

# FINAL REPORT

## TEST EXCAVATIONS AT FARM 664 ROOIKLIPPE, KLEINZEE, NAMA KHOI MUNICIPALITY NORTHERN CAPE

SAHRA CASE ID 12651

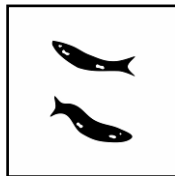
Prepared for:

**Port Nolloth Sea Farms Ranching Pty Ltd**

On behalf of:

**SOUTH AFRICAN HERITAGE RESOURCES AGENCY**

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## Executive summary

### 1. Introduction

ACRM was instructed by the South African Heritage Resources Agency (SAHRA) to conduct test excavations at Site 8221 on Farm No. 664 Rooiklippe, near Kleinzee in the Northern Cape.

The purpose of the excavation is to establish the presence/absence of sub-surface archaeological deposits on the property, and to determine their significance.

Excavations at Site 8221 followed a Heritage Impact Assessment (HIA) for a proposed abalone processing facility on Farm No. 664, conducted on behalf of Port Nolloth Sea Farms Ranching (Pty) Ltd (the Applicant), in August 2018.

### 2. Description of the proposed development

The proposed abalone processing facility includes holding tanks, fuel tanks, sheds, septic tanks, packing room, diver's quarters, and powerline discharge pipes. The existing seawater intake infrastructure on the property will also be upgraded. Electricity will be provided by the Nama Khoi Municipality via an existing servitude. The site will be fenced for security purposes. The extent of the footprint area is about 2.0ha, but not all of the site, will be developed.

### 3. Heritage resources identified

Six test pits were shovel excavated in the area around the proposed divers quarters, where dispersed scatters of marine shellfish and a few pieces of artefactual stone (i. e. Site 8221), were previously recorded. This area was chosen to sample as it is a relatively undisturbed portion of the property, which is severely degraded as a result of historical diamond mining.

Test Pits 1, 3, 4, 5 and 6 were excavated to an average depth of 1.15m below the surface, reaching bedrock in each of the holes, while Test Pit 2 was excavated onto bedrock at 70cm below the surface.

Apart from the loose topsoil deposits (between 10 & 20cm thick), comprising roots/rootlets, and tiny fragments of undiagnostic shellfish, the deposits across all six test pits comprise homogenous yellow/brown coloured beach sands, with no discernable stratigraphy present in any of the test pits excavated.

Quantifiable remains of marine shellfish were located in a single  $\pm$  20-30cm thick, unconsolidated layer of *in-situ* shell between 50 and 85cm below the surface, with higher densities occurring in Test Pits 1, 4 and 6, although this was not visible in any of the side walls of the excavations. The shellfish deposits are dominated by *Cymbula granatina* and *Cymbula granularis*, with some *Scutellastra argenvillei* and *Scutellastra Barbara* also present. Some whelk (*Burnupena sp.*) and Perlemoen (*Haliotis*) were also found, but no Black Mussel (*Choromytilus meridionalis*) was encountered.

The archaeologist Jayson Orton (2012, 2017) has argued, that the majority of sampled sites in northern Namaqualand represent single occupation sites, often displaying only a single coherent *in situ* shell midden layer, and small assemblages of cultural remains. He also

notes that 'more broadly', earlier, mid Holocene assemblages favoured *C. granatina* over *C. granularis*, while after AD 1300 the reverse pattern was more common.

The lithic assemblage generated from the test excavation was relatively large ( $\pm$  109 pieces of stone were recovered), with the majority of pieces comprising small milky white quartz chips and chunks. Several utilized flakes, a banded agate flake (Test Pit 6), a few minimal cores, and a worked out bipolar core were also recovered. No formal retouched or backed pieces of stone were found. A miscellaneous grindstone fragment came from Test Pit 6. Some 63% of the lithic assemblage came from Test Pits 3 and 4.

According to Orton (2017), raw material frequencies dominated by quartz are also a characteristic feature of assemblages associated with mid-late Holocene single occupation sites in northern Namaqualand. It is therefore tentatively suggested that the artefactual assemblage from Site 8221 is comparable with Orton (2017) Group 2 lithic assemblage, where retouched tools in cryptocrystalline silica (or CCS) are virtually absent.

A single ostrich eggshell bead (Test Pit 1), an opening for an ostrich eggshell water container (Test Pit 3) and 15 pieces of ostrich eggshell (mostly from Test Pit 3) were also recovered. No pottery was found recovered in any of the test pits excavated, where a low density of potsherds is also a feature of Group 2 lithic assemblages (Orton 2017).

A few fragments of tortoise, rodent, and bird bone was found in the sorting trays. Eleven crayfish mandibles were also recovered.

#### 4. Anticipated impact

The results of the test excavations indicate that construction of the divers quarters on Farm 664 Rooiklippe will not impact on important buried archaeological deposits. Excavations for the building foundations will not be more than 50cm below the surface, where unstratified *in situ* shell midden deposits were encountered between 50-85cm below the surface.

Unmarked Khoisan burials may, however, be uncovered during excavations for building foundations and services (i. e. septic tanks), across the entire footprint area of the proposed development.

The probability of encountering indigenous human remains in the development site is deemed to be moderately high.

#### 5. Conclusion

No significant archaeological deposits were generated during test excavations at Site 8221 on Farm 664 Rooiklippe, near Kleinzee in the Northern Cape. The lithic assemblage is dominated by quartz, confirming observations made by Orton (2012, 2017) for mid-late Holocene sites in northern Namaqualand. In the absence of any radiocarbon dates, Site 8221 cultural assemblage is tentatively assigned to Orton's (2017) Group 2 lithic assemblage.

Shellfish densities were overall very low across all the test pits excavated, where the dominant shellfish comprised a mix of *C. granatina* and *C. granularis*, further confirming observations made by Orton (2017) across numerous shell middens sampled in northern Namaqualand.

*6. Recommendations*

Regarding a proposed abalone processing and holding facility on Farm 664 Rooiklippe near Kleinzee, the following recommendations are made:

1. No further archaeological mitigation is required.
2. No archaeological monitoring is required during the construction phase. Monitoring will be done by the site manager who has been briefed by the consulting archaeologist.
3. If any unmarked human remains or ostricheggshell caches, for example, are uncovered or exposed during construction activities, all work must be halted and immediately reported to the archaeologist (J Kaplan 0823210172). Burials must not be disturbed or removed from the site until inspected by a professional archaeologist.

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## 1. INTRODUCTION

ACRM was appointed by Port Nolloth Sea Farms (Pty) Ltd to conduct test excavations on Farm No. 664 Rooiklippe (Nama Khoi Municipality), near Kleinsee in the Namaqualand region of the Northern Cape (Figure 1).

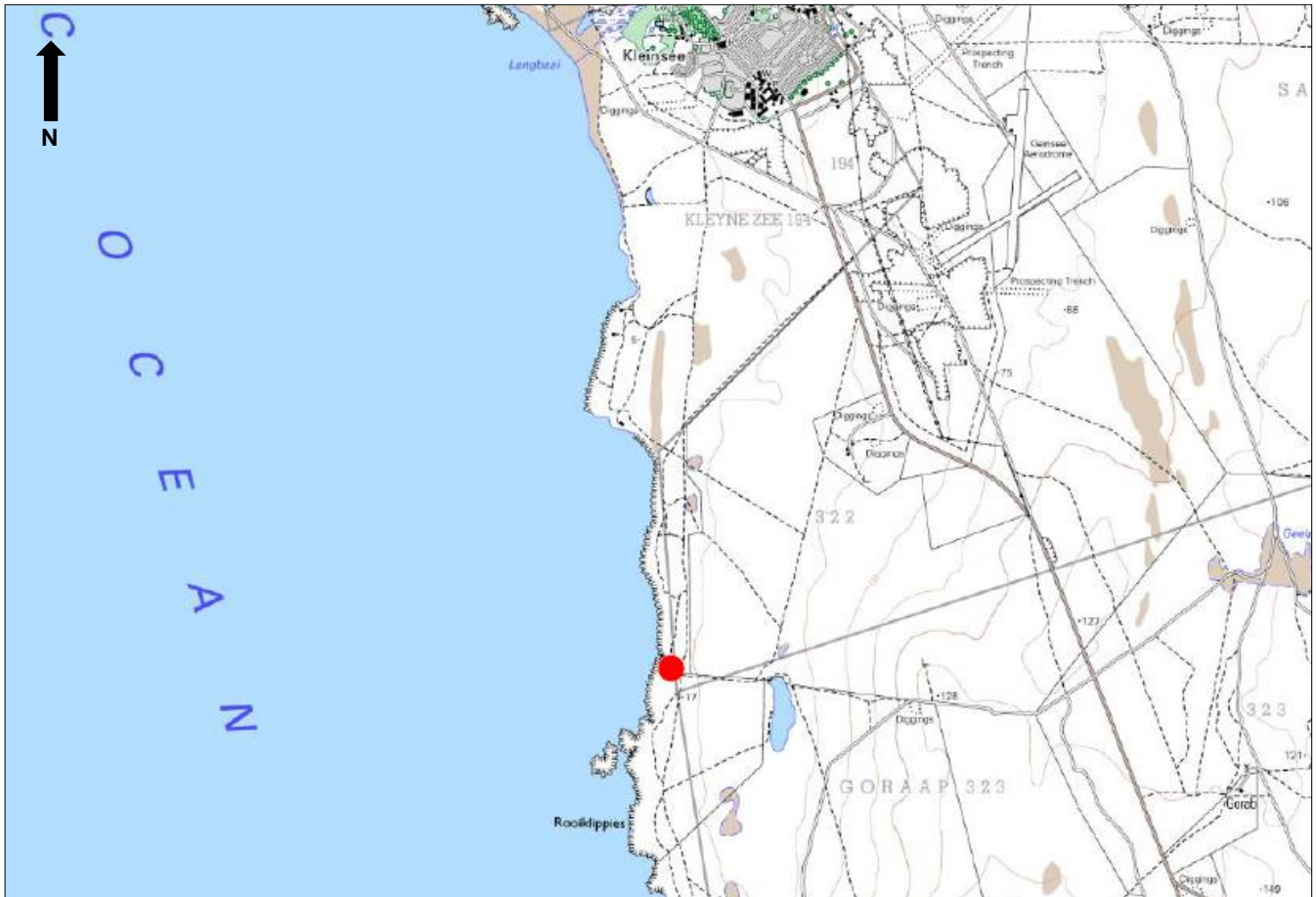


Figure 1. Locality Map. 1:50 000 topo-cadastral sheet (2916DB & 2917CA Kleinsee). The red polygon indicates the location of the development site about 6kms south of Kleinsee

## 2. DEVELOPMENT PROPOSAL

Port Nolloth Sea Farms Ranching (Pty) Ltd currently ranches abalone in the Northern Cape Concession Area 3 and is in need of an abalone holding and processing facility to support the growing abalone ranching business.

Juvenile abalone will be sourced in Hermanus and will be acclimatized and reared in holding tanks for a few months at the proposed holding facility south of Kleinsee, until they are ready to be seeded. Concurrently, harvested abalone will also be kept in the holding tanks until enough abalone have been harvested for shipment to the target market.

Most of the proposed infrastructure will be located in previously disturbed areas. The extent of the proposed development site is about 2.0ha, but not all of the site, will be developed.

A layout plan for the proposed facility is shown in Figure 2.

## Test excavations, Farm 664 near Kleinzee, Northern Cape

As part of the development, the (existing) seawater intake infrastructure will be upgraded (a pump house and intake lines already exist due to previous mining activities in the area). Effluent originating from abalone tanks is known to be very clean with low concentrations of nutrients and waste products. It is therefore proposed that the effluent outfall channel will be open for effective maintenance and that the effluent is discharged at the high-water mark as is the practice with many other abalone aquaculture facilities.

A processing facility is also proposed, where abalone can be de-shelled, gutted, dried or frozen and packed for export. The abalone waste will amount to approximately 3200kg per year and will be discarded at a registered landfill site. Amenities for employees including sheds, diver's quarters and security staff will also be constructed. In addition to a demarcation fence around the leased area, a security fence will be erected around the abalone holding tanks.

Electricity will be provided by the Nama Khoi Municipality via the existing servitude. The applicant also proposes to build an electricity transformer in the south-eastern corner of the proposed site. The abalone holding facility relies on fresh seawater supply to operate successfully and has minimal potable water requirements, which is supplied by the applicant as required.

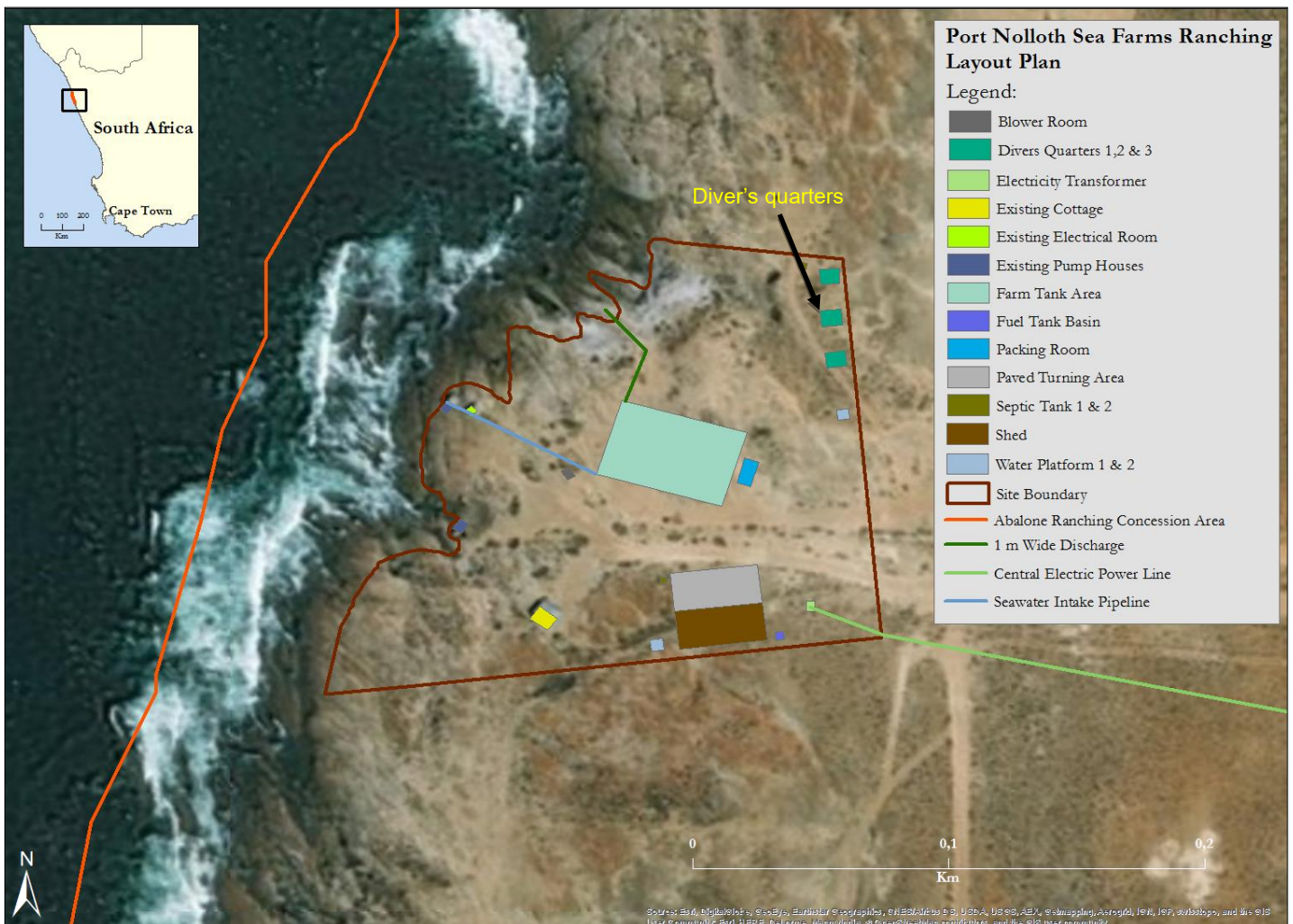


Figure 2. Site development plan for the abalone processing and holding facility on Farm 664. Note the diver's quarters in the top right-hand corner of the development site, which is the focus of archaeological test excavations.

### 3. BACKGROUND

An Archaeological Impact Assessment (or AIA) for the proposed abalone processing facility on Farm 664 was conducted by ACRM (Kaplan 2018), on behalf of Port Nolloth Sea Farms Ranching (Pty) Ltd (the Applicant), in August 2018, in which the following observations were made:

- Traces of archaeological deposits were recorded in the footprint area of the development site but occur mostly in a degraded context as a result of historical diamond mining, which is widespread in the surrounding area.
- Well preserved shell midden deposits, stone flakes and pottery were recorded south of the property boundary fence in the south western portion of the proposed site, in the Strandveld Conservation Area.

Key recommendations included the following:

1. Shovel testing to be conducted in the north eastern portion of the site (the proposed location for the diver's quarters), to determine the significance of sub surface archaeological deposits. Shovel testing is an accepted archaeological practice, as a means of determining the depth and variability of archaeological remains (both subsistence & cultural), in order to determine the extent of further archaeological investigations of specific areas that may be required on the site.
2. The fence alongside the southern boundary of the property must be repaired and act as a barrier where well-preserved archaeological deposits were recorded.

The AIA report was submitted to the South African Heritage Resources Agency (SAHRA), who endorsed the recommendations<sup>1</sup>.

ACRM was instructed by the applicant Port Nolloth Sea Farms Ranching (Pty) Ltd, to action the recommendations.

The test excavations were conducted under a permit (CaseID: 16080) issued by SAHRA to ACRM.

This report presents the results of the excavations.

### 4. SITE CONTEXT AND DESCRIPTION

Farm 664 Rooiklippe is located on the northern Namaqualand coast, ± 6kms south of Kleinzee in the Northern Cape (Figure 3). The property has been heavily impacted by historical diamond mining and constitutes a severely transformed landscape (Figure 4). Existing infrastructure includes an old generator room, a pump house, overhead powerline lines, gravel roads, and a wooden shack.

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<sup>1</sup> SAHRA letter dated 18 October, 2018. CaseID 12651



Test excavations, Farm 664 near Kleinzee, Northern Cape



Figure 3. Google Earth map indicating the proposed development site (red polygon) in relation to the town of Kleinzee



Figure 4. Close up Google Earth satellite image of the subject property. Note the extremely degraded condition of the site. Polygon indicates the location of the test excavations

## 5. TEST EXCAVATION

Six test pits were shovel excavated in the area around the proposed divers quarters, where dispersed scatters of marine shellfish and a few pieces of artefactual stone (i. e. Site 8221), were previously recorded (Kaplan 2018).

This area was chosen to sample as it is a relatively undisturbed portion of the property, which is severely degraded as a result of historical diamond mining (Figure 5).

Test excavations took place over a single day, on 11<sup>th</sup> March 2021.

The archaeologist was assisted by Darryn De Vries and Tristen Wyers both employees of Port Nolloth Sea Farms Ranching (Pty) Ltd.

All the test pits were hand excavated using a spade, and handheld trowel. The excavated deposit was sieved through a 3mm wire mesh sieve and sorted for shellfish, cultural and organic remains.

Shellfish deposits from each of the excavated 30cm spits across all six test pits, were sieved and weighed. None of the shellfish was collected.

All cultural remains sorted were collected, labelled and bagged.



Figure 5. Panoramic view facing south, with the test excavations spoil dumps visible in the foreground of the plate. The generator room, powerline servitude and old pump house can be seen in the distance.

## 6. DESCRIPTION OF HERITAGE RESOURCES

This section describes the details of the Site 8221 test excavations (Table 1).

Figure 6 indicates the location of the six test holes.

Photographs of all of the test holes are illustrated in Appendix A.



Figure 6. Google satellite map illustrating the position of Test Pits 1-6

Test Pit	Surface observations	Sub-surface observations	Summary of sub surface shell content	Cultural & subsistence remains
TP1	Loose sand, with a few isolated fragments of shellfish, 2 quartz chips/chunks	0-10cm – loose dry sand with tiny pieces of shell, and rootlets. No identifiable shellfish	5 sieved buckets = less than 20g of shellfish	0-10cm – OES bead, 3 quartz chunks, 1 crayfish mandible
		10-51cm – orange coloured dune sand	5 sieved buckets = 585g of shell dominated by large whole limpets ( <i>C. granularis</i> & <i>C. granatina</i> )	3 quartz, chips, 2 crayfish mandible, tooth enamel, small reptile
		51-70cm – orange coloured dune sand	5 sieved buckets = 528g of shell dominated by <i>C. granularis</i> & <i>C. granatina</i>	6 quartz, chunks, broken quartzite pebble
		70-1.10m – orange coloured dune sand	5 sieved buckets = 212g of shell dominated by limpets.	No cultural remains recovered
		1.10m – bedrock		No cultural remains recovered

Test excavations, Farm 664 near Kleinzee, Northern Cape

TP2	Loose windblown sands with a few isolated fragments of shellfish, quartz chip	<p>0-10cm – loose windblown sands with tiny bits of shellfish, fragments of limpet shell, rootlets</p> <p>10-69cm – rootlets in orange coloured dune sand, tiny pieces of rotted quartzite stone</p> <p>69cm - bedrock</p>	<p>5 sieved buckets = less than 20g of shellfish</p> <p>5 sieved buckets = 311g of shell dominated by <i>C. granatina</i> &amp; <i>C. granularis</i>. Some <i>S. argenvillei</i> also present.</p>	<p>No cultural remains recovered</p> <p>3 quartz, pebbles/chunks, 2 quartz flakes, 3 quartz chunks, 6 quartz chips</p> <p>No cultural remains recovered</p>
TP3	Windblown sands with thin scatter of shell	<p>0-19cm – mix of windblown sands, tiny roots/rootlets, fragments shell</p> <p>19-46cm – Orange coloured sands. Some rootlets, no discernible stratigraphy</p> <p>46-73cm – orange coloured sand. No discernible stratigraphy</p> <p>73-1.10m – orange coloured dune sand. No discernible stratigraphy</p> <p>1.10m - bedrock</p>	<p>Fragments of limpets (<i>S. argenvillei</i>). 5 sieved buckets = less than 60g of shellfish</p> <p>5 sieved buckets = 181g of shell dominated by <i>C. granularis</i> and <i>C. granatina</i>. One fragment of perlemoen (<i>Haliotis</i>) was found.</p> <p>5 sieved buckets = 894g of shell dominated by limpets. Also, some large <i>S. argenvillei</i></p> <p>5 sieved bucket = 136g of shell, mostly small fragments of limpet</p>	<p>No cultural remains recovered</p> <p>11 OES fragment, 8 quartz chunks/chips, 1 quartz flake, small bird bone</p> <p>Fragment of opening of OES water container, 2 crayfish mandible, large quartz cortex pebble/flake scar, 13 quartz chips &amp; small chunks,</p> <p>No cultural remains recovered</p> <p>No cultural remains recovered</p>
TP4	Loose, windblown sand, with bits of shell fragments	<p>0-25cm – mix of windblown sands, with rootlets and tiny fragment of shell</p> <p>25-58cm. Orange coloured sands, sterile, no discernible stratigraphy, some charcoal, tiny roots</p>	<p>Mostly a diagnostic shell, with a few fragments of limpet. 5 sieved buckets = less than 40g of shellfish</p> <p>5 sieved buckets = 930g shell, with 80% in final bucket. Mostly <i>C. granatina</i> and <i>C. granularis</i>, with some <i>S. argenvillei</i></p>	<p>26 quartz, chips, and 3 small quartz chunks, 1 crayfish mandible</p> <p>Large quartz cortex pebble /single flake scar, 8 small quartz chips, 2 crayfish mandibles.</p>
		58-1.0m. Orange coloured sands, sterile, tiny fragments of shell.	5 sieved buckets = 84g shell. Dominated by <i>C. granatina</i> and <i>C. granularis</i>	7 quartz chips, 1 utilized quartz flake
		1.0-1.17m – sterile sand with tiny pieces of shell &	Insignificant amounts of a-diagnostic shell	No cultural remains recovered

Test excavations, Farm 664 near Kleinzee, Northern Cape

		quartz 1.17cm bedrock		No cultural remains recovered
TP5	Soft, loose sands with fragments of shellfish	0.20cm – roots/rootlets, twigs, in loose sandy matrix and tiny shell fragments  20-54cm – small fragments of shellfish, including med-large sized in sterile orange coloured dune sand  54-93cm – large whole shell in sterile orange/yellow dune sand  93-1.13m- tiny fragments of shellfish, rotted bedrock	Insignificant shellfish fragments  Shellfish densities low dominated by small & a few large whole <i>C. granatina</i> & <i>C granularis</i> S.  95% dominated by large whole <i>C. granatina</i> & <i>C granularis</i> . 5 sieved buckets – 603g	No cultural remains recovered  ± 12 small, rotted quartz chips, 1 ? misc. grindstone fragment, small bird bone, 2 crayfish mandibles  1 small quartz chunk, 1 tortoise bone fragment  No cultural remains recovered
TP6		0-20cm  20-47cm  47-77cm  77-1.19m bedrock	Tiny shell fragments  Dominated by large whole limpets ( <i>C. granatina</i> & <i>C granularis</i> ), but overall, densities very low  5 sieved buckets – 664g shellfish dominated by <i>C. granatina</i> & <i>C granularis</i> . Fragment of burnt shell, some rotted bedrock  One large limpet ( <i>S. argenvillei</i> )	No cultural remains recovered  No cultural remains recovered  Utilised banded agate flake, large clear/vein quartz flake  Single quartz chip

Table 1. Description of the archaeological deposits: Farm 664 Kleinzee

## 7. RESULTS OF THE TEST EXCAVATIONS

Six test pits were excavated in the north eastern corner of the property, where the proposed divers quarters will be built. Test Pits 1, 3, 4, 5 and 6 were excavated to an average depth of 1.15m below the surface, reaching bedrock in each of the test pits. Test Pit 2 was excavated onto bedrock at 70cm below the surface.

### 7.1 Cultural remains

The lithic assemblage generated from the test excavations was relatively large (± 109 pieces of stone was recovered), with some 63% of the artefactual stone coming from Test Pits 3 and 4. The vast majority of the pieces comprised milky white, quartz chips and small pieces of stone, while a few clear quartz utilized flakes and one banded agate utilized flake (TP6) were also recovered. Several flaked pieces of quartz, two minimal cores and a worked out

bipolar core (TP4) were also found. A miscellaneous grindstone fragment was recovered from TP5. No formal retouched tools or backed pieces were recovered from the excavations.

Quartz is locally available and seams of quartz were noted on the property and in the surrounding area, which would have been targeted by hunter-gatherers as a source of raw material for making stone tools. Orton (2017, 2012) has shown that assemblages dominated by quartz are the characteristic feature of lithic assemblages associated with mid-late Holocene single occupation sites in northern Namaqualand. In the absence of radiocarbon dates, Site 8221 cultural assemblage is tentatively assigned to Orton (2017) Group 2 lithic assemblage, where retouched tools in cryptocrystalline silica (or CCS) are virtually absent.

Organic cultural remains recovered included a single ostrich eggshell bead (TP1) less than 3mm diameter, 15 fragments of ostrich eggshell (the majority from TP3), while a fragment from the opening from an ostrich eggshell water container was recovered from TP3.

No pottery was recovered from any of the test pits, but this could be a function of the sample size excavated.

## 7.2 Subsistence remains

Overall, shellfish densities from the excavations were very low. Seventy buckets of sieved deposit from each of the excavated test pits generated the following densities:

TP1: 1345g  
TP2: 311g  
TP3: 1271g  
TP4: 1054g  
TP5: 603g  
TP6: 664g .

According to Smith and Mutti (2009), shellfish densities greater than 1000g p/bucket represents a significant site.

Quantifiable remains of marine shellfish were found in a  $\pm$  20-30cm thick, unconsolidated, unstratified layer of *in-situ* shell between 50 and 85cm below the surface, with higher densities occurring in Test Pits 1, 4 and 6, although this was not visible in any of the side walls of the excavations. The shellfish deposits across all six test pits appear to be dominated by *Cymbula granatina* and *C. granularis*, with some *Scutellastra argenvillei* and *C. Barbara* also present. Some whelk (*Burnupena sp.*) and Perlemoen (*Haliotis*) were also found.

Limpets occur in low to mid tidal habitats, suggesting that Later Stone Age hunter-gatherer-foragers scheduled their visits to the shoreline during this time. Interestingly, no Black Mussel (*Choromytilus meridionalis*), which occur abundantly on exposed rocks and reefs in the lower mid-tidal region, was recovered from any of the test pits, indicating that the hunter-gatherer foragers were specifically focussed on collecting limpets, confirming an observation made by Orton (2017).

A few fragments of burnt shellfish were recovered from TP6, while small pieces and flecks of charcoal were recovered from TP3, TP5 and TP6, suggesting that shellfish was either cooked (possibly in pots), or in an open pit, neither of which were encountered during the excavations.

Test excavations, Farm 664 near Kleinzee, Northern Cape

A small sample of marine and terrestrial fauna was recovered from the excavations, including one tortoise bone fragment (TP5), two pieces of bird bone (TP3 & TP5), and small rodent. Eleven crayfish mandibles were also found (refer to Table 1).

Figures 7-14 illustrates the archaeological resources that were recovered from the test holes.



Figure 7. Cultural & subsistence remains from Test Pit 1.  
Scale in cm



Figure 8. Cultural remains from Test Pit 2. Scale is in cm



Figure 9. TP 3 Stone artefacts. Scale is in cm





Figure 10. TP3 Ostrich eggshell water container opening, bird bone & crayfish mandibles below. Scale is in cm



Figure 11. TP4. Stone assemblage. Scale is in cm



Figure 12. TP5. Stone assemblage. Scale is in cm



Figure 13. TP6. Stone assemblage. Scale is in cm



Figure 14. TP6. Miscellaneous grindstone fragment.  
Scale is in cm

## 8. DISCUSSION

Orton (2012, 2017) has argued that the majority of sampled sites in northern Namaqualand represent single occupation sites, often displaying only a single coherent *in situ* shell midden layer, and small assemblages of cultural remains. He also notes that 'more broadly', earlier, mid Holocene assemblages favoured *C. granatina* over *C. granularis*, while after AD 1300 the reverse pattern was more common. At Site 8221, while shellfish densities were overall very low across all six test pits, the dominant shellfish, encountered in a 25-30cm layer of unconsolidated shell, comprises a mix of *C. granatina* and *C. granularis*, confirming the observations made by Orton.

The lithic assemblage generated from the test excavation was relatively large ( $\pm$  109 pieces of stone were recovered), with the majority of pieces comprising small milky white quartz chips and chunks. Several utilized flakes, a banded agate flake (Test Pit 6), a few minimal cores, and a worked out bipolar core were also recovered. No formal retouched or backed pieces of stone were found. A miscellaneous grindstone fragment came from Test Pit 6.

According to Orton (2017), raw material frequencies dominated by quartz are also a characteristic feature of assemblages associated with mid-late Holocene single occupation sites in northern Namaqualand. It is therefore tentatively suggested that the artefactual assemblage from Site 8221 is comparable with Orton (2017) Group 2 lithic assemblage, where retouched tools in cryptocrystalline silica (or CCS) are virtually absent.

## 9. ANTICIPATED IMPACTS

The results of the test excavations indicate that construction of the divers quarters on Farm 664 Rooiklippe will not impact on important buried archaeological deposits. According to the Site Manager, Darryn De Vries, excavations for the divers quarters foundations will not be more than 50cm below the surface, where unstratified shell midden deposits were encountered 50-85cm below the surface.

There is, however, always the possibility that unmarked Khoisan burials may be uncovered during excavations for building foundations, and services (i. e. septic tanks, water & sewer pipelines), across the development site. It is noted that several burials have been uncovered at the mouth of the Buffelsrivier in Kleinzee (Morris 1992) and further south at Noup (Halkett & Hart 2001). The probability of encountering indigenous human remains in the proposed development site is therefore deemed to be moderately high.

## 10. CONCLUSION

No significant archaeological deposits were generated during test excavations at Site 8221 on Farm 664 Rooiklippe, near Kleinzee in the Northern Cape. The lithic assemblage is dominated by quartz, confirming observations made by Orton (2012, 2017) for mid-late Holocene sites in northern Namaqualand. In the absence of any radiocarbon dates, Site 8221 cultural assemblage is tentatively assigned to Orton's (2017) Group 2 lithic assemblage.

Shellfish densities were overall very low across all the test pits excavated, where the dominant shellfish comprised a mix of *C. granatina* and *C. granularis*, further confirming observations made by Orton (2017) across numerous shell middens sampled in northern Namaqualand

## 11. RECOMMENDATIONS

Regarding the proposed abalone processing and holding facility on Farm 664 Rooiklippe, near Kleinzee, the following recommendations are made:

1. No further archaeological mitigation is required.
2. No archaeological monitoring is required during the construction phase. Monitoring will be done by the Site Manager who has been briefed by the archaeologist.
3. If any unmarked human remains or ostrich eggshell caches, for example, are uncovered or exposed during construction activities, all work must be halted and immediately reported to the archaeologist (J Kaplan 0823210172). Burials must not be disturbed or removed from the site until inspected by a professional archaeologist.

## 12. REFERENCES

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Test excavations, Farm 664 near Kleinzee, Northern Cape

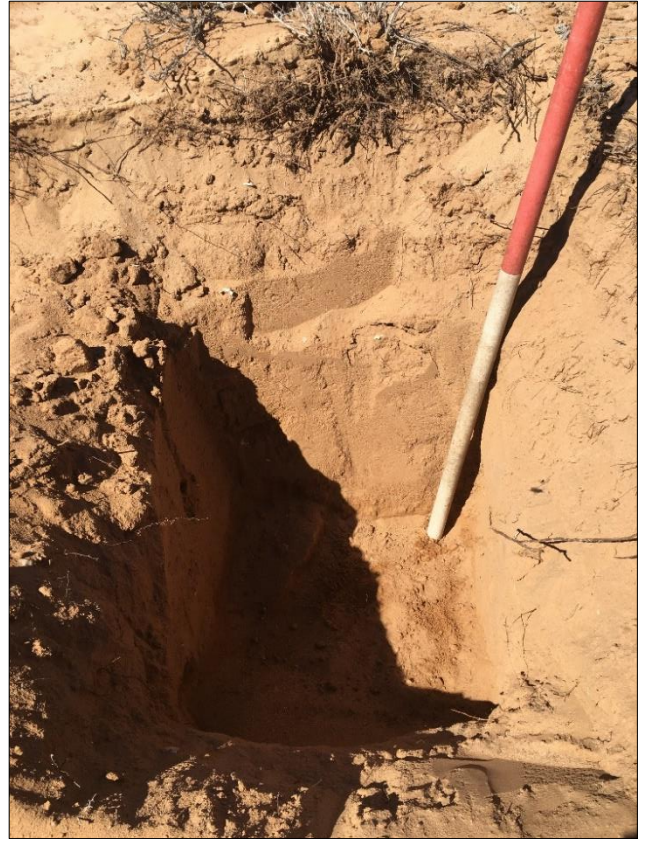
Appendix I

Photographic record of the test holes

Test excavations, Farm 664 near Kleinzee, Northern Cape



Test Pit 1



Test Pit 2



Test Pit 1



Test Pit 2

Test excavations, Farm 664 near Kleinzee, Northern Cape



Test Pit 3



Test Pit 4



Test Pit 5



Test excavations, Farm 664 near Kleinzee, Northern Cape



Test Pit 6



Test Pit 6