Heritage Impact Assessment for a Mining Right Application on Portion 23 (a Portion of Portion 15) of the Farm Lanyon Vale 376 near Douglas in the Siyancuma Local Municipality, Northern Cape

Prepared by

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DOCUMENT CONTROL

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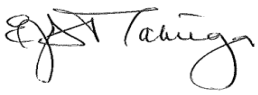
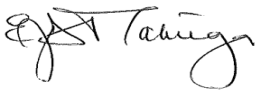
FIELD WORK & REPORT	E. Matenga		06 September 2022

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 remuneration for work performed in terms of 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. This Heritage Impact Assessment (HIA) report has been prepared in support of a Mining Right Application on Portion 23 (a Portion of Portion 15) of the Farm Lanyon Vale 376 near Douglas in the Siyancuma Local Municipality, Northern Cape. A ground survey was undertaken on 16 August and 21 September 2022 to assess the heritage sensitivity of the property, and potential adverse impacts of the proposed activities were evaluated.

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

3. *The Stone Age*
   Stone Age material is widely distributed on the plains, ridges, and valleys on the property. Eleven (11) occurrences were recorded in this instance. The Stone Age material comprises scrapers, blades, cores, and flakes typologically dating to the Middle Stone Age/Late Stone Age period. The single occurrences of a cleaver and hand-axe may represent a transitional period from the Early Stone Age to the Middle Stone Age. The scattered distribution pattern seems to indicate general hunter-gatherer activity in the area over time. None of the sites were found to warrant further action.

4. *The Early Iron Age*
   No material dating to the Iron Age was found.

5. *The Later Iron Age*
   No material dating to the Later Iron Age was found.

6. *Burial grounds*
   A burial ground was known and recorded on the farm with ±30 cairn burials arranged in two rows. The deceased were farm workers. A servitude of 100 m radius must be reserved as per the statutory regulations. Two circular stone features of diameter c. 160 cm were also recorded. They possibly mark graves. As a precaution,

these features must be protected with a 100 m servitude. Otherwise, they must be investigated by a qualified archaeologist for a permit to be issued for their disposal.

A burial ground (LNV02) and circular stone features that may be graves (LNV04 & LNV05)

7. Ranking of sites and Risk Assessment

	Grading	Description	No of Sites
1a	National	Of high intrinsic, associational, and contextual heritage value within a national, provincial, and local context, i.e., formally declared or potential Grade 1, 2, or 3A heritage resources	0
1b		Burial Grounds and Graves. Public sensibilities about the sanctity of graves	3 (1 confirmed, 2 uncertain)
2	Provincial	Of high intrinsic, associational, and contextual heritage value within a national, provincial, and local context, i.e., formally declared or potential Grade 2 heritage resources	0
3A	Local	Of high intrinsic, associational, and contextual heritage value within a national, provincial, and local context, i.e., formally declared or potential Grade 3A heritage resources	0
3B	Local	Of moderate to a high intrinsic, associational, and contextual value within a local context, i.e., potential Grade 3B heritage resources	0
3C	Local	Of medium to low intrinsic, associational, or contextual heritage value within a national, provincial and local context, i.e., potential Grade 3C heritage resources	16
		TOTAL	16

8. Inventory of heritage sites.

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
LNV01	29°17'6.50"S	23°14'19.10"E	20th century	Old driveway road landscaping. The road leads to the farmstead. Garden trees with circular stone features built around them lined the entrance road on either side.	Local 3C	No further action
LNV02	29°17'49.50"S	23°12'9.00"E	19th / 20th century	An isolated circular stone cairn 160 cm in diameter. It can be a burial.	Local 3C	To be investigated. Destruction permit required
LNV03	29°17'44.00"S	23°12'3.70"E	MSA/LSA	Located in a flat valley a few hundred metres from the Orange River. 1 triangular scraper.	Local 3C	No further action
LNV04	29°17'49.80"S	23°12'22.80"E	19th / 20th century	On the western foot of a ridge, and between the ridge and a dry stream. ±30 cairn burials arranged in two rows, a few with headstones. Deceased farm workers.	Local 3C	100 m servitude
LNV05	29°17'44.70"S	23°12'38.30"E	19th / 20th Century	Located in a shallow valley flanked by ridges. An isolated circular stone cairn 160 cm in diameter. It can be a burial.	Local 3C	To be investigated. Destruction permit required
LNV06	29°17'42.00"S	23°12'38.80"E	MSA/LSA	Flat area on the edge of the Orange River old floodplain.	Local 3C	No further action
LNV08	29°17'22.96"S	23°13'22.54"E	20th Century	An old farmstead with several old buildings, of which one with a hipped roof and a veranda facing south, was the principal dwelling. The building is not occupied.	Local 3C	Will not be affected
LNV09	29°17'8.60"S	23°13'31.40"E	MSA/LSA	On the escarpment, surface gravels and scattered blackthorn bushes. 2 scrapers, and a triangular flake.	Local 3C	No further action
LNV10	29°16'34.10"S	23°13'22.90"E	MSA/LSA	On the summit of the glacial tillite ridges. Superficial gravels and sparse vegetation. Two microlithic blades.	Local 3C	No further action

LNV11	29°15'56.80"S	23°12'39.90"E	MSA/LSA	North of the glacial tillite ridges. Fine surface gravel – red stones and calcrete waste, and a calcrete hardpan exposed in places. A small cleaver and flake of the same material.	Local 3C	No further action
LNV12	29°16'54.00"S	23°14'28.70"E	MSA/LSA	On the edge of the Orange River floodplain. 6 lithics: 1 quartz scraper, 2 blades, and 3 dolomite scrapers.	Local 3C	No further action
LNV13	29°16'29.80"S	23°15'10.20"E	MSA/LSA	Flat terrain between a calcrete ridge and a dry streambed. 2 chert blades of which one is a triangular blade.	Local 3C	No further action
LNV14	29°16'37.30"S	23°15'4.50"E	MSA/LSA	A flat area overlooking the Orange River floodplain. A hand axe with retouched edges.	Local 3C	No further action
LNV15	29°16'39.50"S	23°14'53.80"E	MSA/LSA	A flat area overlooking the Orange River floodplain. 3 lithics – a triangular blade, scraper, and 2 flakes.	Local 3C	No further action
LNV16	29°16'41.90"S	23°14'35.00"E	MSA/LSA	An elevated area overlooking the Orange River floodplain. A circular stone feature 60 cm in diameter. An isolated scraper was found.	Local 3C	No further action

9. Conclusion and recommendations

The Mining Right can be approved provided that the recommendations on the protection of the burial ground and disposal of the two stone features (if it becomes necessary) are heeded. Since archaeological deposits may be buried underground, should important artefacts or skeletal material be exposed in the area during operations, such activities should be halted, and the provincial heritage resources authority or SAHRA notified for an investigation and evaluation of the finds undertaken.

ABBREVIATIONS

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

GLOSSARY

Archaeological material: remains 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, and 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, the historical, scientific, and social value of the past, present, and future generations.

[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.

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 the 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 was 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, sculptures, 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 protection and maintenance 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, and organic and environmental remains, as residues of past human activity.

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

1. INTRODUCTION

1.1. Location and physical setting

The Farm Lanyon Vale 376 lies 60 km southwest of Douglas. It is set against the north bank of the Orange River. The Orange River is an important landform and a central feature of the drainage system in the Karoo. The farm lies 60 km downstream from the confluence of the Orange and Vaal Rivers. The two rivers rise in Lesotho and Mpumalanga Province respectively, and take a westerly course across the Highveld to their confluence at Douglas. The farm is on the southern edge of the Ghaap Plateau. From the banks of the Orange River, the ground rises dramatically in a series of steps culminating in the high plateau, a vast elevated plain c. 1300m AMSL straddling the Northwest and Northern Cape Provinces.

The northern part of the farm is generally flat with surface red-brown gravels mixed with calcrete waste, and below them a hard calcrete horizon. The Rooikoppie gravels represent a derived or deflation deposit formed on top of the calcrete by the liberation of durable clasts from the calcrete during chemical weathering and deflation. They are stained red by oxidation which creates an iron oxide slip. Occasionally a calcrete hardpan usually buried beneath the gravels tillite waste is exposed. The calcretes deposit is quite extensive with resistant conglomerates forming cliff edges of deeply incised streams.

A southern portion of the farm overlooking the Orange River consists of an elevated deposit of glacial tillites. It is believed that millions of years before the present, the thick ice sheets that covered the earth started to melt leaving behind massive deposits of heterogeneous deposits which became the Dwyka tillites that flank the mid-Orange River. Streams cutting across the Dwyka tillites into the Orange River created small valleys, spurs, and low ridges. Resistant calcrete conglomerates from cliff edges overlooking the streams. Vegetation is karoo scrub dominated by the blackthorn *Acacia mellifera subsp. Detinens* (*haakbos* in Afrikaans). Standing on the Ghaap Escarpment, there are engaging sceneries south towards the Orange River and north towards the Ghaap Plateau.
(Figures 1-10).

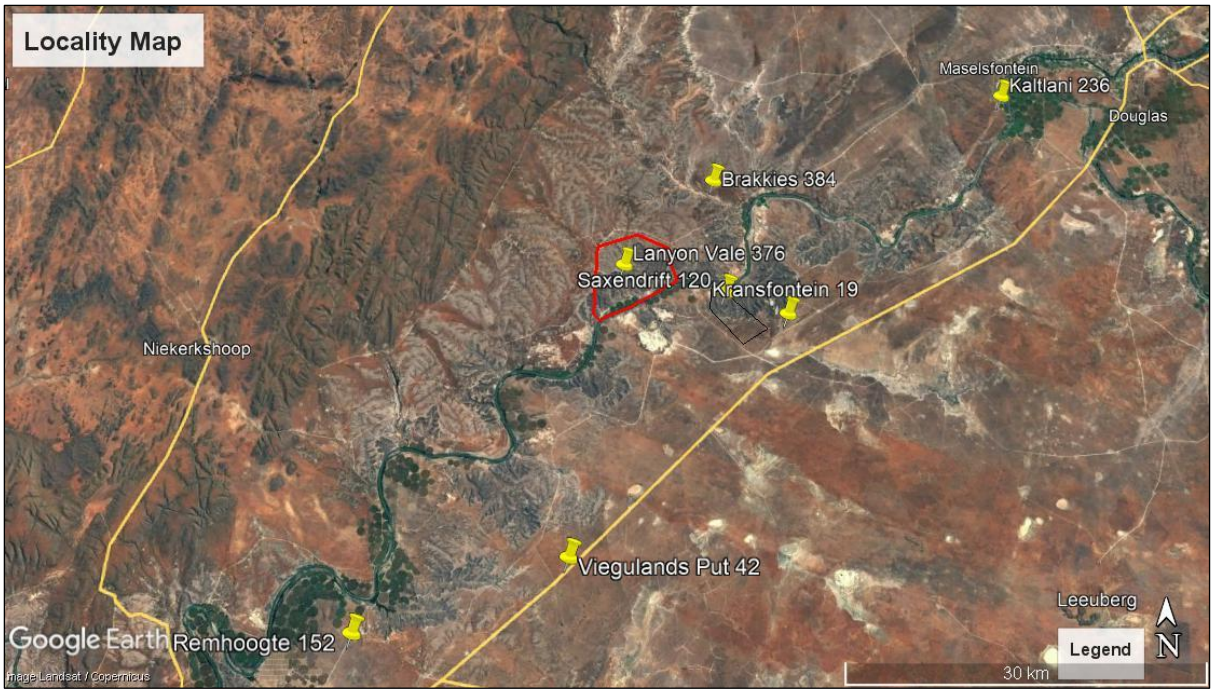

Figure 1: Google-Earth map shows the location of the Farm Lanyon Vale 376 on the north bank of the Orange River, Northern Cape Province

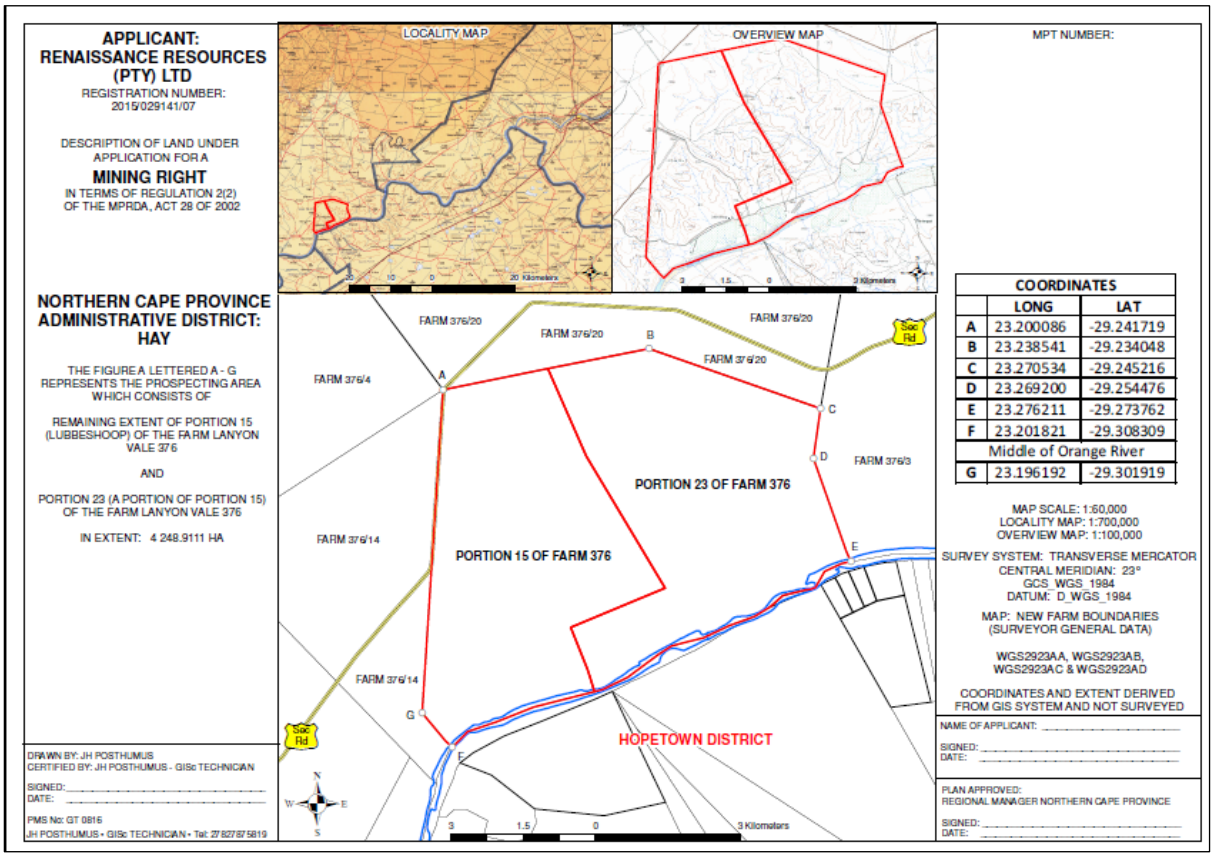

Figure 2: shows the location of the farm Lanyon Vale 376 on three different scales

Figure 3. On the summit of a glacial tillite ridge; the view shows a valley and stream cutting through the glacial deposits, and a spur beyond

Figure 4: A view on the summit of a ridge overlooking a valley, glacial tillite, and blackthorn scrub

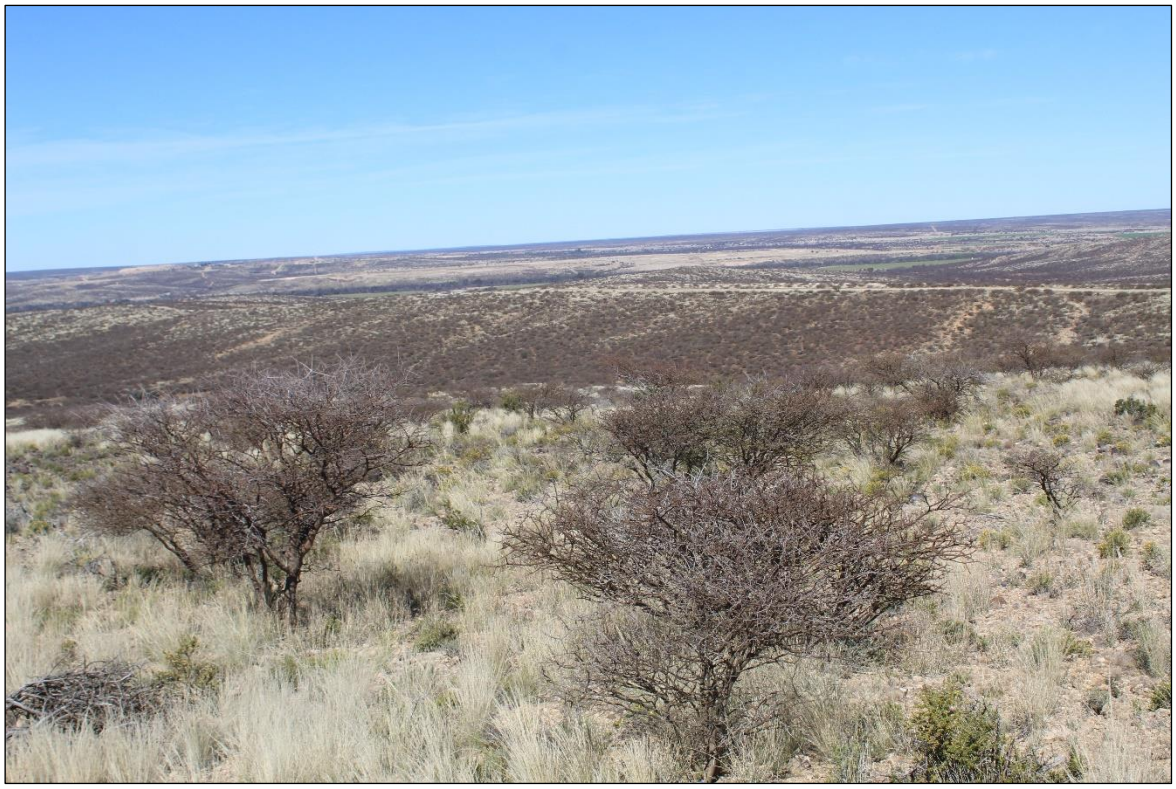

Figure 5: Another view of the valleys and spurs formed on glacial tillite

Figure 6: Red gravel and calcrete waste in a north-western part of the property

Figure 7: Fine red gravel in a north-western part of the property

Figure 8: Exposed calcrete lumps that form a mantle on ridges

Figure 9: A ridge capped with a calcrete layer, and in the foreground an old floodplain. A dry stream behind the camera cuts through the glacial tillite deposits

Figure 10: Fields under pivot irrigation on the Orange River floodplain

1.2. Nature of proposed development

Renaissance Resources intend to extract diamonds from the ancient gravels on the Farm Lanyon Vale 376. The mining technique used is opencast alluvial diamond mining. The diamond-hosting gravels are excavated, loaded, and transported to the nearby treatment facility using dump trucks.

The following infrastructure will be established and will be associated with the mining operation:

- Mining Area: Opencast mining to mine for alluvial diamonds.
- Processing Plant.
- Ablution Facilities
- Clean & Dirty water system: Berms
- Fuel Storage facility (Concrete Bund walls and Diesel tanks)
- Roads (both access and haulage road on the mine site)
- Salvage yard (Storage and laydown area).
- Product Stockpile area.
- Waste disposal site

2. LEGAL FRAMEWORK

This heritage impact assessment fulfils a responsibility placed on developers to safeguard heritage resources when they start new projects. This obligation is legislated with Sections 34, 35, 36, and 38 of the National Heritage Resources Act (No 25 of 1999) forming the legal framework in which this HIA report has been prepared.

2.1. Section 38 of the National Heritage Resources Act on Heritage Impact Assessments

Section 38 of the NHRA states the nature and scale of development that triggers an HIA:

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

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

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

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

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

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

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

2.2. 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 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 that 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—

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

(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 assists 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.

We are mindful of the fact that graves and burial grounds are held sacred whether they are protected by the law or not.

2.6. The National Environmental Management Act (No 107 of 1998)

This act states that a survey and evaluation of cultural resources must be done in areas where development projects that will affect the environment will be undertaken. The impact of the development on these resources should be determined and proposals for the mitigation thereof are made. Environmental management is a much broader undertaking to cater to the 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 practices in heritage management.

3. METHODOLOGY AND THEORETICAL APPROACHES

3.1. Literature survey

A literature survey is a study of all documents about the project and the archaeological and historical context of the broader area in which the project is situated. Reports of previous HIAs conducted in the area are of particular interest. Over time a vast amount of data has been collected to provide general knowledge on the Stone Age in the Orange – Vaal basin. This author has carried out several heritage impact assessment studies north and south of the Orange River in this area.

Matenga, E. 2017. *Phase I Heritage Impact Assessment (including Palaeontological Assessment) requested in terms of Section 38 of the National Heritage Resources Act (No 25/1999) for the proposed Mine Prospecting on the Remaining Extent of Portion 1 of the Farm Viegulands Put 42, Prieska District, Northern Cape Province*. The Farm Viegulands Put is located on the south bank of the Orange River 30 km southwest of Lanyon Vale. One of the significant finds was an ESA hand-axe among the finds predominated by chert scrapers, blades, and flakes.

Matenga, E. 2018. *Phase I Heritage Impact Assessment (including Palaeontological Assessment) requested in terms of Section 38 of the National Heritage Resources Act No 25/1999 for the proposed mine prospecting and application for a mining right on a portion of the remaining extent of the Farm Kransfontein 19 & portion 2 (de rust) of the Farm Kransfontein 19, Prieska District, northern cape province*

Kransfontein 19 is on the south bank of the Orange River 10 km southeast of Lanyon Vale. MSA/LSA lithics were found to be widely distributed indicating general hunter-gatherer

foraging activities. There were buildings and burial grounds on the property both associated with pioneer commercial farmers.

Matenga, E. 2019*. Phase I Heritage impact assessment (including palaeontological assessment) requested in terms of Section 38 of the National Heritage Resources Act No 25/1999 for the proposed Mine Prospecting on a Portion of the Remaining Extent of the Farm Remhoogte 152 Prieska, Northern Cape.* On the farm Remhoogte 152 located on the south bank of the Orang River c 40 km to the southwest of Lanyon Vale, MSA/LSA lithics were found to be widely distributed indicating general hunter-gatherer foraging activities.

Matenga, E. 2019. *Phase I Heritage impact assessment (including palaeontological assessment) in terms of Section 38 of the National Heritage Resources Act No 25/1999 for the proposed Mine Prospecting on the Farm Katlani 236 near Douglas, Northern Cape.* On the farm Katlani, situated on the north bank of the Orange River 40 km upstream Stone Age finds, ancient rock engravings, and burials were recorded.

Matenga, E. 2021. *Phase I Heritage Impact Assessment (including Palaeontological Desktop Assessment) for a Prospecting Right Application on the Remaining Extent of portion 1 (Oranje Oord) of the Farm Brakkies 384, and Portion 2 (Portion of Portion 1) of the Farm Brakkies 384 near Douglas, Northern Cape*. The farm Brakkies 384 lies 10 km NE of Lanyon Vale 176 and is located on the north side of the Orange River. Stone Age material is widely distributed on the property with 38 occurrences having been recorded. The material comprises scrapers, blades, cores, and flakes typologically dating to the Middle Stone Age/Late Stone Age period. The occasional finding of small hand-axes and cleavers may represent a transitional period from the Early Stone Age to the Middle Stone Age.

Matenga, E. 2022. *Heritage Impact Assessment (including Palaeontological Desk Assessment) for a Mining Right Application on the Remaining Extent of Portion 1 (Paals Werf) of the farm Saxendrift 20, near Prieska, Northern Cape.* Saxendrift is located on the opposite side of the Orange River. The two farms share similar geography evolved from glacial tillite deposits.

Other researchers have been involved in the area:

De Cock, S & G Narainne. 2016. Integrated Heritage Impact Assessment in terms of section 38(8) of the National Heritage Resources Act, 1999 (Act 25 of 1999) for the proposed development of Humansrus Solar PV Facility 3 on the Farm Humansrus 147, Prieska District and Pixley Ka Seme District. The study reported a diffuse spread of ESA and MSA stone artefacts across the study area for Humansrus Solar PV Facility 3. There are no buildings or graveyards on the property (page 12);

Mlilo, T. 2018. *Phase I Archaeological Impact Assessment for the proposed 958m 22kv De-Villiers Powerline in the Douglas Area within Siyancuma Local Municipality in the Northern Cape Province.* The study identified sparse scatters of stone tools occurring as isolated finds mostly along streams. These included cores, scrapers, flakes, and flake blades (page 30).

Figure 11: Google Earth map shows the location of farms on which heritage impact assessment studies have been conducted by this author

3.2. Fieldwork

The ground truthing was done by means of walking surveys. A vehicle was used to move from one area to the next to ensure reasonable coverage and a good sample survey given the large size of the property. Photographs taken show the general character of the landscape as well as artefacts and features. A Catalogue of the findings is presented in Appendix I of this Report.

3.3. Ranking of Sites

The ranking system has been adapted from Guidelines for involving Heritage Specialists in EIA processes by Winter S and & N. Baumann (2005: 19).

Table 1: Ranking of sites and risk assessment

	Grading	Description	No of Sites
1a	National	Of high intrinsic, associational, and contextual heritage value within a national, provincial, and local context, i.e. formally declared or potential Grade 1, 2, or 3A heritage resources	

1b		Burial Grounds and Graves. Public sensibilities about the sanctity of graves	
2	Provincial	Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 2 heritage resources	
3A	Local	Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 3A heritage resources	
3B	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources	
3C	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources	
		TOTAL	

3.4. Limitations of the study

The spurs and small valleys overlooking the Orange River are hosts to blackthorn scrub (*Acacia mellifera*) in varying densities which constrained walking surveys. It forms impenetrable thickets. It is difficult to find a passage through blackthorn vegetation, and if you find one, it takes time to get out by another route. More often one is forced to return by the same route, which is not productive.

3.5. Maps of tracklog

Figure 12: Map of the tracklog

3.6. HIA Report and Chance Finds Procedure

An Archaeological and Heritage Chance Finds Procedure (CFP) is annexed to this Report.

4. ARCHAEOLOGICAL AND HISTORICAL CONTEXT

An outline of the cultural sequence in South Africa provides a theoretical framework for the identification of features / structures and objects of archaeological, historical, and cultural interest. A summary of the reconstructed cultural sequence is given below:

4.1. Cultural sequence summary[3]

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 arrowheads, 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, the emergence of complex state systems	Typically distinct ceramics, evidence of long-distance trade, and contacts
(ii) Mapungubwe (K2)	1350AD		Metals including gold, long-distance exchanges
(ii) Historical period	Tswana / Sotho, Nguni people	Iron Age Farmers	Stone walls Mfecance / Difaqane
(iii) Colonial period	19th Century	European settlers / farmers / missionaries/ industrialisation	Buildings, Missions, Mines, metals, glass, ceramics

4.2. Appearance of hominids

South Africa has yielded a very good record of fossil hominids; proto-humans that appeared in South Africa more than 3 million years ago. Three famous sites in Gauteng, Limpopo, and Northwest Provinces have been collectively named the Cradle of Humankind and inscribed as

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

a serial UNESCO World Heritage Site.[4] One of these sites Taung near Vryburg is 200 km northwest of the study area. To my knowledge, although vertebrate fossils are known in this area, no hominid sites have been reported in the vicinity of the study area.

4.3. The Early Stone Age

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

The Stone Age dates back more than 2 million years and is divided into three epochs, the Early, Middle, and Late Stone Ages. These early humans made pear-shaped handaxe, cleavers, and core tools (Deacon & Deacon, 1999). Material evidence is found in caves, rock shelters, and on river sides and edges of streams, and is very rarely seen in open country.[5] The stone tool industries have been called Oldowan and Acheulean and were probably used to butcher large animals such as elephants, rhinoceros, and hippopotamus.

A good profile of the Stone Age in the Northern Cape has been reconstructed from many heritage impact assessments that have been conducted in recent years. Locales along and adjacent to the Orange – Vaal River systems have yielded evidence of great interest.[6] Further north the Wonderwerk Cave has become a benchmark for the characterisation of the Stone Age. Excavations reveal a long sequence of occupations spanning the Early (ESA), Middle (MSA), and Later Stone Ages.[7]

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

The Middle Stone Age (MSA), dates from 250 000 years to 40 000 years ago, marked by the introduction of a new tool kit that 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 then, humans had evolved significantly to become anatomically modern and the toolkit reflected significant developments in cognitive capacity. Caves were used for shelter suggesting permanent or

[4] Deacon, J. and N. Lancaster. 1986. *Later Quaternary Palaeo-environments of Southern Africa*. Oxford: Oxford University Press.
[5] http://archaeology.about/od/bterms/g/bordercave.htm
[6] Morris, D. 2009. Phase 1 Archaeological Impact Assessment at Bucklands Settlement near Douglas, Northern Cape, p3.
[7] http://www.southafrica.net/za/en/articles/entry/article-southafrica.net-the-wonderwerk-cave.

semi-permanent settlement. These people had mastered the art of making fire.[8] Several field surveys have been carried out on the Ghaap Plateau and the Orange-Vaal River basin confirming significant hunter-gatherer activity in the area from the MSA onwards.

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

By the beginning of the LSA, humans are classified as *Homo sapiens* which refers to the modern physical form and thinking capabilities. Several behavioural traits are exhibited, such as rock art and purposeful burials with ornaments, which became a regular practice. LSA technology is characterised by microlithic scrapers and segments made from very fine-grained rock. Spear hunting continued, but LSA people also hunted small game with bows and poisoned arrows. Because of poor preservation, open sites become of less value compared to rock shelters.

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

The Iron Age culture supplanted the Stone Age at least 2000 years ago, associated with the introduction of farming and the use of several metals and pottery. Iron Age communities are associated with speakers of Bantu languages who were farmers keeping domestic animals such as cattle, sheep, goats, and chickens. There is however increasing evidence that sheep and probably cattle as well might have moved into the area much earlier than the Iron Age.[9]

4.4.1. Early Iron Age

According to Huffman (2007), there were two migration streams of Early Iron Age (EIA) communities converging in South Africa, one originating in eastern Africa which has been called the *Urewe-Kwale Tradition* (or the eastern stream), and another from the west, spreading through Zambia and Angola, which he termed the *Kalundu Tradition* (or western stream). An alternative is that the IA was the result of a gradual spread or expansion of settlement of different groups of people indigenous to the continent which took place over a long period. There are few if any sites attributed to the EIA in the western parts of the country. Most IA settlements are concentrated in the eastern part of South Africa.

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

4.4.2. The Later Iron Age

The LIA is marked by the presence of extensive stonewalled settlements such as the Tlhaping capital at Dithakong near Kuruman.[10]

4.5. Historical Context

On the eve of colonial occupation, the Tlhaping, a segment of the Tswana lived in the area. The Tswana belong to the Bantu family probably descending from the Iron Age people and may be connected with the Stone Age predecessors. The early 19th century was a political turning point with an increasingly precarious security situation developing and causing internal displacements. The first of these episodes was the Difaqane characterised by inter-tribal raids.

Then came the Griqua to occupy the area at the confluence of the Vaal and Orange in the 19th century. Historically their cradle was in the north eastern Cape Colony being predominantly of Khoi-Khoi stock with an infusion through marriage with other groups in the area from the 19th century. Adam Kok 1 is considered the founding leader. He moved his people north from the Cape Colony as the colonial frontier was expanding northward. His successor, Andries Waterboer settled with his people in what became Griqualand West, and therein comes the historical connection between the Tlhaping and the Griqua. The Griqua established 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.

4.6. Early Contact with the Boers

In the early 19th century, several traders, hunters, explorers, and missionaries transited the area. A few can be named here - PJ Truter's and William Somerville (arriving in 1801),

[10] 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

Donovan, Burchell and Campbell, and James Read (arriving around 1870). Subsequently, the arrival of large numbers of Great Trek Boers from the Cape Colony and the borders of Bechuanaland and Griqualand West in 1836 caused conflict with many Tswana groups. The conflict escalated when the Korana and Griqua communities and the British government go involved. In 1872, the British proclaimed Griqualand West as a crown state (i.e. including the area around present-day Griekwastad). It was subsequently incorporated into the Cape Colony in 1880. The annexation of Bechuanaland by the British in 1885 imposed further territorial restrictions on native groups (Engelbrecht & Fivaz, 2018: 17-18, 19).

4.7. Orange and Vaal Rivers alluvial diamond diggings

The first diamonds were discovered in 1867 near Hopetown close to the Orange River in what was then the Cape Colony. Another find was made on a farm called Paarde Kloof on the Orange River, also in the locality of Hopetown (Payton 1872, p1). Thereafter, alluvial diamonds gained the spotlight starting in 1869 when a party of prospectors from Natal organised by the British Army started exploration and diggings along the Vaal River Valley. The finds at Klipdrift (Barkly West) 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 Klipdrift 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.[11]

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

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

5. FINDINGS OF THE HERITAGE SURVEY

The heritage sensitivity of the property is summarised as follows:

5.1. The Stone Age

Stone Age material is widely distributed on the plains, ridges, and valleys on the property. Eleven (11) occurrences were recorded in this instance. The Stone Age material comprises scrapers, blades, cores, and flakes typologically dating to the Middle Stone Age/Late Stone Age period. The single occurrences of a cleaver and hand-axe may represent a transitional period from the Early Stone Age to the Middle Stone Age. The scattered distribution pattern seems to indicate general hunter-gatherer activity in the area over time. None of the sites were found to warrant further action.

5.2. The Early Iron Age

No material dating to the Iron Age was found.

5.3. The Later Iron Age

No material dating to the Later Iron Age was found.

5.4. Burial grounds

A burial ground was known and recorded on the farm with ±30 cairn burials arranged in two rows. The deceased were farm workers. A servitude of 100 m radius must be reserved as per the statutory regulations. Two circular stone features of diameter about 160cm were also recorded. They may mark graves. As a precaution, these features must be protected with a 100 m servitude. Otherwise, they must be investigated by a qualified archaeologist for a permit to be issued for their disposal.

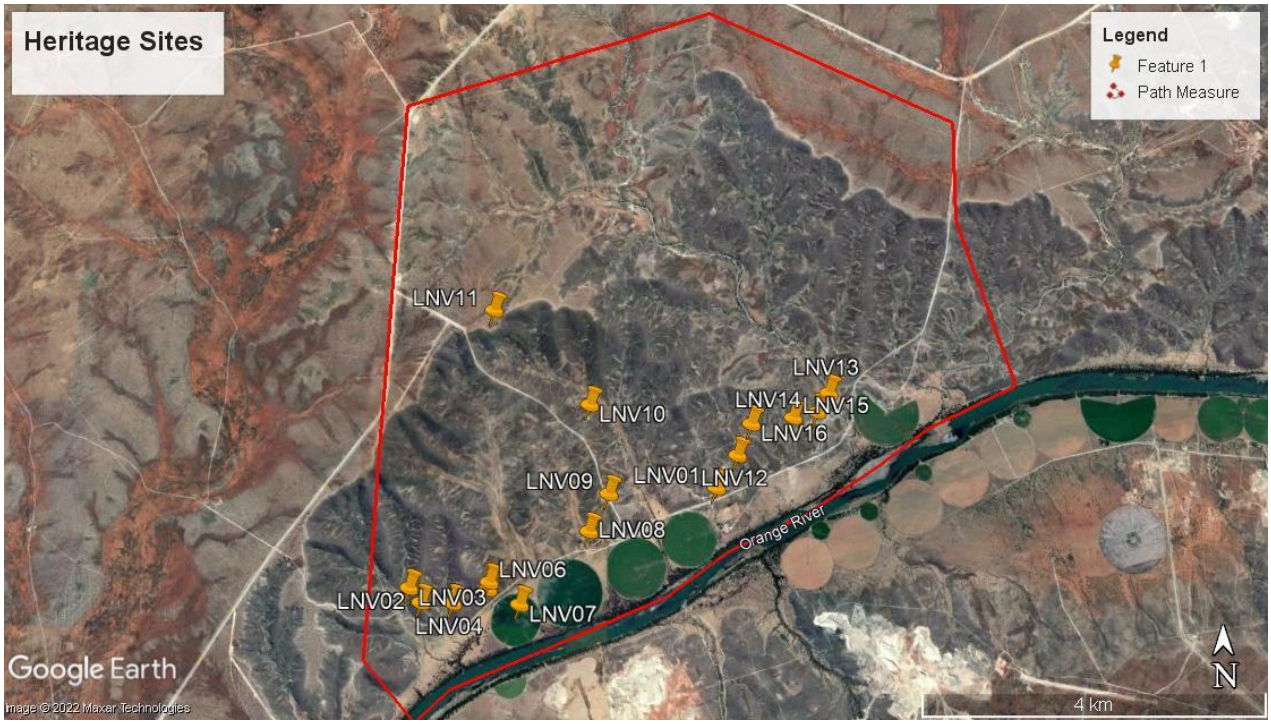

Figure 13: Lanyon Vale 376 location of heritage sites.

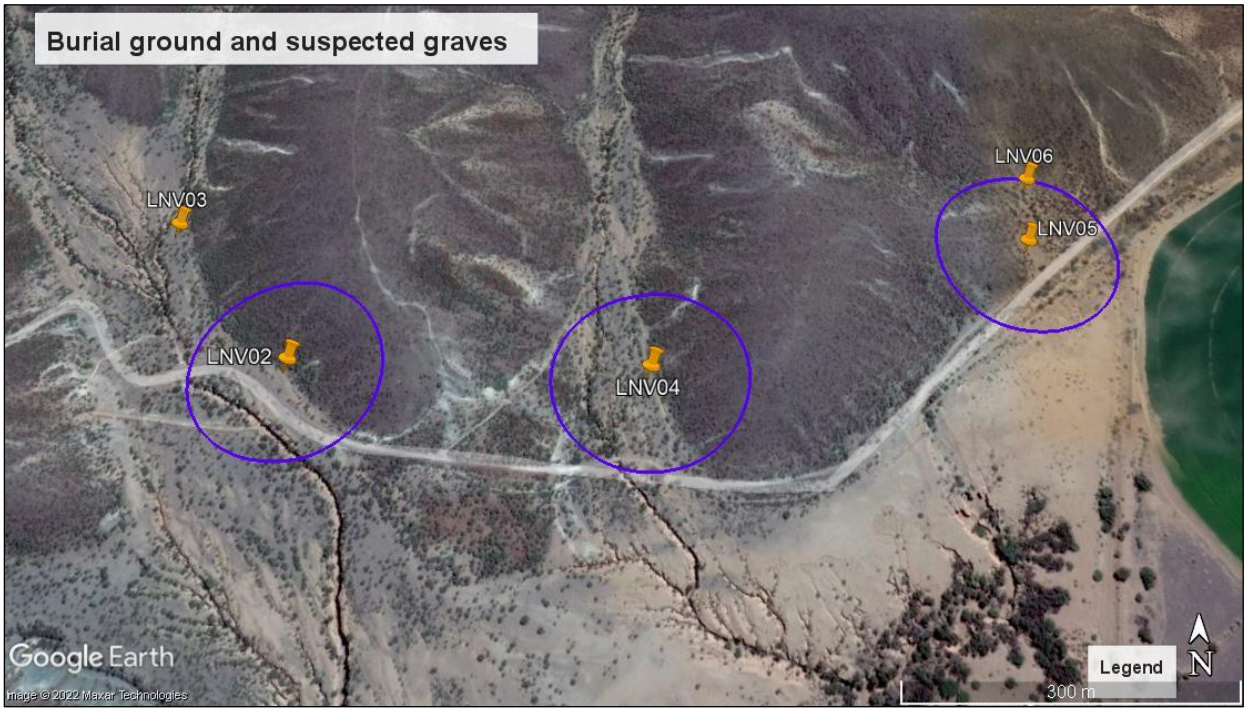

Figure 14: A burial ground (LNV02) and circular stone features that may be graves (LNV04 & LNV05)

5.5. Ranking of sites and Risk Assessment

Table 2. Ranking of sites

	Grading	Description	No of Sites
1a	National	Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 1, 2, or 3A heritage resources	0
1b		Burial Grounds and Graves. Public sensibilities about the sanctity of graves	3 (1 confirmed, 2 unconfirmed)
2	Provincial	Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 2 heritage resources	0
3A	Local	Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 3A heritage resources	0
3B	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources	0
3C	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources	16
		TOTAL	16

Table 1: Inventory of heritage sites.

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
LNV01	29°17'6.50"S	23°14'19.10"E	20th century	Old driveway road landscaping. The road leads to the farmstead. Garden trees with circular stone features built around them lined the entrance road on either side.	Local 3C	No further action
LNV02	29°17'49.50"S	23°12'9.00"E	19th / 20th century	An isolated circular stone cairn 160 cm in diameter. It can be a burial.	Local 3C	To be investigated. Destruction permit required
LNV03	29°17'44.00"S	23°12'3.70"E	MSA/LSA	Located in a flat valley a few hundred metres from the Orange River. 1 triangular scraper.	Local 3C	No further action
LNV04	29°17'49.80"S	23°12'22.80"E	19th / 20th century	On the western foot of a ridge, and between the ridge and a dry stream. ±30 cairn burials arranged in two rows, a few with headstones. Deceased farm workers.	Local 3C	100 m servitude
LNV05	29°17'44.70"S	23°12'38.30"E	19th / 20th Century	Located in a shallow valley flanked by ridges. An isolated circular stone cairn 160 cm in diameter. It can be a burial.	Local 3C	To be investigated. Destruction permit required
LNV06	29°17'42.00"S	23°12'38.80"E	MSA/LSA	Flat area on the edge of the Orange River old floodplain.	Local 3C	No further action
LNV08	29°17'22.96"S	23°13'22.54"E	20th Century	An old farmstead with several old buildings, of which one with a hipped roof and a veranda facing south, was the principal dwelling. The building is not occupied.	Local 3C	Will not be affected
LNV09	29°17'8.60"S	23°13'31.40"E	MSA/LSA	On the escarpment, surface gravels and scattered blackthorn bushes. 2 scrapers, and a triangular flake.	Local 3C	No further action

LNV10	29°16'34.10"S	23°13'22.90"E	MSA/LSA	On the summit of the glacial tillite ridges. Superficial gravels and sparse vegetation. Two microlithic blades.	Local 3C	No further action
LNV11	29°15'56.80"S	23°12'39.90"E	MSA/LSA	North of the glacial tillite ridges. Fine surface gravel – red stones and calcrete waste, and a calcrete hardpan exposed in places. A small cleaver and flake of the same material.	Local 3C	No further action
LNV12	29°16'54.00"S	23°14'28.70"E	MSA/LSA	On the edge of the Orange River floodplain. 6 lithics: 1 quartz scraper, 2 blades, and 3 dolomite scrapers.	Local 3C	No further action
LNV13	29°16'29.80"S	23°15'10.20"E	MSA/LSA	Flat terrain between a calcrete ridge and a dry streambed. 2 chert blades of which one is a triangular blade.	Local 3C	No further action
LNV14	29°16'37.30"S	23°15'4.50"E	MSA/LSA	A flat area overlooking the Orange River floodplain. A hand axe with retouched edges.	Local 3C	No further action
LNV15	29°16'39.50"S	23°14'53.80"E	MSA/LSA	A flat area overlooking the Orange River floodplain. 3 lithics – a triangular blade, scraper, and 2 flakes.	Local 3C	No further action
LNV16	29°16'41.90"S	23°14'35.00"E	MSA/LSA	An elevated area overlooking the Orange River floodplain. A circular stone feature 60 cm in diameter. An isolated scraper was found.	Local 3C	No further action

5.6. Assessment of Impacts using the Heritage Impact Assessment 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

15 Sites were recorded including 1 confirmed Burial Ground and 2 cairn features which may be graves.

(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

Graves are sacred and protected under Section 36 of the NHRA. There are no Grade I or Grade II sites.

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

There is one confirmed burial ground with ±30 graves, and 2 possible cairn burials. A 100 m servitude must be reserved around the burial ground. Two circular stone features have been flagged as they look like cairn burials. It is recommended that if these features will be affected by mining operations, they must be investigated. This requires a destruction/excavation permit from the heritage authority. Otherwise, a 100 m servitude must be applied in both instances.

(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

Mining in the Northern Cape is poised for remarkable growth, and the forecast is that it will make a significant contribution to the South African economy in the medium to long-term. Mineral wealth can provide a stimulus for rapid socio-economic development in the Province

in particular and the country as a whole. Mining is labour intensive and can contribute immensely to alleviating the current high rate of employment. General improvement in the quality of livelihoods in local communities 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

Public participation was undertaken within the ambit of the broader environmental impact assessment process, a basic assessment report (BAR) which will be submitted with this HIA Report.

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

A 100 m servitude will be reserved around the Burial Ground. Two cairn features must be investigated if they will be affected by the development. Otherwise, a destruction permit must be sought from SAHRA.

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

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

5.7. Risk Assessment of the findings

EVALUATION CRITERIA	RISK ASSESSMENT
Description of the 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 and indirect.
Legal Requirements	Sections 34, 35, 36, 38 of National Heritage Resources Act No. 25 (1999).
Stage/Phase	Mining Phase

Extent of Impact	Open cast mining, the opening of roads, and the emplacement of mine infrastructure may result in damage and destruction of important 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	Medium.
Mitigation measures	If archaeological or other heritage relics deemed of high significance 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.

6. CONCLUSION AND RECOMMENDATIONS

The Mining Right can be approved provided that the recommendations on the protection of the burial ground and disposal of the two stone features (if it becomes necessary) are heeded. Since archaeological deposits may be buried underground, should important artefacts or skeletal material be exposed in the area during operations, such activities should be halted, and the provincial heritage resources authority or SAHRA notified for an investigation and evaluation of the finds undertaken.

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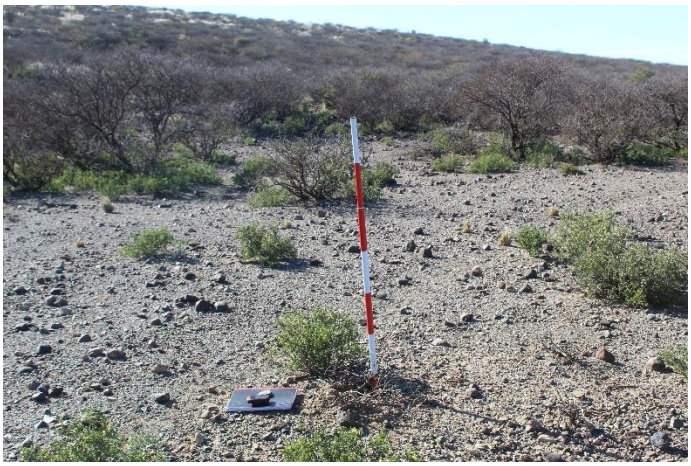
APPENDIX I: LANYON VALE 376 - CATALOGUE OF HERITAGE SITES

SITE NO	COORDINATES		PERIOD
LNV01	29°17'6.50"S	23°14'19.10"E	20th century
 			
DESCRIPTION: Old driveway road landscaping. The road leads to the farmstead. Garden trees with circular stone features built around them lined the entrance road on either side.			
HERITAGE SIGNIFICANCE	Modern commercial farming period.		
MITIGATION	No further action is required.		

SITE NO	COORDINATES		PERIOD
LNV02	29°17'49.50"S	23°12'9.00"E	19th / 20th century

DESCRIPTION: An isolated circular stone cairn 160 cm in diameter. It can be a burial.	
HERITAGE SIGNIFICANCE	Possible grave.
MITIGATION	It must be investigated. Otherwise, it should not be disturbed. A 100 m servitude must be reserved.

SITE NO	COORDINATES		PERIOD
LNV03	29°17'44.00"S	23°12'3.70"E	MSA/LSA



DESCRIPTION: Located in a flat valley a few hundred metres from the Orange River. 1 triangular scraper.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action is required.

SITE NO	COORDINATES		PERIOD
LNV04	29°17'49.80"S	23°12'22.80"E	19th / 20th century

DESCRIPTION: On the western foot of a ridge, and between the ridge and a dry stream. ±30 cairn burials arranged in two rows, a few with headstones. Deceased farm workers.

HERITAGE SIGNIFICANCE	Graves are sacred. Section 36 of NHRA.
MITIGATION	100 m servitude to be reserved.

SITE NO	COORDINATES		PERIOD
LNV05	29°17'44.70"S	23°12'38.30"E	19th / 20th Century

DESCRIPTION: Located in a shallow valley flanked by ridges. An isolated circular stone cairn 160 cm in diameter. It can be a burial.	
HERITAGE SIGNIFICANCE	Possible grave.
MITIGATION	It must be investigated. Otherwise, it should not be disturbed. A 100 m servitude must be reserved.

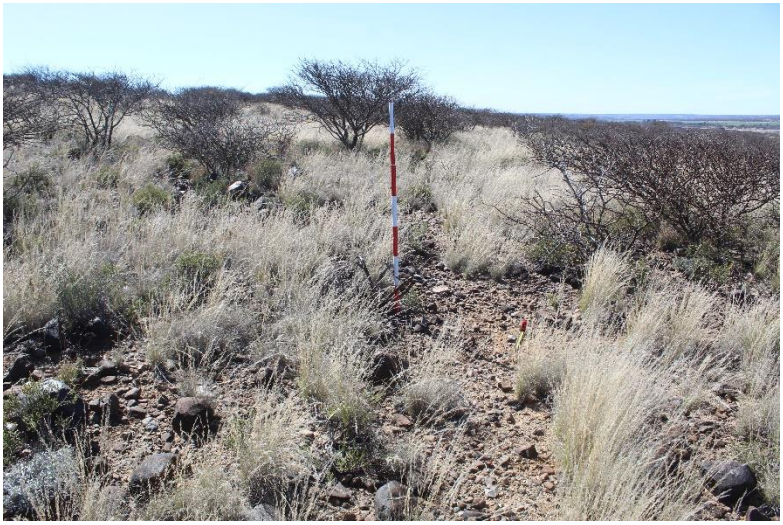
SITE NO	COORDINATES		PERIOD
LNV06	29°17'42.00"S	23°12'38.80"E	MSA/LSA

DESCRIPTION: Flat area on the edge of the Orange River old floodplain.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action is required.

SITE NO	COORDINATES		PERIOD
LNV08	29°17'22.96"S	23°13'22.54"E	20th Century

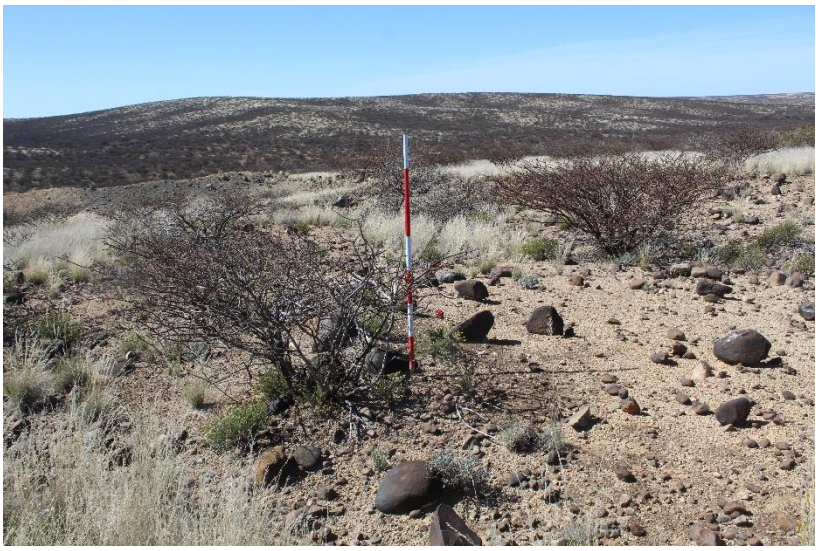
DESCRIPTION: An old farmstead with several old buildings of which one, with a hipped roof and a veranda facing south, was the principal dwelling. The building is not occupied.	
HERITAGE SIGNIFICANCE	Building associated with modern commercial farm
MITIGATION	The building will not be affected by the development

SITE NO	COORDINATES		PERIOD
LNV09	29°17'8.60"S	23°13'31.40"E	MSA/LSA



DESCRIPTION: On the escarpment, surface gravels and scattered blackthorn bushes. 2 scrapers, and a triangular flake.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action is required.

SITE NO	COORDINATES		PERIOD
LNV10	29°16'34.10"S	23°13'22.90"E	MSA/LSA

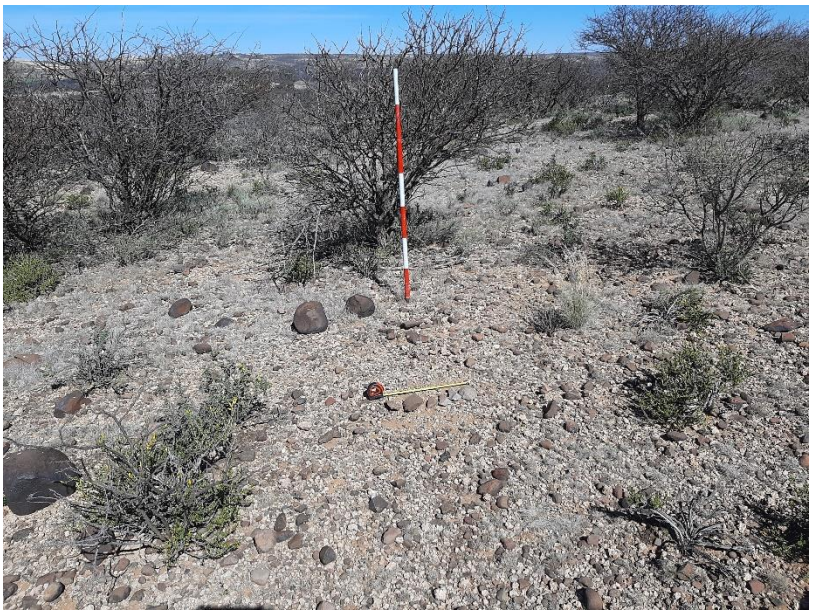


DESCRIPTION: On the summit of the glacial tillite ridges. Superficial gravels and sparse vegetation. Two microlithic blades.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action is required.

SITE NO	COORDINATES		PERIOD
LNV11	29°15'56.80"S	23°12'39.90"E	MSA/LSA

DESCRIPTION: North of the glacial tillite ridges. Fine surface gravel – red stones and calcrete waste, and a calcrete hardpan exposed in places. A small cleaver and flake.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action is required.

SITE NO	COORDINATES		PERIOD
LNV12	29°16'54.00"S	23°14'28.70"E	MSA/LSA



DESCRIPTION: On the edge of the Orange River floodplain. 6 lithics: 1 quartz scraper, 2 blades, and 3 dolomite scrapers.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action is required.

SITE NO	COORDINATES		PERIOD
LNV13	29°16'29.80"S	23°15'10.20"E	MSA/LSA

DESCRIPTION: Flat terrain between a calcrete ridge and a dry streambed. 2 chert blades of which one is a triangular blade.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action is required.

SITE NO	COORDINATES		PERIOD
LNV14	29°16'37.30"S	23°15'4.50"E	MSA/LSA

DESCRIPTION: A flat area overlooking the Orange River floodplain. A hand axe with retouched edges.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action is required.

SITE NO	COORDINATES		PERIOD
LNV15	29°16'39.50"S	23°14'53.80"E	MSA/LSA

DESCRIPTION: A flat area overlooking the Orange River floodplain. 3 lithics – a triangular blade, scraper, and 2 flakes.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action is required.

SITE NO	COORDINATES		PERIOD
LNV16	29°16'41.90"S	23°14'35.00"E	MSA/LSA

DESCRIPTION: An elevated area overlooking the Orange River floodplain. A circular stone feature 60 cm in diameter. An isolated scraper was found.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action is required.