HERITAGE IMPACT ASSESSMENT:
PROPOSED PROSPECTING ON A PORTION OF PORTION 5 OF KAMAGGAS 200, NAMAKWALAND MAGISTERIAL DISTRICT, NORTHERN CAPE

Required under Section 38(8) of the National Heritage Resources Act (No. 25 of 1999) as part of a Heritage Impact Assessment.

SAHRA Case No.: 17647

Report for:

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On behalf of:

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SUMMARY

ASHA Consulting (Pty) Ltd was appointed by N.J. van Zyl to assess the potential impacts to heritage resources that might occur through proposed prospecting activities on a portion of Portion 5 of the farm Kamaggas No. 200, Namakwaland District, Northern Cape. An approximate mid-point for the study area is at S29° 35’ 40” E17° 26’ 30”. The site lies west of the foot of the Spektakel Pass along the southern side of the R355, some 21 km north of Komaggas and 41 km west of Springbok.

The project will include non-invasive work, followed by drilling and then possibly bulk sampling through trenching.

The study area has the Buffels River forming part of its northern edge while cobble terraces occur to the south of the river. Sand covers much of the site, but cobbles are exposed along the terraces, heuweltjies are present in a few areas and dorbank is exposed in a small area.

The survey showed that Early Stone Age materials occurred in very low densities in areas with exposed cobbles, while higher density material occurred on the exposed dorbank. Ephemeral archaeological materials of uncertain age (but most likely Later Stone Age) were present on the heuweltjies. The lower cobble terrace was found to be the most sensitive area with a number of Later Stone Age sites present as well as some historical herder stock posts (which are also associated with living heritage). Two potential graves were also identified in this area. A number of these sites (including the potential graves) are considered culturally significant, as were the Early Stone Age materials on the dorbank. The archaeological stock posts as well as some modern ones are associated with living heritage but the modern stock posts are not considered significant. The cultural landscape is largely natural but with the remains of a number of old mines present in the area, including immediately to the east of the study area.

It is recommended that the proposed prospecting on a portion of Portion 5 of Farm Kamaggas 200 should be authorised, but subject to the following recommendations:

- The two possible graves and their buffers must be avoided;
- All the identified archaeological sites and their buffers must be avoided if possible;
- If avoidance of archaeological sites is not possible then they must be sampled by a qualified archaeologist under a permit issued by SAHRA;
- All surface disturbance must be rehabilitated; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

Glossary

Acheulean: An archaeological name for the period comprising the later part of the Early Stone Age. This period started about 1.7-1.5 million years ago and ended about 250-200 thousand years ago.

Background scatter: Artefacts whose spatial position is conditioned more by natural forces than by human agency.

Early Stone Age: Period of the Stone Age extending approximately between 2 million and 200 000 years ago.

Handaxe: A bifacially flaked, pointed stone tool type typical of the Early Stone Age Acheulian Industry. It is also referred to as a large cutting tool.

Holocene: The geological period spanning the last approximately 10-12 000 years.

Hominid: a group consisting of all modern and extinct great apes (i.e. gorillas, chimpanzees, orangutans and humans) and their ancestors.

Later Stone Age: Period of the Stone Age extending over the last approximately 20 000 years.

Middle Stone Age: Period of the Stone Age extending approximately between 200 000 and 20 000 years ago.

Pleistocene: The geological period beginning approximately 2.5 million years ago and preceding the Holocene.

Abbreviations

APHP: Association of Professional Heritage Practitioners

ASAPA: Association of Southern African Professional Archaeologists

BA: Basic Assessment

CRM: Cultural Resources Management

DMRE: Department of Mineral Resources and Energy

EMPr: Environmental Management Program

ESA: Early Stone Age

GP: General Protection

GPS: global positioning system

HIA: Heritage Impact Assessment

LSA: Later Stone Age

MSA: Middle Stone Age

NBKB: Ngwao-Boswa Ya Kapa Bokoni

NEMA: National Environmental Management Act (No. 107 of 1998)

NHRA: National Heritage Resources Act (No. 25) of 1999

PPP: Public Participation Process

SAHRA: South African Heritage Resources Agency

SAHRIS: South African Heritage Resources Information System

Contents

1. INTRODUCTION

ASHA Consulting (Pty) Ltd was appointed by N.J. van Zyl to conduct an assessment of the potential impacts to heritage resources that might occur through proposed prospecting activities on a portion of Portion 5 of the farm Kamaggas No. 200, Namakwaland District, Northern Cape (Figures 1 & 2). An approximate mid-point for the study area is at S29° 35' 40" E17° 26' 30". The site lies west of the foot of the Spektakel Pass along the southern side of the R355, some 21 km north of Komaggas and 41 km west of Springbok.

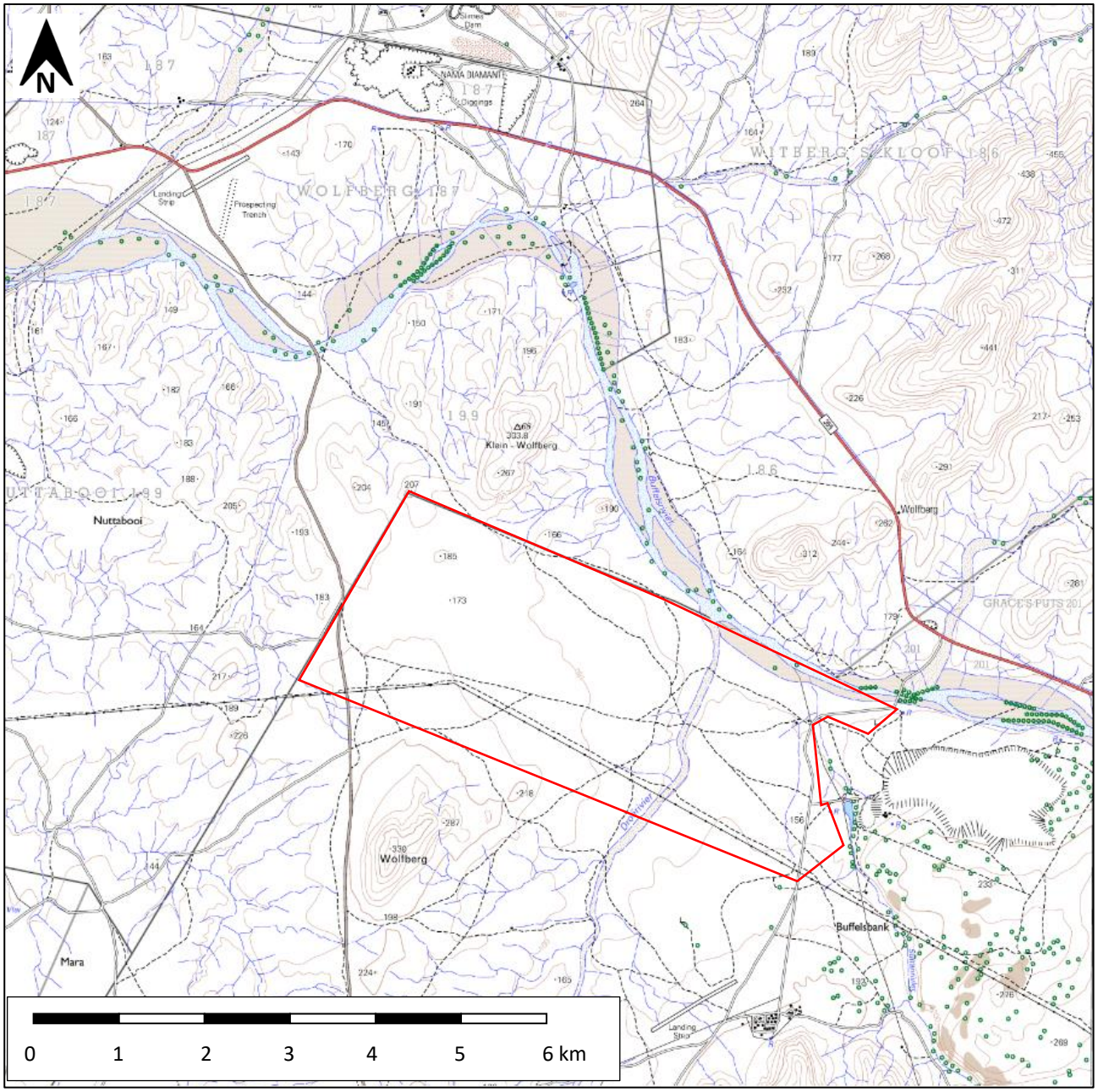

Figure 1: *Extract from 1:50 000 topographic map 2917CB showing the location of the site (red polygon) in the northernmost part of the Kamaggas farm. Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.*

1.1. The proposed project

1.1.1. Project description

Initial work will entail desktop research and various non-invasive remote sensing studies. His work aims to determine the bedrock topography and thus potential locations where diamonds could be trapped (i.e. within low points).

Subsequent invasive work would involve the excavation of test pits where the bedrock is less than 5 m below the surface and reverse circulation drilling for areas with bedrock located 5 to 10 m down. For security reasons, only one test pit would be fully open at a time, while one other is being opened and another closed. Each would be backfilled and rehabilitated once the deposits are recorded. Figure 2 shows the dimensions of these test pits.

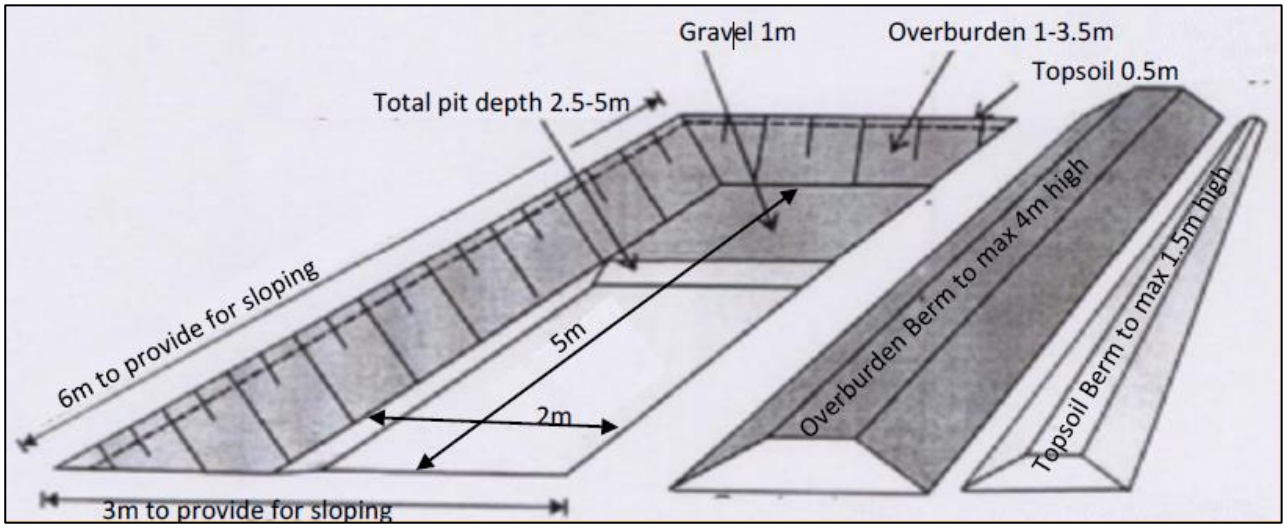

Figure 2: *Schematic drawing showing the nature and size of the proposed test pits.*

Reverse circulation drilling would be done using a small truck-mounted drill rig and the hole would be up to 165 mm in diameter. Should the results of this work prove favourable then bulk sampling would be undertaken. However, due to the different legal and technical requirements, bulk sampling is not included as part of the present application and will be applied for separately at a later stage if needed.

Previous exploration has occurred on the property with several series of drill holes placed in the north and an excavation in the east. These areas will likely again be the focus of attention but this will only be confirmed after the initial non-invasive work. No new formal roads, buildings or processing plants will be required.

1.1.2. Identification of alternatives

No site, activity or technology alternatives are under consideration since the site is known as a potentially diamondiferous area and the methods proposed are appropriate to the nature of the site and expected deposits.

1.1.3. Aspects of the project relevant to the heritage study

All aspects of the proposed development are relevant, since excavations may impact on archaeological and/or palaeontological remains, while all above-ground aspects create potential visual (contextual) impacts to the cultural landscape and any significant heritage sites that might be visually sensitive.

1.2. Terms of reference

ASHA Consulting was asked to provide a heritage impact assessment (HIA) that would assess all relevant aspects of heritage and meet the requirements of the heritage authorities.

1.3. Scope and purpose of the report

An HIA is a means of identifying any significant heritage resources before development begins so that these can be managed in such a way as to allow the development to proceed (if appropriate) without undue impacts to the fragile heritage of South Africa. This HIA report aims to fulfil the requirements of the heritage authorities such that a comment can be issued by them for consideration by the National Department of Mineral Resources and Energy (DMRE) who will review the Basic Assessment (BA) and grant or refuse authorisation. The HIA report will outline any management and/or mitigation requirements that will need to be complied with from a heritage point of view and that should be included in the conditions of authorisation should this be granted.

1.4. The author

Dr Jayson Orton has an MA (UCT, 2004) and a D.Phil (Oxford, UK, 2013), both in archaeology, and has been conducting Heritage Impact Assessments and archaeological specialist studies in South Africa (primarily in the Western Cape and Northern Cape provinces) since 2004 (please see curriculum vitae included as Appendix 1). He has also conducted research on aspects of the Later Stone Age in these provinces and published widely on the topic. He is an accredited heritage practitioner with the Association of Professional Heritage Practitioners (APHP; Member #43) and also holds archaeological accreditation with the Association of Southern African Professional Archaeologists (ASAPA) CRM section (Member #233) as follows:

- Principal Investigator: Stone Age, Shell Middens & Grave Relocation; and
- Field Director: Colonial Period & Rock Art.

1.5. Declaration of independence

ASHA Consulting (Pty) Ltd and its consultants have no financial or other interest in the proposed development and will derive no benefits other than fair remuneration for consulting services provided.

2. LEGISLATIVE CONTEXT

2.1. National Heritage Resources Act (NHRA) No. 25 of 1999

The NHRA protects a variety of heritage resources as follows:

- Section 34: structures older than 60 years;
- Section 35: prehistoric and historical material (including ruins) more than 100 years old as well as military remains more than 75 years old, palaeontological material and meteorites;
- Section 36: graves and human remains older than 60 years and located outside of a formal cemetery administered by a local authority; and
- Section 37: public monuments and memorials.

Following Section 2, the definitions applicable to the above protections are as follows:

- Structures: "any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith";
- Palaeontological material: "any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace";
- Archaeological material: a) "material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures"; b) "rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation"; c) "wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation"; and d) "features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found";
- Grave: "means a place of interment and includes the contents, headstone or other marker of such a place and any other structure on or associated with such place"; and
- Public monuments and memorials: "all monuments and memorials a) "erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government"; or b) "which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual."

Section 3(3) describes the types of cultural significance that a place or object might have in order to be considered part of the national estate. These are as follows:

a) its importance in the community, or pattern of South Africa's history;
b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;

d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
i) sites of significance relating to the history of slavery in South Africa.

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list "historical settlements and townscapes" and "landscapes and natural features of cultural significance" as part of the National Estate. Furthermore, some of the points in Section 3(3) speak directly to cultural landscapes.

Section 38(8) of the NHRA states that if an impact assessment is required under any legislation other than the NHRA then it must include a heritage component that satisfies the requirements of S.38(3). Furthermore, the comments of the relevant heritage authority must be sought and considered by the consenting authority prior to the issuing of a decision. Under the National Environmental Management Act (No. 107 of 1998; NEMA), as amended, the project is subject to a BA. The present report provides the heritage component. Ngwao-Boswa Ya Kapa Bokoni (Heritage Northern Cape; for built environment and cultural landscapes) and the South African Heritage Resources Agency (SAHRA; for archaeology and palaeontology are required to provide comment on the proposed project in order to facilitate final decision making by the DMR.

3. METHODS

3.1. Literature survey and information sources

A survey of available literature was carried out to assess the general heritage context into which the development would be set. The information sources used in this report are presented in Table 1. Data were also collected via a field survey.

Table 1: *Information sources used in this assessment.*

Data / Information	Source	Date	Type	Description
Maps	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical and current 1:50 000 topographic maps of the study area and immediate surrounds
Aerial photographs	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical aerial photography of the study area and immediate surrounds

Aerial photographs	Google Earth	Various	Spatial	Recent and historical aerial photography of the study area and immediate surrounds
Cadastral data	Chief Directorate: National Geo-Spatial Information	Various	Survey diagrams	Historical and current survey diagrams, property survey and registration dates
Background data	South African Heritage Resources Information System (SAHRIS)	Various	Reports	Previous impact assessments for any developments in the vicinity of the study area
Palaeontological sensitivity	South African Heritage Resources Information System (SAHRIS)	Current	Spatial	Map showing palaeontological sensitivity and required actions based on the sensitivity.
Background data	Books, journals, websites	Various	Books, journals, websites	Historical and current literature describing the study area and any relevant aspects of cultural heritage.

3.2. Field survey

The site was subjected to a detailed foot survey by two archaeologists (Dr Jayson Orton & Anja Huisamen) on 20 and 25 November 2021. This was during early summer but, in this very dry area, the season makes no meaningful difference to vegetation covering and hence the ground visibility for the archaeological survey. Other heritage resources are not affected by seasonality. During the survey the positions of finds and survey tracks were recorded on a hand-held Global Positioning System (GPS) receiver set to the WGS84 datum (Figure 3). Photographs were taken at times in order to capture representative samples of both the affected heritage and the landscape setting of the proposed development.

It should be noted that amount of time between the dates of the field inspection and final report do not materially affect the outcome of the report.

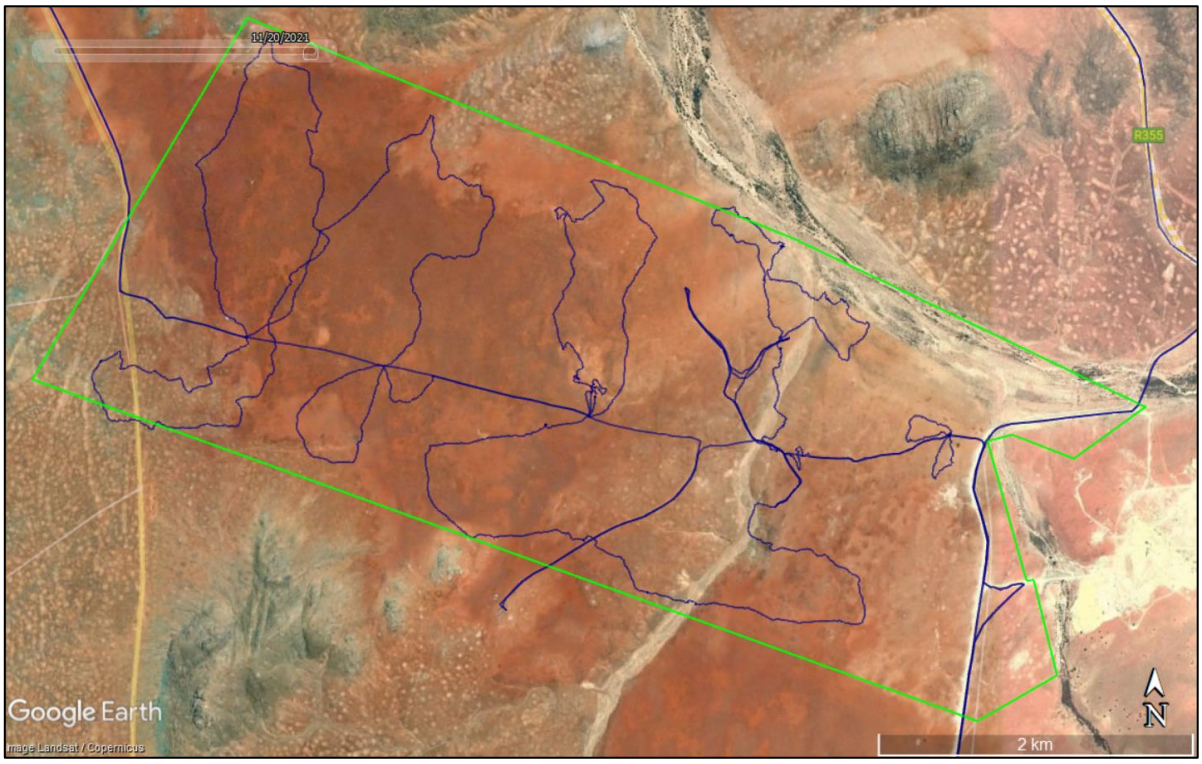

Figure 3: *Aerial view of the study area (green polygon) showing the survey tracks (blue lines).*

3.3. Specialist studies

A palaeontological desktop study was commissioned and has been authored by John Pether. The report is submitted separately in injunction with this HIA.

3.4. Grading

S.7(1) of the NHRA provides for the grading of heritage resources into those of National (Grade I), Provincial (Grade II) and Local (Grade III) significance. Grading is intended to allow for the identification of the appropriate level of management for any given heritage resource. Grade I and II resources are intended to be managed by the national and provincial heritage resources authorities respectively, while Grade III resources would be managed by the relevant local planning authority. These bodies are responsible for grading, but anyone may make recommendations for grading.

It is intended under S.7(2) that the various provincial authorities formulate a system for the further detailed grading of heritage resources of local significance but this is generally yet to happen. SAHRA (2007) has formulated its own system[1] for use in provinces where it has commenting authority. In this system sites of high local significance are given Grade IIIA (with the implication that the site should be preserved in its entirety) and Grade IIIB (with the implication that part of the site could be mitigated and part preserved as appropriate) while sites of lesser significance are referred to as having 'General Protection' (GP) and rated as GP A (high/medium significance, requires mitigation), GP B (medium significance, requires recording) or GP C (low significance, requires no further action).

[1] The system is intended for use on archaeological and palaeontological sites only.

3.5. Consultation

The NHRA requires consultation as part of an HIA but, since the present study falls within the context of an EIA which includes a public participation process (PPP), no dedicated consultation was undertaken as part of the HIA. Interested and affected parties would have the opportunity to provide comment on the heritage aspects of the project during the PPP.

3.6. Assumptions and limitations

The field study was carried out at the surface only and hence any completely buried archaeological sites would not be readily located. Similarly, it is not always possible to determine the depth of archaeological material visible at the surface. Some areas had been overgrazed with the result that recently mobilised sand was covering the surface and potentially obscuring archaeology. Some areas in the far east of the study area had been disturbed by previous mining activities. The study area was large and, due to the only minimally intrusive nature of the proposed project, a full survey was not conducted. The survey aimed only to identify areas that were likely to be sensitive.

4. PHYSICAL ENVIRONMENTAL CONTEXT

4.1. Site context

The site lies in a remote area with two main historical land uses. The first is subsistence small stock raising by the occupants of the Komaggas communal lands on which the study area lies. The second is mining, with several other mines (diamonds and copper) occurring in the local area (Figure 4).

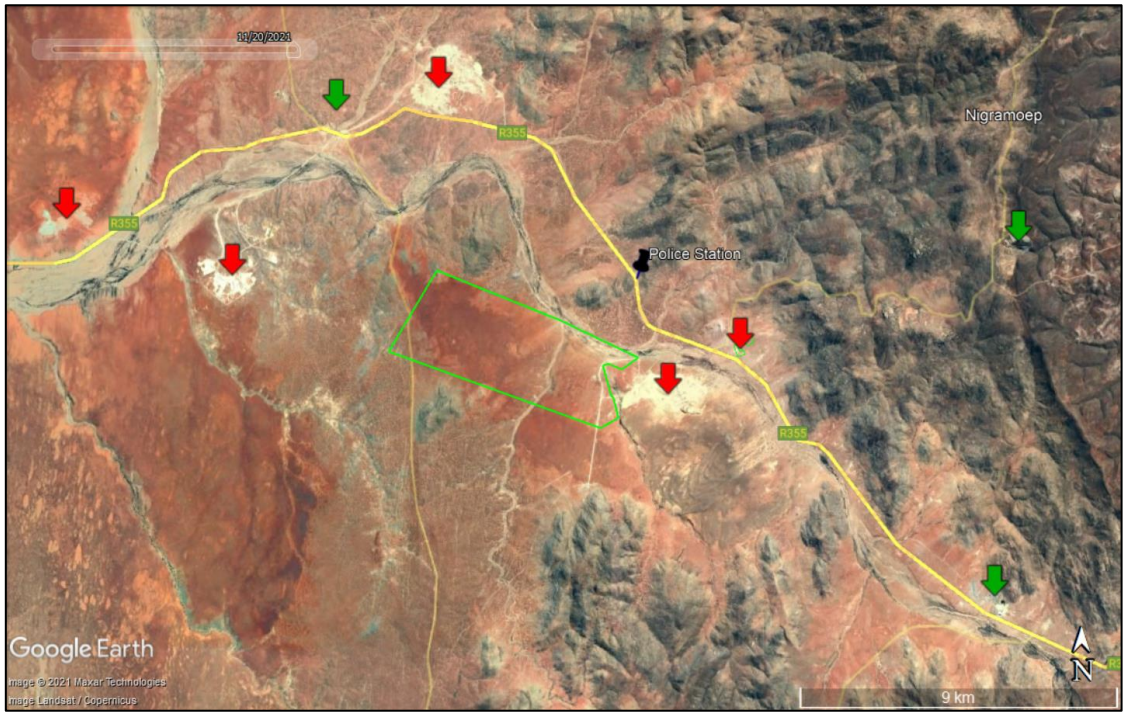

Figure 4: *Aerial view of the study area (green polygon) and surrounds showing the various other mining traces evident in the landscape (red arrows for diamond mines, green for copper). The location of the historical police station is also shown (see below).*

4.2. Site description

The study area lies along the southern side of the Buffels River, but extends into the river floodplain in the east. In the west there is a small area of heuweltjies, while another patch lies along the west bank of the Droërivier stream bed. Much of the central area is coated in sand which shows as dark red/brown in Figure 3. A stream bed (the Droërivier) cuts through the eastern part of the site. Parts of the north-eastern part of the site are underlain by river cobbles and the edge of this cobble terrace is visible in one section along the edge of the Buffels River. The surface is generally sandy, but areas of exposed dorbank do occur in the central part and some patches of exposed cobbles occur in the northeast. Figures 5 to 15 show a selection of views through the study area.

Figure 5: *View towards the east from near the western end of the study area within the area of heuweltjies.*

Figure 6: *View towards the east from near the western end of the study area within the sandy area.*

Figure 7: *View towards the north across a patch of exposed dorbank in the centre of the study area. The Buffels River lies in the background towards the right hand side.*

Figure 8: *View towards the north in the centre of the study area across a patch of recently mobilised sand resulting from disturbance, perhaps overgrazing.*

Figure 9: *View towards the west in the northern part of the study area showing patches of granite bedrock exposed at the surface.*

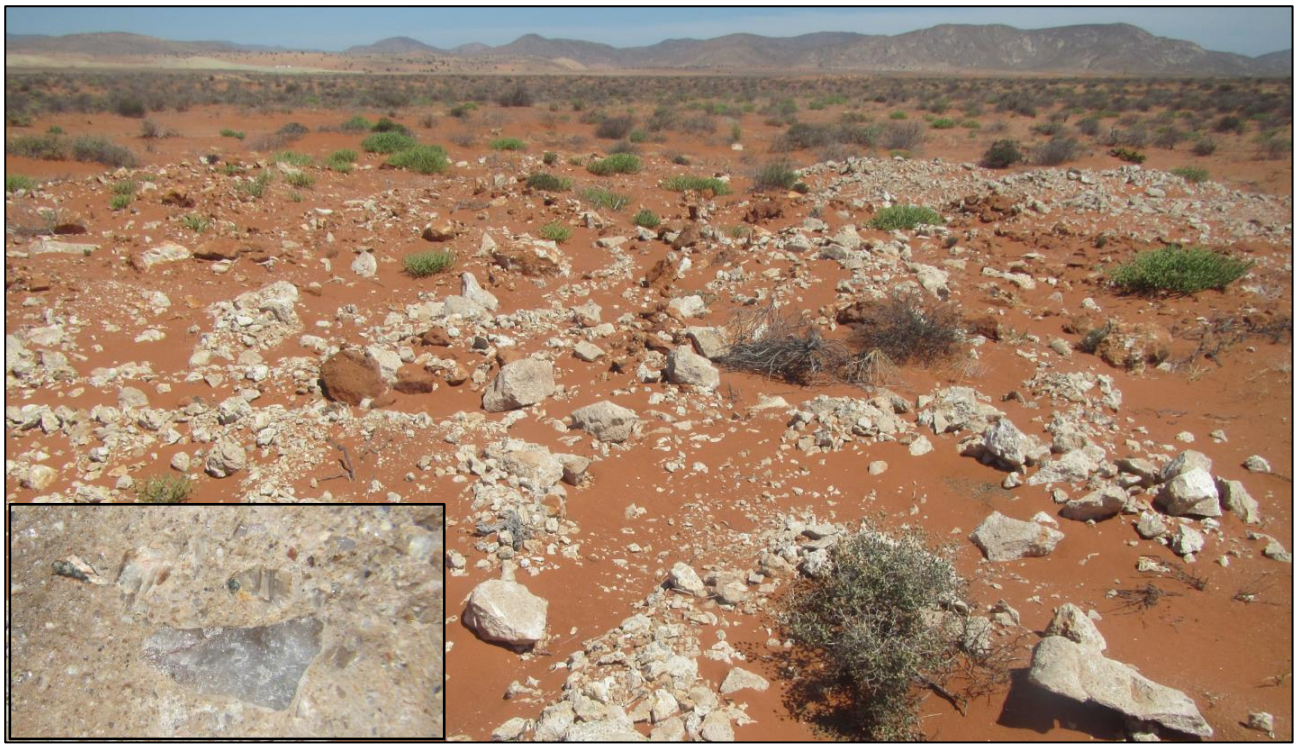

Figure 10: *A disturbed area in the central northern part of the study area where a pale-coloured silcrete has been dug through (inset shows the rock). The dark red chunks are dorbank.*

Figure 11: *A disturbed area in the central northern part of the study area showing excavated river terrace cobbles and recently mobilised wind-blown sand.*

Figure 12: *Looking south along the west bank of the Droërivier, a tributary of the Buffels which cuts through the study area.*

Figure 13: *View east along the northern edge of the Kamaggas Farm showing the place where the study area comes near to, and eventually intersects, the Buffels River.*

Figure 14: *View towards the east along the cobble terrace at the edge of the Buffels River in the eastern part of the study area.*

Figure 15: *View towards the west from the eastern edge of the study area showing a disturbed and deflated area.*

5. FINDINGS OF THE HERITAGE STUDY

This section describes the heritage resources recorded in the study area during the course of the project. A list of finds from the survey appears in Table 2, while thee are mapped in Figures 16 to 18.

Table 2: *List of finds recorded during the survey.*

Waypoint	Co-ordinate	Description	Significance
417	S29 35 29.8 E17 25 05.1	The remains of a modern stockpost with a thick square of dung where the wire stock enclosure used to be.	---

418	S29 35 32.4 E17 24 59.9	A light scatter of quartz flaked artefacts on a heuweltjie.	GPC
419	S29 35 39.9 E17 24 51.5	An ephemeral scatter of quartz flaked artefacts on a heuweltjie.	GPC
420	S29 35 33.6 E17 24 30.5	An ephemeral scatter of quartz flaked artefacts on a heuweltjie.	GPC
421	S29 35 43.7 E17 25 03.4	An ephemeral scatter of quartz flaked artefacts on a heuweltjie.	GPC
422	S29 34 46.9 E17 25 45.8	A minimally flaked quartz outcrop.	GPC
423	S29 34 43.3 E17 25 48.0	The remains of a modern stockpost with fragments of glass, metal, bone, plastic, leather and one marine shell. The scatter is very ephemeral.	---
424	S29 34 57.4 E17 25 57.6	An area of widespread background scatter where heuweltjies are barely showing through the sand cover.	GPC
425	S29 34 57.6 E17 25 57.9	Two refitting fragments of blue-decorated refined white earthenware.	GPC
426	S29 34 57.4 E17 25 59.3	An ephemeral scatter of probably LSA quartz artefacts in an area where heuweltjies are minimally showing through the sand.	GPC
427	S29 35 39.8 E17 26 25.8	An area of exposed dorbank with Early Stone Age artefacts on it. Mostly flakes, but some cores and occasional handaxes. A few unusual artefacts that looked like unifacial handaxes were noted. The larger artefacts tended to be upslope (to the southwest), while smaller flakes dominated in the lower-lying parts of the exposure. The artefacts were of quartz, quartzite and silcrete, with the latter being a very rare inclusion. There were quite a few hammer stones noted amongst the cobbles that lay on the surface.	GPB
428	S29 35 40.7 E17 26 26.8		
429	S29 35 40.8 E17 26 26.7		
430	S29 35 39.6 E17 26 26.8		
431	S29 35 38.9 E17 26 26.0		
432	S29 35 40.1 E17 26 28.8		
433	S29 35 38.0 E17 26 26.2		
434	S29 35 37.7 E17 26 22.8	Similar to the exposure described above, but less dense and with less quartzite artefacts being present. Silcrete was again present as a rare inclusion and many hammer stones were noted.	GPB
435	S29 35 36.5 E17 26 22.3		
436	S29 35 36.8 E17 26 22.5		
437	S29 35 37.2 E17 26 22.8		
438	S29 35 36.6 E17 26 22.5		
439	S29 35 41.1 E17 26 31.0	A small area of exposed dorbank downslope of the 427-433 exposure. This one is strongly dominated by small artefacts and by quartz with just a few quartzite artefacts noted.	GPC

440	S29 35 43.1 E17 26 29.9	A small area of exposed dorbank at a similar elevation to the 427-433 exposure. It has a similar array of artefacts as the 427-433 site, but no handaxes were seen here, just flakes and cores made on quartz and quartzite.	GPC
441	S29 36 22.8 E17 26 05.3	A recent stockpost built alongside a granite outcrop to the south of the study area.	---
442	S29 35 28.4 E17 27 10.5	An exposure of the quartzite cobble terrace with occasional quartzite flakes present in between the cobbles.	GPC
443	S29 35 26.3 E17 27 08.9		
444	S29 35 24.3 E17 27 07.6		
445	S29 35 22.4 E17 27 07.6		
446	S29 35 16.1 E17 27 06.6		
447	S29 35 07.5 E17 26 59.0	An ephemeral scatter of artefacts possibly representing an older stockpost. There are a few 19th century ceramic and glass fragments as well as a few quartz flakes, but these could be indicative of a palimpsest. A few rocks are lying about and look as though they might be out of place. These could be related to weights for the edges of a matjieshuis.	GPC
448	S29 35 09.8 E17 27 10.5	An ephemeral artefact scatter on a flat area behind a granite outcrop alongside the Buffels River. The scatter includes quartz flaked artefacts, a singe CCS baked point, some 19th century lined industrial ware fragments, a few pain white refined earthenware fragments and some glass.	GPC
449	S29 35 12.0 E17 27 08.6	A tight cluster of soapstone fragments lying right next to a quartzite cobble. The cluster is about 10 cm in diameter. Most fragments have saw marks on them.	GPC
450	S29 35 19.2 E17 27 20.8	A light scatter of quartz and quartzite flaked artefacts, as well as some some ostrich eggshell and bone fragments in a deflated area on top of the levee alongside the Buffels River. The scatter covers a wide area and does not have an obvious focus.	GPB
451	S29 35 20.4 E17 27 21.6	As above but with some saw-marked soapstone fragments also included.	GPB
452	S29 35 25.4 E17 27 30.6	An ephemeral scatter of quartz and quartzite flaked stone artefacts and soe ostrich eggshell fragments on the Buffels River cobble terrace.	GPC
453	S29 35 46.2 E17 27 47.5	A large, recent stockpost that includes a tin house on a wooden floor standing next to an old cement floor, two short but now dead palm trees, a fenced thorn tree, the remains of some wire stock enclosures and several piles of dung suggesting a fairly lengthy occupation (normally the stock pots are moved	---

		without clearing the dung from the livestock enclosures).	
454	S29 35 49.6 E17 27 40.8	A widespread exposure of cobble terrace with rare quartzite flakes and cores in between the cobbles.	GPC
455	S29 35 38.7 E17 27 45.2	A very light scatter of glass (including a small, whole medicine bottle and a blue marble), ceramics (including transfer-printed and hand-painted), bone and rubber tyre fragments. Also a cobble with light grinding and some ostrich eggshell fragments. Nearby was a stone square of just under 1x1 m in size. This is likely a mid-20th century herder camp.	GPC
456	S29 35 41.8 E17 27 35.7	An ephemeral scatter of ESA flakes on the top of the large cobble terrace. There is quite a lot of wind-blown sand over the cobbles here so may be more materials buried.	GPC
457	S29 35 27.3 E17 27 33.3	A low density LSA quartz flaked artefact scatter with occasional flakes in quartzite and other materials.	GPB
458	S29 35 28.2 E17 27 35.8	A low density LSA quartz flaked artefact scatter with occasional flakes in quartzite and other materials.	GPB
459	S29 35 38.4 E17 27 51.0	A light scatter of ostrich eggshell fragments with occasional quartz and quartzite flakes and one very lightly used upper grindstone.	GPC
460	S29 35 36.6 E17 27 48.8	A fairly extensive, but light scatter of ostrich eggshell fragments as well as a large cobble with a very lightly ground surface (found face up). There do not appear to be any other associated materials.	GPC
461	S29 35 35.9 E17 27 48.7	A large ostrich eggshell scatter (including one burnt piece) with some CCS and quartz flaked artefacts. There are also two upper grindstones (one is half only) and an elongated and flattened pebble with hammering on both ends. The scatter is about 15 m in diameter.	GPB
462	S29 35 36.3 E17 27 48.0	A small, stone circle made with ten loosely arranged cobbles. In and around it are some burnt bones, one quartz flake, some ostrich eggshell fragments and at least 27 pot sherds. The pottery includes a plain rounded rim in fine-grained fabric. There are two pots represented – one is fine-grained and brown with some red ochre on it, the other has a black body with coarser-grained temper. There was no sign of any ash or charcoal in the stone circle.	GPB
463	S29 35 35.5 E17 27 46.8	A lower grindstone (found face up), an ostrich eggshell fragment and a fragment of *Scutellastra argenvillei* shell. These items may be outliers from the surrounding sites.	GPC
464	S29 35 35.7 E17 27 47.5	A fragment of ostrich eggshell, one fragment of *Scutellastra argenvillei* shell and a perforated ostrich eggshell disc about 27 mm across.	GPC

465	S29 35 32.9 E17 27 40.0	A scatter of bone, ostrich eggshell and heavily rusted metal (including a horseshoe) and some cobbles. One refined white earthenware nearby looks 20th century. About 5 m southwest is a cobble cluster that could well be a grave. Further away is a sheet of corrugated iron.	IIIA
466	S29 35 31.0 E17 27 40.0	A large, light scatter of LSA quartz flaked artefacts with occasional flakes in quartzite and cryptocrystalline silica.	GPB
467	S29 35 34.1 E17 27 46.9	A stone-packed mound which might be a grave but seems unlikely given its location on the cobble terrace. Given a precautionary grading of IIIA.	IIIA
468	S29 35 36.3 E17 27 49.3	An upper grindstone with two faceted surfaces, one of which has a central depression. Also occasional quartz and cryptocrystalline silica artefacts and ostrich eggshell fragments. These items may be outliers from the surrounding sites – it is very close to 460.	GPC
469	S29 35 40.3 E17 27 58.3	A scatter of quartz flaked artefacts, cobbles, ostrich eggshell fragments and one piece of metal in a deflated area on a low dune. There is likely more material extending under the wind-blown sand in this area.	GPC
470	S29 35 40.2 E17 27 59.2	A scatter of quartz and quartzite flaked stone artefacts and some cobbles in a deflated area on a low dune. There is likely more material extending under the wind-blown sand in this area.	GPC
471	S29 35 40.6 E17 28 00.0	A scatter of quartz flaked artefacts, some bone, ostrich eggshell fragments and cobbles in a deflated area on a low dune. There is likely more material extending under the wind-blown sand in this area.	GPC
472	S29 35 41.6 E17 28 03.7	A light scatter of bone, ceramics and cobbles, metal fragments, a cluster of cobbles and a cluster of glass fragments which clearly all come from the same bottle. This is likely a late 19th century herder camp and there is possibly some spatial patterning here.	GPB
551	S29 35 30.9 E17 27 10.3	Ephemeral scatter of quartzite flaked artefacts among quartzite cobbles, probably ESA, along the bank of the Droërivier.	GPC
552	S29 35 46.5 E17 27 11.2	Ephemeral scatter of quartzite flaked artefacts among quartzite cobbles, probably ESA, along the bank of the Droërivier.	GPC
553	S29 35 51.6 E17 27 09.5	Ephemeral scatter of quartzite flaked artefacts among quartzite cobbles, probably ESA, along the bank of the Droërivier.	GPC
569	S29 35 48.6 E17 28 08.3	Ephemeral scatter of ESA flakes on the sloping edge of the river terrace. Surface mostly sandy, but some bedrock outcrop and some cobbles visible.	GPC

570	S29 35 48.3 E17 28 09.2	Similar area with some flakes, but a large cobble with anvil marks is present here. Cannot tell if recent damage or not.	GPC
571	S29 35 43.1 E17 28 10.5	A scatter of LSA and historical materials. At least 13 potsherds including two rims with impressed decoration around the rim. There were rare flaked artefacts in quartz and quartzite, including a quartz blade and a quartzite cobble core, and three ostrich eggshell fragments. One lined industrial ware bowl fragment and two pieces of clear glass.	GPB
572	S29 35 44.5 E17 28 05.4	A scatter of artefacts that very likely represents a late 19th century herder camp. In one area the sand looks darker and may have been where the kraal was. The scatter includes several ceramic (lined industrial, transfer-printed and hand-painted) and glass (clear and blue) fragments and some burnt bones. A square of stones of just under about 1x1 m occurs nearby. Possibly some spatial patterning here.	GPB

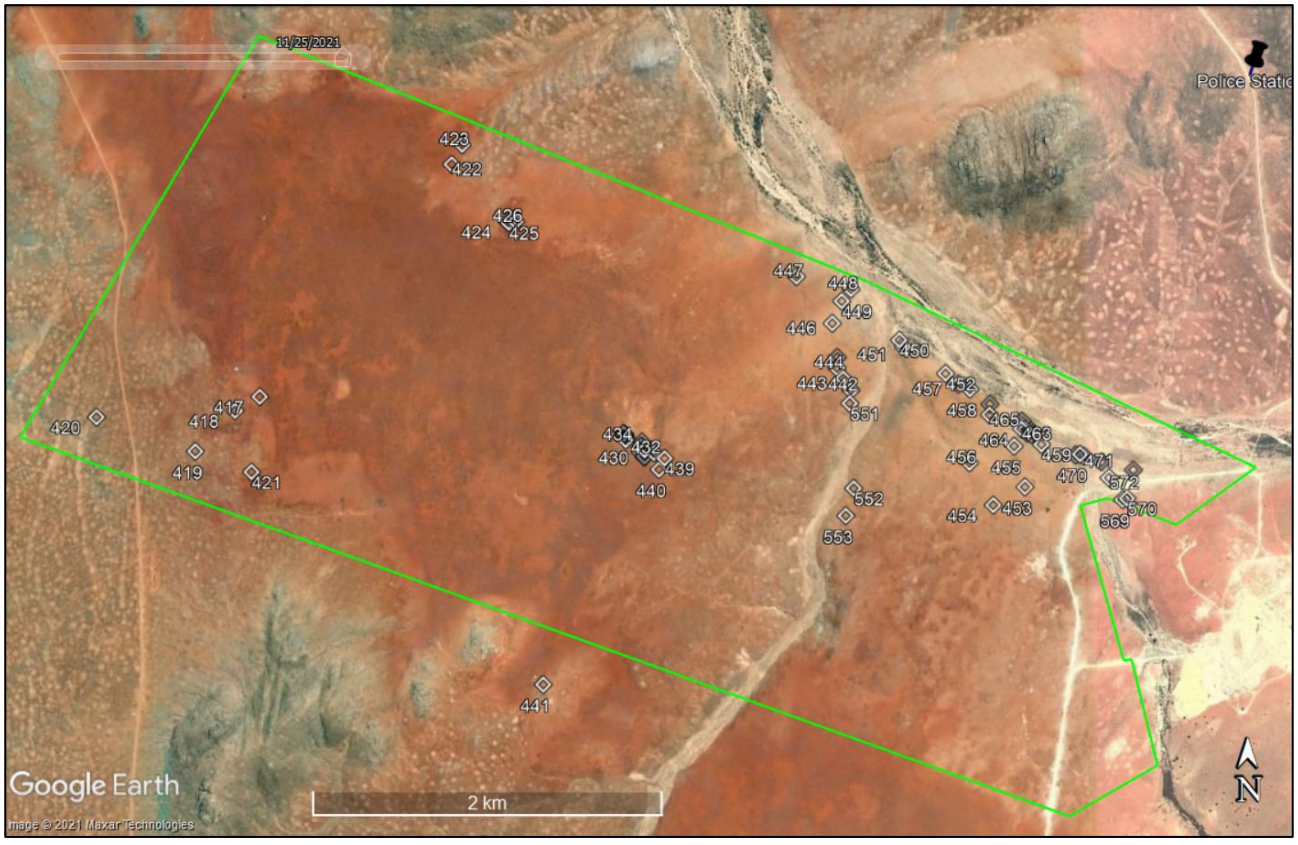

Figure 16: *Map of the heritage finds recorded during the field survey.*

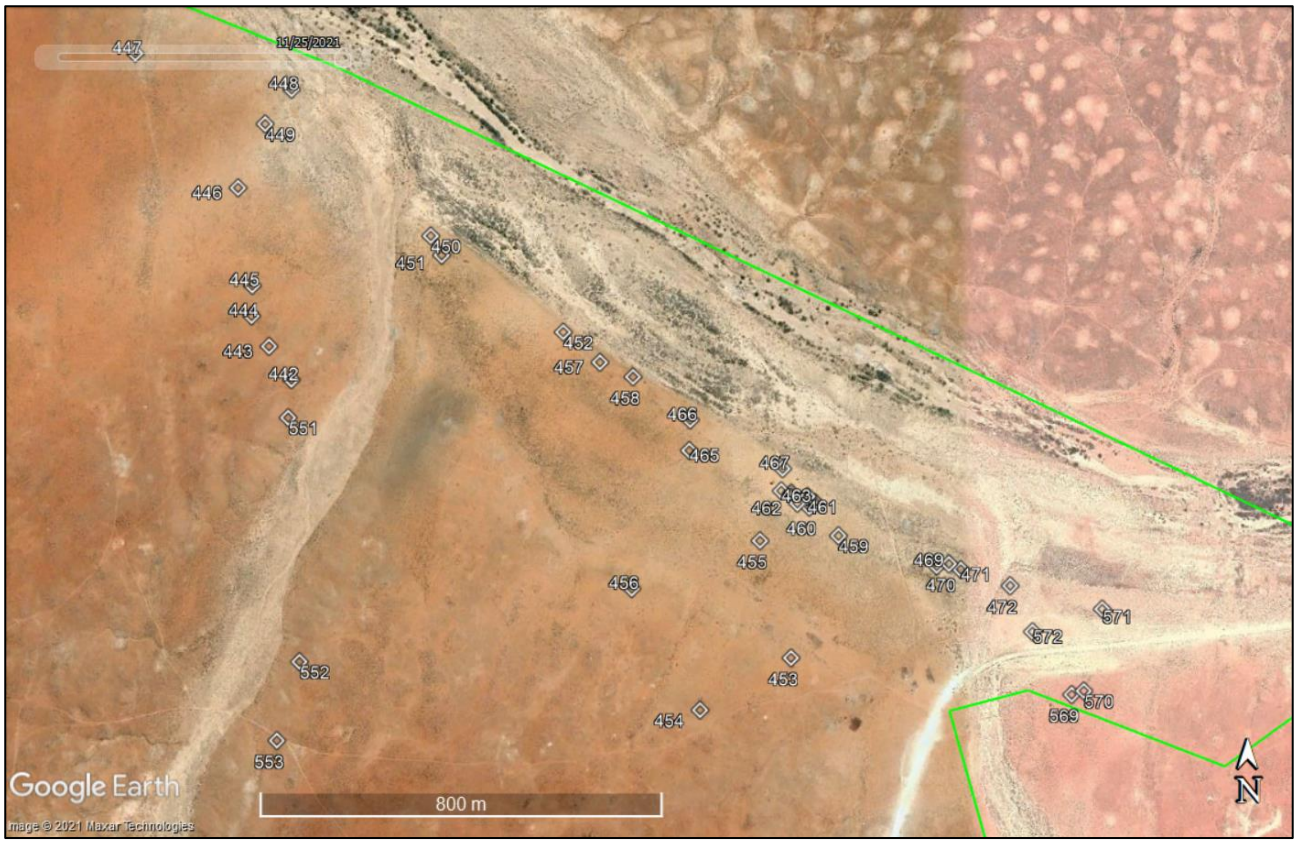

Figure17: *Close-up of the eastern part of the study area.*

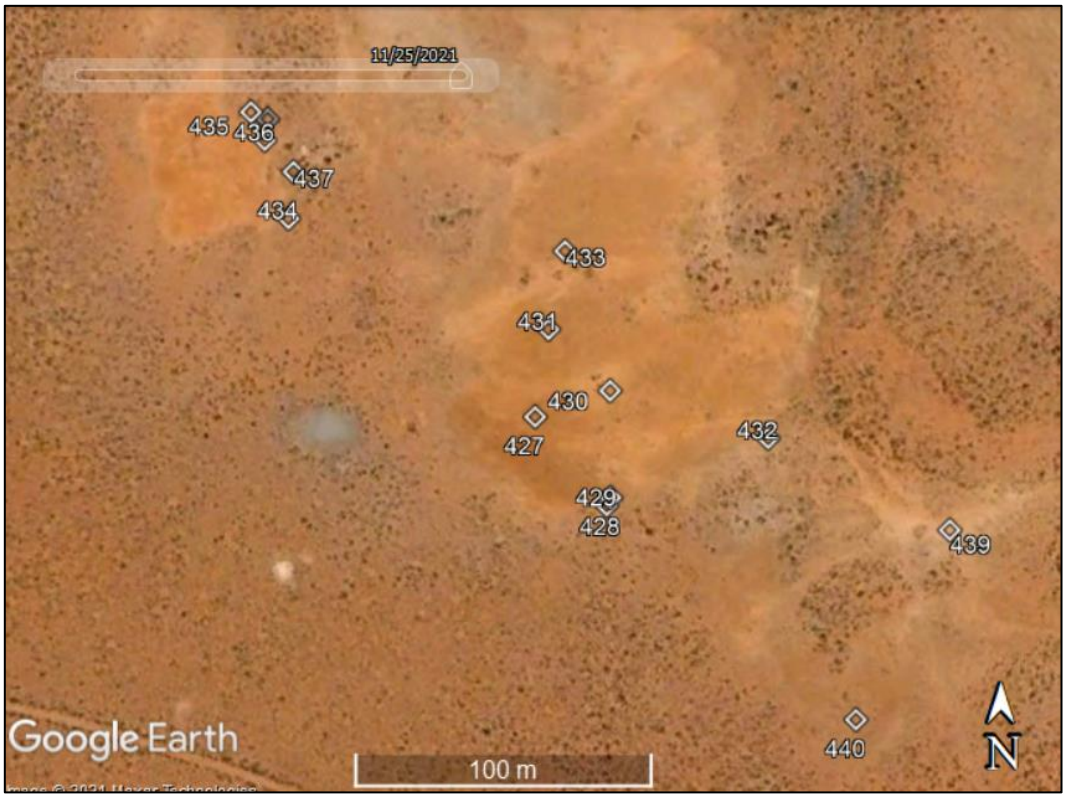

Figure 18: *Close-up of the central cluster of finds.*

5.1. Palaeontology

The SAHRIS Palaeosensitivity Map shows the site to be largely of low sensitivity but with one small area marked as unknown (Figure 19). Through consultation with palaeontologist John Pether, it was determined that the mapping in Namaqualand is variable and that this area is perhaps better regarded as of moderate sensitivity. Accordingly, a separate desktop palaeontological study has been commissioned and is submitted separately with the present HIA. No fossils were seen during the archaeological field survey.

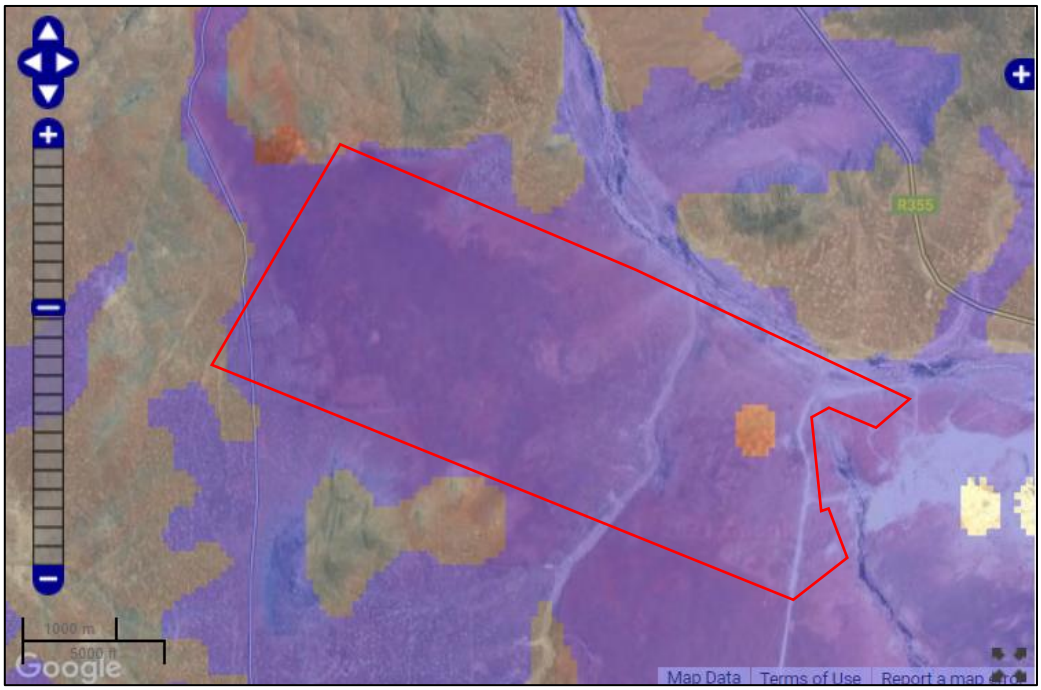

Figure 19: *Extract from the SAHRIS Palaeosensitivity Map showing the site to be of low sensitivity (blue shading) but with a small patch unknown (clear).*

5.2. Archaeology

5.2.1. Desktop study

In Namaqualand, Early Stone Age (ESA) materials are usually found fairly close to the coastline, often in similar contexts to Middle Stone Age (MSA) artefacts. Halkett (2002) reported a large scatter of ESA artefacts from Kleinsee, while Orton and Webley (2012b) found ESA and MSA artefacts associated with fossil bones on the high ground just north of the Buffels River and inland of Kleinsee. Some 20 km north of Kleinsee, Orton and Halkett (2006) described an extensive silcrete outcrop that displayed evidence of quarrying and had scatters of ESA and MSA artefacts on it. To the south, Morris and Webley (2004) reported scatters of ESA artefacts, including Acheulean handaxes, amongst sand dunes on the coastal plain and around pans. Even further south, in Western Cape, Hart and Halkett (1994) excavated an ESA sample adjacent to a quarried silcrete outcrop, while not far away Orton (2017) found extensive scatters of ESA material – including abundant handaxes – at the interface of the dorbank and aeolian cover sands. Both these observations were within 5 km of the coastline. Along the Buffels River, some 20 km west of the present study area, Orton (2019) noted both ESA and MSA artefacts on the surface of (and in one instance stuck into) the dorbank,

but just across the Buffels River to the northwest of the present site he found the ESA and MSA to be virtually absent with just one probable ESA flake being seen (Orton 2020).

Middle Stone Age (MSA) material is generally more commonly reported, but further inland tends to occur as isolated artefacts or as very ephemeral scatters. To the northwest of Komaggas, Dreyer (2002) reported MSA artefacts on quartzite and hornfels associated with river gravel about 1 km from the Buffels River, while on the western and northern outskirts of the town Van Pletzen-Vos and Rust (2011) found quartz artefacts which they attributed to the MSA. In the Kamiesberg Mountains, Howieson's Poort-type implements belonging to the MSA were found in Keurbos Cave some 15km north-east of Garies (Webley 1992), while MSA implements were found in excavations at a small rock shelter called Wolfkraal close to Kharkams (Webley 1984). Near Garies in central Namaqualand, Webley and Halkett (2010) reported an MSA factory site on Swartkop, an outcrop of dark, fine-grained rock which appears to have been targeted by prehistoric populations. Closer to the coast Orton and Halkett (2005) found some Howieson's Poort bifacial points associated with shell in a dunefield north of Koingnaas but the relationship between the shell and artefacts was uncertain. Halkett and Hart (1997) and Jerardino *et al.* (1992) reported scatters of MSA artefacts north of Kleinsee and at the Groen River Mouth respectively.

Later Stone Age (LSA) material is regularly found throughout Namaqualand. The coastal and near-coastal areas, however, have by far the greatest number of reported sites (Dewar 2008; Orton 2012). Many thousands of shell middens and scatters occur along the coast, some of them preserving rich assemblages of cultural materials and food remains. While these focus on the area within about 2 km to 3 km of the coast, shell scatters have been found along the Buffels River up to 10 km inland (Orton & Webley 2012b). Almost all sites are open sites with just one coastal rock shelter known to contain LSA deposits (Webley 1992. 2002). Just inland of the coast smaller sites are frequently found in small deflations on prominent sand dune ridges (Orton 2019a; Orton and Webley 2012a). On the coastal plain the best sites are artefact scatters located in deflation hollows. These sites have not been well studied in Namaqualand but some light scatters have been sampled from deflations about 18 km west of the present study area, also on the southern side of the Buffels River (Orton 2007). Many other deflation hollows were documented by Orton (2019b) around 25 km to 35 km southwest of the present site but, when they contained archaeology, most were found to have only light LSA scatters. An unusual find from the same area was a small ostrich eggshell cache with just two eggs; both were undecorated and one was broken (Orton 2019b). Some 26 to 34 km due south of the present study area, Orton (2018b) found a number of LSA sites on the ridges of the inselberg formed by Brandberg, Byneskop and Graafwater se Kop. The sites consisted only of stone artefacts. Just to the north of this area (and some 13 km to 25 km south of the present study area) Deacon (2004) found no archaeological sites, although this seems hard to believe considering the many other sites known from the surrounding area. Further inland the best sites tend to be rock shelters with the majority of other sites being relatively ephemeral open artefact scatters. Most work in the inland region has been done by Webley (1986, 1992, 2007) with a focus on rock shelters. Although uncommon, both representational and geometric rock art has been recorded at various locations in the central part of Namaqualand (Orton 2013; Morris & Webley 2004).

The last 2000 years are especially important for archaeological research in Namaqualand. Archaeological sites from this period with pottery are reported from a number of sites and are believed to be associated with the introduction of herding and/or pastoralism to the region some 2000 years ago. The region is known to be important in terms of the beginnings of herding, but the details of how it happened are still highly contested (Orton 2015). The archaeology supports the

historic information that pastoralist groups (the ancestors of the Little Namaqua Khoekhoen) were occupying this area at and before the time of colonial contact. Some 5 km northwest of the present site Orton (2020) located a number of artefact scatters close to the Buffels River with good amounts of pottery. Two of them had impressed decoration which could have been made anytime from the mid-first millennium AD onwards.

Historical archaeology is generally rare on the coastal plain, but Orton (2020) found a number of sites to the northwest of the present study area. They seemed most likely to relate to historical copper mining and included the stone-walled remnants of several structures, some scatters of glass, ceramics and other finds as well as the old mine excavations into the bedrock. Historical and more recent finds are far more frequent in the Kamiesberg, especially in the vicinity of the historical mission stations, and pertain to the increased settling of the Namaqua around these towns over the last two centuries (Orton 2018a, 2019c).

5.2.2. Site visit

The oldest archaeology present in the study area is from the ESA. The sites are scatters of quartz, quartzite and silcrete artefacts associated either with dorbank surfaces or with exposed sections of cobble terrace. The dorbank exposures have many cobbles on them as well and, in both cases, these cobbles were the attraction for settlement since they provided the stone material – particularly the quartzite – for artefact manufacture. Quartz is locally available from veins in the igneous rocks of the area, while silcrete would have been obtained from outcrops on the coastal plain. The scatters associated with the dorbank exposures were of greater significance than those on the cobble beds which are better thought of as background scatter associated with the terrace exposures. These dorbank scatters included a wider variety of finds, including handaxes and cores. Hammerstones were also commonly seen. An unusual feature on one of the sites was the presence of a number of artefacts that seemed like unifacial handaxes. While being in the general shape of a handaxe, they were worked exclusively on one side. Figures 20 to 27 show the larger and more significant of the two dorbank exposure sites (waypoint 427-433). Figures 26 to 32 illustrate finds from the second of the two larger sites (waypoints 434 to 438).

Figure 20: *An artefact embedded within the dorbank at waypoint 428. Scale in cm.*

Figure 21: *A hammerstone and two cores from waypoint 429. Scale in cm.*

Figure 22: *Three quartzite flakes – one of them very large – and a fine-grained quartzite cobble core from waypoint 430. The left and upper right flakes both have cobble cortex on them. Scale in cm.*

Figure 23: *Both sides of a set of stone artefacts from waypoint 427. The red arrow shows a handaxe that is worked exclusively on one side (top) with the opposite side being 100% cobble cortex. The yellow and blue arrows show handaxes with only very small flake scars around their perimeters on both faces. Scale in cm.*

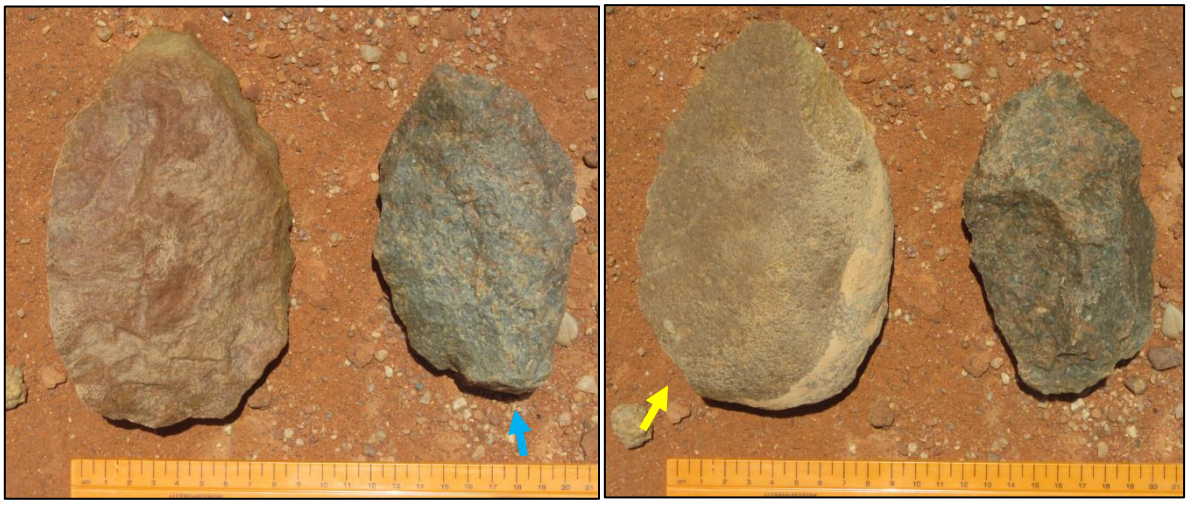

Figure 24: *Both faces of two handaxes from waypoint 431. One of them shows the remains of a bulb of percussion indicating it to have been made on a flake (blue arrow). The other has cobble cortex on one minimally flaked face. Scale in cm.*

Figure 25: *A broken handaxe and a large flake from waypoint 432. Scale in cm.*

Figure 26: *Both sides of quartz and quartzite handaxes from waypoint 433. Scale in cm.*

Figure 27: *View across the area where waypoints 427 to 433 were recorded. See also Figure 7.*

Figure 28: *Quartz handaxe and flake and a quartzite flake from waypoint 434. Scale in cm.*

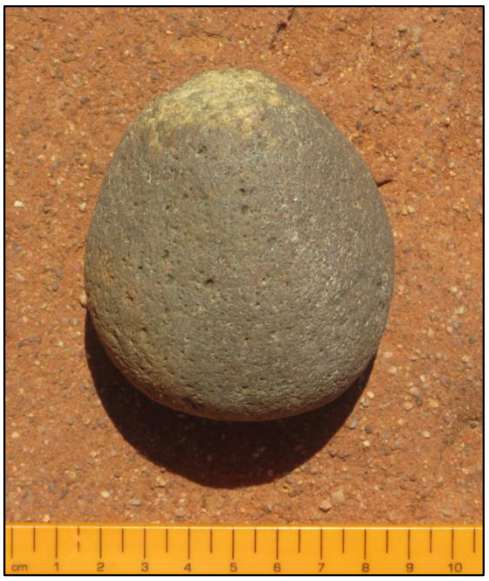

Figure 29: *A hammerstone from waypoint 437. Scale in cm.*

Figure 30: *Quartzite cores and a flake from waypoint 438. Scale in cm.*

Figure 31: *Both faces of a quartzite handaxe from waypoint 436. Scale in cm.*

Figure 32: *Quartz core and flake and two hammerstones that have been heavily worked so as to look like choppers from waypoint 438. Scale in cm.*

Small parts of the study area have heuweltjies on them. These old termite mounds are often associated with archaeological materials and these were no different. However, the artefact scatters found on them were generally very ephemeral and of low cultural significance. All the artefacts seen on these sites were of quartz. None were diagnostic, but from their small size, they may be from the LSA. Figure 33 shows the surface appearance of one of these sites, as well as some artefacts (waypoints 418 & 426 respectively).

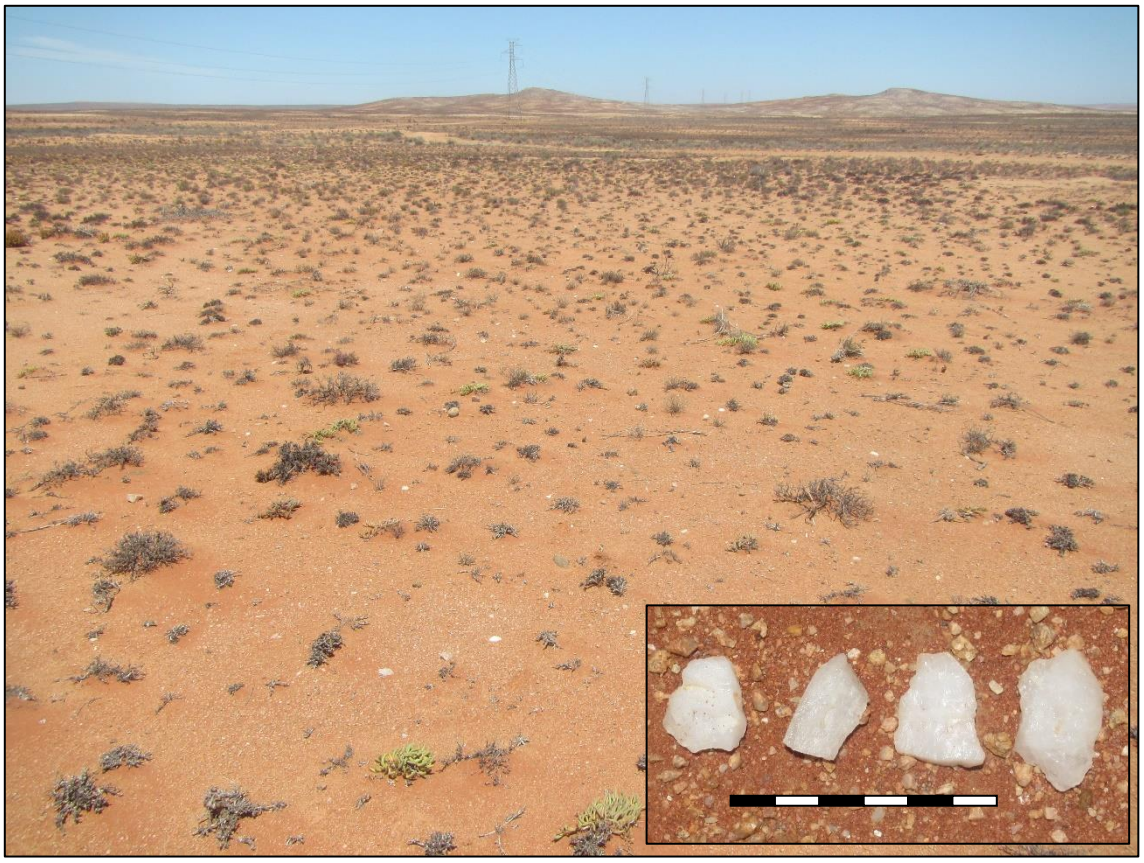

Figure 33: *Surface appearance of the heuweltjie scatter at waypoint 418. Inset: Stone artefacts from the heuweltjie scatter at waypoint 426.*

LSA sites were less common than expected. One ephemeral site on the bank of the Buffels River at waypoint 448 was located on a small terrace held up by a bedrock outcrop (Figure 34). This site had few artefacts on it but did include the only LSA formal tool seen during the survey – a backed point made from crypto-crystalline silica (CCS; Figure 35). Along the margin of the Buffels River several LSA sites were seen, but none was more than a light to moderate scatter, though some were fairly extensive in area. Figure 36 shows the kind of location where these sites were found. One of them had some soapstone fragments with saw marks on it. They were in a cluster and it is possible, or even quite likely, that they were dropped there after the LSA materials. Figure 37 shows some sawed soapstone from another small isolated cluster at waypoint 449 that lay right up against a quartzite cobble, perhaps even stored there.

Figure 34: *The location of the scatter at waypoint 448.*

Figure 35: *The CCS backed point at waypoint 448. Scale in mm.*

Figure 36: *The deflating area at waypoint 450.*

Figure 37: *Sawed soapstone fragments from waypoint 449. Scale in cm.*

An interesting find was a small stone circle made from ten loosely arranged cobbles at waypoint 462; the cobbles have probably moved over time. There was no trace of any ash or charcoal associated with the cobbles but in and around the circle were at least 27 fragments of two pots. One of them had a plain, rounded rim and had a fine-grained brown fabric. The other had a courser and very dark grey/black fabric. Two individual artefacts of interest were a perforated ostrich eggshell disc at waypoint 464 (Figure 40) and a faceted and dimpled upper grindstone at waypoint 468 (Figure 41). Both of these finds were on ephemeral scatters close to denser sites and were probably just outlying finds from those denser sites.

Figure 38: *The stone circle at waypoint 462.*

Figure 39: *Pottery fragments, a quartz flake, burnt bone fragments some and ostrich eggshell from waypoint 462. Scale in cm.*

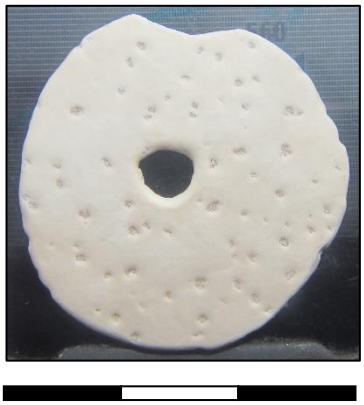

Figure 40: *Perforated ostrich eggshell disc from waypoint 464. Scale in cm.*

Figure 41: *A faceted upper grindstone with a pecked dimple from waypoint 468.*

Some historical traces were also found, but surprisingly few. At waypoint 447 a very light scatter of probably late 19th century glass and ceramics was encountered (Figures 42 & 43). There were also a few quartz flakes here but the relationship may be spurious. There were also a few rocks in the area that did not seem as though they were there naturally. This spot may represent an old stock post but it is impossible to be sure. In another area two refitting fragments of a bowl were found. Another similar scatter at waypoint 455 included fragments of rubber tire and is probably from around the mid-20th century, probably not old enough to be archaeology (Figure 44). Two other herder camps included stone squares measuring just under 1 m across (Figure 45). Two isolated refitting fragments of refined white earthenware are of interest because they can be identified as fragments of a small bowl (Figures 46 & 47).

Figure 42: *Some glass fragments from the scatter at waypoint 447. Scale in cm.*

Figure 43: *Some ceramic fragments from the scatter at waypoint 447. Scale in cm.*

Figure 44: *Some glass, ceramics, bone and tire fragments from waypoint 455. Scale in cm (for main image only).*

Figure 45: *A small stone square just under 1 m across from waypoint 572.*

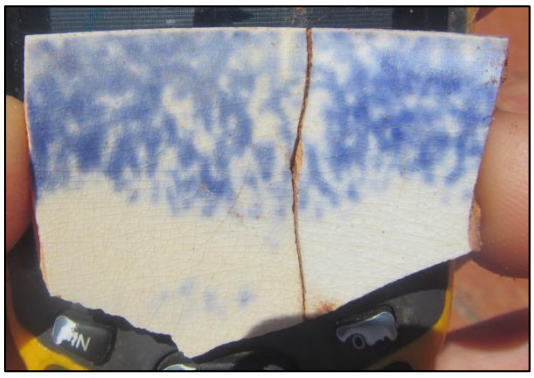

Figure 46: *The inner face of two refitting ceramic bowl fragments from waypoint 425.*

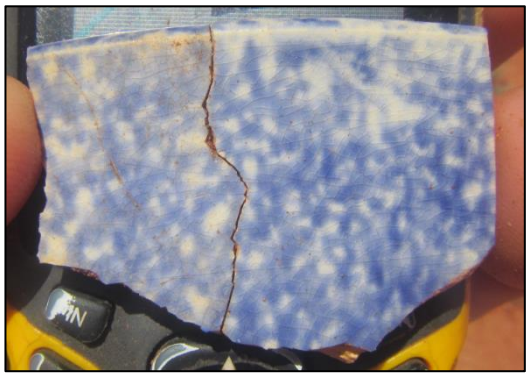

Figure 47: *The outer face of two refitting ceramic bowl fragments from waypoint 425.*

5.3. Graves

Unmarked precolonial graves can occur anywhere where the substrate is soft enough to be excavated by hand. Their locations cannot be predicted. Historical graves will generally be marked at the surface, either by plain rocks as head and/or foot stones or else with a formal headstone. Across the Buffels River to the northwest of the current site, Orton (2020) located a small informal graveyard with two graves, both of which had head and foot stones. They seemed likely to relate to a house ruin found in the area, which in turn was either a farmhouse or else related to the historical copper mining activities on that farm.

Visible graves might occur in association with older stock posts. Several piles or collections of cobbles were seen, but some of them were on the cobble terrace and, because excavation there would be very difficult, these are highly unlikely to be graves. However, two, at waypoints 465 and 467, were considered possible graves (Figures 48 & 49). The first was associated with historical materials and located in a sandy area (although the depth of the sand is unknown. This mound, although somewhat dispersed by time, could be a grave. The second was a better preserved feature but was located in an area where cobbles were visible at the surface close by, making it a somewhat less likely grave.

Figure 48: *Cluster of cobbles at waypoint 465.*

Figure 49: *Cluster of cobbles at waypoint 467.*

5.4. Historical aspects and the Built environment

5.4.1. Desktop study

A number of early travellers followed the course of the Buffels River to the Namaqualand coast, such as Alexander (1836) and Backhouse (1844). In his map of the area from this period, Backhouse shows the location of Bontekoe and Spektakel, but no mines or settlements are indicated in the area. The 1882 survey diagram for Wolfberg, just to the north, shows the location of 'Severn's Mine' and this spot matches the location of the mine pits documented by Orton (2020). The diagram does not show any structures, but structures were not always marked. Orton's (2020) review of historical maps up until the turn of the 20th century shows nothing else in the vicinity of the present study area.

A very detailed British military map from 1907 shows several tracks crossing the study area (Figure 50). The nearest mines are shown at Nigramoep and Spektakel to the east.

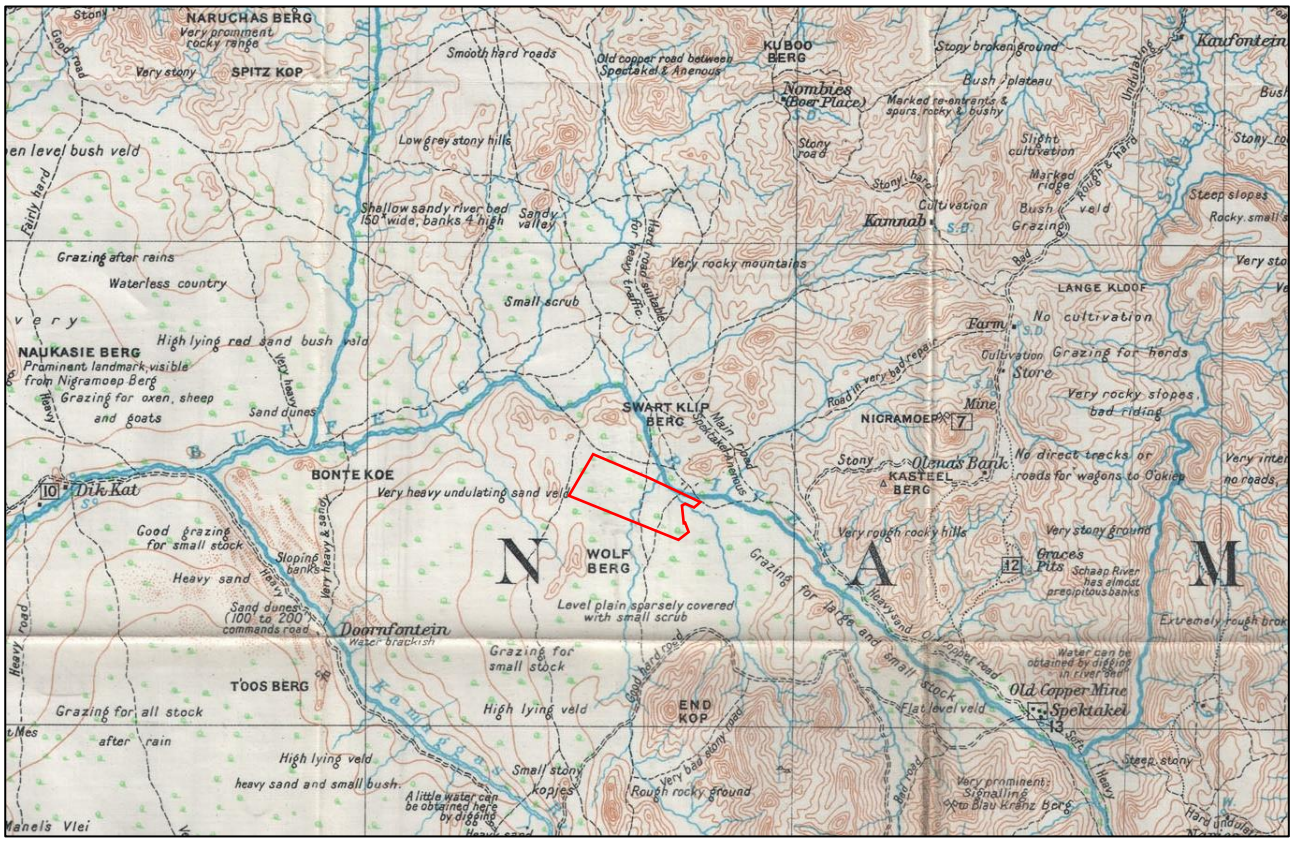

Figure 50: *A 1907 British military map of the broader study area. The location of the farm Wolfberg 187 on the shown in red. The Wolf Berg mountain is located south of the Buffels River. The map shows the position of Bontekoe and the "old copper Mine at Spektakel" (1:250 000 map "Cape Reconnaissance: Port Nolloth & O'Okiep" War Office July 1907). (Source: https://digitalcollections.lib.uct.ac.za/islandora/object/islandora%3A24923/datastream/OBJ/view)*

An important, but not very old, aspect of local history is the police post which was established alongside the R355 just to the northeast of the study area. It is located on a portion of the farm Witbergs Kloof 186 in the neck at a point where the R355 crosses a low ridge. The 2917CB topographic map tells us that the police station was known as Wolfberg. The portion of land on which it stands was subdivided off in 1937 and registered in 1938. Although the post may have existed prior to that time, the ruin that stands on the site today is clearly of 20th century origin (although it has not been examined by the author). The earliest aerial photographs for the area are from a job that was flown along the Buffels River from Kleinsee to the foot of the Spektakel Pass in 1938. That the date co-incides with the registration of the police post land suggests that this was around the time at which diamond mining suddenly gained importance. The police post was fully developed in 1938 (Figure 51) suggesting that it was likely built just before the aerial photography was taken. Although still with its roof in 2003, it has since been stripped of all joinery and is effectively now in ruin.

Figure 51: *Comparative aerial photographs from 1938 (Job 284, strip 002, photograph 49305) and 2003 (Google Earth) showing the Wolfberg police post. The building has subsequently been stripped of its joinery.*

According to Burger (1986), the place now known as Wolfberg[2] where the police post is located, was previously known as "Bobbejaanberg" and "Bobbejaanpoort" because there were always baboons there due to the abundant thorn trees in the nearby Buffels River. This place is not recognised in any way on the 1907 map. When the police post was established to keep watch over the diamond-bearing Veggat[3], the police changed the name to Wolfberg after the Wolfberg mountain to the southwest of the Buffels River. This neck (or *poort*) was crossed by the Spektakel road. Although the modern R355 also crosses this neck past the police post and follows a similar alignment as far as the eastern end of the Wolfberg farm, historical aerial photography and mapping shows that the old road followed a different course elsewhere.

Initially copper, but later diamonds were mined in the local area, but by 1928, the area was known for its diamonds. The 1972 map shows no marked features within the study area other than some small tracks (Figure 52).

The village of Komaggas to the south of the study area was founded by the London Missionary Society as a mission station in 1829. In 1843 it was taken over by the Rhenish Missionary Society and in 1936 by the Dutch Reformed Church (Raper n.d.).

[2] The name appears on the 2917CB 1:50 000 topographic maps.

[3] The Veggat was a 'hole' in the Buffels River from which diamonds were illegally collected (Burger 1986). It presumably refers to a place where diamondiferous gravels were exposed by erosion. Google Earth shows the name Veggat 3 km south of the police post. It is now the site of a diamond mine, seemingly now closed.

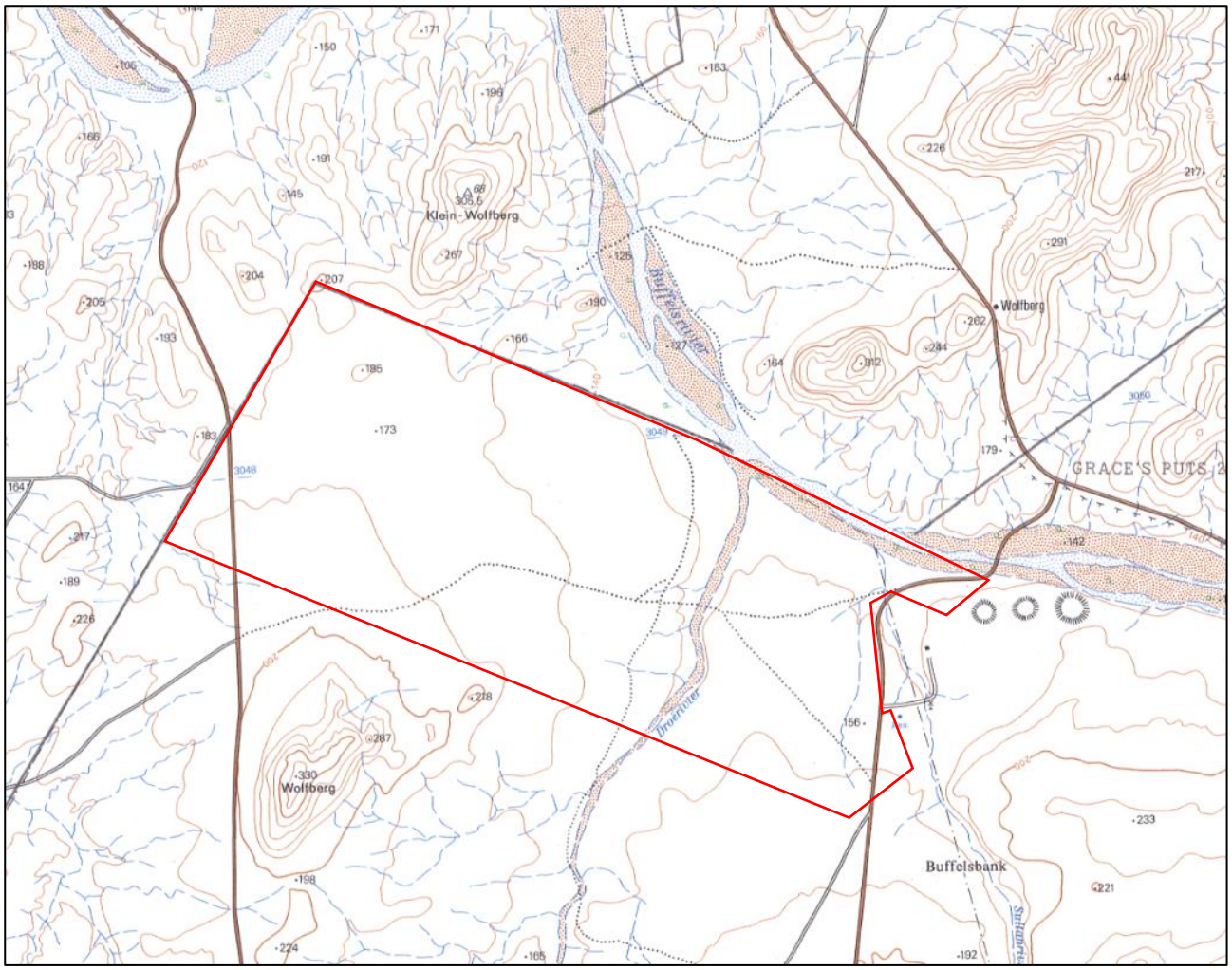

Figure 52: *Topographic map 2917CB from 1972 showing the northern extent of the farm Kamaggas, with the study area outlined in red.*

5.4.2. Site visit

Aside from the very small amount of historical archaeology described above, there were no historical features or buildings on the site. A ruined mine village (Buffelsbank) lies 1.8 km south of the eastern end of the site. It looks like a mid-20th century village and, being in ruin (all roofs and joinery have been stripped leaving only bricks and cement), it does not constitute a heritage resource.

5.5. Places associated with living heritage

There are a number of recent herder camps in the area and these serve as reminders of the transhumant way of life practiced by the Khoekhoe. While some of these settlements are very recent and still have corrugated iron huts and wire fences present and may have been used in the last few years (Figure 53), others are more ephemeral, marked primarily by the dung layers that formed inside the wire kraals and sometimes by remnant fences (Figures 54 & 55). All have modern rubbish and animal bones scattered about them, and often include concentrated dumps with bottles, many food tins and various other things like pieces of plastic and rubber. Some of the archaeological sites described above are likely to be older versions of these herder camps.

Figure 53: *Aerial view of the eastern part of the site showing several features related to relatively recent stock posts. Dark stains indicate dung layers*

Figure 54: *The remains of a herder camp marked by a dark dung stain and some derelict fencing.*

Figure 55: *The remains of a herder camp marked by a dark dung stain and an old car tire.*

5.6. Cultural landscapes and scenic routes

The Namaqualand landscape holds much aesthetic significance, both for its natural beauty and for the displays of wildflowers that are a popular tourism feature. However, the surroundings of the present study area have been compromised by historical and ongoing mining for copper and diamonds (see map in Figure 4). The Spektakel Pass on the R355 is a visually spectacular pass, offering views down the Buffels River valley and onto the coastal plain. The study area is not openly visible from the pass because of local topography. A short distance to the west of the base of the Spektakel Pass the road becomes gravel and passes through the mining landscape already described. This section is substantially less scenic.

5.7. Statement of significance and provisional grading

Section 38(3)(b) of the NHRA requires an assessment of the significance of all heritage resources. In terms of Section 2(vi), ‘‘cultural significance’’ means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. The reasons that a place may have cultural significance are outlined in Section 3(3) of the NHRA (see Section 2 above).

While most of the archaeological resources seen are of very low significance, the ESA scatters are more important and are deemed to have up to low-medium cultural significance at the local level for their scientific value. The areas of land included in this grade are shown in Figure 56. The polygons are created by adding 50 m buffers onto the IIIA and GPB waypoints.

Graves are deemed to have high cultural significance at the local level for their social value and would be allocated a grade of IIIA. Although no definitive graves were seen, two features were considered to be possible graves (Figure 56).

Several relatively recent herder stock posts related to transhumant herding practices were noted, but, given that much of Namaqualand is associated with this aspect of living heritage, this aspect is not considered significant and is not considered further. The older examples are protected as archaeological sites and considered to be more significant.

The cultural landscape is largely a natural landscape with aesthetic value but due to all the mining in the immediate area it is rated as having medium cultural significance at the local level.

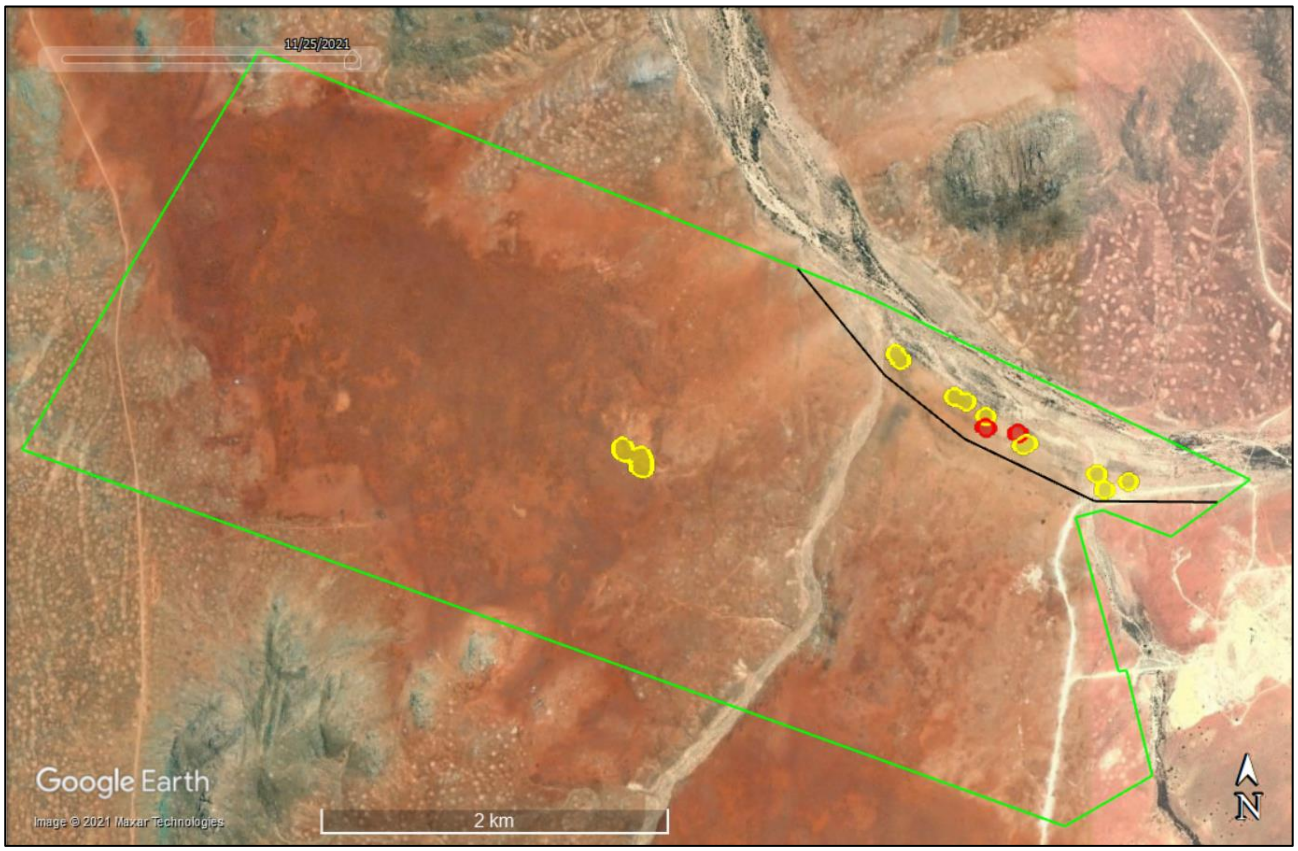

Figure 56: *Grading map for the archaeological resources in the study area. Yellow polygons denote GPB areas, while red polygons denote potential grade IIIA sites with graves. The black line denotes an area that should be regarded as generally archaeologically sensitive.*

5.8. Summary of heritage indicators

Archaeological resources are very easily disturbed during any surface activities and scientific data can be lost.

- Indicator: Significant archaeological sites should not be damaged or destroyed without mitigation.

Graves are easily disturbed during any development.

- Indicator: Graves must not be disturbed.

The landscape can be altered through physical changes to its surface as well as through the introduction of equipment and machinery that is incompatible with a natural setting.

- Indicator: The proposed activities should not permanently alter the general character of the natural environment.

6. ASSESSMENT OF IMPACTS

Impacts to palaeontological resources are considered in the separate report by John Pether. The only other impacts relevant to this project are impacts to archaeological resources and to the cultural landscape. Note that impacts would only occur during invasive prospecting activities with no impacts expected to occur during the initial research and remote sensing parts of the project. The assessments presented below assume both drilling and bulk sampling and are thus a worst case scenario. It is envisaged that impacts can occur during all phases of the project since construction (setting up on site), operation (drilling or excavating) and decommissioning (closing trenches and rehabilitating) will all run concurrently and all will require vehicles moving about on the site. All phases could thus produce similar impacts and only one set of impact assessments is thus provided.

6.1. Impacts to archaeological resources and graves

Impacts to archaeological resources are direct, negative impacts that relate to disturbance of the surface and could occur during all phases as outlines above. Should trenching occur through one of the significant archaeological sites or a grave then the site or grave would be destroyed which equates to a high intensity impact. However, the study area is very large and the probability of any of the sites actually being affected is considered to be low. The overall assessment is thus **medium negative** (Table 3). It is suggested that the areas with GPB archaeological sites should be avoided with the buffers as mapped in Figure 43. If this is not possible then archaeological mitigation should be carried out. With avoidance or mitigation, the impacts are expected to be **low negative**. There are no fatal flaws in terms of impacts to archaeology.

Table 3: *Assessment of impacts to archaeological sites and graves.*

Potential impacts on archaeological resources and graves	
Nature and status of impact:	Direct, negative
Extent and duration of impact:	Local, short term
Intensity	High
Probability of occurrence:	Low
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	High
Cumulative impact prior to mitigation:	Medium
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Avoid or sample archaeological materials. Possibly avoid areas close to river.
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Mitigation

For culturally significant sites (grade GPB or higher) that cannot be avoided, mitigation is suggested. This would involve placing a grid over the sites and collecting all archaeological materials in each grid square. The LSA sites should be sampled using a 1 m^2 grid, while the ESA sites could be done with larger squares of 4 m^2. The collected materials will need to be analysed and reported on prior to the commencement of prospecting in the affected areas. Note that this work would need to be

done under a permit issued to the archaeologist by SAHRA. Avoidance could entail simply avoiding the polygons indicated in Figure 56 or else avoiding a wiser area all along the river. The latter option, also shown in Figure 56, is preferred.

6.2. Impacts to the cultural landscape

Direct impacts to the cultural landscape will occur during all phases as noted above because activity will be ongoing throughout the life of the project, although it is likely that periods of inactivity might occur from time to time. Because of the small scale of the project, the impacts will be of low intensity, but if the project goes ahead, the impacts will definitely occur. Overall, however, the impacts are expected to be limited but with visible scarring of the landscape a significance of **medium negative** is assigned (Table 4). Mitigation would entail ensuring that effective rehabilitation takes place and that high contrast materials are not left exposed on the surface as occurred in the past, thus leaving visible scarring on the landscape. After mitigation the impact significance is likely to be **low negative**. There are no fatal flaws in terms of impacts to the cultural landscape.

Table 4: *Assessment of impacts to the cultural landscape.*

Potential impacts on the cultural landscape	
Nature and status of impact:	Direct, negative
Extent and duration of impact:	Local, short term
Intensity	Low
Probability of occurrence:	High
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Ensure effective rehabilitation of all disturbed areas on completion of prospecting.
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Mitigation

Mitigation will entail ensuring that effective rehabilitation takes place. It is preferable that rocks are not left on the surface of what would have been a sandy area so these should be placed in the excavation first before being covered with topsoil. Also, any high contrast materials, such as white silcrete, calcrete or pale soils should not be left on the surface.

6.3. Cumulative impacts

Very little archaeological work has been undertaken along the Buffels River and it is very likely that some significant archaeological sites and possibly some graves have been lost due to historical mining activities. The loss of further resources could be seen as of **medium negative** significance

(Table 3) but avoidance of the significant sites identified here or else mitigation of any that cannot be avoided will reduce this impact to **low negative**.

The area is already characterised by mining impacts from the nearby diamond and copper mining operations. Because of its very small scale, the proposed prospecting will only result in a very minimal additional impact. This aspect is thus not of concern and has been rated as **low negative** both before and after mitigation (Table 4).

6.4. Evaluation of impacts relative to sustainable social and economic benefits

Section 38(3)(d) of the NHRA requires an evaluation of the impacts on heritage resources relative to the sustainable social and economic benefits to be derived from the development.

The proposed project is a very small scale operation and, in and of itself, is not likely to deliver significant socio-economic benefits. However, prospecting is a required first step before mining can occur and if viable deposits of diamonds are located then a new mining operation would bring much needed employment to the local community. The impacts or prospecting are small, but mining impacts would need to be re-evaluated if mining should become desirable.

6.5. Existing impacts to heritage resources

There are currently no obvious threats to heritage resources on the site aside from the natural degradation, weathering and erosion that will affect archaeological materials and possible fossils, should they become exposed at the surface (which is unlikely). Trampling from grazing animals and/or farm/other vehicles could also occur. These impacts would be of **negligible negative** significance. There are no current impacts to the cultural landscape on the site, but the nearby abandoned diamond mine and other mining operations in the area do result in a significant visual impact to the landscape and can be rated as **medium negative**.

6.6. The No-Go alternative

If the project were not implemented then the site would stay as it currently is (impact significance of **neutral**). The heritage impacts with implementation would be greater than the existing impacts, the loss of potential socio-economic benefits (which would largely only be derived if mining commenced on the site) is more significant and suggests that the No-Go option is slightly less desirable.

6.7. Levels of acceptable change

Any impact to an archaeological or palaeontological resource or a grave is deemed unacceptable until such time as the resource has been inspected and studied further if necessary. Impacts to the landscape are difficult to quantify but in general a development that visually dominates the landscape from many vantage points is undesirable. Because of the nature and scale of the proposed development, such an impact to the landscape is not envisaged.

7. INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAM

The actions recorded in Table 5 should be included in the environmental management program (EMPr) for the project.

Table 5: *Heritage considerations for inclusion in the EMPr.*

Impact	Mitigation / management objectives & outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Impacts to archaeology and graves					
Damage or destruction of archaeological sites or graves	Avoid impacts (preferred) or locate and sample or rescue sites/burials before disturbance	Note locations of sites and ensure avoidance. OR Appoint archaeologist to conduct mitigation.	Appoint archaeologist to conduct mitigation work well before construction	Once-off	Project developer
Damage or destruction of archaeological sites or graves	Rescue information, artefacts or burials before extensive damage occurs	Reporting chance finds as early as possible, protect *in situ* and stop work in immediate area	Inform staff and carry out inspections of excavations	Ongoing basis	Project Manager or other responsible staff member
Impacts to the cultural landscape					
Visible landscape scarring	Minimise landscape scarring	Ensure disturbance is kept to a minimum and does not exceed project requirements. Rehabilitate prospecting areas afterwards	Monitoring of surface clearance relative to needs	Ongoing basis	Project Manager or other responsible staff member

8. CONCLUSIONS

Given that the landscape is already characterised to some degree by mining activities, the main concern for this project is archaeology. Archaeological sites, possibly with associated graves, tend to occur along the lower cobble terrace alongside the Buffels River (Figure 57). This is by far the most sensitive part of the study area and is probably best avoided completely during prospecting activities. Aside from this area, there is only one other sensitive area – the patches of exposed hardpan with ESA artefacts on them above the upper cobble terrace.

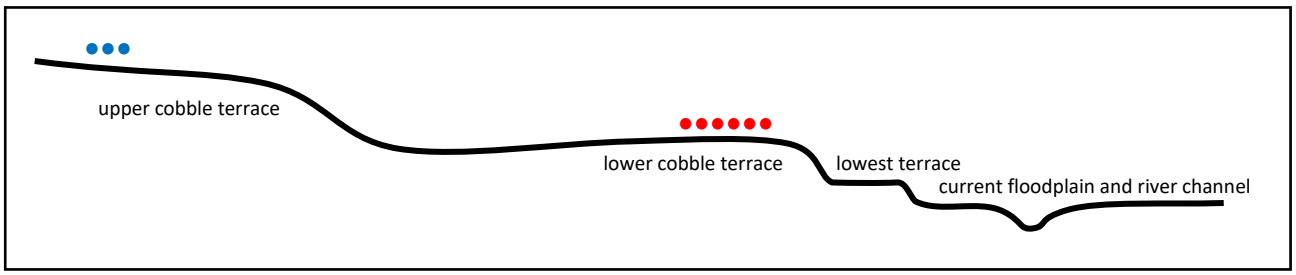

Figure 57: *Schematic section through the southern bank of the Buffels River showing where the main concentration of archaeological sites (LSA; red dots) and secondary concentration (ESA; blue dots) are relative to the river and the three levels of river terraces.*

Table 6 lists the heritage indicators and shows how they are responded to.

Table 6: *Heritage indicators and project responses.*

Indicator	Project Response
Significant archaeological sites should not be damaged or destroyed without mitigation.	Sites have been identified and earmarked for avoidance. A larger buffer along the river has also been identified for potential avoidance if possible.
Graves must not be disturbed.	Two possible graves have been identified
The proposed activities should not permanently alter the general character of the natural environment.	It is envisaged that rehabilitation of the small areas that might be subjected to trenching will be successfully rehabilitated and that permanent alteration of the overall landscape character will not occur.

Implementation of a no-go area as shown in Figure 56 will greatly reduce the chances of impacts to archaeological resources but if work in this area is desirable then great care will need to be taken to stay out of the individual site buffers. If this is not possible then archaeological mitigation will need to be commissioned.

8.1. Reasoned opinion of the specialist

Given that avoidance of sensitive areas is likely to be feasible and that mitigation, if required, would be easy to accomplish, it is the opinion of the heritage consultant that the project should be authorised in full. This opinion needs to be read in conjunction with that of the palaeontologist.

9. RECOMMENDATIONS

It is recommended that the proposed prospecting on a portion of Portion 5 of Farm Kamaggas 200 should be authorised, but subject to the following recommendations:

- The two possible graves and their buffers must be avoided;
- All the identified archaeological sites and their buffers must be avoided if possible;
- If avoidance of archaeological sites is not possible then they must be sampled by a qualified archaeologist under a permit issued by SAHRA;
- All surface disturbance must be rehabilitated; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

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APPENDIX 1 – Curriculum Vitae

Curriculum Vitae

Jayson David John Orton

ARCHAEOLOGIST AND HERITAGE CONSULTANT

Contact Details and personal information:

Address: 23 Dover Road, Muizenberg, 7945
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Cell Phone: 083 272 3225
Email: jayson@asha-consulting.co.za

Birth date and place: 22 June 1976, Cape Town, South Africa
Citizenship: South African
ID no: 760622 522 4085
Driver's License: Code 08
Marital Status: Married to Carol Orton
Languages spoken: English and Afrikaans

Education:

SA College High School	Matric	1994
University of Cape Town	B.A. (Archaeology, Environmental & Geographical Science)	1997
University of Cape Town	B.A. (Honours) (Archaeology)*	1998
University of Cape Town	M.A. (Archaeology)	2004
University of Oxford	D.Phil. (Archaeology)	2013

*Frank Schweitzer memorial book prize for an outstanding student and the degree in the First Class.

Employment History:

Spatial Archaeology Research Unit, UCT	Research assistant	Jan 1996 – Dec 1998
Department of Archaeology, UCT	Field archaeologist	Jan 1998 – Dec 1998
UCT Archaeology Contracts Office	Field archaeologist	Jan 1999 – May 2004
UCT Archaeology Contracts Office	Heritage & archaeological consultant	Jun 2004 – May 2012
School of Archaeology, University of Oxford	Undergraduate Tutor	Oct 2008 – Dec 2008
ACO Associates cc	Associate, Heritage & archaeological consultant	Jan 2011 – Dec 2013
ASHA Consulting (Pty) Ltd	Director, Heritage & archaeological consultant	Jan 2014 –

Professional Accreditation:

Association of Southern African Professional Archaeologists (ASAPA) membership number: 233
CRM Section member with the following accreditation:

- Principal Investigator: Coastal shell middens (awarded 2007)
  Stone Age archaeology (awarded 2007)
  Grave relocation (awarded 2014)
- Field Director: Rock art (awarded 2007)
  Colonial period archaeology (awarded 2007)

Association of Professional Heritage Practitioners (APHP) membership number: 43

- Accredited Professional Heritage Practitioner

➢ *Memberships and affiliations:*

South African Archaeological Society Council member	2004 – 2016
Assoc. Southern African Professional Archaeologists (ASAPA) member	2006 –
UCT Department of Archaeology Research Associate	2013 –
Heritage Western Cape APM Committee member	2013 –
UNISA Department of Archaeology and Anthropology Research Fellow	2014 –
Fish Hoek Valley Historical Association	2014 –
Kalk Bay Historical Association	2016 –
Association of Professional Heritage Practitioners member	2016 –

Fieldwork and project experience:

Extensive fieldwork and experience as both Field Director and Principle Investigator throughout the Western and Northern Cape, and also in the western parts of the Free State and Eastern Cape as follows:

Feasibility studies:

- Heritage feasibility studies examining all aspects of heritage from the desktop

Phase 1 surveys and impact assessments:

- Project types
  - Notification of Intent to Develop applications (for Heritage Western Cape)
  - Desktop-based Letter of Exemption (for the South African Heritage Resources Agency)
  - Heritage Impact Assessments (largely in the Environmental Impact Assessment or Basic Assessment context under NEMA and Section 38(8) of the NHRA, but also self-standing assessments under Section 38(1) of the NHRA)
  - Archaeological specialist studies
  - Phase 1 archaeological test excavations in historical and prehistoric sites
  - Archaeological research projects
- Development types
  - Mining and borrow pits
  - Roads (new and upgrades)
  - Residential, commercial and industrial development
  - Dams and pipe lines
  - Power lines and substations
  - Renewable energy facilities (wind energy, solar energy and hydro-electric facilities)

Phase 2 mitigation and research excavations:

- ESA open sites
  - Duinefontein, Gouda, Namaqualand
- MSA rock shelters
  - Fish Hoek, Yzerfontein, Cederberg, Namaqualand
- MSA open sites
  - Swartland, Bushmanland, Namaqualand
- LSA rock shelters
  - Cederberg, Namaqualand, Bushmanland
- LSA open sites (inland)
  - Swartland, Franschhoek, Namaqualand, Bushmanland
- LSA coastal shell middens
  - Melkbosstrand, Yzerfontein, Saldanha Bay, Paternoster, Dwarskersbos, Infanta, Knysna, Namaqualand
- LSA burials
  - Melkbosstrand, Saldanha Bay, Namaqualand, Knysna
- Historical sites
  - Franschhoek (farmstead and well), Waterfront (fort, dump and well), Noordhoek (cottage), variety of small excavations in central Cape Town and surrounding suburbs
- Historic burial grounds
  - Green Point (Prestwich Street), V&A Waterfront (Marina Residential), Paarl

Awards:

Western Cape Government Cultural Affairs Awards 2015/2016: Best Heritage Project.