

**PHASE I HERITAGE IMPACT ASSESSMENT IN TERMS OF SECTION
38 OF THE NATIONAL HERITAGE RESOURCES ACT NO 25/1999
FOR THE PROPOSED PROSPECTING AND MINING RIGHT ON THE
REMAINING EXTENT OF THE FARM MESNARD 38, FARM ROOIPAN
43, FARM LA PROVENCE 51, REMAINING EXTENT AND PORTION 1
(TURKSVYPAN) OF THE FARM 52, PORTION 1 OF THE FARM
HOPEFIELD ESTATE 552, REMAINING EXTENT OF THE FARM 565
IN THE SIYANCUMA LOCAL MUNICIPALITY, NORTHERN CAPE**

Prepared by

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5 October 2020



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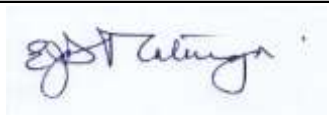
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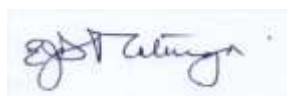
	Name	Signature	Date
FIELD WORK & REPORT	E. Matenga		04 October 2020

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. This report is the outcome of a Heritage Impact Assessment (HIA) study undertaken on behalf Thuderflex (Pty) Ltd in support of an application for a Prospecting and Mining Right on a number of adjoining properties named in the title of this report. The properties are situated 10km north of Griekwastad in the Siyancuma Local Municipality, Northern Cape Province.
2. A ground survey was undertaken on 26 and 27 September 2020 for the documentation of archaeological and historical material that might occur on the properties.
3. The following is an outline of the heritage sensitivity of the area:

4. *The Stone Age*

Stone Age material is widely distributed in the area and a wide range of tools are represented - scrapers, blades, cores and flakes – principally dating from the Middle Stone Age to the Late Stone Age. It is possible that the handaxe and cleaver found date to the transition period from the Early Stone Age to the Middle Stone 250 000 year ago. The artefacts are sparsely distributed and no significant concentrations of artefacts were observed. This pattern seems to indicate general hunter-gatherer activity in the area over time, rather than representing dedicated workshops or regular occupation sites. None of the finds therefore warrant further action.

5. *The Early Iron Age*

No sites dating to the Iron Age were found.

6. *The Later Iron Age*

No sites dating to the LIA were found.

7. *Early Commercial Farming*

There are some buildings of interest at the La Provence farmstead (LPV01, LPV3), which will not be affected by the proposed development.

8. *Graves and burial grounds*

No graves or burial grounds were recorded.

9. *General observations*

At the time of the field excursion, access had been granted to the Farm La Provence and the Farm 38/RE. The owner of the latter property was not available at the last minute when we approached the locked main entrance gate, and his mobile phone was not being answered.

10. As partial compensation for the limited access to the properties, and in order to assess the heritage sensitivity of the broader area we deliberately extended the survey into Farm 50/RE situated immediately south of La Provence, where access was granted.

11. *General observations and postulated heritage sensitivity of the portions that were not surveyed*

It is an established fact that the broader area was home to MSA/LSA hunter gatherer communities who left behind stone tools and flake waste which commonly occur. MSA/LSA tools have been recorded in all surveys conducted by the specialist in the area. No occurrences have been deemed highly significant to warrant further action beyond primary documentation.

12. The Table below provides a confidence rating of the desktop assessment:

	HERITAGE TYPOLOGY	PROBABILITY OF OCCURRENCE	CONFIDENCE
1	MSA/LSA	99.99%	High
2	EIA/LIA	0.01%	High
3	Burial grounds	50%	Medium
4	Farm buildings	75%	High

13. Table 1: Inventory of heritage sites

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
LPV01	28°45'58.20"S	23°14'43.10"E	MSA/LSA	The farmstead on La Provence Farm. There are several buildings including an old double storey farmhouse. The building has gables and a third wing gable in the middle of the north aspect. A garage and workshop on the ground floor open to the north. The living area is on the first floor approached from a staircase built on the east aspect of the building. There is a modern farmhouse to the north with a multi-shaped roof combining a gable and hipped roof.	Medium B	The buildings will not be affected.
LPV02	28°45'57.17"S	23°14'48.41"E	MSA/LSA	Rectangular cattle enclosures at the farmstead are built from locally available stones and cement. An entrance to one of the enclosures has a lintel crowned by three bosses and a date of 13/8/96 inscribed on cement indicate that this was possibly an extension to an existing structure.	Medium B	The structures will not be affected.
LPV03	28°45'51.86"S	23°14'36.88"E	MSA/LSA	Rectangular artificial dam of lack constructed to trap seasonal rainfall. A concrete embankment built on the spillway. The rest of the rim of the dam is an earth embankment c 2m high. Size: 180m x 80m.	Low	No further action required.
LPV04	28°45'46.30"S	23°14'43.90"E	MSA/LSA	Flat terrains with scattered bushes. Red-brown soil with dense grit. 1 scraper.	Medium B	No further action required.
LPV05	28°45'43.40"S	23°14'44.40"E	MSA/LSA	Flat open terrain with scattered bushes. Red-brown soil and red-brown stones and grit. 1 small flaked core, which may have been used as a scraper as well.	Medium B	No further action required.
LPV06	28°45'31.80"S	23°14'40.30"E	MSA/LSA	Flat open terrain with scattered bushes. Red-brown soil and small size grit. 1 blade.	Medium B	No further action required.

LPV07	28°45'27.50"S	23°14'31.10"E	MSA/LSA	Flat terrain, red-brown soils and scatters of stones. Acacia scrub of medium density, dominated by <i>swarthaak</i> (<i>Acacia mellifera</i> subsp. <i>Detinens</i>). 1 lithic – a core with multiple flake surfaces.	Medium B	No further action required.
LPV08	28°45'31.06"S	23°14'26.26"E	MSA/LSA	Flat terrain gently dipping to the east from the base of a ridge. Acacia scrub vegetation of medium density dominated by <i>swarthaak</i> (<i>Acacia mellifera</i> subsp. <i>Detinens</i>). Red-brown soil with high density of stones and grit. 3 lithics – 1 scraper, 1 blade and 1 flake.	Medium B	No further action required.
LPV09	28°45'36.80"S	23°14'31.50"E	MSA/LSA	Flat open terrain gently dipping to the east from the base of a dolomite ridge. Acacia scrub vegetation of medium density dominated by <i>swarthaak</i> (<i>Acacia mellifera</i> subsp. <i>Detinens</i>). Red-brown soil with high density of grit. 1 quartzite tool resembles a small cleaver.	Medium B	No further action required.
LPV10	28°45'38.00"S	23°14'31.10"E	MSA/LSA	Flat terrain gently dipping to the east from the base of a dolomite ridge. Acacia scrub vegetation of medium density dominated by <i>swarthaak</i> (<i>Acacia mellifera</i> subsp. <i>Detinens</i>). Red-brown soil with grit. A rusted teapot with patches of the white body paint. Spherical body but with flat base. 12cm diameter at the mouth, maximum diameter of 15cm.	Low	No further action required.
LPV11	28°46'39.90"S	23°14'53.10"E	MSA/LSA	Flat terrain gently dipping to the east from the base of a ridge. Acacia scrub vegetation of medium density dominated by <i>swarthaak</i> (<i>Acacia mellifera</i> subsp. <i>Detinens</i>). Red-brown soil with grit. 1 crude tool could have been used for chopping in the same way as a cleaver or handaxe.	Medium B	No further action required.
LPV12	28°46'29.90"S	23°15'7.50"E	MSA/LSA	Flat terrain, sparse Karoo scrub vegetation. 1 small pear-shaped tool.	Medium B	No further action required.
LPV13	28°46'44.90"S	23°15'1.80"E	MSA/LSA	Flat terrain, red-brown soil with grit. Sparse Karoo scrub vegetation. 1 small pear-shaped tool.	Medium B	No further action required.

LPV14	28°47'52.00"S	23°15'22.30"E	MSA/LSA	Farmstead, the main house is of stonework with sanded plaster added and yellow paint. A domed structure made of fibreglass resembles an igloo or Zulu indlu. Other outbuildings and exotic tree plantings.	Medium B	The buildings will not be affected.
LPV15	28°47'48.80"S	23°15'22.80"E	MSA/LSA	Flat open terrain, no trees. On the outskirts of the farmstead. 3 lithics – flakes.	Medium B	No further action required.
LPV16	28°47'45.10"S	23°15'25.60"E	MSA/LSA	Flat terrain, light brown soil with calcretic grit. A fine scraper. Collectible.	Medium B	No further action required.
LPV17	28°47'43.10"S	23°15'26.60"E	MSA/LSA	Flat terrain, light brown soil with calcretic grit. A small rectangular building of whitewashed cement block bricks with gables and corrugated zinc roof. Abandoned	Medium B	No further action required.
LPV18	28°47'31.60"S	24° 15'36.9"E	MSA/LSA	Flat open terrain and isolated bushes. Light brown soils with calcretic waste. 3 lithics – 2 small scrapers and a flake.	Medium B	No further action required.
LPV19	28°47'38.70"S	23°15'33.40"E	MSA/LSA	Flat open terrain, no trees. Light brown soils with calcretic waste. 3 lithics – 1 scrapers, 1 quartzite blade and 1 flake.	Medium B	No further action required.
LPV20	28°47'41.30"S	23°15'31.10"E	MSA/LSA	Flat open terrain, no trees. Light brown soils with calcretic waste. 4 lithics – 1 scraper, 1 blade, 2 flakes.	Medium B	No further action required.
LPV21	28°47'42.30"S	23°15'28.70"E	MSA/LSA	Flat open terrain, no trees. 1 scraper	Medium B	No further action required.
LPV22	28°48'12.80"S	23°16'7.30"E	MSA/LSA	Flat open terrain, brown gritty soil and exposures of dolomite hardpan, scattered trees. 5 lithics – 1 scraper, 3 flakes, 1 triangular blade.	Medium B	No further action required.
LPV23	28°48'17.60"S	23°16'11.50"E	MSA/LSA	Flat terrain, brown soil with exposures of calcretic hardpan and scatters of waste. 1 triangular blade.	Medium B	No further action required.
LPV24	28°48'22.00"S	23°16'8.40"E	MSA/LSA	Flat terrain, calcretic waste, dolomite hard pan. 5 lithics - 1 scraper and flake waste.	Medium B	No further action required.

LPV25	29°32'53.40"S	24° 1'45.60"E	MSA/LSA	On the edge of a dry stream bed. Dolomite bedrock. 4 lithics. Flake tools.	Medium B	No further action required.
LPV26	28°48'26.90"S	23°16'14.90"E	MSA/LSA	Flat terrain, calcretic waste and hardpan. Isolated trees. 5 lithics – 4 scrapers, 1 blade.	Medium B	No further action required.
LPV27	28°48'30.30"S	23°15'59.30"E	MSA/LSA	Flat open terrain, calcretic waste. Isolated trees. 4 lithics – 3 scrapers, 1 blade.	Medium B	No further action required.
LPV28	28°48'29.90"S	23°15'54.50"E	MSA/LSA	The ground rises southwest from a dry streambed, open area no trees. Calcretic waste and hardpan. 5 lithics – 2 scrapers, 2 blades. 1 flake.	Medium B	No further action required.
LPV29	28°48'46.10"S	23°15'54.10"E	MSA/LSA	Flat open terrain, open area no trees. Calcretic waste and hardpan. 1 blade.	Medium B	No further action required.
LPV30	28°48'47.60"S	23°15'53.10"E	MSA/LSA	Flat open terrain, no trees. Calcretic waste and hardpan. 5 lithics - 1 blade, 1 scraper, 2 flakes, 1 flaked core.	Medium B	No further action required.
LPV31	28°48'45.30"S	23°15'51.90"E	MSA/LSA	Flat open terrain, no trees. Calcretic waste and hardpan. 1 blade.	Medium B	No further action required.
LPV32	28°48'52.80"S	23°16'4.90"E	MSA/LSA	Flat open terrain, isolated trees. Calcretic waste and hardpan. 4 lithics - 2 blades, 2 scrapers.	Medium B	No further action required.
LPV33	28°47'22.60"S	23°15'15.00"E	MSA/LSA	Flat open terrain, isolated trees. Calcretic waste and hardpan. 1 scraper.	Medium B	No further action required.
LPV34	28°47'22.60"S	23°15'11.90"	MSA/LSA	Flat open terrain, isolated trees. Calcretic waste. 1 scraper.	Medium B	No further action required.

14. 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. Footprint of early modern mining. These may be protected at the recommendations of a heritage expert.	0
3	Medium B	Sites exhibiting archaeological characteristics of the area, unless otherwise recommended no further action is warranted after they have been documented.	31
4	Low	Heritage sites which have been recorded, but considered of minor value relative to the proposed development.	3
		TOTAL	34

15. Conclusion and recommendations

In light of the findings of the ground survey and desk assessment, the mine prospecting can go ahead. The study is mindful that some important discoveries may be made during the prospecting and mining phases. If this will happen, the procedure is to halt operations, notify the provincial heritage resources authority or SAHRA in order for an investigation and evaluation of the finds to take place.

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ABBREVIATIONS

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

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 \pm 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 Heritage Impact Assessment (HIA) report has been prepared on behalf of Thuderflex (Pty) Ltd in support of an application for a Prospecting and Mining Right on a number of adjoining properties named in the title of this report situated 10km north of Griekwastad in the Siyancuma Local Municipality, Northern Cape Province. A ground survey was undertaken on 26 and 27 September 2020 for the documentation of archaeological and historical material that might occur on the properties. The report complies with Section 38(8) of the National Heritage Resources Act (No 25 of 1999) which requires that mitigation measures be considered as part of an Environmental Impact Assessment (EIA) where a proposed development is likely to result in the disturbance or destruction of heritage resources.

1.1. Nature of development and expected impacts

The applicant intends to prospect for and mine diamonds on the properties situated north of Griekwastad. Prospecting and opencast mining may entail the following activities:

- Excavations and trenching
- Test pits
- Drilling
- Excavation of open quarries to extract the mineral
- Opening of permanent/temporary service roads
- Location of processing plant
- Establishment of temporary or permanent residential quarters

The proposed activities may result in the disturbance or destruction of heritage resources where they exist. The purpose of an HIA and palaeontological desktop study is to ascertain the heritage sensitivity of the area in order to prescribe appropriate mitigation measures.

2. LOCATION AND PHYSICAL SETTING

The properties lie 10k north of Griekwastad. Griekwastad is situated near the eastern escarpment of the Ghaap Plateau, a vast elevated plain 1400m AMSL in this area. An old valley floor in which the Orange and Vaal Rivers flow forms the eastern and south-

eastern limits of plateau, which extends to the Kuruman Hills in the west and to Vryburg in the north. The terrain is flat, part of the Highveld merging with the Kalahali sands on its western margin. The area is calcareous and on the properties under study calcretic waste can be seen with occasional exposures of hard surfaces. The calcrete overlaps with dolomitic hardpans. A western portion of the property is covered by gritty red-brown soils; some hills and ridges form a western backdrop. Vegetation is Karoo scrub type dominated by hooked thorns - *swarthaak* (*Acacia mellifera* subsp. *Detinens*) in medium to low density.



Figure 1: Google-Earth map shows the location of the properties under study north of Griekwastad.



Figure 2: La Provence Farm. In the background a ridge which forms a western backdrop to the area and in the foreground red brown gritty soils and thorny scrub, swarthaak (*Acacia mellifera subsp. Detinens*)



Figure 3: Dolomitic bedrock exposed on a section of a dry streambed.



Figure 4: This view shows another common trees species called *Vaalbos*.



Figure 5: Calcareous surface.

3. LEGAL FRAMEWORK

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

The proposed prospecting requires a Heritage Impact Assessment as stipulated under Section 38 of the National Heritage Resources Act (No 25 1999). Terms and conditions of an HIA are stated as follows:

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

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

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

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

(i) exceeding 5 000m² in extent; or

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

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

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

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

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

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

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

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

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

3.2. International Principles and Policies

In practice heritage management advocates protection and respect the sanctity of all graves regardless of their age. International principles are based on the same ethical considerations. The the **Vermillion Accord on Human Remains** adopted by the **World Archaeological Congress (WAC)** at the WAC Inter-Congress in South Dakota (USA) urges “*respect for the mortal remains of the dead shall be accorded to all, irrespective of origin, race, religion, nationality, custom and tradition.*”

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

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

3.4. The Burra Charter

Some generic principles and standards for the protection of heritage resources are drawn from international charters and conventions, in particular the **Australia Charter for the Conservation of Places of Cultural Significance (the Burra Charter 1999)**, which South Africa has adopted.

4. APPROACH AND METHODOLOGY

4.1. Literature Survey

A literature is undertaken to collect background information on the area as it relates to geography, history and culture. A number of reports generated through heritage impact assessment studies shed light on the cultural sequence and heritage potential of the broader area.

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

Van Ryneveld, K. 2012. (ArchaeoMaps). *Phase 1 Archaeological Impact Assessment – Metsimatala Solar Project, Groenwater 453, Siyanda District Municipality, Northern Cape, South Africa.*

Van Ryneveld, K. (ArchaeoMaps). 2016. *Assessment – Metsimatala 150MW CSP Solar Energy Facility, Groenwater No 453, (near Postmasburg), Siyanda District Municipality, Northern Cape.*

In both studies conducted 50km north of Griekwastad, a low density of Stone Age ascribed to the later Middle Stone Age (MSA) and the microlithic Later Stone Age (LSA). Artefacts were produced from a variety of raw material sources, including medium to fine grained dolerite, banded iron stone, jaspilite, baked shale, quartzitic material and a few siliceous pieces (2016: page 13).

Palaeo Field Services. 2018. *Phase 1 Heritage Impact Assessment of proposed installation of a new 19 ha irrigation pivot on the farm Reliance no. 347 near Griekwastad, Northern Cape Province.* The study was conducted on the farm on the farm Reliance no. 347, located about 11 km northwest of Griekwastad. No archaeological or historical material was found although it was suspected there might be material buried under the mantle of shifting aeolian Kalahali sands.

Morris, D. (2012). *Archaeological & Cultural Heritage Impact Assessment Phase 1: Proposed Olien Solar Project on Portion 4 of Farm 300, Barkly West, near Lime Acres, Northern Cape.* McGregor Museum, Kimberley. Summary of report incorporated into Francini van Staden. 2014. *Final Impact Assessment Report & Environmental Management Programme for 'Olien Solar Facility' on Portion 4 of Farm 300 Barkly West, Lime Acres, Northern Cape.*

The findings were summarized as follows: Colonial era heritage traces comprising remains of kraals constructed from calcrete cobbles found north of the farmstead and burial ground. A very low density of surface Stone Age lithics found over the development site. The artefacts were scattered fairly isolated from one another and considered of minimal significance (pages 69, 71).

Matenga, E. 2016. *Phase 1 Heritage Impact Assessment 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 503 (Werda) near Postmasburg in the Northern Cape Province.*

The presence of a stone tool kit dating from the Middle Stone Age and Late Stone Age was established. On a more general note, the studies cited above and many others not mentioned here have noted the occurrence of sites dating from Early Stone Age (ESA) through the Middle Stone Age (MSA) to the Late Stone Age (LSA), with a majority being of a MSA/LSA date. The finds are sparsely distributed scrapers, blades and cores without concentrated finds representing manufacturing sites or settlements.

4.2. Ground Survey

Walking surveys were undertaken. A vehicle was used to change survey positions to ensure reasonable coverage and a representative sample in light of the large size of the property. Photographs were taken to show the general character of the landscape as well as the locale of artefacts and features seen. A Catalogue of the findings is presented in Section 7 of this Report.

4.3. Limitations of the study

At the time of the field excursion, access to a number of the properties had not been granted. Access had been granted to the Farm La Provence (Farm 51/RE). As partial compensation for the limited access, and in order to get a better understanding of the broader area we deliberately extended the survey into Farm 50/RE immediately south of La Provence, where the owner had granted access.

4.4. Significance Ranking

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. Footprint of early modern mining. These may be protected at the recommendations of a heritage expert.	
3	Medium B	Sites exhibiting archaeological characteristics of the area, 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	

5. ARCHAEOLOGICAL AND HISTORICAL CONTEXT

The Table below provides an overview of the cultural sequence in South Africa from the Early Stone Age to the beginning of the modern industrial age.

5.1. Cultural Sequence Summary

PERIOD	EPOCH	ASSOCIATED CULTURAL GROUPS	TYPICAL MATERIAL EXPRESSIONS
Early Stone Age 2.5m – 250 000 YCE	Pleistocene	Early Hominids: <i>Australopithecines</i> <i>Homo habilis</i> <i>Homo erectus</i>	Typically large stone tools such as hand axes, choppers and cleavers.
Middle Stone Age 250 000 – 25 000 YCE	Pleistocene	First <i>Homo sapiens</i> species	Typically smaller stone tools such as scrapers, blades and points.
Late Stone Age 20 000 BC – present	Pleistocene / Holocene	<i>Homo sapiens</i> 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	19 th Century	European settlers / farmers / missionaries/ industrialisation	Buildings, Missions, Mines, metals, glass, ceramics

5.2. Appearance of hominids

Early hominids were proto-humans that have been recorded in South Africa dating to 3 or 4 million before present. These were later to evolve into modern humans. The nearest hominid fossil site is Taung near Vryburg (180km to the northeast). This is a UNESCO World Heritage Site proclaimed together with the Sterkfontein Caves (Krugersdorp) and Makapans Valley (Mokopane) in a serial nomination. No hominid sites have been reported along the Vaal River.

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

The Stone Age dates back more than 2 million years representing a more explicit beginning of the cultural sequence divided into three epochs, the Early, Middle and Late Stone Ages. These early people made stone and bone implements. Material evidence is found in caves, rock-shelters and on river sides and edges of streams, and very rarely seen in open country. The earliest tools have been identified as pear-shaped handaxes, cleavers and crude core tools.² These tool industries have been called Oldowan and Acheulian and were probably used to butcher large animals such as elephants, rhinoceros and hippopotamus. Acheulian artefacts are usually found near sites where they were manufactured and thus in close proximity to the raw material or at kill sites. Early hunters are classified as hominids meaning that they had not evolved to the present human form. Progressively a good profile of the Stone Age in the Northern Cape Province has been constructed from many heritage impact assessments that have been conducted in recent years. Early (ESA) and Middle Stone Age (MSA) lithics occur over most of area with a more recent find of Later Stone Age (LSA) occupations.³ In the current study a small hand axes and possible cleavers have been found which may date to the end of the Early Stone Age and beginning of the Middle Stone Age. The Wonderwerk Cave 100km to the north has become a benchmark for the characterisation of the Stone Age. Excavations reveal a long sequence of occupation spanning the Early (ESA), Middle (MSA) and Later Stone Ages.⁴

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

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

² Deacon, H.J. & Deacon, J. 1999. Human Beginnings in South Africa: Uncovering the Secrets of the Stone Age. Cape Town: David Philip.

³ Schalkwyk, J. 2015. Heritage Scoping Assessment for the Proposed Perseus-Kronos 765KV Transmission Power Line and Substations Upgrade, Northern Cape and Free State Provinces, p6.

⁴ Humphreys, A.J.B. & Thackeray, A.I. 1983. Ghaap and Gariep. Later Stone Age Studies in the Northern Cape. Cape Town: South African Archaeological Society Monograph Series 2.

were used for shelter suggesting permanent or semi-permanent settlement. There is archaeological evidence from some of the caves indicating the making of fire.⁵

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

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

Humans had evolved to *Homo sapiens* (modern man) by the beginning of the Late Stone Age (LSA), which refer to the modern physical form and thinking capabilities. Several behavioural traits are noticed, such as rock art and purposeful burials with ornaments, became a regular practice. LSA technology is characterised by microlithic scrapers and segments made from very fine-grained rock. Spear hunting continued, but LSA people also hunted small game with bows and poisoned arrows. Practitioners of rock art were ancestors of the San and sites abound in the whole of Southern Africa. Wildebeest Kuil Rock Art Centre is a rock engraving site now with an interpretation centre on land owned by the !Xun and Khwe San situated c. 60 km to the southeast from the study area along the R31 road from Kimberley to Barkly West. The site was first known to the public in modern times by the renowned 19th century researcher, George William Stow.⁶ A number of rock engravings have been reported in the vicinity of Lime Acres and Danielskuil⁷ (c. 65km northeast) and south of the area near the confluence of the Vaal and Orange Rivers.

5.6. Early Iron Age

The Iron Age was a gradual spread or expansion of settlement of different groups of speakers of Bantu languages over a period that could have spanned more than 2 millennia. These communities indigenous to the continent brought with them domestic animals, crops, pottery and metal technology. However there are few if any sites attributed to the EIA in the western parts of the country.⁸ Most Iron Age settlements are concentrated in the eastern part of the country. The woodland zone would have

⁵ Deacon, J & H. Deacon. 1999. *Human Beginnings in South Africa*. Cape Town: David Philip.

⁶ Wildebeest Kuil Rock Art Centre, at: <http://www.kimberley.co.za/city/wildebeest-kuil-rock-art-centre/> (Consulted 3 May 2017).

⁷ Collins, S. 1973. Rock-engravings of the Danielskuil Townlands. *South African Archaeological Bulletin* 109-110: 49-57.; Eastwood, E.B. & Smith, B.W. 2005.

⁸ Phillipson, D. W. 2005. *African Archaeology*. Cambridge: University of Cambridge Press.

been preferred by the farmers because of favourable conditions for crops. However there is strong possibility that transhumant pastoralism was practiced and seasonal hunting camps were established in the inhospitable western regions of the country. There is increasing evidence that sheep and cattle as well might have moved into the area much earlier than the Iron Age.⁹

5.7. The Later Iron Age

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

5.8. Historical context

The study area is historically home to the Tlhaping segment of the Tswana, who descended from the Iron Age people and probably from as far back as the Stone Age. The early 19th century was a political turning point with an increasingly uncertain security situation and internal displacements. The first of these episodes was the Difaqane characterised by inter-tribal warfare, which led to extensive displacement of communities on the South African Highveld.

The history of the area is not complete without mention of the footprint of the Griqua people. Historically their cradle was in the northeastern Cape Colony and they were predominantly of Khoi-Khoi stock with an infusion through marriage of other groups in the area from the 1st century. Adam Kok 1 is considered the founding leader. He moved his people north from the Cape Colony out of the expanding colonial frontier. His successor, Andries Waterboer settled with his people in what became Griqualand West and therein comes the historical connection between the Tlhaping and the Griquas. 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

⁹ Evers, T. M. 1988. Recognition of Groups in the Iron Age of Southern Africa. Unpublished PhD Thesis, University of Witwatersrand. Huffman 2007. A Handbook on the Iron Age. Scottsville: UKZN Press

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.

“rush”. The area which became known as Griqualand West was subsequently incorporated into the Cape Colony in the 1880s.¹¹

5.9. Early Contact with the Boers

On the eve of colonial occupation a number of traders, hunters, explorers and missionaries transited the area. A few can be named here - PJ Truter's and William Somerville (arriving in 1801), 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. Conflict escalated when the Korana and Griqua communities and the British government got 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).

6. FINDINGS OF THE SURVEY

The heritage sensitivity of the properties is summarised as follows:

6.1. The Stone Age

Stone Age material is widely distributed in the area and a wide range of tools are represented - scrapers, blades, cores and flakes – principally dating from the Middle Stone Age to the Late Stone Age. The handaxe and cleaver may date to the transition period from the Early Stone Age to the Middle Stone 250 000 year ago. The artefacts are sparsely distributed and no concentrations of artefacts were observed. This pattern seems to indicate general hunter-gatherer activity in the area over time, rather than representing dedicated workshops or regular occupation sites. None of the finds therefore warrant further action.

6.2. The Early Iron Age

No sites dating to the Iron Age were found.

¹¹ 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.

6.3. The Later Iron Age

No sites dating to the LIA were found.

6.4. Early Commercial Farming

There are some buildings of interest at the farmstead (LPV01, LPV3), which will not be affected by the proposed development.

6.5. Burials

No graves or burial grounds were recorded.

6.6. General observations

At the time of the field excursion, permission for entry had been granted to the Farm La Provence (Farm 51/RE) and the Farm 38/RE. The owner of the latter property was not available at the last minute when we approached the locked entrance gate and his mobile phone was not being answered.

As partial compensation for the limited access, and in order to get a better understanding of the heritage sensitivity of the broader area, the survey was deliberately extended into Farm 50/RE immediately south of La Provence, where the owner had granted access even as it was at short notice.

6.6.1. Postulated heritage sensitivity of the portions that were not surveyed

It is an established fact that the broader area was home to MSA/LSA hunter gatherers who left behind the stone tools and flake waste which commonly occur. MSA/LSA tools have been seen in all surveys conducted by the specialist in the broader area. No occurrences have been deemed highly significant to warrant further action beyond primary documentation.

The Table below provides a confidence rating of the findings:

	HERITAGE TYPOLOGY	PROBABILITY OF OCCURRENCE	CONFIDENCE
1	MSA/LSA	99.99%	High
2	EIA/LIA	0.01%	High
3	Burial grounds	50%	Medium
4	Farm buildings	75%	High

Table 1: Inventory of heritage sites

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
LPV01	28°45'58.20"S	23°14'43.10"E	MSA/LSA	The farmstead on La Provence Farm. There are several buildings including an old double storey farmhouse. The building has gables and a third wing gable in the middle of the north aspect. A garage and workshop on the ground floor open to the north. The living area is on the first floor approached from a staircase built on the east aspect of the building. There is a modern farmhouse to the north with a multi-shaped roof combining a gable and hipped roof.	Medium B	The buildings will not be affected.
LPV02	28°45'57.17"S	23°14'48.41"E	MSA/LSA	Rectangular cattle enclosures at the farmstead are built from locally available stones and cement. An entrance to one of the enclosures has a lintel crowned by three bosses and a date of 13/8/96 inscribed on cement indicate that this was possibly an extension to an existing structure.	Medium B	The structures will not be affected.
LPV03	28°45'51.86"S	23°14'36.88"E	MSA/LSA	Rectangular artificial dam of lack constructed to trap seasonal rainfall. A concrete embankment built on the spillway. The rest of the rim of the dam is an earth embankment c 2m high. Size: 180m x 80m.	Low	No further action required.
LPV04	28°45'46.30"S	23°14'43.90"E	MSA/LSA	Flat terrains with scattered bushes. Red-brown soil with dense grit. 1 scraper.	Medium B	No further action required.
LPV05	28°45'43.40"S	23°14'44.40"E	MSA/LSA	Flat open terrain with scattered bushes. Red-brown soil and red-brown stones and grit. 1 small flaked core, which may have been used as a scraper as well.	Medium B	No further action required.
LPV06	28°45'31.80"S	23°14'40.30"E	MSA/LSA	Flat open terrain with scattered bushes. Red-brown soil and small size grit. 1 blade.	Medium B	No further action required.

LPV07	28°45'27.50"S	23°14'31.10"E	MSA/LSA	Flat terrain, red-brown soils and scatters of stones. Acacia scrub of medium density, dominated by swarthaak (<i>Acacia mellifera</i> subsp. <i>Detinens</i>). 1 lithic – a core with multiple flake surfaces.	Medium B	No further action required.
LPV08	28°45'31.06"S	23°14'26.26"E	MSA/LSA	Flat terrain gently dipping to the east from the base of a ridge. Acacia scrub vegetation of medium density dominated by swarthaak (<i>Acacia mellifera</i> subsp. <i>Detinens</i>). Red-brown soil with high density of stones and grit. 3 lithics – 1 scraper, 1 blade and 1 flake.	Medium B	No further action required.
LPV09	28°45'36.80"S	23°14'31.50"E	MSA/LSA	Flat open terrain gently dipping to the east from the base of a dolomite ridge. Acacia scrub vegetation of medium density dominated by swarthaak (<i>Acacia mellifera</i> subsp. <i>Detinens</i>). Red-brown soil with high density of grit. 1 quartzite tool resembles a small cleaver.	Medium B	No further action required.
LPV10	28°45'38.00"S	23°14'31.10"E	MSA/LSA	Flat terrain gently dipping to the east from the base of a dolomite ridge. Acacia scrub vegetation of medium density dominated by swarthaak (<i>Acacia mellifera</i> subsp. <i>Detinens</i>). Red-brown soil with grit. A rusted teapot with patches of the white body paint. Spherical body but with flat base. 12cm diameter at the mouth, maximum diameter of 15cm.	Low	No further action required.
LPV11	28°46'39.90"S	23°14'53.10"E	MSA/LSA	Flat terrain gently dipping to the east from the base of a ridge. Acacia scrub vegetation of medium density dominated by swarthaak (<i>Acacia mellifera</i> subsp. <i>Detinens</i>). Red-brown soil with grit. 1 crude tool could have been used for chopping in the same way as a cleaver or handaxe.	Medium B	No further action required.

LPV12	28°46'29.90"S	23°15'7.50"E	MSA/LSA	Flat terrain, sparse Karoo scrub vegetation. 1 small pear-shaped tool.	Medium B	No further action required.
LPV13	28°46'44.90"S	23°15'1.80"E	MSA/LSA	Flat terrain, red-brown soil with grit. Sparse Karoo scrub vegetation. 1 small pear-shaped tool.	Medium B	No further action required.
LPV14	28°47'52.00"S	23°15'22.30"E	MSA/LSA	Farmstead, the main house is of stonework with sanded plaster added and yellow paint. A domed structure made of fibreglass resembles an igloo or Zulu indlu. Other outbuildings and exotic tree plantings.	Medium B	The buildings will not be affected.
LPV15	28°47'48.80"S	23°15'22.80"E	MSA/LSA	Flat open terrain, no trees. On the outskirts of the farmstead. 3 lithics – flakes.	Medium B	No further action required.
LPV16	28°47'45.10"S	23°15'25.60"E	MSA/LSA	Flat terrain, light brown soil with calcretic grit. A fine scraper. Collectible.	Medium B	No further action required.
LPV17	28°47'43.10"S	23°15'26.60"E	MSA/LSA	Flat terrain, light brown soil with calcretic grit. A small rectangular building of whitewashed cement block bricks with gables and corrugated zinc roof. Abandoned	Medium B	No further action required.
LPV18	28°47'31.60"S	24° 15'36.9"E	MSA/LSA	Flat open terrain and isolated bushes. Light brown soils with calcretic waste. 3 lithics – 2 small scrapers and a flake.	Medium B	No further action required.
LPV19	28°47'38.70"S	23°15'33.40"E	MSA/LSA	Flat open terrain, no trees. Light brown soils with calcretic waste. 3 lithics – 1 scrapers, 1 quartzite blade and 1 flake.	Medium B	No further action required.
LPV20	28°47'41.30"S	23°15'31.10"E	MSA/LSA	Flat open terrain, no trees. Light brown soils with calcretic waste. 4 lithics – 1 scraper, 1 blade, 2 flakes.	Medium B	No further action required.
LPV21	28°47'42.30"S	23°15'28.70"E	MSA/LSA	Flat open terrain, no trees. 1 scraper	Medium B	No further action required.
LPV22	28°48'12.80"S	23°16'7.30"E	MSA/LSA	Flat open terrain, brown gritty soil and exposures of dolomite hardpan, scattered trees. 5 lithics – 1 scraper, 3 flakes, 1 triangular blade.	Medium B	No further action required.

LPV23	28°48'17.60"S	23°16'11.50"E	MSA/LSA	Flat terrain, brown soil with exposures of calcretic hardpan and scatters of waste. 1 triangular blade.	Medium B	No further action required.
LPV24	28°48'22.00"S	23°16'8.40"E	MSA/LSA	Flat terrain, calcretic waste, dolomite hard pan. 5 lithics - 1 scraper and flake waste.	Medium B	No further action required.
LPV25	29°32'53.40"S	24° 1'45.60"E	MSA/LSA	On the edge of a dry stream bed. Dolomite bedrock. 4 lithics. Flake tools.	Medium B	No further action required.
LPV26	28°48'26.90"S	23°16'14.90"E	MSA/LSA	Flat terrain, calcretic waste and hardpan. Isolated trees. 5 lithics – 4 scrapers, 1 blade.	Medium B	No further action required.
LPV27	28°48'30.30"S	23°15'59.30"E	MSA/LSA	Flat open terrain, calcretic waste. Isolated trees. 4 lithics – 3 scrapers, 1 blade.	Medium B	No further action required.
LPV28	28°48'29.90"S	23°15'54.50"E	MSA/LSA	The ground rises southwest from a dry streambed, open area no trees. Calcretic waste and hardpan. 5 lithics – 2 scrapers, 2 blades. 1 flake.	Medium B	No further action required.
LPV29	28°48'46.10"S	23°15'54.10"E	MSA/LSA	Flat open terrain, open area no trees. Calcretic waste and hardpan. 1 blade.	Medium B	No further action required.
LPV30	28°48'47.60"S	23°15'53.10"E	MSA/LSA	Flat open terrain, no trees. Calcretic waste and hardpan. 5 lithics - 1 blade, 1 scraper, 2 flakes, 1 flaked core.	Medium B	No further action required.
LPV31	28°48'45.30"S	23°15'51.90"E	MSA/LSA	Flat open terrain, no trees. Calcretic waste and hardpan. 1 blade.	Medium B	No further action required.
LPV32	28°48'52.80"S	23°16'4.90"E	MSA/LSA	Flat open terrain, isolated trees. Calcretic waste and hardpan. 4 lithics - 2 blades, 2 scrapers.	Medium B	No further action required.
LPV33	28°47'22.60"S	23°15'15.00"E	MSA/LSA	Flat open terrain, isolated trees. Calcretic waste and hardpan. 1 scraper.	Medium B	No further action required.
LPV34	28°47'22.60"S	23°15'11.90"	MSA/LSA	Flat open terrain, isolated trees. Calcretic waste. 1 scraper.	Medium B	No further action required.



Figure 6: Google Earth map shows the location of heritage sites.

6.7. 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. Footprint of early modern mining. These may be protected at the recommendations of a heritage expert.	0
3	Medium B	Sites exhibiting archaeological characteristics of the area, unless otherwise recommended no further action is warranted after they have been documented.	31
4	Low	Heritage sites which have been recorded, but considered of minor value relative to the proposed development.	3
		TOTAL	34

6.8. 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

Thirty-four (34) sites were recorded all of are of medium to low significance.

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

There are no Grade I or Grade II sites.

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

The risk ranking is a definition of potential risks based on perceived value of the heritage and potential threats posed by the proposed development. As mentioned above Six (6) sites must be protected. Three (3) sites with potential dangerous objects must be investigated.

(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 is an important lever of economic development for the South African economy. The mineral wealth can provide stimulus for rapid socio-economic development in the Northern Cape Province in particular and the country as a whole. Mining is labour intensive and can contribute immensely to alleviate the

current high rate of employment. General improvement in the quality of livelihoods in local communities and the country at large is expected.

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

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

No sites have been ranked of high significance to warrant further action.

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

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

6.9. 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	As a standard precaution, if archaeological or other heritage relics are found during the construction phase, heritage authorities will be advised immediately and a heritage specialist will be called to attend.
Level of significance of impacts after mitigation	Low.
Cumulative Impacts	None.
Comments or Discussion	None.

7. CONCLUSION AND RECOMMENDATIONS

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

8. CATALOGUE OF HERITAGE SITES

SITE NO	COORDINATES		PERIOD
LPV01	28°45'58.20"S	23°14'43.10"E	Morden





DESCRIPTION: The farmstead on La Provence Farm. There are several buildings including an old double storey farmhouse. The building has gables and a third wing gable in the middle of the north aspect. A garage and workshop on the ground floor open to the north. The living area is on the first floor approached from a staircase built on the east aspect of the building. There is a modern farmhouse to the north with a multi-shaped roof combining a gable and hipped roof.

HERITAGE SIGNIFICANCE	Association with modern commercial farming
MITIGATION	The buildings will not be affected.

SITE NO	COORDINATES		PERIOD
LPV02	28°45'57.17"S	23°14'48.41"E	Modern



DESCRIPTION: Rectangular cattle enclosures at the farmstead are built from locally available stones and cement. An entrance to one of the enclosures has a lintel crowned by three bosses and a date of 13/8/96 inscribed on cement indicate that this was possibly an extension to an existing structure.

HERITAGE SIGNIFICANCE	Association with modern commercial farming
MITIGATION	The structures will not be affected.

SITE NO	COORDINATES		PERIOD
LPV03	28°45'51.86"S	23°14'36.88"E	Modern



DESCRIPTION: Rectangular artificial dam of lack constructed to trap seasonal rainfall. A concrete embankment built on the spillway. The rest of the rim of the dam is an earth embankment c 2m high. Size: 180m x 80m.

HERITAGE SIGNIFICANCE	Association with modern commercial farming
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
LPV04	28°45'46.30"S	23°14'43.90"E	MSA/LSA



DESCRIPTION: Flat terrains with scattered bushes. Red-brown soil with dense grit.
1 scraper.

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

SITE NO	COORDINATES		PERIOD
LPV05	28°45'43.40"S	23°14'44.40"E	MSA/LSA



DESCRIPTION: Flat open terrain with scattered bushes. Red-brown soil and red-brown stones and grit. 1 small flaked core, which may have been used as a scraper as well.

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

SITE NO	COORDINATES		PERIOD
LPV06	28°45'31.80"S	23°14'40.30"E	MSA/LSA



DESCRIPTION: Flat open terrain with scattered bushes. Red-brown soil and small size grit. 1 blade.

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

SITE NO	COORDINATES		PERIOD
LPV07	28°45'27.50"S	23°14'31.10"E	MSA/LSA



DESCRIPTION: Flat terrain, red-brown soils and scatters of stones. Acacia scrub of medium density, dominated by *swarthaak* (*Acacia mellifera* subsp. *Detinens*). 1 lithic – a core with multiple flake surfaces.

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

SITE NO	COORDINATES		PERIOD
LPV08	28°45'31.06"S	23°14'26.26"E	MSA/LSA



DESCRIPTION: Flat terrain gently dipping to the east from the base of a ridge. Acacia scrub vegetation of medium density dominated by *swarthaak* (*Acacia mellifera subsp. Detinens*). Red-brown soil with high density of stones and grit. 3 lithics – 1 scraper, 1 blade and 1 flake.

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

SITE NO	COORDINATES		PERIOD
LPV09	28°45'36.80"S	23°14'31.50"E	MSA/LSA



DESCRIPTION: Flat open terrain gently dipping to the east from the base of a dolomite ridge. Acacia scrub vegetation of medium density dominated by *swarthaak* (*Acacia mellifera subsp. Detinens*). Red-brown soil with high density of grit. 1 quartzite tool resembles a small cleaver.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
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MITIGATION	No further action required.
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SITE NO	COORDINATES		PERIOD
LPV10	28°45'38.00"S	23°14'31.10"E	Modern



DESCRIPTION: Flat terrain gently dipping to the east from the base of a dolomite ridge. Acacia scrub vegetation of medium density dominated by *swarthaak* (*Acacia mellifera subsp. Detinens*). Red-brown soil with grit. A rusted teapot with patches of the white body paint. Spherical body but with flat base. 12cm diameter at the mouth, maximum diameter of 15cm.

HERITAGE SIGNIFICANCE	Association with modern commercial farming.
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
LPV11	28°46'39.90"S	23°14'53.10"E	MSA/LSA



DESCRIPTION: Flat terrain gently dipping to the east from the base of a ridge. Acacia scrub vegetation of medium density dominated by *swarthaak* (*Acacia mellifera* subsp. *Detinens*). Red-brown soil with grit. 1 crude tool could have been used for chopping in the same way as a cleaver or handaxe.

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

SITE NO	COORDINATES		PERIOD
LPV12	28°46'29.90"S	23°15'7.50"E	MSA/LSA



DESCRIPTION: Flat terrain, sparse Karoo scrub vegetation. 1 small pear-shaped tool.

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

SITE NO	COORDINATES		PERIOD
LPV13	28°46'44.90"S	23°15'1.80"E	MSA/LSA



DESCRIPTION: Flat terrain, red-brown soil with grit. Sparse Karoo scrub vegetation. 1 small pear-shaped tool.

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

SITE NO	COORDINATES		PERIOD
LPV14	28°47'52.00"S	23°15'22.30"E	Modern



DESCRIPTION: Farmstead, the main house is of stonework with sanded plaster added and yellow paint. A domed structure made of fibreglass resembles an igloo or Zulu *indlu*. Other outbuildings and exotic tree plantings.

HERITAGE SIGNIFICANCE	Association with modern commercial farming
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MITIGATION	Will not be affected.
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SITE NO	COORDINATES		PERIOD
LPV15	28°47'48.80"S	23°15'22.80"E	MSA/LSA



DESCRIPTION: Flat open terrain, no trees. On the outskirts of the farmstead. 3 lithics – flakes.

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

SITE NO	COORDINATES		PERIOD
LPV16	28°47'45.10"S	23°15'25.60"E	MSA/LSA



DESCRIPTION: Flat terrain, light brown soil with calcretic grit. A fine scraper. Collectible.

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

SITE NO	COORDINATES		PERIOD
LPV17	28°47'43.10"S	23°15'26.60"E	Modern
			
<p>DESCRIPTION: Flat terrain, light brown soil with calcretic grit. A small rectangular building of whitewashed cement block bricks with gables and corrugated zinc roof. Abandoned.</p>			
HERITAGE SIGNIFICANCE		Association with modern commercial farming.	
MITIGATION		No further action required.	

SITE NO	COORDINATES		PERIOD
LPV18	28°47'31.60"S	24° 15'36.9"E	MSA/LSA



DESCRIPTION: Flat open terrain and isolated bushes. Light brown soils with calcretic waste. 3 lithics – 2 small scrapers and a flake.

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

SITE NO	COORDINATES		PERIOD
LPV19	28°47'38.70"S	23°15'33.40"E	MSA/LSA



DESCRIPTION: Flat open terrain, no trees. Light brown soils with calcretic waste.
3 lithcs – 1 scrapers, 1 quartzite blade and 1 flake.

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

SITE NO	COORDINATES		PERIOD
LPV20	28°47'41.30"S	23°15'31.10"E	MSA/LSA



DESCRIPTION: Flat open terrain, no trees. Light brown soils with calcretic waste.
4 lithics – 1 scraper, 1 blade, 2 flakes.

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

SITE NO	COORDINATES		PERIOD
LPV21	28°47'42.30"S	23°15'28.70"E	MSA/LSA



DESCRIPTION: Flat open terrain, no trees. 1 scraper.

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

SITE NO	COORDINATES		PERIOD
LPV22	28°48'12.80"S	23°16'7.30"E	MSA/LSA



DESCRIPTION: Flat open terrain, brown gritty soil and exposures of dolomite hardpan, scattered trees. 5 lithics – 1 scraper, 3 flakes, 1 triangular blade.

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

SITE NO	COORDINATES		PERIOD
LPV23	28°48'17.60"S	23°16'11.50"E	MSA/LSA



DESCRIPTION: Flat terrain, brown soil with exposures of calcretic hardpan and scatters of waste. 1 triangular blade.

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

SITE NO	COORDINATES		PERIOD
LPV24	28°48'22.00"S	23°16'8.40"E	MSA/LSA



DESCRIPTION: Flat terrain, calcretic waste, dolomite hard pan. 5 lithics - 1 scraper and flake waste.

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

SITE NO	COORDINATES		PERIOD
LPV25	29°32'53.40"S	24° 1'45.60"E	MSA/LSA



DESCRIPTION: On the edge of a dry stream bed. Dolomite bedrock. 4 lithics. Flake tools.

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

SITE NO	COORDINATES		PERIOD
LPV26	28°48'26.90"S	23°16'14.90"E	MSA/LSA



DESCRIPTION: Flat terrain, calcretic waste and hardpan. Isolated trees. 5 lithics – 4 scrapers, 1 blade.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
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MITIGATION	No further action required.
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SITE NO	COORDINATES		PERIOD
LPV27	28°48'30.30"S	23°15'59.30"E	MSA/LSA



DESCRIPTION: Flat open terrain, calcretic waste. Isolated trees. 4 lithics – 3 scrapers, 1 blade.

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

SITE NO	COORDINATES		PERIOD
LPV28	28°48'29.90"S	23°15'54.50"E	MSA/LSA



DESCRIPTION: The ground rises southwest from a dry streambed, open area no trees. Calcretic waste and hardpan. 5 lithics – 2 scrapers, 2 blades. 1 flake.

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

SITE NO	COORDINATES		PERIOD
LPV29	28°48'46.10"S	23°15'54.10"E	MSA/LSA



DESCRIPTION: Flat open terrain, open area no trees. Calcretic waste and hardpan.
1 blade.

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

SITE NO	COORDINATES		PERIOD
LPV30	28°48'47.60"S	23°15'53.10"E	MSA/LSA



DESCRIPTION: Flat open terrain, no trees. Calcretic waste and hardpan. 5 lithics - 1 blade, 1 scraper, 2 flakes, 1 flaked core.

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

SITE NO	COORDINATES		PERIOD
LPV31	28°48'45.30"S	23°15'51.90"E	MSA/LSA



DESCRIPTION: Flat open terrain, no trees. Calcretic waste and hardpan. 1 blade.

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

SITE NO	COORDINATES		PERIOD
LPV32	28°48'52.80"S	23°16'4.90"E	MSA/LSA



DESCRIPTION: Flat open terrain, isolated trees. Calcretic waste and hardpan. 4 lithics - 2 blades, 2 scrapers.

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

SITE NO	COORDINATES		PERIOD
LPV33	28°47'22.60"S	23°15'15.00"E	MSA/LSA



DESCRIPTION: Flat open terrain, isolated trees. Calcretic waste and hardpan. 1 scraper.

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

SITE NO	COORDINATES		PERIOD
LPV34	28°47'22.60"S	23°15'11.90"	MSA/LSA



DESCRIPTION: Flat open terrain, isolated trees. Calcretic waste. 1 scraper.

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

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