Phase 1 Heritage Impact Assessment Requested in Terms of Section 38 of the National Heritage Resources Act No 25/1999 for the Proposed Prospecting and Mining Right on the Farm Gamolilo 72 near Kuruman, Northern Cape Province

Prepared by

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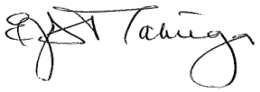
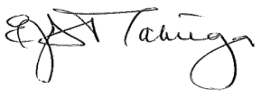
FIELD WORK & REPORT	E. Matenga		26/01/2020

DECLARATION OF INDEPENDENCE

AHSA (Pty) Ltd is an independent consultancy: I 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 study was undertaken in terms of Section 38(8) of the National Heritage Resources Act (No 25 of 1999) for a prospecting and mining right application on the farm Gamolilo 72 in the vicinity of Tsineng Village, 60 km from Kuruman in the Joe Morolong Local Municipality, Northern Cape Province. A ground survey was conducted between 11 and 14 January 2020 for the identification and documentation of archaeological and historical material that might occur on the property.

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

3. *Stone Age*

Background scatters of lithics comprising scrapers, blades cores and flakes were recorded in twenty-one (21) places (sites) dating from the Early Stone Age (GAM18) through the Middle Stone Age to the Late Stone Age. Finds appear to be widely distributed throughout the property despite their low density. A cleaver was rated of high value (GAM18). The rock engravings (petroglyphs) (GAM20) must be protected with a 200 m buffer zone reserved around the site. A Museum or University may be approached to conduct further research to ascertain whether there are other engravings in the vicinity.

4. *The Iron Age*

No sites or relics dating to the Iron Age were recorded.

5. *Historic structures*

The farmhouse (GAM10) contributes to landscape elements associated modern commercial farming. The farmhouse and perimeter wall will not be affected by the proposed development.

6. *Burial grounds*

No graves or burial grounds were found on the property.

7. Heritage sites

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
GAM01	27° 1'42.50"S	23° 4'50.50"E	MSA/LSA	Flat area on the east side of an ironstone ridge, dense red-brown grit. Scattered bushes including black thorn. 1 lithic – core.	Medium B	No further action required
GAM02	27° 1'47.20"S	23° 4'35.50"E		Dense red-brown grit on the eastern slope of an ironstone ridge. Scattered bushes including black thorn. 3 lithics – 2 cores and blade.	Medium B	No further action required
GAM03	27° 1'40.80"S	23° 4'32.00"E		Dense red-brown grit on the eastern slope of an ironstone ridge. Scattered bushes including black thorn. 2 lithics Core and a flake.	Medium B	No further action required
GAM04	27° 1'28.40"S	23° 5'3.70"E		Flat area with calcrete waste and hardpan. Scattered bushes including black thorn. 5 lithics – 1 core, 1 scraper, 1 blade and flakes.	Medium B	No further action required
GAM05	27° 1'31.30"S	23° 5'10.50"E	MSA/LSA	Flat area with clacrete waste. Scattered acacia trees including black thorn. 1 core and flakes.	Medium B	No further action required
GAMO6	27° 1'42.70"S	MSA/LSA	MSA/LSA	Flat area with clacrete waste and hardpan. Scattered acacia trees including black thorn. 5 lithics - 1 scraper and flakes.	Medium B	No further action required
GAM07	27° 1'47.10"S	MSA/LSA	MSA/LSA	A low minor calcrete ridge. Dense stand of black thorn. 3 lithics – 1 blade, 1 scraper and flake.	Medium B	No further action required
GAM08	27° 1'49.40"S	MSA/LSA	MSA/LSA	Flat area, sparse grit, black thorn. 1 obsidian scraper.	Medium B	No further action required
GAM09	27° 1'7.43"S	23° 4'37.58"E	Modern	Farmstead with several structures including a small gabled building of dressed ironstone bricks and mortar, and corrugated iron sheet roofing. The remains of a much larger building of the same fabric.	Medium B	No further action required

GAM10	26°59'48.16"S	23° 4'32.59"E	MSA/LSA	Farmstead in the midst of an extensive calcrete plain. Derelict farmhouse had veranda on 2 sides, hipped roof of corrugated iron sheets. A low perimeter wall of mortar bound ironstone	Medium B	The buildings will not be affected
GAM11	27° 0'13.00"S	23° 3'5.10"E	Modern	Watering point on the western foot of an ironstone ridge.	Medium B	No further action required
GAM12	27° 0'18.40"S	23° 3'0.80"E	MSA/LSA	Flat area, red-brown grit. Scattered bushes. Core and scraper.	Medium B	No further action required
GAM13	27° 0'26.10"S	23° 2'59.60"E	MSA/LSA	Flat area, sandy loam with a few stones. Scattered bushes. 6 lithics – 1 core, 1 scraper and flakes	Medium B	No further action required
GAM14	27° 0'27.20"S	23° 3'5.40"E	MSA/LSA	Flat open area surrounded by bushes. Scatter of lithics (13) – 3 scrapers, 3 blades and flake waste.	Medium B	No further action required
GAM15	27° 0'26.20"S	23° 3'10.10"E	MSA/LSA	Flat area with bushes including black thorn. 8 lithics – 3 blades, 2 scrapers and flakes.	Medium B	No further action required
GAM16	26°59'56.80"S	23° 3'7.70"E	MSA/LSA	Flat area, gritty, scattered bushes. 3 lithics – core, blade and flake.	Medium B	No further action required
GAM17	26°58'21.2"S	023°03'35.7"E	MSA/LSA	Saddle or slope on a ridge. 1 core	Medium B	No further action required
GAM18	26°58'18.9"S	023°03'37.3"E	MSA/LSA	Saddle or slope on a ridge. 3 lithics – 2 scrapers and a cleaver	Medium B	No further action required
GAM19	26°58'6.50"S	23° 4'3.30"E	MSA/LSA	Eastern foot of ironstone ridge. Scattered bushes (black thorn). Obsidian flake	Medium B	No further action required
GAM20	26°58'1.20"S	23° 4'4.20"E	MSA/LSA	Flat area near the eastern base of an ironstone ridge. Rock engravings representing circles or a labyrinth.	High	Site to be protected, 200 m buffer
GAM21	26°58'22.10"S	23° 4'22.90"E	MSA/LSA	Flat area east of an ironstone ridge. Scattered bushes including black thorn. I blade.	Medium B	No further action required

GAM22	26°59'13.40"S	23° 4'31.50"E	MSA/LSA	Flat area east of an ironstone ridge. Red-brown grit. Scattered bushes including black thorn. 3 lithics – 1 core, 1 blade and flake.	Medium B	No further action required

8. 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. These may be protected at the recommendations of a heritage expert.	1 (Engravings)
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	21
4	Low	Heritage sites which have been recorded, but considered of minor value relative to the proposed development.	0
		TOTAL	**22**

9. Recommendations and conclusions

The prospecting and mining right application can be considered with guarantees given that the rock engravings are protected with the proposed 200 m buffer zone enforced. A standard proviso is that 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.

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]

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.

[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.

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

This document is a heritage impact assessment study undertaken in terms of Section 38(8) of the National Heritage Resources Act (No 25 of 1999) for a prospecting and mining right application on the farm Gamolilo 72 in the Joe Morolong Local Municipality, Northern Cape Province. The property is situated 60 km northwest of Kuruman. A ground survey was conducted from 11 to 14 January 2020 for the identification and documentation of any archaeological and historical material that might occur on the property.

1.1. Nature of Development

Prospecting for mining is planned on the farm Gamolilo 72, the target minerals of which are iron, manganese and lime. Prospecting may entail excavation of test pits and drilling. Physical works will be escalated during the mining phase and since the mode of extraction is opencast, surface impacts are inevitable including arising from the following activities:

- Excavation of quarries for the extraction of the mineral ores,
- Ground clearing for the placement of mine plant, site offices and related infrastructure,
- Road development, and
- Stockpiling (topsoil and discards).

Heritage resources may be disturbed or destroyed as a result of such operations and infrastructure development. The requirement to protect heritage resources likely to be affected by such activities is enacted in Section 38 of the National Heritage Resources Act calling for a Heritage Impact Assessment to inform decisions to mitigate potentially harmful impacts.

1.2. Location and Physical setting

The property is situated 60 km northwest of Kuruman (Figures 1-2). Topography is generally flat; the only prominent feature is an ironstone ridge which trends north-south and can be seen as a low rise backdrop on the western limits of the farm (Figure 3). The ironstone ridge is associated with banded ironstone and a scree of red-brown stones spread on the slopes and base (Figures 4-5). The other key

features of geology are extensive calcrete waste and occasional exposures of the underlying calcrete hardpan (Figure 6). A large portion of the farm has high density *swarthaak* (black thorn) vegetation - *Acacia mellifera subsp. Detinens* (Figure 7).

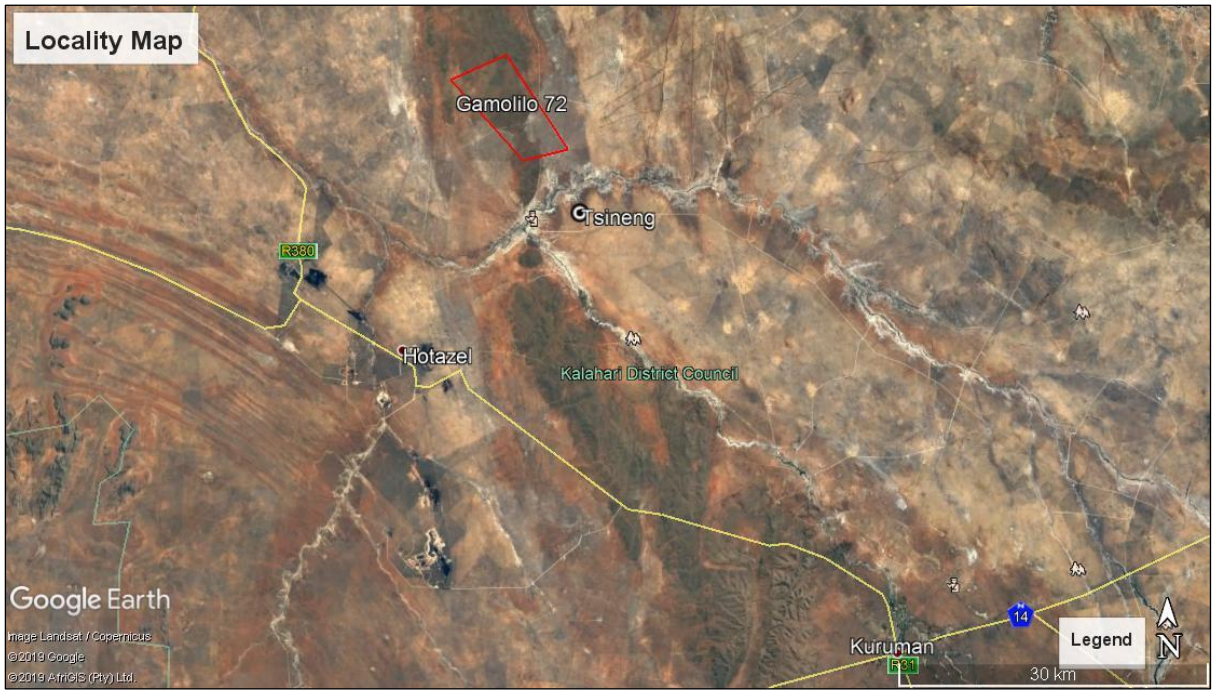
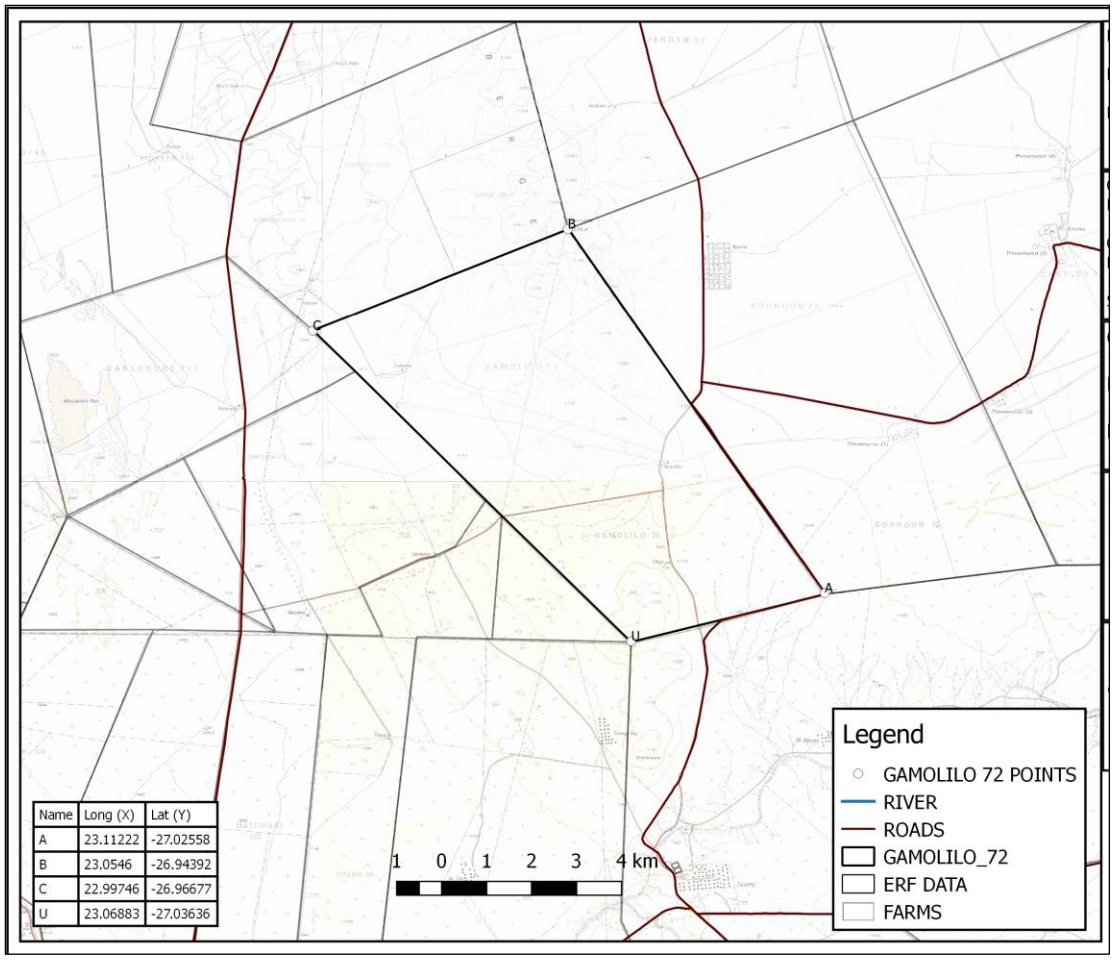


Figure 1: Google-Earth map shows the location of the farm Gamolilo 72 near Tsineng Village and north of the mining town of Hotazel



Name	Long (X)	Lat (Y)
A	23.11222	-27.02558
B	23.0546	-26.94392
C	22.99746	-26.96677
U	23.06883	-27.03636

Figure 2: Map of the farm Gamolilo 72 (supplied by the client)

Figure 3: Part of the Ironstone ridge in a north-central part of the farm

Figure 4: Exposure of banded ironstone on the eastern slope of the ironstone ridge

Figure 5: Ironstone waste (grit) on the base of the ridge

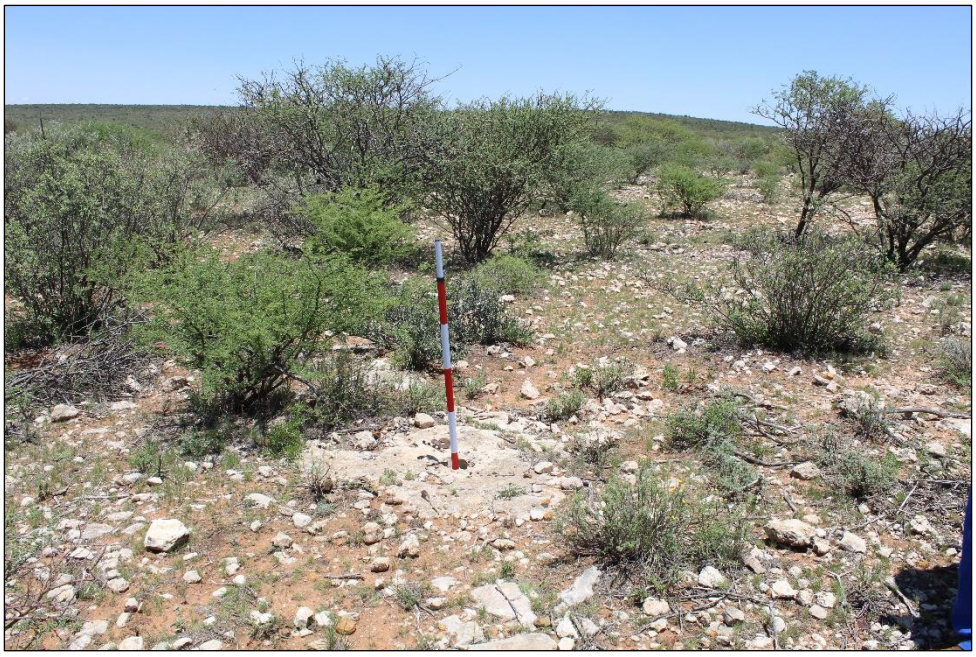


Figure 6: Calcrete waste on a south-central part of the property

Figure 7: Ironstone on the western limits of the farm Gamolilo 72

2. LEGAL FRAMEWORK

This heritage impact assessment fulfils an onus placed on developers to safeguard heritage resources. This obligation is legislated under Sections 34, 35, 36 and 38 of the National Heritage Resources Act (No 25 of 1999), the legal context in which this HIA report has been prepared.

2.1. Section 38 of National Heritage Resources Act on 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 m^2 in extent[2];*** *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 m^2 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. Definition of heritage (National Estate)

Section 3 lists a wide range of cultural phenomena which could be defined as heritage, or the *National Estate* (3(2)). Section 3(3) outlines criteria upon which

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

heritage value is ascribed. This Section is useful as a field checklist for the identification of heritage resources.

2.3. 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.

2.4. 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;

(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.

2.5. 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.

2.6. The National Environmental Management Act

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.

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

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. APPROACH AND METHODOLOGY

3.1. Literature Survey

A literature survey is undertaken to provide background information on the property as it relates to geography, the cultural sequence and known heritage potential of the area. A number of reports generated through heritage impact assessment studies in the broader area have been researched. In 2015/16 this author carried out a ground survey on three farms in the vicinity of Olifantshoek and Postmasburg c. 100 km and 130 km respectively to the south of the present study.

Matenga, E. 2020. *Phase I heritage impact assessment (including palaeontological desk assessment) in terms of Section 38 of the National Heritage Resources Act No*

25/1999 for the proposed prospecting and mining right on the Farms Titanic 773 and Gasesa 272 near Kuruman, Northern Cape Province

Matenga, E. 2015: *Heritage Impact Assessment requested in terms of Section 38 of the National Heritage Resources Act No 25/1999 for the proposed mine prospecting on 3 farms:- Thaba Letsele 643 and Makukukwe 522 near Olifantshoek, and Plaas 503 near Postmasburg in the Northern Cape Province*

Matenga, E. 2016. *Heritage impact assessment requested in terms of section 38 of the national heritage resources act no 25/1999 for the proposed mine prospecting on remaining portion of the farm Jacobsfontein (Plaas 503 / Werda) near Postmasburg in the Northern Cape Province*

All the above studies revealed a significant footprint of hunter-gatherer foraging activities dating from the Early Stone Age through the Middle Stone Age to the Late Stone Age represented by scatters of stone tools (scrapers, cores, blades and flakes).

Many specialists have worked in the area, including the following:
Fourie, W (PGS). 2017. *Heritage Impact Assessment for the Proposed New Kathu Cemetery on parts of the Remainder of the Farm Lyleveld 545 on the southern side of the town of Kathu in the Gamagara Local Municipality, Northern Cape.* Occurrence of low density scatters or single artefacts is consistent with what has been observed by other researchers (page 34).

Kusel, U. 2018**.** *East Manganese: Phase 1 Heritage Impact Assessment on the farm East 270 (Portion 1 & Re) within the John Taolo Gaetsewe District Municipality, Northern Cape.* The findings are significant in being 10 km southwest of the present study. Stone tools were found in the vicinity of the Ga-Mogara River (a tributary of the Matlhwaring, the latter flows through the property of the present study). The lithics represented all three periods of the Stone Age with a few cutting tools typical of the Early Stone Age (ESA). A majority of lithics such as blades, a knife (exhibiting secondary trimming or retouch), and triangular flakes are typical of the Middle Stone Age (pp. 22-23).

Kaplan, J. 2014. *Heritage impact assessment for the proposed mixed use development in Kathu, Northern Cape Province: Remainder & Portion 1 of the Farm Sims 462, Kuruman RD.* Most of the material recorded was made from ironstone representing chunks and flakes. A single occurrence of a chalcedony blade was also significant (pp. 12-14).

On a more general note, many studies in support of Heritage Impact Assessments in the broader area have recorded occurrences of artifacts dating from the Early Stone Age (ESA) through the Middle Stone Age (MSA) to the Late Stone Age (LSA), with a majority falling under the MSA/LSA periods. Generally finds occur as scatters of scrapers, blades and cores while concentrated finds evidencing manufacturing sites or settlements are rare.

3.2. Ground Survey

Data was collected by means of walking surveys, largely random, but also targeting spots seen as likely to yield material. Given the large size of the property a vehicle was used to move from one target area to the next in order to collect data samples from various areas on the farm.

3.3. Significance ranking of findings

Heritage sites have been ranked to show potential risks relative to their cultural significance.

	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. These may be protected at the recommendations of a heritage expert.	
3	Medium B	Sites exhibiting archaeological characteristics of the area, unless otherwise recommended no further action is warranted after they have been documented.	
4	Low	Heritage sites which have been recorded, but considered of minor value relative to the proposed development.	

		TOTAL	

3.1. Limitations of the study

Extensive, thick and almost impenetrable *swarthaak* (black thorn) vegetation in the southern part of the farm and isolated areas in other parts of the farm.

4. ARCHAEOLOGICAL AND HISTORICAL CONTEXT

An outline of the cultural sequence in South Africa provides context for identification of heritage resources in the area of study. The sequence spans nearly 4.4 million years beginning with the appearance of Hominids. The major epochs are presented in the following Table

Table 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

4.1. Appearance of Hominids

Hominid or proto-humans appeared in South Africa more than 3 million years ago. They were primate species which are the immediate ancestors of man. Hominid sites and their fossil remains are largely confined to dolomite caves on the highveld in Gauteng, Limpopo and Northwest Provinces.[3]

To my knowledge the nearest hominid site is at Taung near Vryburg (180 km to the southeast).This site is inscribed on the UNESCO World Heritage Site in a serial nomination with the Sterkfontein (Krugersdorop) and Makapans Valley (Mokopane).
The preservation of hominid may be a function of geology and in the South African context these are almost always found in association with limestone deposits.

4.2. The Stone Age

The Stone Age dates back more than 1 million years, and is seen as the beginning of more definitive features of the cultural sequence divided into three epochs, the Early, Middle and Late Stone Ages. Stone and bone implements manifest the technology of the time and fall into distinct typologies indicating chronological development. Material evidence of human activities has been found in caves, rock-shelters and riverside sites, and very rarely seen in open country. The Late Stone Age is also associated with the execution of paintings mostly in rock shelters and caves.

4.2.1. The Early Stone Age [1.4 million – 100 000 yrs BP]

The Early Stone Age marks the earliest appearance of stone artefacts about 1.4 million years ago. The pear-shaped hand-axe, cleavers and cores are archetypal artifacts (Deacon & Deacon, 1999). These tools, which have been called Acheulian after a site in France, were probably used to cut up 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 butchering sites. The early hunters are classified as hominids or proto-humans, meaning that they had not evolved to the present human form. A number of occurrences of ESA tools have been recorded by this author and other researchers along the Orange River.

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

4.2.2. Middle Stone Age (MSA) [200 000 yrs – 30 000 yrs BP]

The Middle Stone Age (MSA), which appeared 200 000 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 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. These were two remarkable steps in human cultural advancement.[4]

4.2.3. Later Stone Age (LSA)[40 000 yrs to ca 2000 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. The practitioners of rock art are definitely the ancestors of the San and sites abound in the whole of Southern Africa. 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.

Stone Age tools of the Middle to Late Stone Age continuum are prevalent in a broader are stretching from the banks of the Vaal and Orange in the south to Kuruman in the north. Rock paintings have been documented at Inglesby Farm near Olifantshoek.[5] A picture is gradually crystalizing of the extent of rock engravings on exposures of dolomite and in some cases glaciated surfaces along the Vaal and Orang River Valleys. There is evidence of ancient mining of specularite around

[4] Deacon, J & H. Deacon. 1999. *Human Beginnings in South Africa*. Cape Town: David Philip.
[5] Dreyer, Corbus. 2014. Ibid: 11

Postmasburg worked by the Khoisan and Tswana from the Middle Stone Age through to the Iron Age.[6]

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

The Iron Age culture superseded the Stone Age at around 2000 years ago. The introduction of farming, metal technology and pottery appears to happen at the same time. A dominant school of thought has postulated a sudden synchronized appearance of these cultural traits in South Africa, indeed in the whole region of Eastern and Southern Africa, suggesting a fairly rapid movement of people which has been associated with speakers of Bantu languages.[7] The migration theory and its timeframe is of questionable merit in view of the fact these people are indigenous to the continent. As the theory becomes increasingly untenable, a gradual "expansion" model is preferred (rather than migration in the strict sense). In the southern part of the continent these people may have coexisted and intermingled with Khoisan communities for a long time, the cultural encounters producing the hybrid people and languages found in the area today.

4.3.1. Early Iron Age

Metal working was a new technology not possessed by the Stone Age hunters. As mixed farmers, iron-using peoples practiced agriculture and kept domestic animals such as cattle, sheep, goat and chicken amongst others. However, there is increasing evidence that sheep and cattle might have been in the area with the Khoikhoi much earlier than the introduction of metals.

In the migration theory (Huffman 2007) two streams converge 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) (Figure 8).

[6] http://www.southafrica.org.za/south-africa-travel-postmasburg.html.
Beaumont, Peter. 2007. Phase 1 Heritage Impact Assessment Report on the Farm Portions Potentially Affected by a Proposed Direct Rail Link between the Sishen South Mine near Postmasburg and the Sishen - Saldanha line, Siyanda District Municipality, Northern Cape Province.

[7] Phillipson, D. W. 2005. *African Archaeology*. Cambridge: University of Cambridge Press: 249.

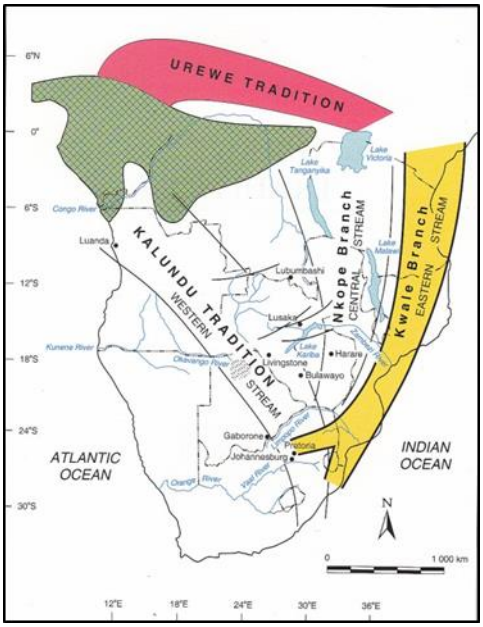


Figure 8: Postulated spread of the Bantu into Eastern and Southern Africa (Huffman 2007: 122)

Although no sites in the western parts of country have been explicitly linked with the Early Iron Age one cannot rule out possible transhumant pastoralism / seasonal hunting camps in the western regions from early in the Iron Age.

4.3.2. The Later Iron Age

The LIA is marked by the presence of extensive stonewalled settlements such as the Tlhaping capital at Dithakong near Kuruman.[8]

4.4. Precolonial historical context

The area under study falls within the south-western frontier of the Tswana, specifically the Tlhaping (around the confluence of the Vaal and Orange Rivers) and the Tlaro subgroups in the region of Kuruman and Olifantshoek. The interface between the Later Iron Age with the Tswana is a grey area in terms of the existing state of research. For now we can postulate that they are descendants of LIA farming communities.

[8] 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

4.5. The Mfecane/Difaqane Upheavals

In the 1820s Tshaka's unification wars on the eastern seaboard, what became Zululand, set in motion a series of migrations, north, south and west onto the South African highveld. The Ngwane under Matiwane wreaked havoc with several groups on the southern highveld. The Ndebele of Mzilikazi penetrated the central highveld causing displacement of Sotho and Tswana groups living there. As the security situation deteriorated, Sotho segments under Sebitoane and Mantatisi drifted out of the Plateau settling on the upper Zambezi flood plains; while Mzilikazi was also subsequently forced to leave the area after bloody fights with the Afrikaners in 1837, taking with him assimilated elements of the Sotho and Tswana.[9]

The story of the Difaqane is not complete without mentioning Manthatisi, the queen of the Batlokwa. Born in the area that later became Harrismith, she married the chief of the Batlokwa, in a dynastic alliance, and had borne him four sons. The chief died while his son and heir, Sekonyela, was still too young to assume the chieftaincy, so Manthatisi, his mother acted as regent for Sekonyela and ultimately assumed the throne. At the time in the 1820s the Batlokwa were facing military encroachments by AmaHlubi (led by Mpangazitha) and AmaNgwane (led by Matiwane) who were fleeing attacks by the Zulu. Manthatisi commanded the Batlokwa into the Caledon valley, causing further displacements and leaving a trail of destruction and devastation. The war trail covered a large part of southern plateau (Free State) and extended as far as Kuruman (Northern Cape) and Botswana. Manthatisi's army was estimated to contain 40 000 fighters. Her victory run ended in the Battle of Dithakong near Kuruman when, on 23 June 1823, she suffered a massive defeat which was recorded in the diaries of the missionary Robert Moffat.[10]

[9] Muller, C. F. J. 1986. *Five Hundred Years: A History of South Africa.* 5th Edition. Pretoria:
Rasmussen, R. K. 1977. *Mzilikazi of the Ndebele. African Historical Biographies*. London: Heinemann
[10] Mmanthatisi. Found at: https://en.wikipedia.org/wiki/Mmanthatisi#Defeat_and_subsequent_wins

4.6. The European Contact Period

4.6.1. Missionaries and explorers

At the beginning of the 19th century the German explorer Martin Henrich Carl Lichtenstein travelled through the general vicinity of the study area. Crossing the Orange River near present-day Prieska, Lichtenstein's party visited present-day Daniëlskuil, and by June 1805 they were at Blinkklip (Postmasburg), famous for its specularite mines. The party trekked further north and reached the Kuruman River in the middle of Tswana communities.

The explorer William John Burchell travelled through the area in 1811 followed by John Campbell in 1813. During 1813 John Campbell of the London Missionary Society also visited the general vicinity of the study area. He passed through Postmasburg on the way to Kuruman (Fourie 2018: 28).

The London Missionary Society established at Kuruman in 1817 under the tutelage of Robert Moffat. The spot was chosen for its abundant water supply issuing from a spring. The remains of the old mission are treasured heritage, the bicentenary of which was marked on 2017 (Figure 9). Moffat struck a cordial relationship with Mzilikazi in spite of the notorious reputation of the Matabele had earned as marauders. The culmination of this friendship was the establishment years later of a mission station at Inyathi (near present day Bulawayo, Zimbabwe) in Mzilikazi's new territory north of the Limpopo River. The famous Scottish Doctor and explorer, David Livingstone, credited with the discovery of the Victoria Falls in 1855 also passed through Moffat's Mission at Kuruman The missionary episode is seen as a prelude to expansion of the colonial frontier from the Cape.

Figure 9: The entrance to Moffat's Mission on the outskirts of Kuruman

4.6.2. Colonial occupation and African resistance

One of the important triggers of European interest in the area was the discovery of diamonds at Kimberley in 1867. With increasing mining activity at Kimberley, the British annexed Griqualand West in 1871, its northern boundary set 30km south of present day Olifantshoek.

In 1878 there was a revolt against the British in Griqualand West which spread beyond into the Oilfantshoek area. The British sent a force under Sir Charles Warren to put down the revolt,

Between 1881 and 1883 the Tlaro and Tlhaping mounted resistance against Boer encroachment. In the ensuing fights the Boers prevailed leading to the establishment of the Republics of Stellaland and Goosen. These state systems were however short-lived as the British annexed the two Republics two years later and declared Bechuanaland (land of the Tswana) as a crown land. In 1895 Bechuanaland was incorporated into the Cape Colony.

4.6.3. The Langberg Rebellion 1896-7

Mounting anger among the Tlhaping and Tlaro over the confiscation of land, confinement to reserves and continued demands for land at the expense of the reserves led to rebellion. The outbreak of the bovine disease, rinderpest in many parts of southern Africa provided the ignition. Demand by the British that the Tlaro put down their horses to contain the epidemic was interpreted as sabotage in preparation for war.[11] Chief Toto Makgolokwe of the Tlaro led his people into war and made a good account by defeating British Forces in one of the encounters which lasted 8 months.[12] (Figure 11). British war graves on a farm west of Olifantshoek are a tourist attraction. The farms Langkloof, Inglesby, Lukin, Gamayana, Puduhush, Toto, Luka and Hopkins west of Olifantshoek are named after major role players in the Langberg Rebellion[13] (Makukukwe Farm is on the western fringe of this area). However the identification of specific sites connected with the war is yet to be conducted.

The British forces eventually captured Toto Makgolokwe and his son Phemelo together with King (kgosi) Galeshewe who had sheltered in the area. Toto and his son were taken prisoners to Robben Island; Toto died there.

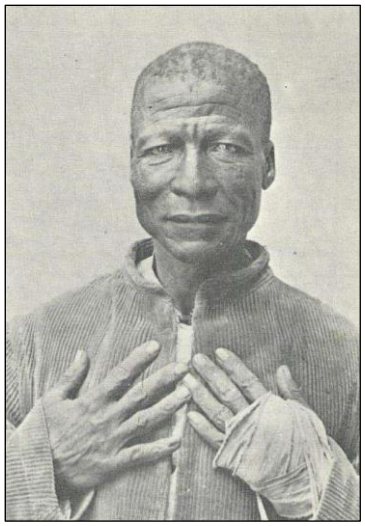


Figure 10: Toto, leader of the Tlaro (From Fourie, 2018: 34)

[11] Information provided by Mr Rean Van De Luytgaarden, Owner of Elephant Rock Inn, Oilfantshoek.
[12] http://en.wikipedia.org/wiki/Toto_Makgolokwe
[13] Corbus Dreyer, 2014. First Phase Archaeological & Heritage Investigation of the Proposed Mine Prospecting at the Remaining Extent of the Farm Inglesby 580 near Olifantshoek, Northern Cape Province

The above is the framework for identifying heritage resources in the area.

5. FINDINGS OF THE SURVEY

The heritage sensitivity of the property is summarised as follows:

5.1. Stone Age

Background scatters of lithics comprising scrapers, blades cores and flakes were recorded in twenty-one (21) locales (sites) dating from the Early Stone Age (GAM18) through the Middle Stone Age to the Late Stone Age. Finds appear to be widely distributed throughout the property despite their low density. The cleaver was rated of high value (GAM18). The rock engravings (petroglyphs) (GAM20) fall into a special category of sites, generally rare, with quite a number of sites having been recorded in the Northern Cape, especially in vicinity of the Vaal and Orange Rivers. This site must be protected with a 200 m buffer. A Museum or University may be approached to conduct further research to ascertain whether there are no other engravings in the vicinity.

The Iron Age

No sites or relics dating to the Iron Age were recorded.

5.2. Historic structures

The farmhouse (GAM10) contributes to the landscape elements associated commercial farming. The building will not be affected by the proposed development.

5.3. Burial grounds

No graves or burial grounds were reported on the property.

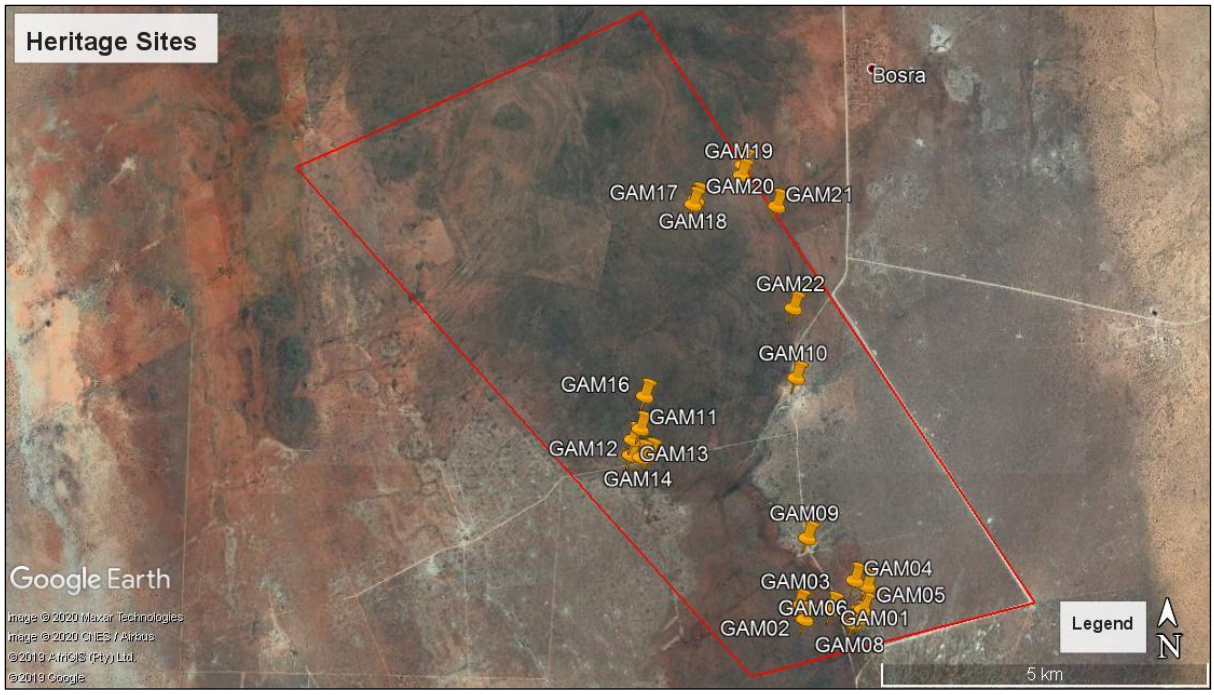


Figure 11: Google Earth Map shows the location of finds (sites).

Table 1: Heritage sites

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
GAM01	27° 1'42.50"S	23° 4'50.50"E	MSA/LSA	Flat area on the east side of an ironstone ridge, dense red-brown grit. Scattered bushes including black thorn. 1 lithic – core.	Medium B	No further action required
GAM02	27° 1'47.20"S	23° 4'35.50"E		Dense red-brown grit on the eastern slope of an ironstone ridge. Scattered bushes including black thorn. 3 lithics – 2 cores and blade.	Medium B	No further action required
GAM03	27° 1'40.80"S	23° 4'32.00"E		Dense red-brown grit on the eastern slope of an ironstone ridge. Scattered bushes including black thorn. 2 lithics Core and a flake.	Medium B	No further action required
GAM04	27° 1'28.40"S	23° 5'3.70"E		Flat area with calcrete waste and hardpan. Scattered bushes including black thorn. 5 lithics – 1 core, 1 scraper, 1 blade and flakes.	Medium B	No further action required
GAM05	27° 1'31.30"S	23° 5'10.50"E	MSA/LSA	Flat area with clacrete waste. Scattered acacia trees including black thorn. 1 core and flakes.	Medium B	No further action required
GAMO6	27° 1'42.70"S	MSA/LSA	MSA/LSA	Flat area with clacrete waste and hardpan. Scattered acacia trees including black thorn. 5 lithics - 1 scraper and flakes.	Medium B	No further action required
GAM07	27° 1'47.10"S	MSA/LSA	MSA/LSA	A low minor calcrete ridge. Dense stand of black thorn. 3 lithics – 1 blade, 1 scraper and flake.	Medium B	No further action required
GAM08	27° 1'49.40"S	MSA/LSA	MSA/LSA	Flat area, sparse grit, black thorn. 1 obsidian scraper.	Medium B	No further action required
GAM09	27° 1'7.43"S	23° 4'37.58"E	Modern	Farmstead with several structures including a small gabled building of dressed ironstone bricks and mortar, and corrugated iron sheet roofing. The remains of a much larger building of the same fabric.	Medium B	No further action required

GAM10	26°59'48.16"S	23° 4'32.59"E	MSA/LSA	Farmstead in the midst of an extensive calcrete plain. Derelict farmhouse had veranda on 2 sides, hipped roof of corrugated iron sheets. A low perimeter wall of mortar bound ironstone	Medium B	The buildings will not be affected
GAM11	27° 0'13.00"S	23° 3'5.10"E	Modern	Watering point on the western foot of an ironstone ridge.	Medium B	No further action required
GAM12	27° 0'18.40"S	23° 3'0.80"E	MSA/LSA	Flat area, red-brown grit. Scattered bushes. Core and scraper.	Medium B	No further action required
GAM13	27° 0'26.10"S	23° 2'59.60"E	MSA/LSA	Flat area, sandy loam with a few stones. Scattered bushes. 6 lithics – 1 core, 1 scraper and flakes	Medium B	No further action required
GAM14	27° 0'27.20"S	23° 3'5.40"E	MSA/LSA	Flat open area surrounded by bushes. Scatter of lithics (13) – 3 scrapers, 3 blades and flake waste.	Medium B	No further action required
GAM15	27° 0'26.20"S	23° 3'10.10"E	MSA/LSA	Flat area with bushes including black thorn. 8 lithics – 3 blades, 2 scrapers and flakes.	Medium B	No further action required
GAM16	26°59'56.80"S	23° 3'7.70"E	MSA/LSA	Flat area, gritty, scattered bushes. 3 lithics – core, blade and flake.	Medium B	No further action required
GAM17	26°58'21.2"S	023°03'35.7"E	MSA/LSA	Saddle or slope on a ridge. 1 core	Medium B	No further action required
GAM18	26°58'18.9"S	023°03'37.3"E	MSA/LSA	Saddle or slope on a ridge. 3 lithics – 2 scrapers and a cleaver	Medium B	No further action required
GAM19	26°58'6.50"S	23° 4'3.30"E	MSA/LSA	Eastern foot of ironstone ridge. Scattered bushes (black thorn). Obsidian flake	Medium B	No further action required
GAM20	26°58'1.20"S	23° 4'4.20"E	MSA/LSA	Flat area near the eastern base of an ironstone ridge. Rock engravings representing circles or a labyrinth.	High	Site to be protected, 200 m buffer
GAM21	26°58'22.10"S	23° 4'22.90"E	MSA/LSA	Flat area east of an ironstone ridge. Scattered bushes including black thorn. I blade.	Medium B	No further action required

GAM22	26°59'13.40"S	23° 4'31.50"E	MSA/LSA	Flat area east of an ironstone ridge. Red-brown grit. Scattered bushes including black thorn. 3 lithics – 1 core, 1 blade and flake.	Medium B	No further action required

5.2. 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.	0
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. These may be protected at the recommendations of a heritage expert.	1 (rock engravings)
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	21
4	Low	Heritage sites which have been recorded, but considered of minor value relative to the proposed development.	0
		TOTAL	**22**

5.3. 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

Finds were recorded at twenty-two (22) sites. The rock engravings (petroglyphs) (GAM20) must be protected with a 200 m reserve around the site. A Museum or University may be approached to conduct further research to ascertain where there no other engravings in the vicinity.

(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. The rock engravings must be protected.

(d) 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

Mining is an important lever of economic development for the South African economy. The mineral wealth can provide stimulus for rapid socio-economic development in rural areas in the Northern Cape Province. Mining is labour intensive and can contribute immensely to alleviate the current high rate of unemployment. General improvement in the quality of livelihoods in local communities and the country at large is expected.

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

Gamolilo is owned by a Community Property Association established after a successful land claim in 1998. The farm is used for pasture with a camp of herd boys occupying the farmhouse and other buildings vacated by the previous owners of the farm. Executive Members the CPA live in different places while quite a number of the community members live in Tsineng Village. It was difficult to bring together members in one single gathering. With the support of Mr Kagisho Bannane, a community member resident in Tsineng, a number of stakeholders in Tsineng Village were contacted, informing them about the concern to protect heritage resources.

There were no objections raised concerning the project. Public notices were mounted at the gate to the property and at the community service centre in Tsineng (Figures 12-13).

Figure 12: Public notice mounted at the gate to Gasesa 773

Figure 13: Public notice displayed at the Bana Ba Thari Community Development centre at Tsineng Village

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

The farmhouse will not be affected by the proposed mining operations.

(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 phases, the Provincial Heritage Resources Authority or SAHRA will be informed immediately and an archaeologist or heritage expert called to attend.

5.4. Risk Assessment of the findings

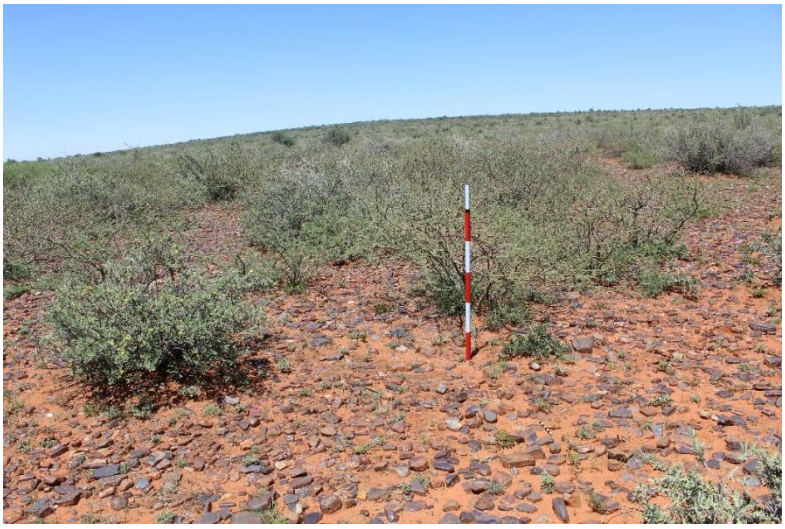
EVALUATION CRITERIA	RISK ASSESSMENT
Description of potential impact	Negative impacts range from partial to total destruction of surface and under-surface movable/immovable relics.
Nature of Impact	Negative impacts can both be direct or indirect.
Legal Requirements	Sections 34, 35, 36, 38 of **National Heritage Resources Act** No. 25 (1999)
Stage/Phase	Prospecting for minerals (test pits, drilling); Mining Phase
Extent of Impact	Test pits, excavations and ground clearing, opencast mining 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 rock engravings (GAM20) and respect proposed buffer zone. 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. This is standard precaution in view of inherent limitations of archaeological fieldwork.
Level of significance of impacts after mitigation	Low.
Cumulative Impacts	None.
Comments or Discussion	None.

6. RECOMMENDATIONS AND CONCLUSIONS

The prospecting and mining application can be considered with guarantees provided that the rock engravings are protected with the proposed 200 m buffer around them. As a standard precaution, 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.

7. CATALOGUE OF HERITAGE FINDS

SITE NO	COORDINATES		PERIOD
GAM01	27° 1'42.50"S	23° 4'50.50"E	MSA/LSA



DESCRIPTION: Flat area on the east side of an ironstone ridge, dense red-brown grit. Scattered bushes including black thorn. 1 lithic – core.

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

SITE NO	COORDINATES		PERIOD
GAM02	27° 1'47.20"S	23° 4'35.50"E	MSA/LSA

DESCRIPTION: Dense red-brown grit on the eastern slope of an ironstone ridge. Scattered bushes including black thorn. 3 lithics – 2 cores and blade.

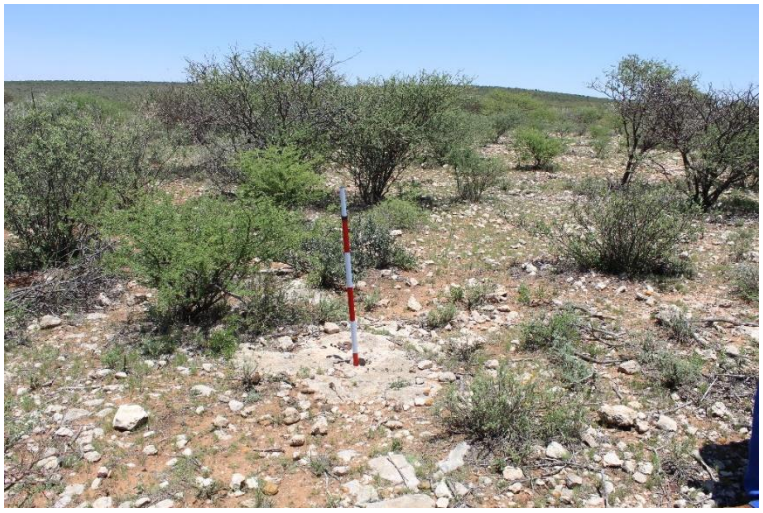
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
GAM03	27° 1'40.80"S	23° 4'32.00"E	MSA/LSA

DESCRIPTION: Dense red-brown grit on the eastern slope of an ironstone ridge. Scattered bushes including black thorn. 2 lithics Core and a flake.

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

SITE NO	COORDINATES		PERIOD
GAM04	27° 1'28.40"S	23° 5'3.70"E	MSA/LSA



DESCRIPTION: Flat area with calcrete waste and hardpan. Scattered bushes including black thorn. 5 lithics – 1 core, 1 scraper, 1 blade and flakes.

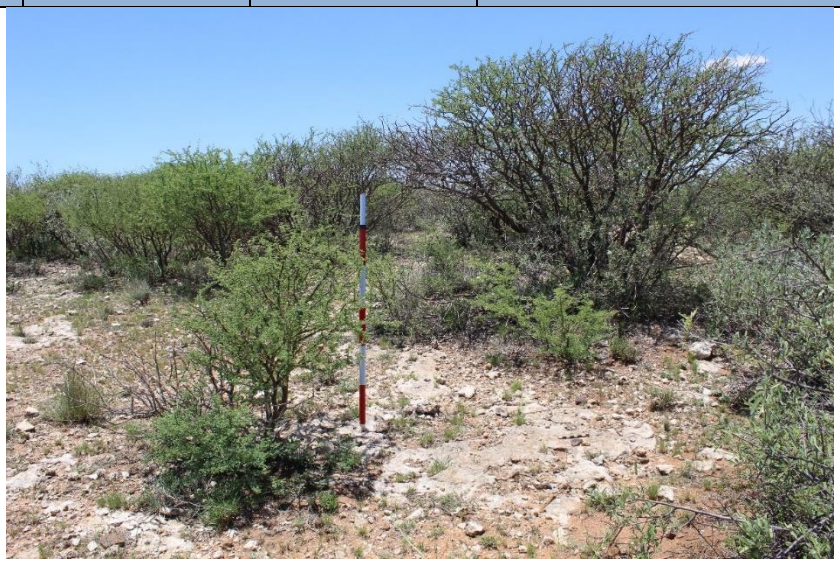
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
GAM05	27° 1'31.30"S	23° 5'10.50"E	MSA/LSA

DESCRIPTION: Flat area with clacrete waste. Scattered acacia trees including black thorn. 1 core and flakes.

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

SITE NO	COORDINATES		PERIOD
GAMO6	27° 1'42.70"S	23° 5'7.90"E	MSA/LSA



DESCRIPTION: Flat area with clacrete waste and hardpan. Scattered acacia trees including black thorn. 5 lithics - 1 scraper and flakes.

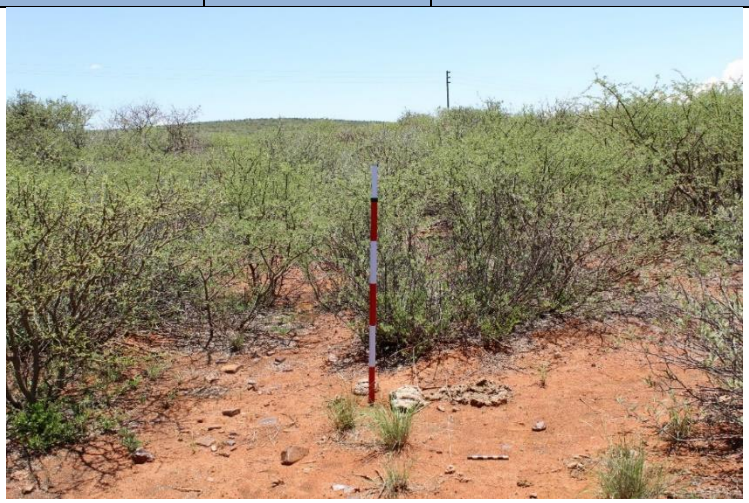
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
GAM07	27° 1'47.10"S	23° 5'5.80"E	MSA/LSA

DESCRIPTION: A low minor calcrete ridge. Dense stand of black thorn. 3 lithics – 1 blade, 1 scraper and flake.

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

SITE NO	COORDINATES		PERIOD
GAM08	27° 1'49.40"S	23° 5'2.20"E	MSA/LSA



DESCRIPTION: Flat area, sparse grit, black thorn. 1 obsidian scraper.

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

SITE NO	COORDINATES		PERIOD
GAM09	27° 1'7.43"S	23° 4'37.58"E	MSA/LSA

DESCRIPTION: Farmstead with several structures including a small gabled building of dressed ironstone and mortar, and corrugated iron sheet roofing. The remains of a much large building of same fabric.

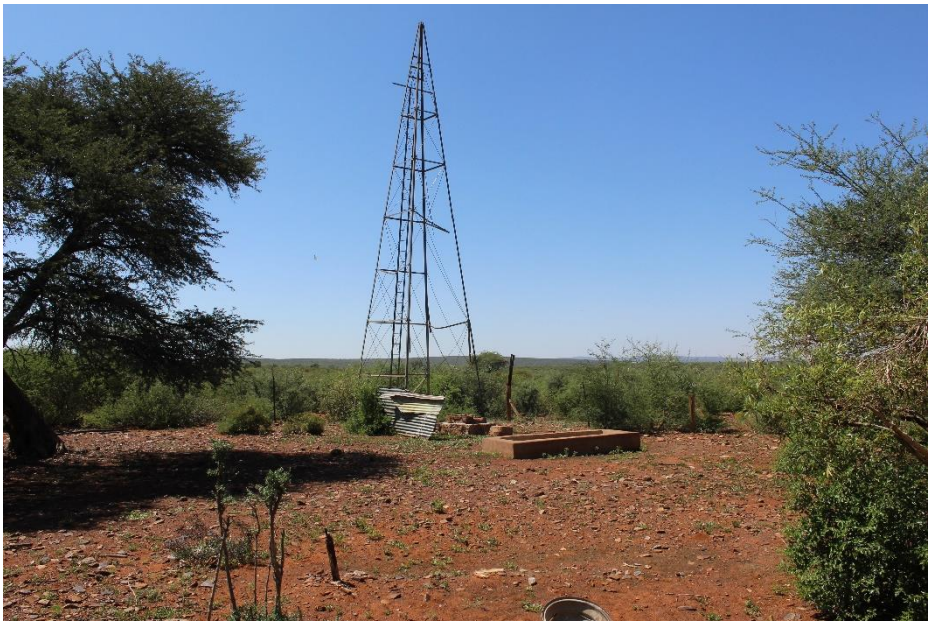
HERITAGE SIGNIFICANCE	Modern commercial farming infrastructure.
MITIGATION	The structures will not be affected.

SITE NO	COORDINATES		PERIOD
GAM10	26°59'48.16"S	23° 4'32.59"E	Modern

DESCRIPTION: Farmstead in the midst of an extensive calcrete plain. Derelict farmhouse had veranda on 2 sides, hipped roof corrugated iron sheets. A low perimeter wall of mortar bound ironstone.

HERITAGE SIGNIFICANCE	Modern commercial farming infrastructure.
MITIGATION	Buildings will not be affected.

SITE NO	COORDINATES		PERIOD
GAM11	27° 0'13.00"S	23° 3'5.10"E	Modern



DESCRIPTION: Watering point on the western foot of an ironstone ridge.

HERITAGE SIGNIFICANCE	Modern commercial farming infrastructure.
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
GAM12	27° 0'18.40"S	23° 3'0.80"E	MSA/LSA

DESCRIPTION: Flat area, red-brown grit. Scattered bushes. Core and scraper.

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

SITE NO	COORDINATES		PERIOD
GAM13	27° 0'26.10"S	23° 2'59.60"E	MSA/LSA

DESCRIPTION: Flat area, sandy loam with a few stones. Scattered bushes. 6 lithics – 1 core, 1 scraper and flakes.

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

SITE NO	COORDINATES		PERIOD
GAM14	27° 0'27.20"S	23° 3'5.40"E	MSA/LSA

DESCRIPTION: Flat open area surrounded by bushes. Scatter of lithics (13) – 3 scrapers, 3 blades and flake waste.

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

SITE NO	COORDINATES		PERIOD
GAM15	27° 0'26.20"S	23° 3'10.10"E	MSA/LSA

DESCRIPTION: Flat area with bushes including black thorn. 8 lithics – 3 blades, 2 scrapers and flakes.

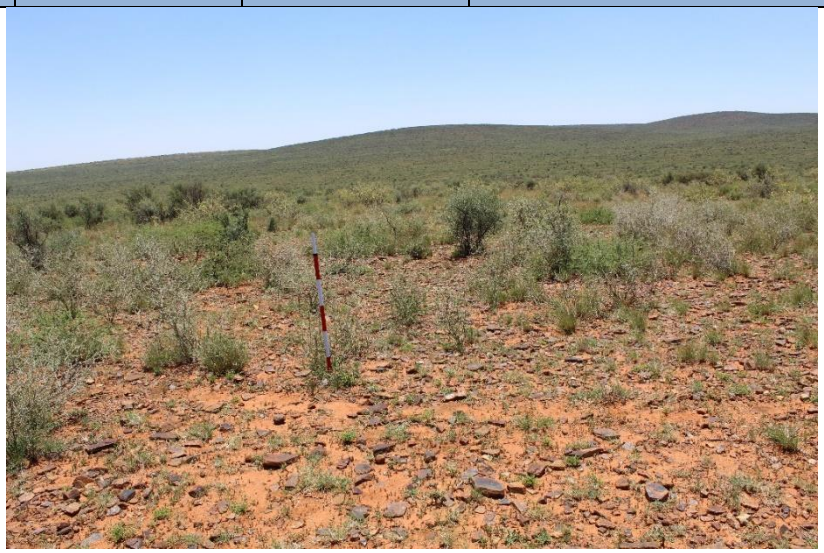
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
GAM16	26°59'56.80"S	23° 3'7.70"E	MSA/LSA

DESCRIPTION: Flat area, gritty, scattered bushes. 3 lithics – core, blade and flake.

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

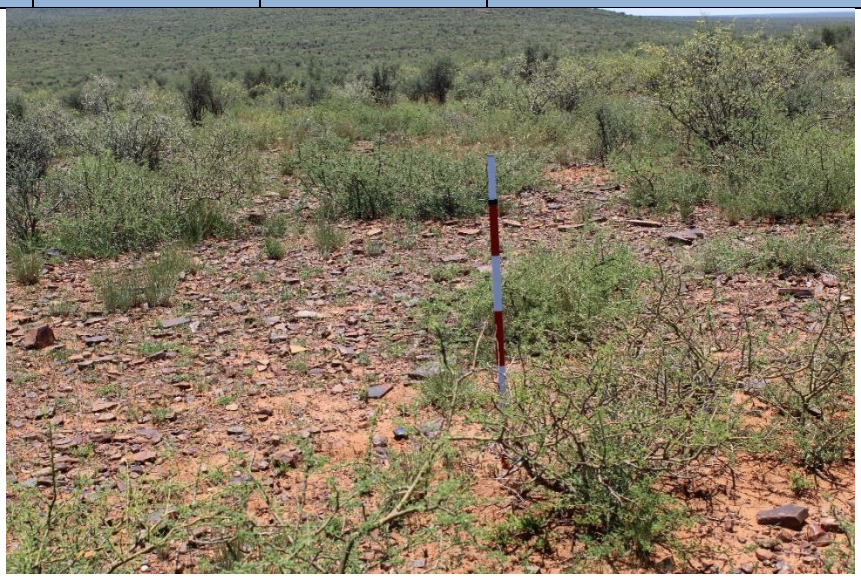
SITE NO	COORDINATES		PERIOD
GAM17	26°58'21.2"S	023°03'35.7"E	MSA/LSA



DESCRIPTION: Saddle or slope on a ridge. 1 core.

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

SITE NO	COORDINATES		PERIOD
GAM18	26°58'18.9"S	023°03'37.3"E	ESA



DESCRIPTION: Saddle or slope on a ridge. 3 lithics – 2 scrapers and a cleaver.

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

SITE NO	COORDINATES		PERIOD
GAM19	26°58'6.50"S	23° 4'3.30"E	MSA/LSA

DESCRIPTION: Eastern foot of ironstone ridge. Scattered bushes (black thorn). Obsidian flake.

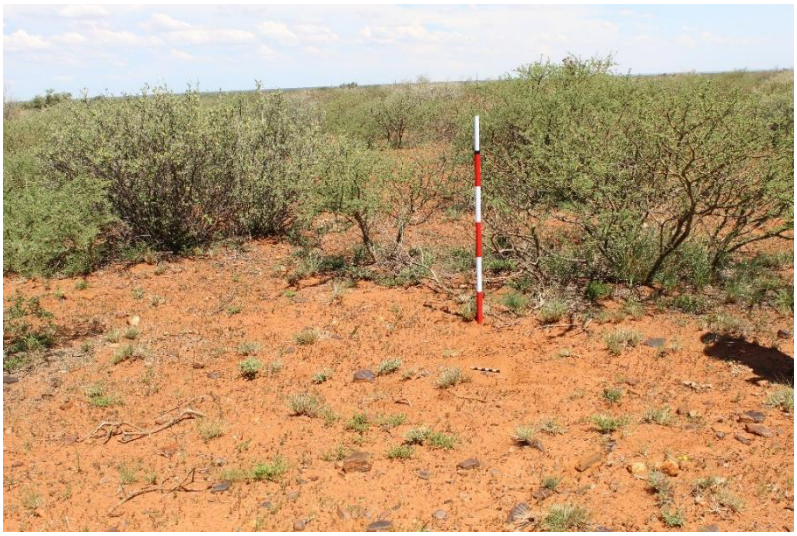
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
GAM20	26°58'1.20"S	23° 4'4.20"E	MSA/LSA

DESCRIPTION: Flat area, near the eastern base of an ironstone ridge. Rock engravings representing circles or a labyrinth.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	Site must be sufficiently buffered and protected.

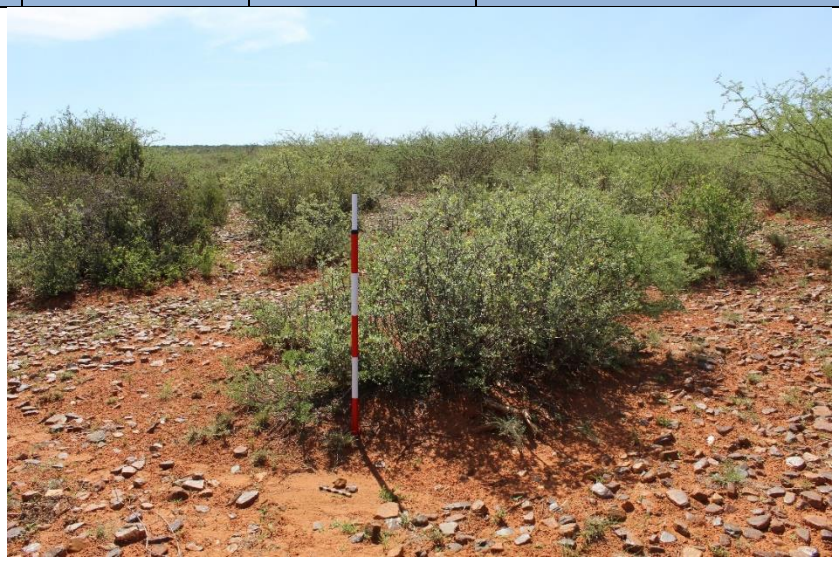
SITE NO	COORDINATES		PERIOD
GAM21	26°58'22.10"S	23° 4'22.90"E	MSA/LSA



DESCRIPTION: Flat area east of an ironstone ridge. Scattered bushes including black thorn. I blade.

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

SITE NO	COORDINATES		PERIOD
GAM22	26°59'13.40"S	23° 4'31.50"E	MSA/LSA



DESCRIPTION: Flat area east of an ironstone ridge. Red-brown grit. Scattered bushes including black thorn. 3 lithics – 1 core, 1 blade and flake.

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

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9. ACKNOWLEDGEMENTS

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