Phase 1 Heritage Impact Assessment & Palaeontological Desktop Assessment for a Mine Prospecting Right Application on Portion 1, 2 & the Remaining Extent of the Farm Drieboom Leegte No 345; Portion 1, 2, 3 and the Remaining Extent of Farm Groot Zwart Bast No 189 and Portions 3, 5 & 8 of the Farm Jagt Kolk No 244 near Kenhardt Town, within the Kai !Garib Municipality, Northern Cape



# Prepared by Edward Matenga

(PhD Archaeology & Heritage, MPhil, Archaeology; Uppsala/Sweden)

Tuesday, 05 October 2021



(AHSA) Archaeological and Heritage Services Africa (Pty) Ltd Reg. No. 2016/281687/07

48 Jacqueline Street, The Reeds, 0157, Centurion, Pretoria Email: <u>e.matenga598@gmail.com</u>. Cell: +27 73 981 0637 / +2784 073 7774 Website: <u>www.archaeologicalheritage.co.za</u>

APPLICANT	ENVIRONMENTAL CONSULTANT
Newnite Mining (Pty) Ltd	Basia Environmental Consultancy (Pty) Ltd

	Name	Signature	Date
FIELD WORK & REPORT	E. Matenga	Ef Taning	26 Sep 2021

#### **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).

J ahre

Full Name:Edward J. MatengaTitle / Position:Heritage Management Consultant

**Qualifications:** PhD (Archaeology & Heritage, Uppsala University, Sweden), MPhil (Uppsala), Certificate in the Integrated Conservation of Territories and Landscapes of Heritage Value (ICCROM, Rome)

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#### **EXECUTIVE SUMMARY**

- 1. This heritage specialist report has been prepared in support of a mine prospecting right application on several properties referenced in the title of this document situated 60 km southwest of Kenhardt in the Kai !Garib Local Municipality, Northern Cape Province. The report is in fulfilment of Section 38(8) of the National Heritage Resources Act (No 25/1999) which requires screening for the possible occurrence of heritage resources that may be affected by the proposed activities, and on the basis of which appropriate mitigation measures are prescribed.
- 2. The report is based on ground survey undertaken from 22 to 26 August 2021.
- 3. The findings of the survey are summarised as follows:

#### 4. The Stone Age

It is now established that Stone Age material is widely distributed on the plains, ridges and valleys of the upper Karoo area north and south of the Orange-Vaal Rivers. The material comprises scrapers, blades, cores and flakes typologically dating to the Middle Stone Age/Late Stone Age period. Early Stone Age material was encountered during this study exemplified by hand-axes and cleavers. MSA to LSA finds are ubiquitous. The scattered distribution pattern of the artefacts seems to suggest general hunter-gatherer activity in the region now known in archaeological literature as Bushmanland. No further action is warranted on the sites which have been recorded.

#### 5. Iron Age

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

## 6. Commercial farming heritage

A number buildings and structures were recorded on all the farms in the footprint of the proposed prospecting. As an established pattern the principal dwellings occupied by farm owners are of a superior quality compared to other farm buildings. These structures will not affected by the development.

## 7. Burial Grounds

Three burial grounds were recorded, DMB40 and DMB54 on the farm Drieboom Leegte 245, and GZB52 on the farm Groot Zwart Bast 189. Burial grounds are protected in terms of Sections 3 and 36 of the National Heritage Resources Act (No 25/1999). A 100 m servitude must be reserved around the burial grounds as a mandatory requirement.



Burial Ground GZB52 on the farm Groot Zwart Bast 189 with a 100 m radius marked



Two burial grounds, DMB 40 and DMB54 on the farm Drieboom Leegte 245 with 100 m radii marked

# 8. Ranking of Findings

	RANKING	SIGNIFICANCE	No of sites
1	High	National and Provincial heritage sites (Section 7 of NHRA). All burials including those protected under Section 36 of NHRA. They must be protected.	3 burial grounds
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. These may be protected at the recommendations of a heritage expert.	0
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	51
4	Low	Heritage sites which have been recorded, but considered of minor value relative to the proposed development.	4
		TOTAL	58

# 9. Inventory of heritage sites

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
GZB01	29°32'8.50"S	20°40'39.80"E	MSA/LSA	Open flat plain with surface gravels and shrubs. 3 lithics – 2 scrapers and a flake.	Medium B	No further action
GZB02	29°32'3.10"S	20°40'33.90"E	MSA/LSA	Open flat plain with surface gravels. 5 lithics – 1 large blade, 1 scrapers, 3 flakes.	Medium B	No further action
GZB03	29°32'5.40"S	20°40'38.10"E	MSA/LSA	Open flat plain with surface gravels. 6 lithics – flakes of which some may have been used as scrapers.	Medium B	No further action
GZB04	29°31'54.40"S	20°40'27.50"E	MSA/LSA	Open flat plain with fine surface gravel. 6 lithics – pear-shaped hand axe, 3 scrapers, 2 flakes.	Medium B	No further action
GZB05	29°31'53.60"S	20°40'23.60"E	MSA/LSA	Open flat plain with fine surface gravel. 4 lithics – 2 scrapers, 2 flakes.	Medium B	No further action
GZB06	29°32'1.90"S	20°40'26.50"E	MSA/LSA	Open flat plain, scattered gravels. 5 lithics – 1 large scraper, 4 quartzite flakes.	Medium B	No further action
GZB07	29°31'57.80"S	20°40'11.20"E	MSA/LSA	Open flat plain. 5 lithics – 3 scrapers, 2 flakes.	Medium B	No further action
GZB08	29°32'1.00"S	20°40'10.90"E	MSA/LSA	Open flat plain. 4 lithics – flakes of which some may have been used as scrapers	Medium B	No further action
GZB09	29°32'1.00"S	20°40'13.80"E	MSA/LSA	Open flat plain. 2 flake tools with sharp cutting edges.	Medium B	No further action
GZB10	29°32'3.70"S	20°40'5.90"E	MSA/LSA	Open flat plain. 4 lithics. 3 scrapers, 1 blade.	Medium B	No further action
GZB11	29°32'5.10"S	20°39'52.20"E	MSA/LSA	Open flat plain with fine surface gravel. 5 lithics, 2 blades, 2 scrapers, 2 flakes.	Medium B	No further action
GZB12	29°32'9.50"S	20°39'51.10"E	MSA/LSA	Open flat plain. 4 flakes.	Medium B	No further action
GZB13	29°32'10.00"S	20°39'54.80"E	MSA/LSA	Open flat plain. 4 lithics – 1 scraper, 3 flakes.	Medium B	No further action
GZB14	29°32'12.50"S	20°39'22.00"E	MSA/LSA	Open flat plain with surface gravels. 6 flake tools/waste.	Medium B	No further action
GZB15	29°32'17.10"S	20°39'22.10"E	MSA/LSA	Open flat plain. 5 lithics – 4 scrapers, 1 blade (or end scraper).	Medium B	No further action

GZB16	29°32'33.10"S	20°39'12.40"E	MSA/LSA	Open flat plain. 3 lithics – 2 scrapers, 1 blade.	Medium B	No further action
GZB10 GZB17	29°32'33.70"S	20°39'12.40 L 20°39'8.50"E	MSA/LSA MSA/LSA	Open flat plain. 3 lithics – 1 blade, 2 scrapers.	Medium B	No further action
			-			
GZB18	29°32'20.10"S	20°39'2.91"E	Modern	Watering site, windmill and concrete reservoir.	Medium B	No further action
GZB19	29°31'37.54"S	20°38'15.91"E	Modern	Farmstead. Main dwelling house and outbuildings.	Medium B	Will not be affected
GZB20	29°31'4.50"S	20°38'4.70"E	Modern	Windmill and broken concrete reservoir.	Medium B	No further action
GZB21	29°30'46.00"S	20°38'11.40"E	MSA/LSA	Open flat plain with shrubs. 3 lithics – 1 blade, 2 scrapers.	Medium B	No further action
GZB22	29°30'47.40"	20°38'12.70"E	MSA/LSA	Flat plain with surface gravels and shrubs. 4 lithics. 3 flake tools, 1 blade.	Medium B	No further action
GZB23	29°30'8.21"S	20°37'59.09"E	MSA/LSA	Windmill, concrete reservoir.	Low	No further action
GZB24	29°29'54.90"S	20°37'44.70"E	MSA/LSA	Open flat plain with shrubs. 4 lithics – 1 cleaver/scraper, 3 scrapers.	Medium B	No further action
GZB25	29°29'24.90"S	20°37'39.20"E	MSA/LSA	Open flat plain, with surface gravels and shrubs. 4 lithics – 1 handaxe, 1 scrapers, flakes.	Medium B	No further action
GZB26	29°28'55.30"S	20°37'24.20"	MSA/LSA	Open flat plain with fine surface gravel. 4 lithics – scrapers.	Medium B	No further action
GZB27	29°29'59.00"S	20°38'14.20"E	MSA/LSA	Open flat plain with surface gravels. 4 lithics – 1 blade, 3 scrapers.	Medium B	No further action
GZB28	29°29'48.30"S	20°38'29.70"E	MSA/LSA	Open flat area with fine surface gravel. 3 flake tools.	Medium B	No further action
GZB29	29°32'16.00"S	20°39'5.30"E	MSA/LSA	Open flat plain with scattered surface gravel. 2 flakes, 1 blade.	Medium B	No further action
DBM30	29°36'18.50''S	20°35'4.80"E	MSA/LSA	Farmstead on Drieboom Leegte 245. Principal dwellings, a gabled building with a flat veranda roof extension, and flat roofed extension on the western side. Dry stone walling formed an enclosure for penning stock.	Medium B	Will not be affected
DBM31	29°36'57.80"S	20°35'28.10"E	MSA/LSA	Open flat plain with surface gravels. 2 lithics – Scrapers with retouched edges.	Medium B	No further action

DBM32	29°37'14.50"S	20°35'44.20"E	MSA/LSA	Open flat plain with surface gravels. 5 lithics – 1 blade, 4 scrapers.	Medium B	No further action
DBM33	29°37'12.10"S	20°35'46.30"E	MSA/LSA	Open flat plain with fine surface gravel. 1 scraper.	Medium B	No further action
DBM34	29°37'37.30"S	20°35'58.90"E	MSA/LSA	Open flat plain. Scraper and flake.	Medium B	No further action
DBM35	29°37'53.87"S	20°36'12.60"E	MSA/LSA	Open flat plain. 3 scrapers.	Medium B	No further action
DBM36	29°36'30.90"S	20°36'41.80"E	MSA/LSA	Open flat plain with surface gravels. 4 lithics. 2 flakes, 2 scrapers.	Medium B	No further action
DBM37	29°36'7.10"S	20°37'50.80"E	MSA/LSA	Open flat plain with surface gravels. 4 lithics - 1 large flake, 4 scrapers.	Medium B	No further action
DBM38	29°35'33.50"S	20°36'38.00"E	MSA/LSA	Open flat plain. Watering site. An old concrete reservoir with corrugated zinc coating.	Medium B	No further action
DBM39	29°36'45.00"S	20°36'28.60"E	MSA/LSA	Open flat plain. Old windmill.	Low	No further action
DBM40	29°36'15.70"S	20°34'56.00"E	MSA/LSA	Burial ground on Groot Zwart Bast 189. Double grave with marble heads and granite base dressing. A single grave on the side marked by a concrete base with a broken head. Schalk Leopold van Zyl DOB 31 March 1850 DOD 18 May 1908; Helena Christina van Zyl (nee Balen). DOB 30 April 1864, DOD 6 March 1936	High	100 m servitude to be reserved
DBM41	29°35'51.30"S	20°34'42.80"E	MSA/LSA	Flat area, weathered read-brown stones. 1 scraper and flakes.	Medium B	No further action
DBM42	29°36'5.81"S	20°34'55.12"E	MSA/LSA	Earth embankment to trapping storm water in the rainy season.	Low	No further action
DJK43	29°30'45.84"S	20°45'27.26"E	MSA/LSA	Farmstead on Drieboomste Yte. Principal dwelling and behind it to the south building which appears to be the oldest structure on the farmstead.		Will not be affected
DJK44	29°30'43.10"S	20°45'46.30"E	MSA/LSA	Earth embankment with stone reinforcement.	Medium B	No further action
DJK45	29°30'33.90"S	20°46'5.30"E	MSA/LSA	Open flat plain with fine surface gravels and shrubs. 2 scrapers.	Medium B	No further action
DJK46	29°30'46.70"S	20°46'55.50"E	MSA/LSA	Open flat plain. 3 flakes/scrapers.	Medium B	No further action

DJK47	29°31'14.00"S	20°46'46.10"E	MSA/LSA	Open flat plain with surface gravels. 4 lithics – 1 cleaver (scraper), 3 flakes.	Medium B	No further action
DJK48	29°30'59.30"S	20°45'26.10"E	MSA/LSA	Open flat plain with surface gravels. 4 lithics – 1 blade, 3 scrapers.	Medium B	No further action
DJK49	29°29'57.54"S	20°45'2.57"E	MSA/LSA	Open flat plain. 6 flake tools	Medium B	No further action
DJK50	29°29'45.10"S	20°44'59.30"E	MSA/LSA	Open flat plain with surface gravels. 6 lithics - 1 cleaver/scraper, 3 blades, 2 scrapers.	Medium B	No further action
GZB52	29°31'40.90"S	20°41'33.90"E	MSA/LSA	Burial ground on the farm Drieboom Leegte 245. 7 graves. Some of the names engraved: Johannes Jacobus Jordaan DOB 1 Sep 1893, DOD 4 Dec 1951; FL Jordaan DOB 1 Sep 1860, DOD 21 Oct 1928; Johanna JM DOB 12 Sep 1866, DOD 25 Dec 1953	High	100 m servitude to be reserved
JKK53	29°39'36.40"S	20°32'38.70"E	MSA/LSA	Camp on Jagt Kolk 244. Dwelling structures. Stonewalled cattle enclosure with a loading ramp.	Medium B	No further action
DBM54	29°36'29.11"S	20°34'40.44"E	MSA/LSA	Burial ground with 2 graves on the side of the road close to the boundary of Drieboom Leegte 245.	High	100 m servitude to be reserved
JKK55	29°40'21.40"S	20°29'50.70"E	MSA/LSA	On the edge of a pan. Stone enclosure 3m in diameter.	Low	No further action
JKK56	29°40'22.20"S	20°29'49.10"E	MSA/LSA	On the edge of a pan. Circular setting of stones 2,5m in diameter.	Low	No further action
JKK57	29°39'24.23"S	20°30'17.97"E	MSA/LSA	On the farm Jagt Kolk 244. Dwellings for farm workers.	Low	No further action
JKK58	29°38'44.40"S	20°30'43.80"E	MSA/LSA	On the farm Jagte Kolk 244. Windmill and stonewalled reservoir	Medium B	No further action

10. When the environmental and heritage approvals and prospecting operations commence an Archaeological and Heritage Chance Find Procedure (CPF) appended to this report will be applied as a manual for the protection of unidentified heritage resources which may occur in the footprint of the prospecting right application (Annexure II).

# 11. Recommendations and Conclusions

In light of the findings in this report, the mine prospecting can go ahead, provided that there is no encroachment into 100 m servitudes around the burial grounds identified in this report (DMB40, DMB54 and GZB52). The study is mindful that some important discoveries may be made during prospecting. If this happens operations should be halted, and the provincial heritage resources authority or SAHRA notified in order for an investigation and evaluation of the finds to take place. An Archaeological and Heritage Chance Find Procedure (CPF) appended to this report will be applied as a manual for the protection of unidentified heritage resources which may occur in the footprint of the prospecting right (Annexure II).

# ABBREVIATIONS

CPF	Chance Finds Procedure
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
NEMA	National Environmental Management Act.
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency

# 1. INTRODUCTION

This heritage specialist report has been prepared in support of a mine prospecting right application on several properties referenced in the title of this document situated 60 km southwest of Kenhardt in the Kai !Garib Local Municipality, Northern Cape Province. The report is in fulfilment of Section 38(8) of the National Heritage Resources Act (No 25/1999) which requires screening for the possible occurrence of heritage resources that may be affected by the proposed activities, and on the basis of which appropriate mitigation measures will be prescribed. The report is based on ground survey undertaken from 22 to 26 August 2021.

Prospecting for minerals entails the following physical works which may result in damage or destruction of heritage resources above or below the ground:

- Open excavations and trenches;
- Test pits;
- Drilling;
- Opening of temporary service roads; and
- Location of processing plant.

# 2. DESCRIPTION OF THE RECEIVING ENVIRONMENT

The properties under study are subdivisions of the farms Drieboom Leegte 245, Zwart Bast 189, Drieboomste Yte and Jagt Kolk 345 which lie 60 km southwest of Kenhardt. The region is an open extensive Karoo plain with no prominent topographical features in the terrain to interrupt long range views. The superficial geology shows red-brown gravels, which have been characterised as deflated gravels, derived from primary fluvial gravels generally dating to the Miocene age. These fluvial gravels were deflated from their original thicknesses as eluvial (derived by in situ weathering) and collegial processes continued. The reddish colour arises from iron staining of the entire deposits due to oxidation. The vast stoneveld on which these gravels occur is occasionally interrupted by shallow depressions called pans which hold water during the rainy season and for a shorter period thereafter. Vegetation is sparse Karoo scrub and occasional *Acacia karoo* trees found with increasing density along ephemeral channels with beds filled with sand.



Figure 1: View of the Karoo landscape on the farm Groot Zwart Bast 189 shows shrubs in the background and surface gravels in the foreground



Figure 2: Another view of the landscape on the farm Drieboom Leegte 245



Figure 3. Google Earth map shows the location of the farms under study southwest of Kenhardt

# 3. LEGAL FRAMEWORK

This heritage impact assessment fulfils an onus on developers to safeguard heritage resources. 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.

# 3.1. Section 38 of National Heritage Resources Act on Heritage Impact Assessments

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

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

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

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

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

(i) exceeding 5 000 m<sup>2</sup> in extent<sup>1</sup>; or

(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
(d) the re-zoning of a site exceeding 10 000 m<sup>2</sup> 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.

# 3.2. 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.

# 3.3. Protection of buildings and structures older than 60 years

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

(1) No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

# 3.4. 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—

<sup>&</sup>lt;sup>1</sup> 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 assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

# 3.5. 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.

Further to the legal prescripts, we are mindful of the fact that graves and burial grounds are held sacred whether they are protected by the law or not.

## 3.6. The National Environmental Management Act

This Act states that a survey and evaluation of cultural resources must be done in areas where development projects that will affect the environment will be undertaken. The impact of the development on these resources should be determined and proposals for the mitigation thereof are made. Environmental management is a much broader undertaking to cater for cultural and social needs of people. Any disturbance of landscapes and sites that constitute the nation's cultural

heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

# 3.7. The Burra Charter on Conservation of Places of Cultural Significance

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

# 4. APPROACH AND METHODOLOGY

# 4.1. Literature study

A number of heritage impact studies have been undertaken in the broader area encompassing Kenhardt, Marydale and Copperton, and a few of the reports are cited here:

**Pelser, A. J. 2011**. A report on an archaeological impact assessment (AIA) for the Proposed Solar Energy Plant on Klein Zwart Bast 188, Kenhardt District, Northern Cape.

This study was undertaken for the establishment of the Aries Power Plant which has been commissioned, and is situated on an adjacent property east of the farms which are the subject of the current study. A number of archaeological sites, features and objects were identified and recorded in the area, dating from the Early to Later Stone Ages, as well as the Historical period. Although some finds were more localized the whole area was covered by scatters of Stone Age artefacts (page 20).

**Orton, J. 2019.** Heritage Impact Assessment: Scoping and Environmental Impact Assessment for the Proposed Development of the Skeerhok PV2 solar energy facility on Gemsbokbult 120/9, Kenhardt Magisterial District, Northern Cape Province.

The farm Gemsbokbult 120/1 is situated 20 km north of Kenhardt. Stone artefacts date ESA, MSA and LSA. Of important significance are LSA sites which are

commonly located along the margins of pans. Small rock outcrops were quarried as a source of stone material for making stone tools (page 14).

**Orton, J. 2020.** Heritage Impact Assessment: Proposed Access Road on the Remainder and Portion 4 of the Farm Onder Rugzeer 168, Kenhardt Magisterial District, Northern Cape Province.

The farm Onder Rugzeer lies 15 km north of Kenhardt. The survey revealed background scatter stone artefacts to be present all over the study area. Denser scatters of artefacts were rare, but three were noted along Option C. All are of low to very low cultural significance. No graves were seen and the chances of graves occurring are considered to be negligible (page 2).

**Orton, J. 2018a.** Heritage Impact Assessment: Scoping and Environmental Impact Assessment for the Proposed Development of the Skeerhok PV1 Solar Energy Facility on Smutshoek 395/Remainder, Kenhardt Magisterial District, Northern Cape Province. Unpublished Report Prepared for CSIR – Environmental Management Services. Lakeside: ASHA Consulting (Pty) Ltd.

The farm Smutshoek 395/Remainder lies 40 km north of Kenhardt. Scatters of artefacts found. Of particular significance are artefacts located on the edge of a pan. In the report 1 rock art site is reported located 9km south of the Farm Gemsbokbult (page 11).

## 4.2. Field Work

The findings of this study are primarily based on an extensive ground survey on the farms undertaken from 22 – 26 August 2021. This was undertaken by means pedestrian surveys (an archaeologist and field assistant) varied with windscreen observations. See Annexure I for maps the survey track log.

#### 4.3. Limitation of the study

While prior arrangements had been made for access to all the properties in the footprint of the proposed mine prospecting, the owner of Portion 2 of the Farm

Drieboom Leegte 245 was not reachable by phone at the time of the visit. An email correspondence was sent to which no reply was received. With regard to the Remaining Extent Drieboom Leegte 245 the owner had initially granted access only to say that there was no one on the farm to open the gates. Together the two properties constitute a small part of the footprint of the proposed development. In the last resort therefore a desktop study has been undertaken.

Some areas on the farms Zwart Bast and Drieboom had thick impenetrable colonies of black thorn (Afrikaans - *haakbos* - *Acacia mellifera* subsp. *detinens*), which rendered the ground survey impossible in those areas.

# 4.4. HIA Report and Chance Finds Procedure

A Heritage Chance Finds Procedure (CFP) is annexed to this Report.

# 5. 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. As summary of the reconstructed cultural sequence is given below:

# 5.1. Cultural sequence summary<sup>2</sup>

PERIOD	EPOCH	ASSOCIATED	TYPICAL MATERIAL
		CULTURAL GROUPS	EXPRESSIONS
Early Stone Age	Pleistocene	Early Hominids:	Typically large stone tools
2.5m – 250 000		Australopithecines	such as hand axes,
YCE		Homo habilis	choppers and cleavers.
		Homo erectus	
Middle Stone Age	Pleistocene	First Homo sapiens	Typically smaller stone
250 000 – 25 000		species	tools such as scrapers,
YCE			blades and points.
Late Stone Age	Pleistocene / Holocene	<i>Homo sapiens</i> including San people	Typically small to minute stone tools such as arrow

<sup>&</sup>lt;sup>2</sup> Adapted from Exigo Consultancy. 2015. Frances Baard District Municipality: Proposed Nkandla Extension 2 Township Establishment, Erf 258 Nkandla, Hartswater, Northern Cape Province.

20 000 BC – present			heads, points and bladelets.
Early Iron Age / Early Farmer Period c300 – 900 AD (or earlier)	Holocene	Iron Age Farmers	Typically distinct ceramics, bead ware, iron objects, grinding stones.
Later Iron Age 900ADff	Holocene	Iron Age Farmers, emergence of complex state systems	Typically distinct ceramics, evidence of long distance trade and contacts
(ii) Mapungubwe (K2)	1350AD		Metals including gold, long distance exchanges
(ii) Historical period	Tswana / Sotho, Nguni people	Iron Age Farmers	Stone walls Mfecance / Difaqane
(iii) Colonial period	19 <sup>th</sup> Century	European settlers / farmers / missionaries/ industrialisation	Buildings, Missions, Mines, metals, glass, ceramics

# 5.2. Appearance of hominids

South Africa has a yielded a very good record of fossil hominids, proto-humans which 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 a serial UNESCO World Heritage Site.<sup>3</sup> No hominid sites have been reported in the vicinity of the study area.

# 5.3. The Early Stone Age

The Early Stone Age may date back more than 2 million years. Much of the Karoo in the Northern Cape is covered by gravels from which ESA artefacts have been found. These artefacts are generally very well weathered and have been described as background scatters in that their distribution is conditioned more by geological actions than human actions (Orton 2013, p7). 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.<sup>4</sup> Further north the Wonderwerk Cave

<sup>&</sup>lt;sup>3</sup> Deacon, J. and N. Lancaster. 1986. *Later Quaternary Palaeo-environments of Southern Africa*. Oxford: Oxford University Press.

<sup>&</sup>lt;sup>4</sup> Morris, D. 2009. Phase 1 Archaeological Impact Assessment at Bucklands Settlement near Douglas, Northern Cape, p3.

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.<sup>5</sup>

## 5.3.1. 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 which included prepared cores, parallel-sided blades and triangular points hafted to make spears. A number of 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.

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

LSA technology is characterised by microlithic scrapers and segments made from very fine-grained rock. The ephemeral pans in the Northern Cape, also present in the locality of the present study hosted hunter gatherer communities as evidenced by a comparatively high density of LSA lithics found on the edges of these pans.

Rock art, in the form of engravings (petroglyphs), is widely known from the Karoo (Orton 2013, p10) with examples nearest to the study area on the farm Springbokoog 80km to the south, Driekopseiland180km to the ENE), and the farm Katlani 236 (150km ENE). Various subjects are depicted in both stylized and naturalistic motifs including humans and animals.

The upper Karoo region of the Northern Cape is now referred to as Bushmansland in recognition of the strong archaeological and historical footprint of hunter-gatherer communities identified to the San and the Khoikhoi, with a cultural distinction being made between the two as hunter-gatherers and hunter-gatherer pastoralists respectively.

## 5.4. The Iron Age Culture [ca. 2000 years BP]

<sup>&</sup>lt;sup>5</sup> http://www.southafrica.net/za/en/articles/entry/article-southafrica.net-the-wonderwerk-cave.

The Iron Age culture supplanted the Stone Age at least 2000 years ago, associated with the earliest farming communities keeping domestic animals such as cattle, sheep, goat and chickens, and using several metals and pottery (Huffman 2007). The transition to the Iron Age appears to coincide with the spread of Bantu speakers from the north into Southern Africa. Around the beginning of the 2<sup>nd</sup> millennium, radical changes in the Iron Age culture occurred signifying the transition to the Later Iron Age. Subsequently the Iron Age people built stonewalled settlements present in a large swathe of territory straddling the Northern Cape, Northwest Province, Limpopo Province and the Free State. One such site Dithakong near Kuruman.

#### 5.5. Early Contact with the Boers

In the early 19<sup>th</sup> century, 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, a large number of Great Trek Boers from the Cape Colony and established commercial farms in the area. The came into contact with local people who included the Khoisan, Korana, Tswana and Griqua (Van der Walt 2012).

## 5.6. Brief history of Kenhardt

Kenhardt is a small Karroo town situated about 120 km southeast of Upington, the largest town in the area. It was founded in 1868 on the north bank of the Hartebees, a shallow river, with the riverbed filled with sand. Kenhardt became a municipality in 1909. The Kenhardt landscape is arid and one of the fascinating features are desert aloes (*Aloe karasbergensis Pillans*) which grow up to several metres and a rounded crown

# 6. FINDINGS FROM HERITAGE IMPACT ASSESSMENT STUDIES CARRIED OUT IN THE BROADER AREA

#### 6.1. The Stone Age

It is now established that Stone Age material is widely distributed on the plains, ridges and valleys of the upper Karoo area north and south of the Orange-Vaal basin. The material comprises scrapers, blades, cores and flakes typologically dating to the Middle Stone Age/Late Stone Age period. Early Stone Age material was encountered in this study exemplified by hand-axes and cleavers. MSA to LSA material is ubiquitous. The scattered distribution pattern of the artefacts seems to suggest general hunter-gatherer activity in the region now known in archaeological literature as Bushmanland. No further action is warranted on the sites which have been recorded.

#### 6.2. Iron Age

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

## 6.3. Commercial farming heritage

A number buildings and structures were recorded on all the farms. As an established pattern the principal dwellings occupied by farm owners are of a superior quality compared to other farm buildings. These houses will not affected by the development.

#### 6.4. Burial Grounds

Three burial grounds were recorded, DMB40 and DMB54 on the farm Drieboom Leegte 245, and GZB52 on the farm Groot Zwart Bast 189. Burial grounds are protected in terms of Sections 3 and 36 of the National Heritage Resources Act (No 25/1999). A 100 m servitude must be reserved around the burial grounds as a mandatory requirement.



Figure 4: Burial Ground GZB52 on the farm Groot Zwart Bast 189 with a 100 m radius marked



Figure 5: Two burial grounds, DMB 40 and DMB54 on the farm Drieboom Leegte 245 with 100 m reservations drawn around them

## 6.5. Ranking of Findings

RANKING	SIGNIFICANCE	No of sites

1	High	National and Provincial heritage sites (Section 7 of	3	burial
		NHRA). All burials including those protected under	grounds	
		Section 36 of NHRA. They must be protected.		
2	Medium A	Substantial archaeological deposits, buildings protected	0	
		under Section 34 of NHRA. These may be protected at		
		the recommendations of a heritage expert.		
3	Medium B	Sites exhibiting archaeological characteristics of the	51	
		area, but do not warrant further action after they have		
		been documented.		
4	Low	Heritage sites which have been recorded, but	4	
		considered of minor value relative to the proposed		
		development.		
		TOTAL	58	

# Table 2. Inventory of heritage sites

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
GZB01	29°32'8.50"S	20°40'39.80"E	MSA/LSA	Open flat plain with surface gravels and shrubs. 3 lithics – 2 scrapers and a flake.	Medium B	No further action
GZB02	29°32'3.10"S	20°40'33.90"E	MSA/LSA	Open flat plain with surface gravels. 5 lithics – 1 large blade, 1 scrapers, 3 flakes.	Medium B	No further action
GZB03	29°32'5.40"S	20°40'38.10"E	MSA/LSA	Open flat plain with surface gravels. 6 lithics – flakes of which some may have been used as scrapers.	Medium B	No further action
GZB04	29°31'54.40"S	20°40'27.50"E	MSA/LSA	Open flat plain with fine surface gravel. 6 lithics – pear-shaped hand axe, 3 scrapers, 2 flakes.	Medium B	No further action
GZB05	29°31'53.60"S	20°40'23.60"E	MSA/LSA	Open flat plain with fine surface gravel. 4 lithics – 2 scrapers, 2 flakes.	Medium B	No further action
GZB06	29°32'1.90"S	20°40'26.50"E	MSA/LSA	Open flat plain, scattered gravels. 5 lithics – 1 large scraper, 4 quartzite flakes.	Medium B	No further action
GZB07	29°31'57.80"S	20°40'11.20"E	MSA/LSA	Open flat plain. 5 lithics – 3 scrapers, 2 flakes.	Medium B	No further action
GZB08	29°32'1.00"S	20°40'10.90"E	MSA/LSA	Open flat plain. 4 lithics – flakes of which some may have been used as scrapers	Medium B	No further action
GZB09	29°32'1.00"S	20°40'13.80"E	MSA/LSA	Open flat plain. 2 flake tools with sharp cutting edges.	Medium B	No further action
GZB10	29°32'3.70"S	20°40'5.90"E	MSA/LSA	Open flat plain. 4 lithics. 3 scrapers, 1 blade.	Medium B	No further action
GZB11	29°32'5.10"S	20°39'52.20"E	MSA/LSA	Open flat plain with fine surface gravel. 5 lithics, 2 blades, 2 scrapers, 2 flakes.	Medium B	No further action
GZB12	29°32'9.50"S	20°39'51.10"E	MSA/LSA	Open flat plain. 4 flakes.	Medium B	No further action
GZB13	29°32'10.00"S	20°39'54.80"E	MSA/LSA	Open flat plain. 4 lithics – 1 scraper, 3 flakes.	Medium B	No further action
GZB14	29°32'12.50"S	20°39'22.00"E	MSA/LSA	Open flat plain with surface gravels. 6 flake tools/waste.	Medium B	No further action

GZB15	29°32'17.10"S	20°39'22.10"E	MSA/LSA	Open flat plain. 5 lithics – 4 scrapers, 1 blade (or end scraper).	Medium B	No further action
GZB16	29°32'33.10"S	20°39'12.40"E	MSA/LSA	Open flat plain. 3 lithics – 2 scrapers, 1 blade.	Medium B	No further action
GZB17	29°32'33.70"S	20°39'8.50"E	MSA/LSA	Open flat plain. 3 lithics – 1 blade, 2 scrapers.	Medium B	No further action
GZB18	29°32'20.10"S	20°39'2.91"E	Modern	Watering site, windmill and concrete reservoir.	Medium B	No further action
GZB19	29°31'37.54"S	20°38'15.91"E	Modern	Farmstead. Main dwelling house and outbuildings.	Medium B	Will not be affected
GZB20	29°31'4.50"S	20°38'4.70"E	Modern	Windmill and broken concrete reservoir.	Medium B	No further action
GZB21	29°30'46.00"S	20°38'11.40"E	MSA/LSA	Open flat plain with shrubs. 3 lithics – 1 blade, 2 scrapers.	Medium B	No further action
GZB22	29°30'47.40"	20°38'12.70"E	MSA/LSA	Flat plain with surface gravels and shrubs. 4 lithics. 3 flake tools, 1 blade.	Medium B	No further action
GZB23	29°30'8.21"S	20°37'59.09"E	MSA/LSA	Windmill, concrete reservoir.	Low	No further action
GZB24	29°29'54.90"S	20°37'44.70"E	MSA/LSA	Open flat plain with shrubs. 4 lithics – 1 cleaver/scraper, 3 scrapers.	Medium B	No further action
GZB25	29°29'24.90"S	20°37'39.20"E	MSA/LSA	Open flat plain, with surface gravels and shrubs. 4 lithics – 1 handaxe, 1 scrapers, flakes.	Medium B	No further action
GZB26	29°28'55.30"S	20°37'24.20"	MSA/LSA	Open flat plain with fine surface gravel. 4 lithics – scrapers.	Medium B	No further action
GZB27	29°29'59.00"S	20°38'14.20"E	MSA/LSA	Open flat plain with surface gravels. 4 lithics – 1 blade, 3 scrapers.	Medium B	No further action
GZB28	29°29'48.30"S	20°38'29.70"E	MSA/LSA	Open flat area with fine surface gravel. 3 flake tools.	Medium B	No further action
GZB29	29°32'16.00"S	20°39'5.30"E	MSA/LSA	Open flat plain with scattered surface gravel. 2 flakes, 1 blade.	Medium B	No further action

DBM30	29°36'18.50"S	20°35'4.80"E	MSA/LSA	Farmstead on Drieboom Leegte 245. Principal dwellings, a gabled building with a flat veranda roof extension, and flat roofed extension on the western side. Dry stone walling formed an enclosure for penning stock.	Medium B	Will not be affected
DBM31	29°36'57.80"S	20°35'28.10"E	MSA/LSA	Open flat plain with surface gravels. 2 lithics – Scrapers with retouched edges.	Medium B	No further action
DBM32	29°37'14.50"S	20°35'44.20"E	MSA/LSA	Open flat plain with surface gravels. 5 lithics – 1 blade, 4 scrapers.	Medium B	No further action
DBM33	29°37'12.10"S	20°35'46.30"E	MSA/LSA	Open flat plain with fine surface gravel. 1 scraper.	Medium B	No further action
DBM34	29°37'37.30"S	20°35'58.90"E	MSA/LSA	Open flat plain. Scraper and flake.	Medium B	No further action
DBM35	29°37'53.87"S	20°36'12.60"E	MSA/LSA	Open flat plain. 3 scrapers.	Medium B	No further action
DBM36	29°36'30.90"S	20°36'41.80"E	MSA/LSA	Open flat plain with surface gravels. 4 lithics. 2 flakes, 2 scrapers.	Medium B	No further action
DBM37	29°36'7.10"S	20°37'50.80"E	MSA/LSA	Open flat plain with surface gravels. 4 lithics - 1 large flake, 4 scrapers.	Medium B	No further action
DBM38	29°35'33.50"S	20°36'38.00"E	MSA/LSA	Open flat plain. Watering site. An old concrete reservoir with corrugated zinc coating.	Medium B	No further action
DBM39	29°36'45.00"S	20°36'28.60"E	MSA/LSA	Open flat plain. Old windmill.	Low	No further action
DBM40	29°36'15.70''S	20°34'56.00"E	MSA/LSA	Burial ground on Groot Zwart Bast 189. Double grave with marble heads and granite base dressing. A single grave on the side marked by a concrete base with a broken head. Schalk Leopold van Zyl, DOB 31 March 1850 DOD 18 May 1908; Helena Christina van Zyl (nee Balen), DOB 30 April 1864 DOD 6 March 1936	High	100 m servitude to be reserved
DBM41	29°35'51.30"S	20°34'42.80"E	MSA/LSA	Flat area, weathered read-brown stones. 1 scraper and flakes.	Medium B	No further action
DBM42	29°36'5.81"S	20°34'55.12"E	MSA/LSA	Earth embankment to trapping storm water in the rainy season.	Low	No further action

DJK43	29°30'45.84"S	20°45'27.26"E	MSA/LSA	Farmstead on Drieboomste Yte. Principal dwelling and behind it to the south building which appears to be the oldest structure on the farmstead.		Will not be affected
DJK44	29°30'43.10"S	20°45'46.30"E	MSA/LSA	Earth embankment with stone reinforcement.	Medium B	No further action
DJK45	29°30'33.90"S	20°46'5.30"E	MSA/LSA	Open flat plain with fine surface gravels and shrubs. 2 scrapers.	Medium B	No further action
DJK46	29°30'46.70"S	20°46'55.50"E	MSA/LSA	Open flat plain. 3 flakes/scrapers.	Medium B	No further action
DJK47	29°31'14.00"S	20°46'46.10"E	MSA/LSA	Open flat plain with surface gravels. 4 lithics – 1 cleaver (scraper), 3 flakes.	Medium B	No further action
DJK48	29°30'59.30"S	20°45'26.10"E	MSA/LSA	Open flat plain with surface gravels. 4 lithics – 1 blade, 3 scrapers.	Medium B	No further action
DJK49	29°29'57.54"S	20°45'2.57"E	MSA/LSA	Open flat plain. 6 flake tools	Medium B	No further action
DJK50	29°29'45.10"S	20°44'59.30"E	MSA/LSA	Open flat plain with surface gravels. 6 lithics - 1 cleaver/scraper, 3 blades, 2 scrapers.	Medium B	No further action
GZB52	29°31'40.90"S	20°41'33.90"E	MSA/LSA	Burial ground on the farm Drieboom Leegte 245. 7 graves. Some of the names engraved: Johannes Jacobus Jordaan DOB 1 Sep 1893 DOD 4 Dec 1951; FL Jordaan, DOB 1 Sep 1860, DOD 21 Oct 1928; Johanna JM DOB 12 Sep 1866 DOD 25 Dec 1953.	High	100 m servitude to be reserved
JKK53	29°39'36.40"S	20°32'38.70"E	MSA/LSA	Camp on Jagt Kolk 244. Dwelling structures. Stonewalled cattle enclosure with a loading ramp.	Medium B	No further action
DBM54	29°36'29.11"S	20°34'40.44"E	MSA/LSA	Burial ground with 2 graves on the side of the road close to the boundary of Drieboom Leegte 245.	High	100 m servitude to be reserved
JKK55	29°40'21.40"S	20°29'50.70"E	MSA/LSA	On the edge of a pan. Stone enclosure 3m in diameter.	Low	No further action
JKK56	29°40'22.20"S	20°29'49.10"E	MSA/LSA	On the edge of a pan. Circular setting of stones 2,5m in diameter.	Low	No further action

JKK57	29°39'24.23"S	20°30'17.97"E	MSA/LSA	On the farm Jagte Kolk 244. Dwellings for farm workers.	Low	No further action
JKK58	29°38'44.40"S	20°30'43.80"E	MSA/LSA	On the farm Jagte Kolk 244. Windmill and stonewalled reservoir	Medium B	No further action

# 6.6. Desk assessment of the likely heritage sensitivity on the farms not surveyed: Portion 1 of Drieboom Leegte 245 and Portion 1 of Drieboom Leegte 245

The terrain features on both properties are not any different from what was encountered on the other farms. It can be reasonably concluded that the findings of a ground survey were not likely to turn out to be fundamentally different from what has been encountered on the farms surveyed. On a more general note, it is an established fact that Stone Age material is widely distributed on the plains, ridges and valleys of the upper Karroo area north and south of the Orange-Vaal Rivers.

## 6.7. Other heritage resources that might occur in the broader area

The following site types/objects have been encountered in the broader region and are therefore flagged:

- Rock engravings (petroglyphs) from the Middle Stone Age to Later Stone Age periods
- Rock Paintings from the Middle Stone Age to Later Stone Age periods
- Buildings and objects associated with modern commercial farming from the 19<sup>th</sup> century
- Graves, burial grounds and human bones.

## 6.8. Postulated heritage sensitivity of the properties

The ground survey which has been undertaken on the other farms and in the broader area should provide a good theoretical foundation from which to extrapolate the more likely scenarios on the farms under study.

The area was obviously home to MSA/LSA hunter gatherers who left behind the scatters of stone tools and flake waste. As most pre-industrial communities had a propensity to gravitate to permanent water sources, the pans which occur in the area have potential to yield artefacts both above and below the surface. Although Early to Later Stone artefacts have been seen in the surveys that have been encountered in

the broader area, most occurrences have not warranted further action beyond primary documentation.

The Table below provides a summary of the probability of occurrence of different typologies of heritage and a confidence rating of the predictions. The ranking system relates to the national grading of heritage sites (adapted from Guidelines for involving Heritage Specialists in EIA processes by Winter S and & N. Baumann (2005, p19). The probability of occurrence of different grades of sites confirms the view that no finds in the study area are likely to warrant further action apart from documentation. During the exploration phase monitoring will be undertaken using the Chance Finds Procedure.

GRADE	RANKING	SIGNIFICANCE	PROBABILITY OF	CONFIDENCE RATING
			OCCURRENCE	
1	National	Of high intrinsic, associational and contextual heritage value	0%	High
		within a national, provincial and local	50% (for burial	
		context, i.e. formally declared or potential Grade 1, 2 or 3A	grounds)	
		heritage resources, and burial grounds		
2	Provincial	Of high intrinsic, associational and contextual heritage value	0%	High
		within a national, provincial and local		
		context, i.e. formally declared or potential 2 heritage resources		
3A	Local	Of high intrinsic, associational and contextual heritage value	10%	Medium
		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	20%	High
		value within a local context, i.e. potential		
		Grade 3B heritage resources		
3C	Local	Of medium to low intrinsic, associational or contextual heritage	99,99%	High
		value within a national, provincial and		
		local context, i.e. potential Grade 3C heritage resources		

## 6.9. Chance Finds Procedure (CPF)

When the environmental and heritage approvals have been received prospecting operations will commence at which time an Archaeological and Heritage Chance Find Procedure (CPF) annexed to the report will be applied as a manual for the protection of unidentified heritage resources which may occur in the footprint of the prospecting right (Annexure 2).

## 6.10. 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 Fifty-eight (58) sites have been documented.

(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 an index of potential risks based on perceived value of the heritage and potential threats posed by the proposed development. Any sites found during the exploration and are deemed to be significant will be dealt with in accordance with the mitigation procedures in the Heritage Chance Finds Procedure.

 (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 porthern is making a significant contribution to the growth of the South African

Mining in the northern is making a significant contribution to the growth of the South African economy. 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. There is an overwhelming sentiment that mining industry will mitigate the vagaries of climate change – induced droughts which have been experienced over the last decade.

## (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

All the landowners and tenants in the footprint of the development were contacted by a social practitioner and informed about the project. A Stakeholder Assessment Report (SER) is attached to this report. Subsequently the heritage specialist communicated with most of the landowners by telephone and/or email correspondence. The heritage specialist met with Mr Johan and Mrs Lettie Malan (Remaining Extent of Drieboom Leegte 245) who also arranged for access to the farm Jagt Kolk 244 owned by Mrs Ronell Muller. An advertisement was published in the Gemsbok Newspaper a weekly paper circulating in the area, also available digitally on internet. No objections have been raised about the proposed mine prospecting.



Figure 6: Public Notice placed at the entrance to the farm Groot Zwart Bast 189



Figure 7: Public Notice placed at the entrance to the farm Jagt Kolk 244



Figure 8: Public Notice placed at the notice board at the Kenhardt Service Station in Kenhardt

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

A Chance Finds Procedure will be used to deal with any sites or objects found during the mine exploration and when actual mining commences.

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

In accordance with the CPF in the event of discovery of heritage resources deemed of significance during exploration or mining, the Provincial Heritage Resources Authority or SAHRA will be informed immediately and an archaeologist or heritage expert called to attend.

EVALUATION CRITERIA	RISK ASSESSMENT
Description of potential	Negative impacts range from partial to total destruction of
impact	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 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	Medium.
impacts before mitigation	
Mitigation measures	If archaeological or other heritage relics deemed of high
	significance are found during the exploration phase, heritage
	authorities will be advised immediately and a heritage
	specialist will be called to attend.
Level of significance of	Low.
impacts after mitigation	
Cumulative Impacts	None.
Comments or Discussion	None.

6.11. Risk Assessment of the findings

## 7. CONCLUSION AND RECOMMENDATIONS

In light of the findings in this report, the mine prospecting can go ahead, provided that there is no encroachment into 100 m servitudes around the burial grounds identified in this report (DMB40, DMB54 and GZB52). The study is mindful that some

important discoveries may be made during prospecting. If this happens operations should be halted, and the provincial heritage resources authority or SAHRA notified in order for an investigation and evaluation of the finds to take place. An Archaeological and Heritage Chance Find Procedure (CPF) appended to this report will be applied as a manual for the protection of unidentified heritage resources which may occur in the footprint of the prospecting right application (Annexure II).

## 8. CATALOGUE OF HERITAGE SITES

SITE NO	COORDINATES	3	PERIOD
GZB01	29°32'8.50"S	20°40'39.80"E	MSA/LSA
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<b>DESCRIPTION</b> : Open flat plain with surface gravels and shrubs. 3 lithics – 2			
scrapers and a flake.			
HERITAGE SIGNIFICANCE	HERITAGE SIGNIFICANCE Evidence of hunter-gatherer activities during the		
MSA/LSA			
MITIGATION No further action required.			

SITE NO	COORDINATES		PERIOD
GZB02	29°32'3.10"S	20°40'33.90"E	MSA/LSA



<b>DESCRIPTION</b> : Open flat plain with surface gravels. 5 lithics – 1 large blade, 1			
scrapers, 3 flakes.			
HERITAGE SIGNIFICANCE Evidence of hunter-gatherer activities during the			
MSA/LSA			
MITIGATION No further action required.			

SITE NO	COORDINATES		PERIOD
GZB03	29°32'5.40"S	20°40'38.10"E	MSA/LSA
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		Carl Marcall	18 24
	N. C.	A CEN	· · · · · ·
	M. A.		N 323
DESCRIP	TION: Open flat n	lain with surface	gravels. 6 lithics – flakes of which
	have been used a		
	E SIGNIFICANCE		hunter-gatherer activities during the
		MSA/LSA	-

MITIGATION	No further action required.

ITE NO	COORDINATES	;	PERIOD
GZB04	29°31'54.40"S	20°40'27.50"E	MSA/LSA
		345678911234	5 6 7 8 9 70 1 2 3 4 5 6 7 8 9 70 1
			ace gravel. 6 lithics – pear-shaped
	3 scrapers, 2 flak		
HERITAG	E SIGNIFICANCE	E Evidence of MSA/LSA	hunter-gatherer activities during the
MITIGATI	ON		tion required.

SITE NO	COORDINATES	6	PERIOD
GZB05	29°31'53.60"S	20°40'23.60"E	MSA/LSA
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		789101234567	8 9 20 1 2 3 4 5 6 7 8 9 30 1
	and the second	antis a Es	
	China La		
	<b>HON</b> : Open flat p	blain with fine surf	ace gravel. 4 lithics – 2 scrapers, 2
flakes.	E SIGNIFICANCE	Evidence of	huntor anthoror activition during the
		MSA/LSA	hunter-gatherer activities during the
MITIGATI	ON	No further ac	tion required

SITE NO	COORDINATES	i	PERIOD
GZB06	29°32'1.90"S	20°40'26.50"E	MSA/LSA
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			An Ala San A
		2 2 4 5 6 7 8 9 10 1 2 3	3456789201234567893
		Marsha St	and the second
	A TRACTOR		
DESCRIP	TION: Open flat r	lain scattered or	avels. 5 lithics – 1 large scraper, 4
quartzite fl		ian, ooutorou yi	
· ·	E SIGNIFICANCE	Evidence of	hunter-gatherer activities during the
		MSA/LSA	c v
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES	•	PERIOD
GZB07	29°31'57.80"S	20°40'11.20"E	MSA/LSA
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			and the second second
		∎6−789 <b>10</b> 12345	6 7 8 9 20 1 2 3 4 5 6 7 8 9 3
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<b>DESCRIPTION</b> : Open flat plain. 5 lithics – 3 scrapers, 2 flakes.			
HERITAG	E SIGNIFICANCE	E Evidence of	hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES		PERIOD
GZB08	29°32'1.00"S	20°40'10.90"E	MSA/LSA
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		ain. 4 lithics – fla	kes of which some may have been
used as so			
HERITAG	E SIGNIFICANCE		hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	DN	No further ac	tion required.

SITE NO	COORDINATES	5	PERIOD
GZB09	29°32'1.00"S	20°40'13.80"E	MSA/LSA
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			A CONTRACTOR
	and the second		5678920123456789301
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DESCRIP	TION: Open flat p	olain. 2 flake tools	with sharp cutting edges.
HERITAG	E SIGNIFICANCE	E Evidence of	hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES		PERIOD	
GZB10	29°32'3.70"S	20°40'5.90"E	MSA/LSA	
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	2 3 4 5 6		and the second second second	
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			States and the	
DESCRIP	<b>DESCRIPTION</b> : Open flat plain. 4 lithics. 3 scrapers, 1 blade.			
	E SIGNIFICANCE		hunter-gatherer activities during the	
		MSA/LSA		
MITIGATI	ON	No further ac	tion required.	
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SITE NO	COORDINATES		PERIOD
GZB11	29°32'5.10"S	20°39'52.20"E	MSA/LSA
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	and and a set	the share	
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	2 Contraction	<b>然而</b> 。 海	
<b>DESCRIPTION</b> : Open flat plain with fine surface gravel. 5 lithics, 2 blades, 2			
scrapers, 2 flakes.			
HERITAG	E SIGNIFICANCE	Evidence of	hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further act	tion required.

SITE NO	COORDINATES	6	PERIOD
GZB12	29°32'9.50"S	20°39'51.10"E	MSA/LSA
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	and the second second	and the second	and the second second
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DESCOID	TION: Open flat p	alain 4 flakas	
	E SIGNIFICANCE		hunter getherer activities during the
		MSA/LSA	hunter-gatherer activities during the
MITIGATI			tion required
			tion required.

SITE NO	COORDINATES	6	PERIOD
GZB13	29°32'10.00"S	20°39'54.80"E	MSA/LSA
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	a Alexand	and Marian	
<b>DESCRIPTION</b> : Open flat plain. 4 lithics – 1 scraper, 3 flakes.			
HERITAG	E SIGNIFICANCE	E Evidence of	hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES	5	PERIOD	
GZB14	29°32'12.50"S	20°39'22.00"E	MSA/LSA	
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<b>ب</b>		Ara See	The second second	
DESCRIP	<b>DESCRIPTION</b> : Open flat plain with surface gravels. 6 flake tools/waste.			
			hunter-gatherer activities during the	
		MSA/LSA		
MITIGATI	ON	No further ac	tion required.	

SITE NO	COORDINATES	;	PERIOD
GZB15	29°32'17.10"S	20°39'22.10"E	MSA/LSA
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			er sa en
		dies a	
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			scrapers, 1 blade (or end scraper).
	E SIGNIFICANCE	MSA/LSA	hunter-gatherer activities during the
			tion required
MITIGATI		No further ac	uon requirea.

SITE NO	COORDINATES	6	PERIOD	
GZB16	29°32'33.10"S	20°39'12.40"E	MSA/LSA	
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	Stor 1 - 12			
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DESCRIP	<b>DESCRIPTION</b> : Open flat plain. 3 lithics – 2 scrapers, 1 blade.			
	HERITAGE SIGNIFICANCE Evidence of hunter-gatherer activities during			
		MSA/LSA	-	
MITIGATI	ON	No further ac	tion required.	

SITE NO	COORDINATES	6	PERIOD	
GZB17	29°32'33.70"S	20°39'8.50"E	MSA/LSA	
		A DECEMBER OF THE OWNER		
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		Same and	and the second	
DESCRIP	<b>DESCRIPTION</b> : Open flat plain. 3 lithics – 1 blade, 2 scrapers.			
HERITAG	E SIGNIFICANCE	E Evidence of	hunter-gatherer activities during the	
		MSA/LSA		
MITIGATI	ON	No further ac	tion required.	

SITE NO	COORDINATES		PERIOD
GZB18	29°32'20.10"S	20°39'2.91"E	Modern
		the second	
		+	
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		H	
	The second second	and the second second	
			A SECTION AND
DESCRIP	TION: Watering s	ite, windmill and o	concrete reservoir.
HERITAG	E SIGNIFICANCE	Association w	vith modern commercial farming.
MITIGATI	ON	Will not be af	fected.

SITE NO	COORDINATES	;	PERIOD	
GZB19	29°31'37.54"S	20°38'15.91"E	Modern	
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制成	ma			
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1			and the second	
	<b>DESCRIPTION</b> : Farmstead. Main dwelling house and outbuildings.			
HERITAG	E SIGNIFICANCE	Association	with modern commercial farming.	
MITIGATIO	NC	Will not be af	fected.	

SITE NO	COORDINATES	6	PERIOD
GZB20	29°31'4.50"S	20°38'4.70"E	Modern
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	and the second		
	23.00	T	
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	Alia De		and the second
			And Proventing ( March 1)
DESCRIP	TION: Windmill a	nd broken concre	te reservoir.
HERITAG	E SIGNIFICANCE	Association w	vith modern commercial farming.
MITIGATI	ON	No further act	tion required.
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SITE NO	COORDINATES	6	PERIOD
GZB21	29°30'46.00"S	20°38'11.40"E	MSA/LSA
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		/ 8 9 1 4 3 4 9 9 9 9	
	AN A A	Mary 10	
	The second	the second	A CALL STREET
DESCRIP	<b>DESCRIPTION</b> : Open flat plain with shrubs. 3 lithics – 1 blade, 2 scrapers.		
	E SIGNIFICANCE		hunter-gatherer activities during the
		MSA/LSA	-
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES		PERIOD
GZB22	29°30'47.40"	20°38'12.70"E	MSA/LSA
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	March 1		
	3 M	4 5 6 7 8 9 16 1 2 3 4 5 6 7	8 9 70 1 2 3 4 5 6 7 8 9 30 1
	2		
	and the		
	17.05		
DESCRIP	<b>DESCRIPTION</b> : Flat plain with surface gravels and shrubs. 4 lithics. 3 flake tools,		
1 blade.			
	E SIGNIFICANCE	Evidence of	hunter-gatherer activities during the
		MSA/LSA	name gamerer activities during the

MITIGATION	No further action required.
	MSA/LSA
	Evidence of fidities gatherer activities during the

SITE NO	COORDINATES	6	PERIOD			
GZB23	29°30'8.21"S	20°37'59.09"E	MSA/LSA			
	and the second second	A A ANT				
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		A. Carlos	l. L			
			A CONTRACTOR OF THE OWNER			
			A CONTRACTOR OF A			
	DESCRIPTION: Windmill, concrete reservoir.					
	E SIGNIFICANCE		with modern commercial farming.			
MITIGATI	UN	Will not be af	Tected.			

SITE NO	COORDINATES	;	PERIOD
GZB24	29°29'54.90"S	20°37'44.70"E	MSA/LSA
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	2 3 4 5 6 7 8 9		
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	A ANT	0	
DESCRIP	TION: Open flat p	lain with shrubs.	4 lithics – 1 cleaver/scraper, 3
scrapers.			
HERITAG	E SIGNIFICANCE	E Evidence of	hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES	;	PERIOD
GZB25	29°29'24.90"S	20°37'39.20"E	MSA/LSA
DESCRIPTION: Open flat plain, with surface gravels and shrubs, 4 lithing, 1			
	<b>DESCRIPTION</b> : Open flat plain, with surface gravels and shrubs. 4 lithics – 1 handaxe, 1 scrapers, flakes.		
HERITAG	HERITAGE SIGNIFICANCE Evidence of hunter-gatherer activities during		hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	TIGATION         No further action required.		

<b>IITIGATION</b>	No further action required.

SITE NO	COORDINATES	6	PERIOD	
GZB26	29°28'55.30"S	20°37'24.20"	MSA/LSA	
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	and the second	1 Carlos		
DEGODID				
	<b>PTION</b> : Open flat plain with fine surface gravel. 4 lithics – scrapers.			
HERITAG	E SIGNIFICANCE	MSA/LSA	hunter-gatherer activities during the	
MITIGATI	ON	No further act	tion required	
			uon requirea.	

SITE NO	COORDINATES		PERIOD	
GZB27	29°29'59.00"S	20°38'14.20"E	MSA/LSA	
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			A CONTRACT	
	- d start	MHT.		
DESCRIP	TION: Open flat p	lain with surface of	gravels. 4 lithics – 1 blade, 3	
scrapers.	<b>DESCRIPTION</b> : Open flat plain with surface gravels. 4 lithics – 1 blade, 3 scrapers.			
-	E SIGNIFICANCE	Evidence of	hunter-gatherer activities during the	

MITIGATION	No further action required.			
	MSA/LSA			
HERITAGE SIGNIFICANCE	Evidence of numer-gamerer	activities	uunng	uie

SITE NO	COORDINATES	;	PERIOD
GZB28	29°29'48.30"S	20°38'29.70"E	MSA/LSA
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	and the second second		
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		Charles 1.	
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DESCRIP		aroa with find curf	ace gravel. 3 flake tools.
			hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES	5	PERIOD
GZB29	29°32'16.00"S	20°39'5.30"E	MSA/LSA
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			d surface gravel. 2 flakes, 1 blade.
HERITAG	E SIGNIFICANCE		hunter-gatherer activities during the
	0.1	MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES		PERIOD
DBM30	29°36'18.50"S	20°35'4.80"E	MSA/LSA

DESCRIPTION: Farmstead or	n Drieboom Leegte 245. Principal dwellings, a	
gabled building with a flat veranda roof extension, and flat roofed extension on the		
western side. Dry stone walling formed an enclosure for penning stock.		
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the	
	MSA/LSA	

	MSA/LSA
MITIGATION	Will not be affected.

SITE NO	COORDINATES		PERIOD
DBM31	29°36'57.80"S	20°35'28.10"E	MSA/LSA
		23456	7 8 9 10 1 2 3 4 5 6 7 8 9 20 1
		ain with surface o	gravels. 2 lithics – Scrapers with
retouched edges.			
HERITAG	E SIGNIFICANCE	Evidence of MSA/LSA	hunter-gatherer activities during the

No further action required.

MITIGATION

SITE NO	COORDINATES	6	PERIOD
DBM32	29°37'14.50"S	20°35'44.20"E	MSA/LSA
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	2 3 4 5 6	78910123456	18920123450103
		to start	
DESCRIP	TION: Open flat r	plain with surface	gravels. 5 lithics – 1 blade, 4
scrapers.			
		E Evidence of	hunter-gatherer activities during the

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

SITE NO	COORDINATES	6	PERIOD
DBM33	29°37'12.10"S	20°35'46.30"E	MSA/LSA
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			ace gravel. 1 scraper.
HERITAG	E SIGNIFICANCE		hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES	6	PERIOD
DBM34	29°37'37.30"S	20°35'58.90"E	MSA/LSA
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		and the second	
DESCOID	<b>TION</b> : Open flat p	lain Scrapor and	flake
	E SIGNIFICANCE		hunter-gatherer activities during the
		MSA/LSA	numer-gamerer activities during the
MITIGATI		No further ac	tion required
WITIGATI			

SITE NO	COORDINATES	6	PERIOD
DBM35	29°37'53.87"S	20°36'12.60"E	MSA/LSA
		3-4-5-6-7-8-9	10 1 2 3 4 5 6 7 8 9 20 1
	DESCRIPTION: Open flat plain. 3 scrapers.		
HERITAG	E SIGNIFICANCE	E Evidence of MSA/LSA	hunter-gatherer activities during the
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES		PERIOD
DBM36	29°36'30.90"S	20°36'41.80"E	MSA/LSA
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<b>A</b> ,		PA 250	A MAR DANK
DESCRIP	TION: Open flat p	lain with surface	gravels. 4 lithics. 2 flakes, 2
scrapers.			
HERITAG	E SIGNIFICANCE	Evidence of	hunter-gatherer activities during the

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

SITE NO	COORDINATES	<b>;</b>	PERIOD
DBM37	29°36'7.10"S	20°37'50.80"E	MSA/LSA
DECODIO	2 3 4 5 2 3 4 5		6 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 30 7 8 9 20 1 2 3 4 5 6 7 8 9 20 1 2 3 7 8 9 20 1 2 3 7 8 9 20 1 2 3 7 8 9 20 1 2 3 7 8 9 20 1 2 3 7 8 9 20 1 2 3
<b>DESCRIPTION</b> : Open flat plain with surface gravels. 4 lithics - 1 large flake, 4 scrapers.			
	E SIGNIFICANCE	E Evidence of MSA/LSA	hunter-gatherer activities during the

	MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES	;	PERIOD
DBM38	29°35'33.50"S	20°36'38.00"E	MSA/LSA
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DEOODID			
<b>DESCRIPTION</b> : Open flat plain. Watering site. An old concrete reservoir with			
_	corrugated zinc coating.		
HERITAG	E SIGNIFICANCE	Association w	vith modern commercial farming
MITIGATIO	NC	Will not be af	fected.

SITE NO	COORDINATES	6	PERIOD
DBM39	29°36'45.00"S	20°36'28.60"E	MSA/LSA
		2 H	
	<b>TION</b> : Open flat p		
HERITAG	E SIGNIFICANCE		hunter-gatherer activities during the
		MSA/LSA	
MITIGATIO		No further ac	tion required.

SITE NO	COORDINATES		PERIOD
DBM40	29°36'15.70"S	20°34'56.00"E	MSA/LSA



**DESCRIPTION**: Burial ground on Groot Zwart Bast 189. Double grave with marble heads and granite base dressing. A single grave on the side marked by a concrete base with a broken head.

Schalk Leopold van Zyl DOB 31 March 1850 DOD 18 May 1908

Helena Christina van Zyl (nee Balen). DOB 30 April 1864 DOD 6 March 1936

HERITAGE SIGNIFICANCE	Association with modern commercial farming.
MITIGATION	100 m servitude to be reserved.

SITE NO	COORDINATES	•	PERIOD
DBM41	29°35'51.30"S	20°34'42.80"E	MSA/LSA
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P		3 4 5 6 7 8 9 10	23450
1	Man Tal	49.00	A STAR
5		A.S. Pices	TAN TYPE
	<b>DESCRIPTION</b> : Flat area, weathered read-brown stones. 1 scraper and flakes.		
			hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES		PERIOD
DBM42	29°36'5.81"S	20°34'55.12"E	MSA/LSA
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		Chief Martin	Private State
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		DBM42	AND THE STATE
		and the second and	
4		1	
			A State of the
G	boogle Earth		Legend
DESCRIP	TION: Earth emba	nkment to trappir	ng storm water in the rainy season.
HERITAG	E SIGNIFICANCE	Association w	vith modern commercial farming.
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES		PERIOD
DJK43	29°30'45.84"S	20°45'27.26"E	MSA/LSA
			Yte. Principal dwelling and behind it
			oldest structure on the farmstead.
	E SIGNIFICANCE		vith modern commercial farming.
MITIGATI	ON	Will not be af	fected.

SITE NO	COORDINATES	;	PERIOD
DJK44	29°30'43.10"S	20°45'46.30"E	MSA/LSA
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	and the second second	and the second	
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		and the second	
	Section 2		
	10/12		
	J.		and the second se
	Sur all	AND THE	
DESCRIP	TION: Earth emb	ankment with stor	ne reinforcement.
HERITAG	E SIGNIFICANCE	Association w	vith modern commercial farming.
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES		PERIOD
DJK45	29°30'33.90"S	20°46'5.30"E	MSA/LSA
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2	2.2.00		A BAR AND
DESCRIP	TION: Open flat p	lain with fine surfa	ace gravels and shrubs. 2 scrapers.
HERITAG	E SIGNIFICANCE		hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES	5	PERIOD
DJK46	29°30'46.70"S	20°46'55.50"E	MSA/LSA
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			A CARACTER STORE
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DESCRIP	TION: Open flat p	olain. 3 flakes/scra	apers.
	E SIGNIFICANCE		hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES	i	PERIOD
DJK47	29°31'14.00"S	20°46'46.10"E	MSA/LSA
DJK47	29°31'14.00"S		
	the e	789012345878	
		ain with surface	gravels. 4 lithics – 1 cleaver
(scraper),			
HERITAG	E SIGNIFICANCE		hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES		PERIOD
DJK48	29°30'59.30"S	20°45'26.10"E	MSA/LSA
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	2 3 4	16-7 8 9 10 1 2 3 4 5 6 7 8 9	
	36 A		and the second second
	ale a	a contraction	
DESCRIP	<b>TION</b> : Open flat p	lain with surface	gravels. 4 lithics – 1 blade, 3
scrapers.			
HERITAG	E SIGNIFICANCE	E Evidence of	hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES	6	PERIOD
DJK49	29°29'57.54"S	20°45'2.57"E	MSA/LSA
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	TION: Open flat p	lain 6 flake tools	
			hunter-gatherer activities during the
		MSA/LSA	name-gamerer activities during the
MITIGATI	ON		tion required.

SITE NO	COORDINATES		PERIOD
DJK50	29°29'45.10"S	20°44'59.30"E	MSA/LSA
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		The space	- The second
	100		「本にいま」
DESCRIP	TION: Broken win	dmill and reserve	bir
HERITAG	E SIGNIFICANCE	Association w	vith modern commercial farming.
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES	i	PERIOD
DJK51	29°29'51.90"S	20°45'29.40"E	MSA/LSA
		ain with surface of	gravels. 6 lithics - 1 cleaver/scraper,
	2 scrapers.		
HERITAG	E SIGNIFICANCE		hunter-gatherer activities during the
		MSA/LSA	
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES	;	PERIOD
GZB52	29°31'40.90"S	20°41'33.90"E	MSA/LSA
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			a the same of the
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	4		· · · ····
DESCRIP	TION: Burial grou	und on the farm D	rieboom Leegte 245. 7 graves.
Some of the	ne names engrave	ed: Johannes Jac	obus Jordaan DOB 1 Sep 1893,
DOD 4 De			
	an DOB 1 Sep 186		
	JM DOB 12 Sep 1		
	E SIGNIFICANCE		hunter-gatherer activities during the
		MSA/LSA	

	MSA/LSA	0
MITIGATION	No further action required.	

SITE NO	COORDINATES		PERIOD
JKK53	29°39'36.40"S	20°32'38.70"E	MSA/LSA
DESCRIP	TION: Camp on Ja	agt Kolk 244. Dw	elling structures. Stonewalled cattle
	with a loading ram		
	E SIGNIFICANCE		vith modern commercial farming.
MITIGATI	ON	Will not be af	fected.

SITE NO	COORDINATES	;	PERIOD
DBM54	29°36'29.11"S	20°34'40.44"E	MSA/LSA
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n Store			All and a second
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DESCRIP	TION: Burial grou	und with 2 graves	on the side of the road close to the
<b>DESCRIPTION</b> : Burial ground with 2 graves on the side of the road close to the boundary of Drieboom Leegte 245.			
HERITAG	E SIGNIFICANCE		hunter-gatherer activities during the
		MSA/LSA	
MITIGATIO	NC	No further act	tion required.

SITE NO	COORDINATES		PERIOD
JKK55	29°40'21.40"S	20°29'50.70"E	MSA/LSA
	E SIGNIFICANCE		e enclosure 3m in diameter. /ith modern commercial farming
MITIGATI		No further act	

SITE NO	COORDINATES	;	PERIOD
JKK56	29°40'22.20"S	20°29'49.10"E	MSA/LSA
	E SIGNIFICANCE		ar setting of stones 2,5m in diameter. <i>i</i> th modern commercial farming.
MITIGATI		No further act	-

SITE NO	COORDINATES	•	PERIOD
JKK57	29°39'24.23"S	20°30'17.97"E	MSA/LSA
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	JELLIN T	the l	
		11-1	
	Maria Maria		
DESCRIP	TION: On the farm	n Jagte Kolk 244.	Dwellings for farm workers.
	E SIGNIFICANCE	Association w	vith modern commercial farming.
MITIGATI	ON	No further ac	tion required.

SITE NO	COORDINATES	6	PERIOD
JKK58	29°38'44.40"S	20°30'43.80"E	MSA/LSA
			Windmill and stonewalled reservoir.
	E SIGNIFICANCE		vith modern commercial farming.
MITIGATIO		No further ac	tion required.

#### 9. 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, 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".<sup>6</sup>

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

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

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

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

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

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

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

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

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

**Later Iron Age:** The period from the beginning of the 2<sup>nd</sup> 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

<sup>&</sup>lt;sup>6</sup> 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.

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.

#### **10. REFERENCES**

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Mr Johan and Mrs Lettie Malan of Jagt Kolk 244, Zwart Bast and Drieboom 245.

Mr Nico Kirstein of the Remaining Extent of Zwart Bast 189.

Mrs Linda Muller, the owner of the De Oude Herberg County Lodge in Kenhardt, Northern Cape

# ANNEXURE I MAPS OF THE TRACK, SURVEY BY EDWARD MATENGA, 22-26 AUGUST 2021

Phase 1 Heritage Impact Assessment & Palaeontological Desktop Assessment for a Mine Prospecting Right Application on Portion 1, 2 & the Remaining Extent of the Farm Drieboom Leegte No 345; Portion 1, 2, 3 and the Remaining Extent of Farm Groot Zwart Bast No 189 and Portions 3, 5 & 8 of the Farm Jagt Kolk No 244 near Kenhardt Town, within the Kai !Garib Municipality, Northern Cape



Figure i: Track log overview of the area.

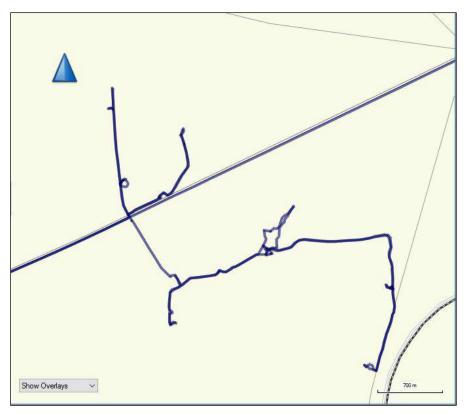


Figure ii: Track log, north-eastern part of the study area covering Drieboomste and Zwart Bast

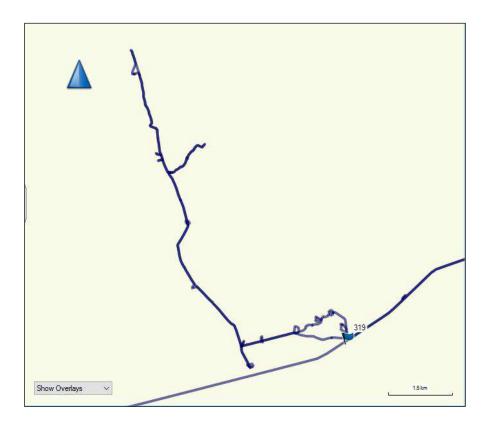


Figure iii: Map of track log covering a north-western part of the study area (the farm Zwart Bast)

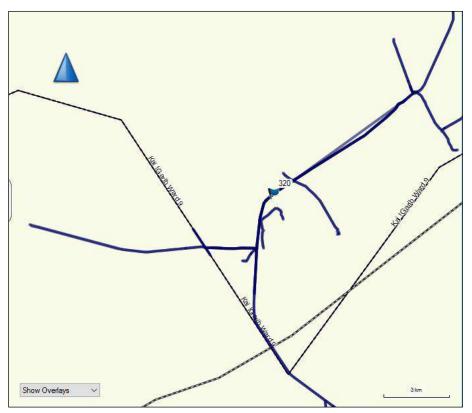


Figure iv: Track log, south-western part of the study area (farm Jagte Kolk)

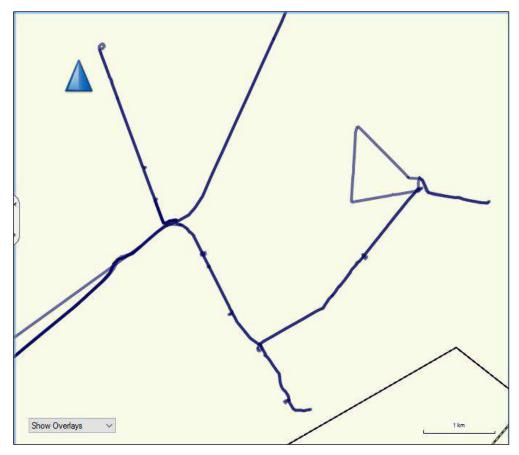


Figure v: Track log, central party of the study area covering Drieboomste and Jagt Kolk

### ANNEXURE II

### **CHANCE FINDS PROCEDURE**

Phase 1 Heritage Impact Assessment & Palaeontological Desk Assessment a Mine Prospecting Right Application on Portion 1, 2 & the Remaining extent of farm Drieboom Leegte No 345; Portion 1, 2, 3 and the remaining extent of farm Groot Zwart Bast No 189 and Portions 3, 5 & 8 of Jagt Kolk No 244 near Kenhardt Town, within the Kai !Garib Municipality, Northern Cape

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### ABBREVIATIONS

BGG	Burial Grounds and Graves unit of SAHRA
CPF	Chance Finds Procedure

- ECO Environmental Control Officer
- ESA Early Stone Age
- LSA Later Stone Age
- MSA Middle Stone Age
- NHRA National Heritage Resources Act (No 25/1999)
- SAPS South African Police Services
- SAHRA South African Heritage Resources Agency

### BACKGROUND

Newnite Mining (Pty) Ltd has applied for a mine prospecting right on Portion 1, 2 & the Remaining extent of farm Drieboom Leegte No 345; Portion 1, 2, 3 and the remaining extent of farm Groot Zwart Bast No 189 and Portions 3, 5 & 8 of Jagt Kolk No 244 near Kenhardt Town, within the Kai !Garib Municipality, Northern Cape. When the environmental and heritage approvals have been received prospecting operations will commence at which time the Archaeological and Heritage Chance Finds Procedure (CPF) will be applied as a manual for the protection of unidentified heritage resources which may occur in the footprint of the prospecting right.

## LEGAL FRAMEWORK

The National Heritage Resources Act is the principal law for the protection of heritage resources Act (No 25 / 1999) and for the application of the CPF attention is drawn to the following Sections:

- Section 3 on the definition and types of heritage resources
- Section 4 on the provisional protection of buildings more than 60 years old
- Section 35 on the protection of archaeological and palaeontological resources
- Section 36 on the protection of graves and human remains

## HERITAGE SITES AND OBJECTS THAT MIGHT OCCUR IN THE AREA

The following site types/objects have been encountered in the broader region and are therefore flagged for possible occurrence on the farms that will be prospected.

- Surface scatters or concentrations of stone tools of the ESA, MSA, LSA periods
- Substantial subsurface occurrences of stone tools
- Rock engravings
- Buildings and objects associated with modern commercial farming from the 19<sup>th</sup> century
- Graves, burial grounds and human bones

### GENERAL

A principal aim of the CFP is to raise awareness of all personnel in the project regarding the prospect of finding archaeological resources that unseen during the Phase 1 scoping heritage assessment and establish a protocol for the protection of these resources. The appointed Environmental Control Officer (ECO) and Site Manager keep copies of the CPF at the field offices. Training of field personnel on cultural heritage resources that might potentially be found on area should be provided.

### PROCEDURE FOR ARCHAEOLOGICAL FINDS

If you discover what you suspect may be a possible archaeological site:

- Stop all work in the area to avoid damaging the site.
- Do not disturb any archaeological remains that you may encounter.
- The finds must be reported to ECO or Site Manager
- The finds must be reported to the heritage authority, i.e. SAHRA and/or the provincial heritage resources agency.
- The heritage authority will send a heritage specialist and /or ask the permit holder to appoint a heritage specialist to make a preliminary assessment of the findings.
- If the potential significance of the finds are deemed to warrant further action and they cannot be avoided, then then heritage specialist will submit a report advising SAHRA accordingly.
- SAHRA will determine the appropriate course of action.

### PROCEDURE FOR GRAVES, BURIAL GROUNDS AND HUMAN REMAINS

If you discover what you suspect may be possible human remains:

- Stop all work in the area to avoid damaging the site.
- Do not disturb any possible human remains that you may encounter.
- The finds must be reported to ECO or Site Manager.
- The finds must be reported to the local area station of SAPS.

- The finds must be reported to the SAHRA Burial Grounds and Graves (BGG) Unit.
- The BGG Unit will send a heritage specialist and /or ask the permit holder to appoint a heritage specialist to make a preliminary assessment of the findings.
- If the graves/human remains cannot be avoided SAHRA will require that the human remains be re-interred in a formal cemetery.
- Public participation to identify interested and affected parties (if any) will be undertaken in terms of NHRA Regulations 39, 41 and 41 in the Government Notice No R548 (year 2000).
- An application will be lodged to the BGG for the relocation of the human remains in terms of NHRA Regulations 34 in the Government Notice No R548 (year 2000).
- If the graves/ human remains must not be relocated, the BGG Unit may require that any damage done to the site is repaired and a 100m buffer zone is enforced around the site.

### SAHRA CONTACT DETAILS

SAHRA Head Office	SAHRA BGG Unit
111 Harrington Street	Office 101, 1st floor, Sancardia Mall,
Cape Town, 8001	541 Madiba Street
Email: info@sahra.org.zaTel: (021) 462	Pretoria
4502	Tel: 012 320 8490/ 4965
Fax: (021) 462 4509	Fax: +27 12 320 8486

#### **ANNEXURE III**

### ADVERTISEMENT IN A LOCAL CIRCULATING NEWSPAPER

