (WAC** at the WAC Inter-Congress in South Dakota (USA) is a code of ethics which urges "*respect for the mortal remains of the dead shall be accorded to all, irrespective of origin, race, religion, nationality, custom and tradition.*

3.3. The National Environmental Management Act (No 107/19998)

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.

3.4. The Burra Charter

The **Burra Charter, the Australia Charter for the Conservation of Places of Cultural Significance** contains generic principles and standards for the protection of heritage resources which have been adopted in heritage practice in South Africa.

4. APROACH AND METHODOLOGY

5.1. Literature Survey

A variety of literature has been researched to support this HIA, especially to understand geography, the cultural sequence and the heritage potential of the area. A heritage impact assessment undertaken on 2 portions of the same property in 2016 has provided useful baseline information:

Rossouw, L 2016. *Phase 1 Heritage Impact Assessment of the farm Rooidam 101 near Windsorton, Northern Cape Province*.

The areas surveyed are shown in the map below (Figure 7).

Apart from scatters of Stone Age artefacts, the following finds are of interet:

(i) A rectangular Stone-walled structure

(ii) Circular Stone-walled Structure

(iii) Foundations remains of a Korana Mission Station

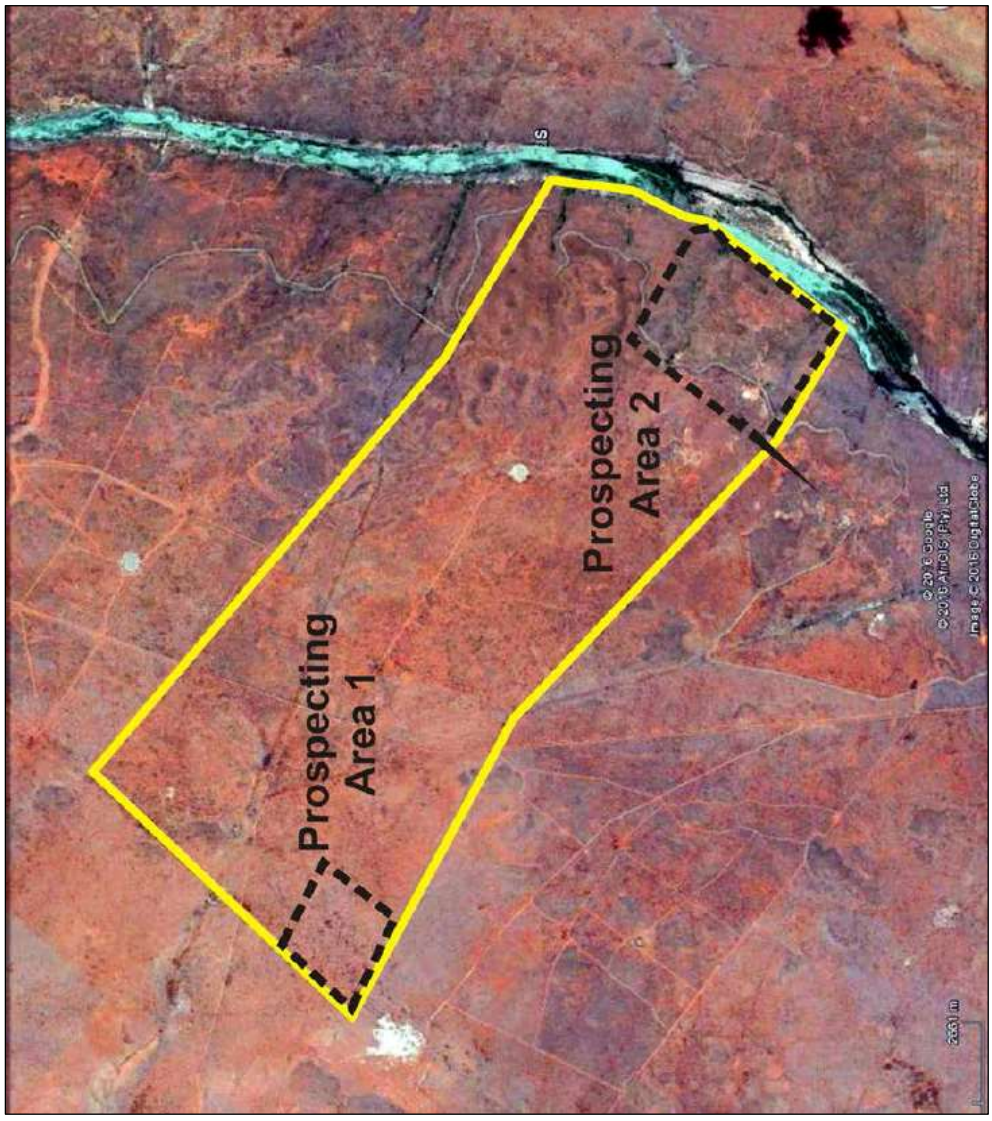

Figure 7: The two portions surveyed in 2016 (Rossouw 2016, p13).

A number of other reports generated through heritage impact assessment studies in the broader area are of pertinent reference:

Fourie, W. 2011. *Concentrated Solar Power EIA - Droogfontein heritage impact assessment.* This survey was carried out near Riverton, 35km to the south of

Rooidam. Low density scatters of Middle Stone Age material were exposed around an existing quarry and dry pans were reported (p3).

Morris 2018: *Proposed construction of a 132kV powerline associated with the Photovoltaic Solar Plants on the Farm Droogfontein, Northern Cape Province: Walk-Down Heritage Impact Survey of the Final Alignment and Tower Positions.* Low density occurrence of stone tools were reported (p15).

Matenga, E. 2019. *Phase I Heritage Impact Assessment (including Palaeontological Desktop Assessment) in terms of section 38 of the National Heritage Resources Act no 25/1999 for the proposed mining permit application on the Remainder of Portion 3 (Bestpan), Portion 14 (Tipperary) and Portion 15 (Annex Tipperary) of the Farm Zoutpansfontein No. 34 in the district of Kimberley.*

This survey was carried out near Riverton on the eastern bank of the Vaal River, 25km south of Rooidam. Scatters of lithics comprising scrapers, blades cores and flakes were recorded. Potsherds were found close to the river bank which may be associated with Later Iron Age settlement in the area. A number of buildings at the farmstead were considered to be of interest due to their age and architectural style.

5.2. Ground Survey

A ground survey was conducted by an archaeologist and field assistant on 23 November 2019. Data was collected by means of walking surveys. To a large extent the surveys were random, but locales seen as promising to yield material were also targeted. It was deemed not necessary to walk through the irrigated fields aware of the grubbing, disturbance of topsoil and removal of stones when the fields were prepared. This notwithstanding, the circular green fields are recognized as a modern cultural landscape.

5.3. Significance ranking of findings

Heritage sites are ranked to show potential risks relative to their cultural significance and the expected impact of the proposed development.

Ranking of Findings

	RANKING	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.	
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.	
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	
4	Low	Heritage sites which have been recorded, but considered of minor value relative to the proposed development.	
		TOTAL	

6. ARCHAEOLOGICAL AND HISTORICAL CONTEXT

6.1. Cultural Sequence Summary

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	Nguni / Sotho/Venda people	Iron Age Farmers	Mfecance / Difaqane
(iii) Colonial period	19th Century	European settlers / farmers / missionaries/ industrialisation	Buildings, Missions, Mines, metals, glass, ceramics

6.2. Appearance of Hominids

The appearance of hominids in the fossil record marks the beginning of the sequence. Hominids were proto-humans which appeared in South Africa more than 3 million years ago. The hominid site nearest to the study area is Taung near Vryburg, 70km to the north. This is a UNESCO World Heritage Site proclaimed together with the Sterkfontein Caves (Krugersdorop) and Makapans Valley (Mokopane) in a serial nomination. No hominid sites have been reported along the Vaal River.

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

The Stone Age dates back more than 2 million years representing a more explicit beginning of the cultural sequence divided into three epochs, the Early, Middle and Late Stone Ages. These early people made stone and bone implements. Material

evidence is found in caves, rock-shelters and on river sides and edges of streams, and very rarely seen in open country. Such tools bore a consistent shape such as the pear-shaped handaxe, cleavers and core tools.[2] These tool industries have been called Oldowan and Acheulian and were probably used to butcher large animals such as elephants, rhinoceros and hippopotamus. Acheulian artefacts are usually found near sites where they were manufactured and thus in close proximity to the raw material or at kill sites. 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 Province has been constructed from many heritage impact assessments that have been conducted in recent years. Early (ESA) and Middle Stone Age (MSA) lithics occur over most of area with a more recent find of Later Stone Age (LSA) occupations.[3] 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.[4]

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

The Middle Stone Age (MSA), appeared 250 000 years ago and 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. By humans had evolved significantly to become anatomically modern. Caves were used for shelter suggesting permanent or semi-permanent settlement. There is archaeological evidence from some of the caves indicating the making of fire.[5]

A number of field surveys have been carried confirming significant hunter gatherer activity in the broader area from the MSA onwards.

[2] Deacon, H.J. & Deacon, J. 1999. Human Beginnings in South Africa: Uncovering the Secrets of the Stone Age. Cape Town: David Philip.
[3] Schalkwyk, J. 2015. Heritage Scoping Assessment for the Proposed Perseus-Kronos 765KV Transmission Power Line and Substations Upgrade, Northern Cape and Free State Provinces, p6.
[4] Humphreys, A.J.B. & Thackeray, A.I. 1983. Ghaap and Gariep. Later Stone Age Studies in the Northern Cape. Cape Town: South African Archaeological Society Monograph Series 2.
[5] Deacon, J & H. Deacon. 1999. Human Beginnings in South Africa. Cape Town: David Philip.

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

By the beginning of the LSA, humans had evolved to Homo sapiens which refer to the modern physical form and thinking capabilities. Several behavioural traits are noticed, 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. Practitioners of rock art were ancestors of the San and sites abound in the whole of Southern Africa.

6.6. Early Iron Age

The Iron Age was a gradual spread or expansion of settlement of different groups of speakers of Bantu languages over a period that could have spanned more than 2 millennia. These communities indigenous to the continent brought with them domestic animals, crops, pottery and metal technology. However there are few if any sites attributed to the EIA in the western parts of the country.[6] Most Iron Age settlements are concentrated in the eastern part of the country. 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. There is however increasing evidence that sheep and probably cattle as well might have moved into the area much earlier than the Iron Age.

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

6.7. The Later Iron Age

The LIA is marked by the presence of extensive stonewalled settlements such as the Tlhaping capital at Dithakong near Kuruman.[7]

6.8. Historical context

The study area is historically home to the Tlhaping segment of the Tswana, who descended from the Iron Age people and probably with roots in the Stone Age. The early 19th century was a political turning point with an increasingly uncertain security situation and internal displacements. The first of these episodes was the Difaqane characterised by inter-tribal raids. During the late 18th and early 19th centuries Griqua herders (people of Coloured stock from the southwest) settled near the confluence of the Vaal and Orange Rivers establishing a town called Klaarwater and subsequently renamed Griquatown. Meanwhile white hunters, traders and missionaries also entered the area. A little later the Afrikaners arrived bringing their stock as part of a mass exodus from the Cape called the Great Trek. The discovery of diamonds at Kimberley sparked the "rush". The area which became known as Griqualand West was subsequently incorporated into the Cape Colony in the 1880s.[8]

6.9. Brief history of Windsorton and the Vaal River diamond diggings

Windsorton is an agricultural service centre, a small town situated on the banks of the Vaal River in the Northern Cape Province of South Africa. It is situated 50km northeast of Barkly West and 40km south-west of Warrenton. It was founded in 1869 as a diamond-diggers' camp. Diamonds were discovered in the river and prospectors flooded the village. At first known as Hebron, it was renamed after P E Windsor who was instrumental in its development. The Khoekhoen name is Chaib, which means "place of the kudu".[9]

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[7] 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.

[8] 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.

[9] Windsorton. Found at: https://www.south-africa-info.co.za/country/town/489/windsorton#:~:text=Geography%20and%20History&text=Windsorton%20was%20founded%20in%201869,was%20instrumental%20in%20its%20development. Consulted November 2020.

The mining of alluvial diamonds in the Vaal River Valley started in 1869 carried out by a party of prospectors from Natal organised by the British Army. As they continued the search for the gemstones along the valley they struck good finds at Klipdrift (Barkly West). These finds sparked South Africa's first diamond rush. Following the news men began to flock from Britain and elsewhere to the new diggings. By April 1871 c. 5000 men had swarmed the Vaal, Modder, and Orange Rivers. The alluvial stones from the region proved to be of high quality. The miners staked claims while the local Griqua chiefs and the Boer Republics of the Transvaal and Orange Free State also joined in the fray. Ownership rights were initially given to local chiefs and Boer Trekkers. But the diggers proclaimed the Klip Drift Republic on 30th July 1870 with Stafford Parker as its elected president. In 1872, the British annexed the diamond fields and proclaimed Griqualand West as a crown state. It was subsequently incorporated into the Cape Colony in 1880. The majority of the prospectors abandoned the various Vaal River claims in the wake of richer finds at Kimberley in 1871. Mining of the river gravels has been going on sparking sporadic rushes over the last nearly one and half centuries.[10]

The above forms the archaeological and historical context for the identification of heritage resources in the study area.

7. FINDINGS OF THE SURVEY

The heritage sensitivity of the property is summarised as follows:

7.1. The Stone Age

The Stone Age yield was far much lower compared to other surveys which have been carried out by the same author in the Vaal-Orange River valleys. However the finding of a hand axe and cleaver together (RDM01) is instructive, as it shows the Early Stone Age origins of the stone tool cultures which became well established in subsequent epochs of the Stone Age, i.e. the Middle and Late State Age. None of the finds warrants further action.

[10] The Barkly West & Vaal River Diggings. Found at: ttp://www.on-the-rand.co.uk/Diamond%20Grounds/Barkly%20West.htm

7.2. The Iron Age

No material dating to the Iron Age was found.

7.3. Historic buildings

Foundations of Koranna mission station and graves (RDM06): The Morija Mission Station was established in 1892 by Heinrich Christian Kalllenberg and abandoned after his death in1901 (Rossouw 2026, p7). As recommended by Rossouw (2016 p8) the graves and structural remains of the Koranna mission station must be fenced off and avoided. In addition a buffer zone of 100m must be maintained around the graves. The stone cattle enclosure (RDM04), which lie a few metres east of the prospecting area must be preserved with 10m buffer zone prescribed.

Table 1: Inventory of heritage sites

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
RDM01	28°14'50.10"S	24°41'56.00"E	MSA/LSA	Flat terrain, scattered thorn bushes. Thin veneer of sandy soil overlying gravel. A hand axe and cleaver.	Medium B	No further action required But finds collectible.
RDM02	28°13'45.50"S	24°40'36.50"E	MSA/LSA	Flat terrain, red brown soils. Scattered acacia bushes. A large scraper.	Medium B	No further action required
RDM03	28°13'59.90"S	24°41'54.00"E	MSA/LSA	Flat terrain, red brown soils. Scattered acacia bushes. A short blade made from chert.	Medium B	No further action required
RDM04	28°15'0.20"S	24°42'25.20"E	MSA/LSA	Two cattle enclosures that appear to have been joined in a tangent. Each enclosure has a small square enclosure appended on the west side (also reported by Rossouw 2016, pp11, 25).	Medium A	Site must be fenced off, 10m buffer maintained around the site
RDM05	28°14'53.60"S	24°42'53.60"E	MSA/LSA	Situated immediately west of the dolerite ridges flanking the Vaal River. Square foundation of a building measuring 4m x 4m.		No further action required
				SITES REPORTED BY ROSSOUW 2020		
RDM06	28°12'47.20"S	24°40'16.40"E	19th C	Graves and remains of the old Morja Mission station (adapted from Rossouw 2016, p19).	High	Site must be fenced off and a 100m buffer maintained around the graves
RDM07	28°13'11.00"S	24°39'26.60"E		Stone Tool Surface Scatter	Medium B	
RDM08	28°15'16.20"	24°42'45.70"E		Rectangular Stone-walled structure	Medium A	Outside the prospecting area

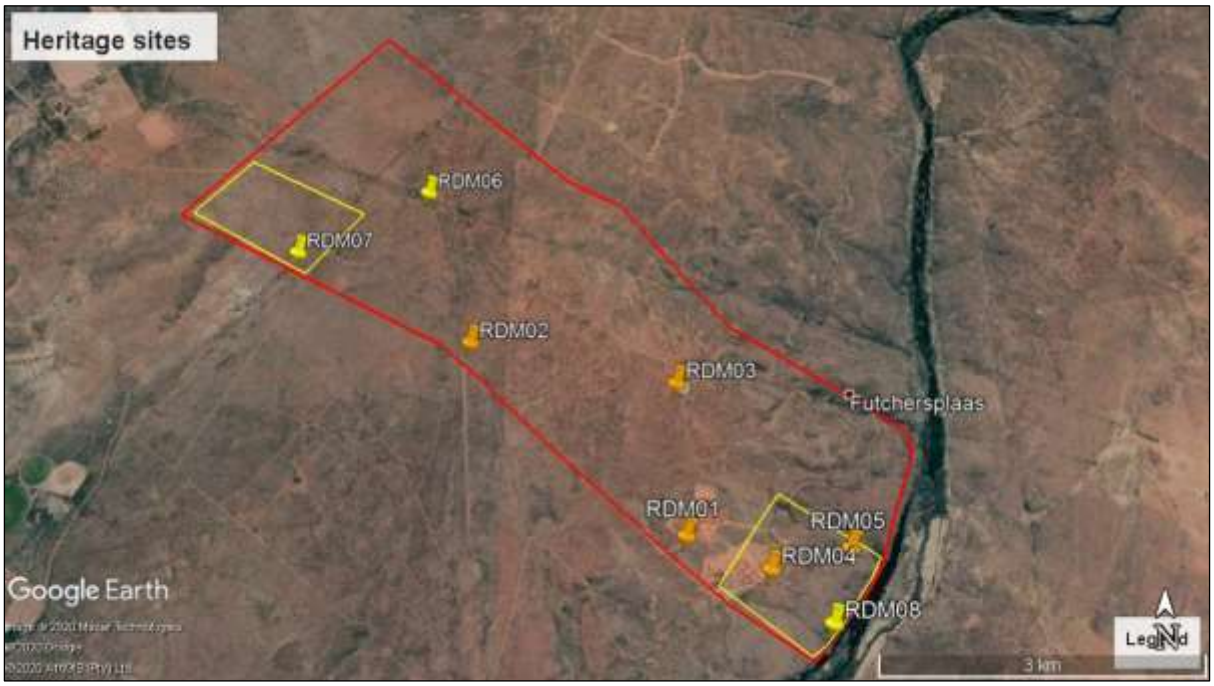

Figure 11: Location of heritage sites.

7.4. Ranking of Findings

	RANKING	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.	1
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. These may be protected at the recommendations of a heritage expert.	2
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	4
4	Low	Heritage sites which have been recorded, but considered of minor value relative to the proposed development.	1
		TOTAL	**8**

7.5. Assessment of Impacts using the Statutory Framework

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

Eight (8) sites were recorded. The remains of Morija mission and the associated burial ground are ranked as highly significant. Two sites with stone walls were recorded in previous work by Rossouw (2016) are important and must be preserved.

(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.

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

The risk ranking is a definition of potential risks based on perceived value of the heritage and potential threats posed by the proposed development. As mentioned the remains of mission church and the graves must be protected a 100m buffer zone prescribed. Although the stonewalled enclosures lie outside the prospecting area, one of the sites is so close to the boundary that it is recommended that it is fenced off and 10m buffer zone maintained.

(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

The Northern Cape Karoo is leveraging extraction of its vast mineral wealth for economic development which is expected to provide unemployment relief for the province in particular and the country as a whole. General improvement in the quality of livelihoods in local communities is expected.

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

The remains of the Morija and graves, and the stone walls have been flagged for protection with servitude restrictions.

(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 as a result of the prospecting activities, the Provincial Heritage Resources Authority or SAHRA will be informed immediately and an archaeologist or heritage expert called to attend.

7.6. 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** No. 25 (1999).
Stage/Phase	Prospecting for minerals (test pits, drilling).
Extent of Impact	Test pits, excavations and ground clearing can result in damage and destruction of archaeological 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	Protect the sites that have been ranked as significant. As a standard procedure, if archaeological or other heritage relics are found during the construction phase, heritage authorities

	will be advised immediately and a heritage specialist will be called to attend.
Level of significance of impacts after mitigation	Low.
Cumulative Impacts	None.
Comments or Discussion	None.

8. RECOMMENDATIONS AND CONCLUSIONS

The mine prospecting application may be given a green light to go ahead with the recommendations heeded to avoid the sites which have been identified for protection. As a standard procedure, in the event of other heritage resources being discovered in future phases of the project, the Provincial Heritage Resources Authority or SAHRA must be alerted immediately and an archaeologist or heritage expert called to attend.

9. CATALOGUE OF HERITAGE SITES

SITE NO	COORDINATES		PERIOD
RDM01	28°14'50.10"S	24°41'56.00"E	MSA/LSA

DESCRIPTION: Flat terrain, scattered thorn bushes. Thin veneer of sandy soil overlying gravel. A hand axe and cleaver.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the ESA.
MITIGATION	No further action required. But finds collectible.

SITE NO	COORDINATES		PERIOD
RDM04	28°13'45.50"S	24°40'36.50"E	MSA/LSA

DESCRIPTION: Flat terrain, red brown soils. Scattered acacia bushes. A large scraper.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
RDM03	28°13'59.90"S	24°41'54.00"E	MSA/LSA

DESCRIPTION: Flat terrain, red brown soils. Scattered acacia bushes. A short blade made from chert.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
RDM04	28°15'0.20"S	24°42'25.20"E	MSA/LSA

DESCRIPTION: Two cattle enclosures that appear to have been joined in a tangent. Each enclosure has a small square enclosure appended on the west side (also reported by Rossouw 2016, pp11, 25).

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
RDM05	28°14'53.60"S	24°42'53.60"E	MSA/LSA

DESCRIPTION: Situated immediately west of the dolerite ridges flanking the Vaal River. Square foundation of a building measuring 4m x 4m.	
HERITAGE SIGNIFICANCE	Early modern mining period.
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
RDM06	28°12'47.20"S	24°40'16.40"E	19th Century

DESCRIPTION: Graves and remains of the old Morija Mission station (adapted from Rossouw 2016, p19).

HERITAGE SIGNIFICANCE	Associational links with the pioneering work of mission churches.
MITIGATION	Site must be fenced off and a 100m buffer maintained around the graves.

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11. ACKNOWLEDGEMENT

Mr Nathaniel Matlhodi of Rooidam Plaas (Pty) guided us around the property.