HERITAGE IMPACT ASSESSMENT:
PROPOSED SAND MINE ON DIKGAT 195/4, NAMAKWALAND MAGISTERIAL DISTRICT, NORTHERN CAPE

Required under Section 38(8) of the National Heritage Resources Act (No. 25 of 1999)

SAHRA Case No.: 17747

Report for:

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On behalf of:

Nanga Mining (Pty) Ltd

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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 the proposed mining of sand from the bed of the Buffels River on Portion 4 of Dikgat 195, Namakwaland District. An approximate centre point of the study area is at S29° 38’ 05” E17° 07’ 11”.

The mine will be a very small-scale, open cast mine with a front-end loader removing sand and loading it onto trucks. No permanent infrastructure is required. The site is in the Buffels River floodplain to the south of the R399, 6 km northeast of Kleinsee.

The site was inspected and found to be entirely within the modern river floodplain. No archaeological or other heritage resources were seen with the only heritage relevant to the study being the cultural landscape. Since the site is somewhat remote, and the surrounding area has been compromised by other mining activities, the potential impacts are rated as being of low significance.

It is recommended that the proposed sand mine be authorised, but subject to the following conditions which should be incorporated into the conditions of authorisation:

- At closure, all waste must be removed and the site left in a tidy state; 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

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.

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

SA: 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 the proposed mining of sand from the bed of the Buffels River on Portion 4 of Dikgat 195, Namakwaland District (Figure 1). An approximate centre point of the study area is at S29° 38' 05" E17° 07' 11".

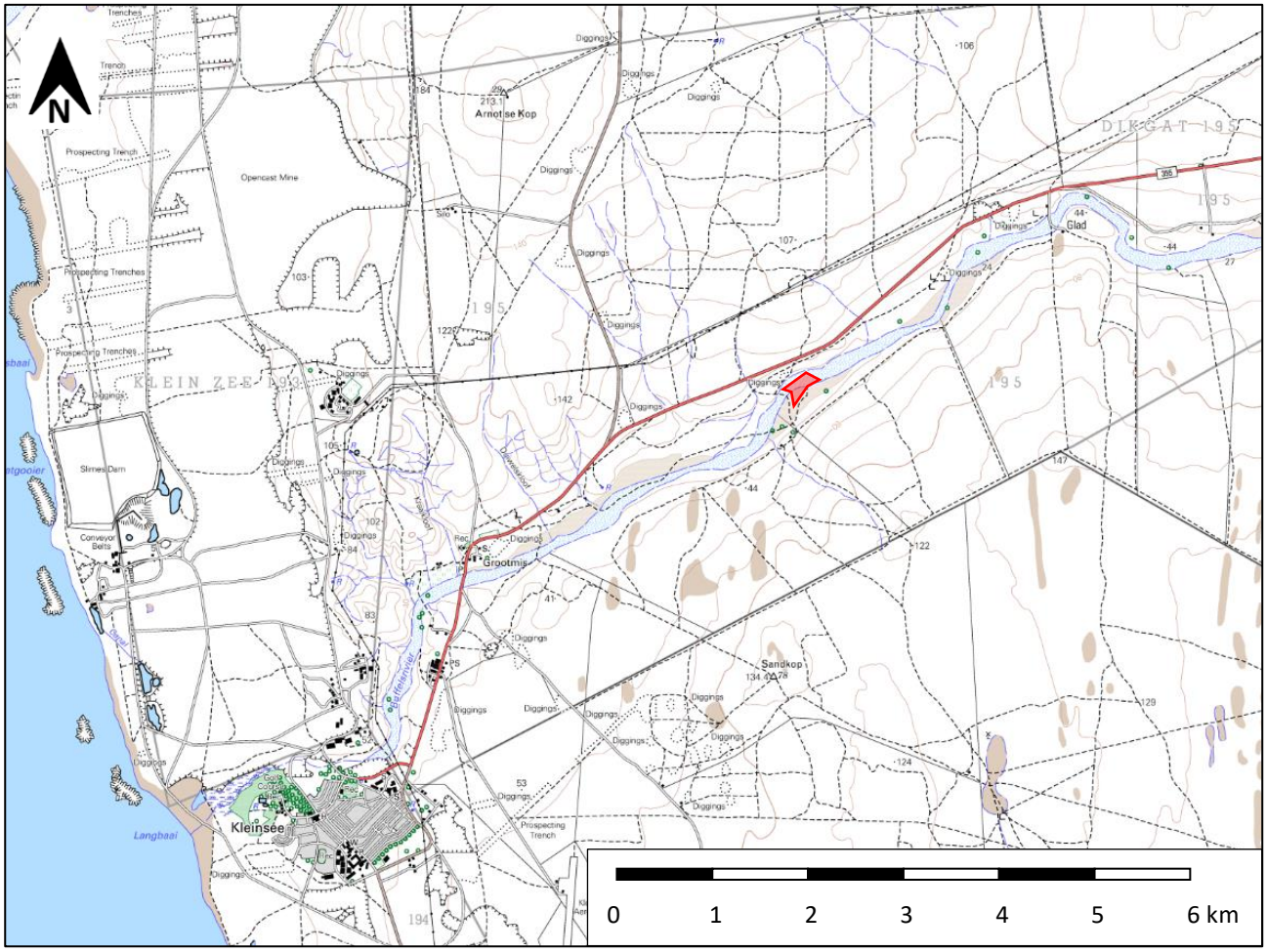


Figure 1: *Extract from 1:50 000 topographic map 2918CA showing the location of the site (red shaded polygon). Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.*

1.1. The proposed project

1.1.1. Project description

Existing farm tracks will be used and upgraded where necessary to provide access to the mining site. A front-end loader and trucks will be used to load and remove sand from the site. No permanent infrastructure is required on site. Mining ill proceed to a depth of approximately 2 m and no backfilling will be contemplated.

1.1.2. Identification of alternatives

No alternatives are under consideration as the site is chosen based on the mineral resources present and the activity and methods are the most appropriate to the extraction of sand from the site.

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 assess the potential heritage impacts that the project might have. The assessment was to include both desktop research and a site visit. The results of the work should be used to compile a Heritage Impact Assessment (HIA) that assessed all relevant aspects of heritage and complied with the requirements of the relevant authorities.

1.3. Scope and purpose of the report

A heritage impact assessment (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 (DMR) 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 on 20 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 the amount of time between the dates of the field inspection and final report do not materially affect the outcome of the report.

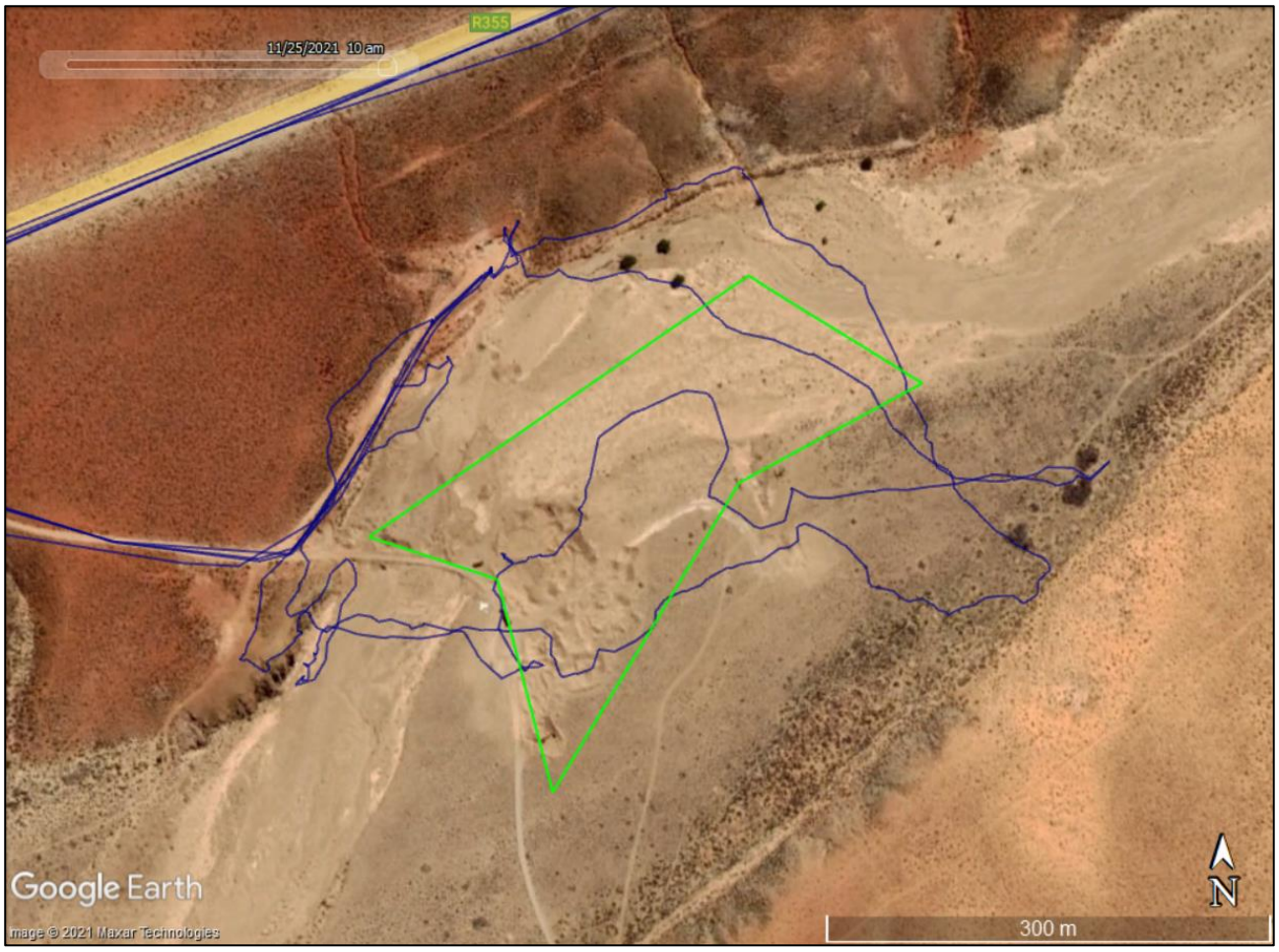


Figure 3: *Aerial view of the study area (green polygon) showing the survey tracks (blue lines).*

3.3. Specialist studies

A separate specialist palaeontological desktop study was commissioned to assess the potential palaeontological impacts. This report is submitted separately with the 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

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

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).

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. The site was open and fully accessible and there were no other restrictions.

4. PHYSICAL ENVIRONMENTAL CONTEXT

4.1. Site context

The site lies alongside the R355 gravel road that links Springbok in the east with Kleinsee in the west. The immediate area is rural in character, although the wider area is dominated by mining with diamond mines located 5 km to the west and 7 km to the east of the site. Sand mining has already been undertaken in the immediate area with some excavations evident in the southern part of the study area.

4.2. Site description

The site lies within the floodplain of the broad, sandy channel of the Buffels River. There is minimal vegetation within the channel and only a light covering in the surrounding area. Figures 4 to 8 show the nature of the study area and its surroundings. The sand itself is granite-derived and contains many large grains. There is no evidence of any stone in the area that would be suitable for the manufacture of stone artefacts and there are no rick outcrops anywhere in the immediately surrounding area. From aerial photography, the nearest granite outcrops are 700 m to the northwest and 700 m to the south of the site.

Figure 4: *View towards the south-southwest across the site as seen from the R355. The river channel runs from left to right following the area with the least vegetation.*

Figure 5: *View towards the south from just outside the northernmost corner of the site. The site begins just beyond the tree and figure in mid-picture.*

Figure 6: *View towards the west from the easternmost corner of the site.*

Figure 7: *View towards the west through the centre of the site from its south-eastern edge.*

Figure 8: *Old excavation in the south-western part of the site which has been washed by recent river flow.*

Figure 9: *Old excavation in the southern part of the site showing the nature of the sand being targeted for mining.*

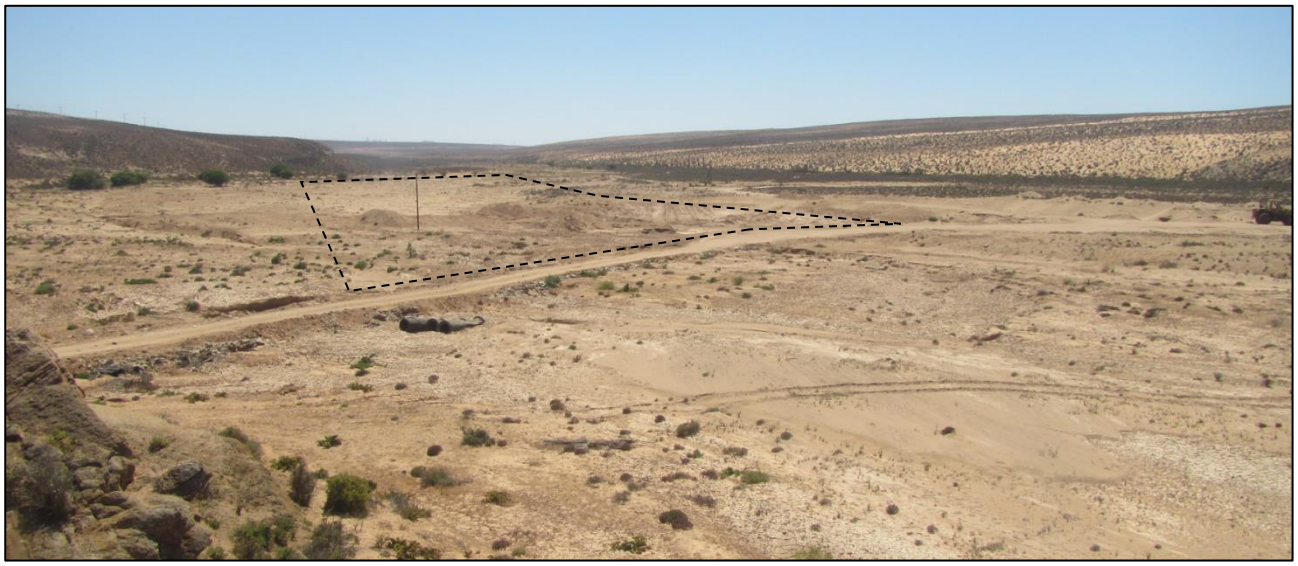


Figure 10: *View towards the east from just beyond the western end of the site. The approximate boundary of the site is marked by the dashed polygon.*

5. FINDINGS OF THE HERITAGE STUDY

This section describes the heritage resources recorded in the study area during the course of the project.

5.1. Palaeontology

The SAHRIS Palaeosensitivity Map shows the site to be of zero palaeontological sensitivity (Figure 11). John Pether (pers. comm. 2021) notes that there er errors in the palaeontological sensitivity mapping in the area as evidenced by the disjunction located further south. He suggests

that the river channels of the area are better considered medium sensitivity – this is what they are mapped as further to the south. There is a possibility buried fossils occurring within the river sands and a desktop assessment has been commissioned. This study has been written by Prof. Marion Bamford (2021) and is submitted separately with the present report. Her assessment finds only a small chance of transported fossils being present. Being out of context and relatively recent in age, their significance would be low.

Figure 9: *Extract from the SAHRIS Palaeosensitivity Map showing the site to be of zero sensitivity (grey shading).*

5.2. Archaeology

5.2.1. Desktop study

Early Stone Age (ESA) materials in Namaqualand have mostly been found fairly close to the coastline and are often found in the same contexts as 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 to the north of the Buffels River, and some 3 km west of the present study area. Some 20 km north of Kleinsee, Orton and Halkett (2006) described an extensive silcrete outcrop that displayed evidence of quarrying. There were

scatters of ESA and MSA artefacts located across the outcrop. Further inland, to the southeast of the present study area, Morris and Webley (2004) reported scatters of ESA artefacts, including handaxes, amongst sand dunes on the coastal plain and around pans.

Middle Stone Age (MSA) material is generally more commonly reported, but further inland, probably only because the landscape is less eroded and deflated there, it 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. Van Pletzen-Vos and Rust (2011) found MSA quartz artefacts on the western and northern outskirts of Komaggas. Closer to the coast Orton and Halkett (2005) found some Howieson's Poort bifacial points associated with shell in a dunefield southwest of the present study area, but the relationship between the shell and artefacts might be spurious. 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). Other sites on the coastal plain are often deflation hollows of varying size (Orton 2012; 2019a, 2019b, 2019c, 2019d, 2020a, 2020b, 2020c, 2020d). Rock art also occurs in Namaqualand (Orton 2013; Morris & Webley 2004), but, owing to the distance to the nearest known sites, is not discussed further.

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.

Several other surveys have been conducted away from the coastline. Magoma's (2016) linear survey along the proposed Eskom 400 kV alignment to the east of the present site yielded only isolated artefacts, but Orton (2019a, 2019b) found deflation hollow sites along the same route. To the southwest of the Dikgat mine site Orton and Webley (2012a) found large numbers of LSA sites spread across the landscape, while Orton's (2019c, 2019d) surveys slightly further inland yielded many small LSA sites with their size, density and shell content generally reducing towards the east. The sites were strongly focused on dune ridges. Further east again, Orton (2018) 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.

5.2.2. Site visit

No archaeological materials of any sort were found in the study area. Some parts of the adjoining riverbank were also searched and, aside from rare isolated background scatter artefacts, archaeological materials were lacking.

5.3. Graves

No graves were seen in the study area or anywhere nearby. While it is possible that unmarked precolonial graves may occur in the unconsolidated sediments of the area, they will definitely not be within the sand body. It is very remotely possible that isolated human bones that might have come from a burial upstream exposed through erosion could be found, but the chances are virtually zero.

5.4. Historical aspects and the Built environment

5.4.1. Desktop study

Namaqualand is quite remote, poorly watered and relatively unproductive from an agricultural point of view. As a result, it does not have as deep a history as many other parts of South Africa. Although the little settlement of Grootmis just inland of Kleinsee (3.7 km west of the study area) and the mission station at Komaggas (40 km southeast of the study area) date back into the 19th century, the larger towns of Kleinsee and Koingnaas – both originally developed as 'company towns' – relate to 20th century diamond mining.

Grootmis was historically important because it had water. An annotation on a 1907 British Military map states that Grootmis had an unlimited water supply (Source: Pietermaritzburg Archives). The very large number of shell scatters found in the area by Orton and Webley (2012b) suggests that this water source had been available to the precolonial population as well. It probably stopped yielding water when De Beers dammed the river and commenced with the abstraction of water.

Komaggas (Camaggas) is first mentioned by Gordon in 1779. Komaggas (the farm is spelled Kamaggas, a form that also appears on some early maps) received a Certificate of Occupation on 9 November 1843, granting the Cloete family the right of occupation on the land.

There are various oral accounts of the relationship between Ryk Jasper Cloete and the Nama kaptein kXurib who used the Komaggas Fountain as his main water source. Bregman (2010) suggests that Cloete acquired the land through his marriage to the kaptein's daughter. Jasper Cloete utilised land up to the Orange River to graze his stock. A mission station of the London Missionary Society (LMS) was set up at Komaggas in 1829 and the farm was surveyed in 1831. It became a station of the Rhenish Missionary Society in 1843 and then the N.G. Church from 1936 (Raper n.d.).

Bregman (2010) provides a list of the farms surrounding and in the vicinity of Komaggas, including the date that they were first registered. Farms to the west of Komaggas were granted to colonists under quitrent title only after 1855. Mining companies were seeking land in the area because of the commencement of copper mining. Closer to the coast, the dry plains between the Swartlintjies and Buffels Rivers were left open as Crown Land – this is the zone in which the present study area lies. Despite the increasing private ownership of farms in the area, herders from Komaggas were still

able to access grazing lands outside of the reserve because the farms were not completely fenced and access was gained at certain places. However, they had no formal title to the land.

In 1925 diamonds were discovered on the farm Oubeep, south of Port Nolloth, and in 1926 at Kleyne Zee, both by Jack Carstens. Mining commenced at the latter in 1927 and the town of Kleinsee was soon established (Rebelo 2003). Much of the coastline was then bought up for diamond mining and access for grazing was closed.

Figure 10 shows aerial views of the site. The 1942 view shows that the farm complex on the south side of the river was not present 80 years ago. The R355 was already built to the north of the site and Buffels River.

Figure 10: *Aerial views from 1942 (13_014_00417) and 2020 (Google Earth) showing the R355 in place but not the farmstead to the south of the site.*

5.4.2. Site visit

Aside from the gravel roads and sand tracks, no historical features of any sort were seen on the site or in the immediate surroundings. The farmhouse was not inspected but it is well away from the site and will be affected in any way.

5.5. Cultural landscapes and scenic routes

The site is situated in a landscape dominated by 20th century mining, but there are large swathes of undeveloped land inland of the coastal mines and in between the inland ones that are used for small stock farming. Since the demise of diamond mining the region sees far less traffic and is, to a degree, regaining some of its remote, inhospitable atmosphere. It is relevant to note that the R399 is elevated above the study area and offers a good view over the proposed mine. Being only very minimally developed (aside from the mines), the cultural landscape is largely considered a natural landscape rather than a rural one. Natural heritage also requires consideration because of the visual amenity provided by aesthetically pleasing landscapes. Aside from rare structures, the only other

anthropogenic features on the landscape are farm tracks/roads and fences, along with occasional borrow pits alongside the larger gravel roads. The remoteness and inhospitability of the Namaqualand Sandveld are a result of the very frequent strong winds, the low scrubby vegetation and seemingly endless sand flats and dunes.

5.6. 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).

No archaeological resources, graves or other physical features were found to occur. The only heritage resource is the landscape which, in the vicinity of the study area, has low to medium cultural significance for its aesthetic value.

5.7. Summary of heritage indicators

The cultural landscape is the only heritage resource potentially under threat.

- Indicator: The proposed mine should not dominate the landscape from multiple publicly accessible viewpoints.

6. ASSESSMENT OF IMPACTS

6.1. All Phases

6.1.1. Impacts to the cultural landscape

Direct impacts to the landscape would occur during all phases and be connected to both the mining itself as well as the presence of mine vehicles in the area. Only a very small number of vehicles are expected to be present at any one time (e.g. an excavator and perhaps two trucks) so the impact will be very localised and low intensity. It would, of course, definitely happen if mining were to proceed. The impact is temporary and would cease in the medium term after the completion of mining and closure of the site. The potential impact before mitigation is rated as **low negative** (Table 2). Because the mine will be a very small-scale operation, the only mitigation measure suggested is to ensure effective rehabilitation of the site after the completion of mining. Although "mitigation" would occur naturally in the event of a large flood, such events are rare and this should not be relied upon to redistribute sand across the study area. An effective rehabilitation plan should thus be in place. With mitigation the impact will still be at the **low negative level**. There are no fatal flaws.

Table 2: *Assessment of impacts to the cultural landscape.*

Potential impacts on cultural landscape	
Nature and status of impact:	Direct, negative
Extent and duration of impact:	Local, Medium term
Intensity	Low
Probability of occurrence:	Definite
Degree to which the impact can be reversed:	High

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)	Low
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Rehabilitate site after mining
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

6.2. Cumulative impacts

Small scale sand mining has already been undertaken in the southern part of the study area but impacts would have been minimal. The large-scale diamond mines of the area, however, have resulted in extensive impacts, especially to archaeological sites, over nearly a century. The impacts from the present proposal, however, are expected to be negligible and will thus make no meaningful contribution to cumulative heritage impacts.

6.3. 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.

While the project will be very small-scale and will provide only a very limited number of jobs, sand for the construction industry is an important part of economic development in general and for this reason it can be said that the socio-economic benefits outweigh the impacts to heritage resources.

6.4. Existing impacts to heritage resources

There are currently no obvious threats to heritage resources on the site. The impacts are thus regarded as **neutral**.

6.5. The No-Go alternative

If the project were not implemented then the site would stay as it currently is (impact significance of **neutral**). Although the heritage impacts with implementation would be greater than the existing impacts, the loss of socio-economic benefits is more significant and suggests that the No-Go option is less desirable.

6.6. 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 publicly accessible vantage points is undesirable. None of these impacts is expected.

7. INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAM

The actions recorded in Table 3 should be included in the environmental management program (EMPr) for the project.

Table 3: *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	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	Construction Manager or Contractor
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 the site after closure	Monitoring of surface clearance relative to approved layout	Ongoing basis	Construction Manager or Contractor

8. CONCLUSIONS

This assessment has shown that no significant impacts to any type of heritage resource will occur with implementation of the proposed project. The site will be very visible from the adjoining R399 but low traffic volumes, the presence of existing mining traces on site, and the large scale diamond mines of the region mean that this new impact will have only a very minimal effect on the landscape.

8.1. Reasoned opinion of the specialist

Given the negligible impacts to heritage resources expected from this project, it is the opinion of the heritage specialist that the proposed sand mine can be authorised in full.

9. RECOMMENDATIONS

It is recommended that the proposed sand mine be authorised, but subject to the following conditions which should be incorporated into the conditions of authorisation:

- At closure, all waste must be removed and the site left in a tidy state; 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.

10. REFERENCES

Bamford, M.K. 2021. Palaeontological Impact Assessment for the proposed Dikgat sand mining project, Buffels River, Northern Cape Province. Report prepared for ASHA Consulting (Pty) Ltd. Johannesburg: Marion Bamford.

Dewar, G. 2008. *The archaeology of the coastal desert of Namaqualand, South Africa: a regional synthesis*. Oxford: British Archaeological Reports International Series 1761.

Dreyer, C. 2002. Archaeological assessment of the proposed upgrading of the road (DR2955) between Springbok and Komaggas, Northern Cape. Unpublished report for Cebo Environmental Consultants.

Halkett, D. 2002. An analysis of a randomly collected Early Stone Age artefact assemblage from the Sandkop mining area, Kleinzee, Namaqualand. Unpublished report prepared for De Beers Namaqualand Mines. University of Cape Town: Archaeology Contracts Office.

Halkett, D. J. & Hart, T. J. G. 1997. An archaeological assessment of the coastal strip, and a proposed heritage management plan for: De Beers Namaqualand Mines. Unpublished report prepared for De Beers Consolidated Mines NM. University of Cape Town: Archaeology Contracts Office.

Jerardino, A.M., Yates, R., Morris, A.G. & Sealy, J.C. 1992. A dated human burial from the Namaqualand coast: observations on culture, biology and diet. *South African Archaeological Bulletin* 47: 75–81.

Magoma, M. 2016. Phase 1 Archaeological and Cultural Heritage Impact Assessment specialist report for the proposed 400kV power line from the existing Eskom Juno substation to the existing Gromis substation in the Western and Northern Cape Provinces respectively. Unpublished report for Eskom Holdings Ltd.

Morris, D. & Webley, L. 2004. Cultural History in and adjacent the Namaqua National Park. Unpublished SANParks report.

Orton, J. 2012. Late Holocene Archaeology in Namaqualand, South Africa: hunter-gatherers and herders in a semi-arid environment. Unpublished D.Phil. thesis: University of Oxford.

Orton, J. 2013. Geometric rock art in Western South Africa and its implications for the spread of early herding. *South African Archaeological Bulletin* 68: 27-40.

Orton, J. 2015. The introduction of pastoralism to southernmost Africa: thoughts on new contributions to an ongoing debate. *Azania: Archaeological Research in Africa* 50: 250-258.

Orton, J. 2016. Prehistoric cultural landscapes in South Africa: a typology and discussion. *South African Archaeological Bulletin* 71: 119-129.

Orton, J. 2018. Heritage Impact Assessment: Scoping and Environmental Impact Assessment for the proposed Kap Vley Wind Energy Facility, Namakwaland Magisterial District, Northern Cape Province: EIA Phase Report. Unpublished report prepared for CSIR. Lakeside: ASHA Consulting (Pty) Ltd.

Orton, J. 2019a. Heritage Impact Assessment: proposed grid connection infrastructure for the Namas Wind Farm near Kleinsee, Namakwaland Magisterial District, Northern Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Lakeside: ASHA Consulting (Pty) Ltd.

Orton, J. 2019b. Heritage Impact Assessment: proposed grid connection infrastructure for the Zonnequa Wind Farm near Kleinsee, Namakwaland MagisteriaL District, Northern Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Lakeside: ASHA Consulting (Pty) Ltd.

Orton, J. 2019c. Heritage Impact Assessment: proposed Namas Wind Farm near Kleinsee, Namakwaland MagisteriaL District, Northern Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Lakeside: ASHA Consulting (Pty) Ltd.

Orton, J. 2019d. Heritage Impact Assessment: proposed Zonnequa Wind Farm near Kleinsee, Namakwaland MagisteriaL District, Northern Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Lakeside: ASHA Consulting (Pty) Ltd.

Orton, J. 2020a. Heritage Impact Assessment: Basic Assessment for the proposed Gromis Wind Energy Facility and associated infrastructure near Kleinsee, Namakwa Magisterial District, Northern Cape Province. Report prepared for CSIR. Lakeside: ASHA Consulting (Pty) Ltd.

Orton, J. 2020b. Heritage Impact Assessment: Basic Assessment for the proposed Komas Wind Energy Facility and associated infrastructure near Kleinsee, Namakwa Magisterial District, Northern Cape Province. Report prepared for CSIR. Lakeside: ASHA Consulting (Pty) Ltd.

Orton, J. 2020c. Heritage Impact Assessment: Basic Assessment for the proposed power line and electrical infrastructure to support the proposed Gromis Wind Energy Facility near Kleinsee, Namakwa Magisterial District, Northern Cape Province. Report prepared for CSIR. Lakeside: ASHA Consulting (Pty) Ltd.

Orton, J. 2020d. Heritage Impact Assessment: Basic Assessment for the proposed power line and electrical infrastructure to support the proposed Komas Wind Energy Facility near Kleinsee, Namakwa Magisterial District, Northern Cape Province. Report prepared for CSIR. Lakeside: ASHA Consulting (Pty) Ltd.

Orton, J. & Halkett, D. 2005. A report on the archaeological mitigation program at De Beers Namaqualand Mines, August to September 2004. Unpublished report prepared for De Beers Consolidated Mines NM. University of Cape Town: Archaeology Contracts Office.

Orton, J. & Webley, L. 2012a. Heritage impact assessment for the proposed ESKOM Kleinsee Wind Energy Facility, Namakwaland Magisterial District, Northern Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Diep River: ACO Associates cc.

Orton, J. & Webley, L. 2012b. Heritage impact assessment for the proposed Project Blue Wind Energy Facility, Kleinzee, Namakwa Magisterial District, Northern Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Diep River: ACO Associates cc.

Raper, P.E. n.d. Dictionary of southern African place names. Accessed online at https://archive.org/stream/DictionaryOfSouthernAfricanPlaceNames/SaPlaceNames_djvu.txt on 19 June 2015.

Rebelo, E. 2003. Namaqualand Mine, Northern Cape. Mining Weekly 13 March 2003. Accessed online at: http://www.miningweekly.com/print-version/namaqualand-mine-northern-cape-2003-03-13 on 27th August 2017.

SAHRA. 2007. Minimum Standards: archaeological and palaeontological components of impact assessment reports. Document produced by the South African Heritage Resources Agency, May 2007.

Van Pletzen-Vos, L. & Rust, R. 2011. Phase 1 Archaeological Impact Assessment Portion 5, Farm Kamaggas No 200, Proposed Nama Khoi Cemetery. Unpublished report for PHS Consulting.

Webley, L. 1992. The history and archaeology of pastoralist and hunter-gatherer settlement in the north-western Cape, South Africa. Unpublished PhD thesis: University of Cape Town.

Webley, L. 2002. The re-excavation of Spoegrivier Cave on the West Coast of South Africa. *Annals of the Eastern Cape Museums* 2: 19–49.

Webley, L. 2007. Archaeological evidence for pastoralist land-use and settlement in Namaqualand over the last 2000 years. *Journal of Arid Environments* 70: 629–640.

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
Telephone: (021) 788 1025
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.

APPENDIX 2 – Site Sensitivity Verification

A site sensitivity verification was undertaken in order to confirm the current land use and environmental sensitivity of the proposed project area. The details of the site sensitivity verification are noted below:

Date of Site Visit	20 November 2022
Specialist Name	Dr Jayson Orton
Professional Registration Number	ASAPA: 233; APHP: 043
Specialist Affiliation / Company	ASHA Consulting (Pty) Ltd

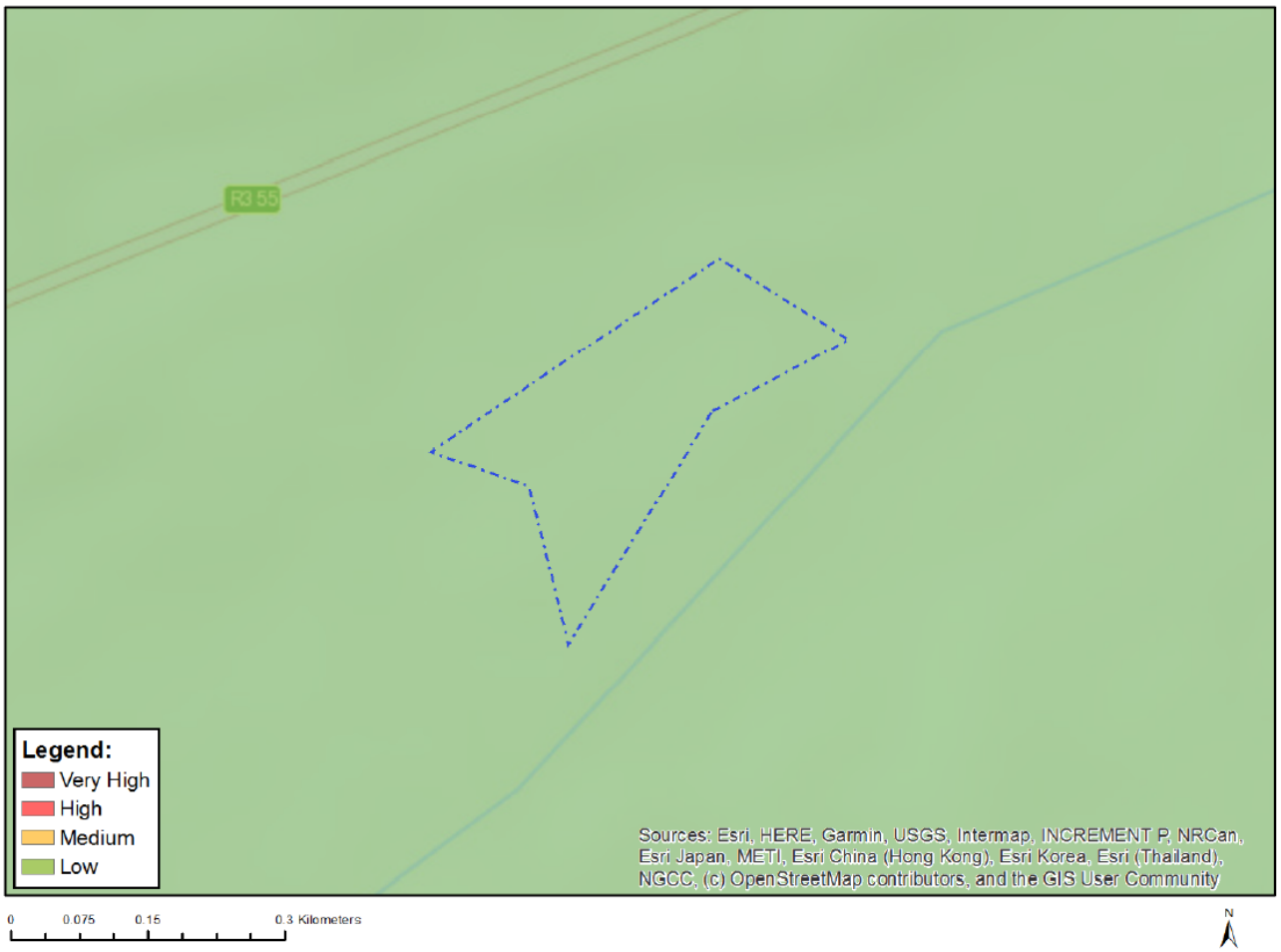
- Provide a description on how the site sensitivity verification was undertaken using the following means:
(a) desk top analysis, using satellite imagery;
(b) preliminary on -site inspection; and
(c) any other available and relevant information.

Initial work was carried out using satellite aerial photography in combination with the author's accumulated knowledge of the local landscape. This was used to determine whether any areas were likely to be sensitive. Subsequent fieldwork served to ground truth the site, including areas identified as potentially sensitive. Desktop research was also used to inform on the heritage context of the area. This information is presented in the report (Sections 5.2.1 and 5.4.1).

- Provide a description of the outcome of the site sensitivity verification in order to:
(a) confirm or dispute the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.; and
(b) include a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity.

The map below is extracted from the screening tool report and shows the archaeological and heritage sensitivity to be low. The site visit confirmed that the site is of low sensitivity. A photographic record and description of the relevant heritage resource is contained within the impact assessment report.

The lack of a palaeontology map in the screening tool report suggests low sensitivity. There have been mapping errors on the SAHRIS Palaeosensitivity map which indicates the site as zero sensitivity, with the area better considered as medium sensitivity, the assessment has shown that in practice the riverine sands are of low sensitivity and the specialist thus agrees with the screening tool report.



Map 1: Archaeology and cultural heritage theme map.