

**The Archaeological Surveys and Excavations of the  
Zulti North Mining Lease**

*For Richards Bay Minerals*

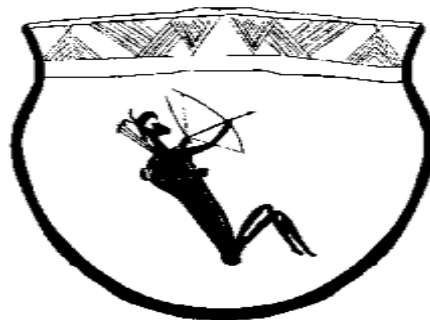
**2015 Annual Report**

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**Umlando: Archaeological Tourism and Resource  
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## INTRODUCTION

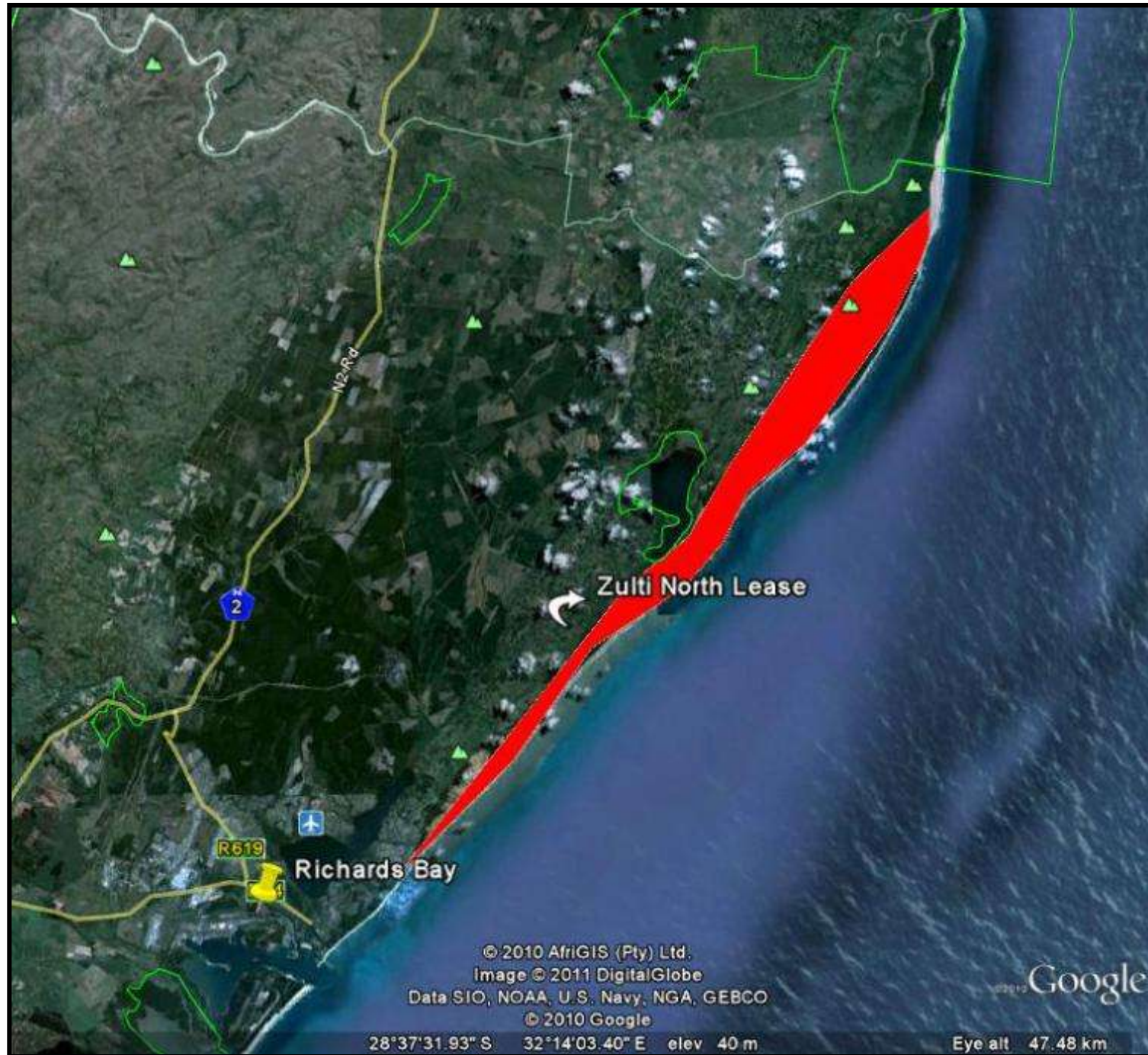
Umlando is contracted by Richards Bay Minerals (Pty) Ltd to undertake archaeological surveys and excavations in the Zulti North mining lease. The mining lease is located north of Richards Bay, KwaZulu-Natal and occurs along the eastern seaboard. (Fig.'s 1 - 2).The surveys consist of bi-monthly surveys, while excavations occur when needed. The archaeological program has been in progress at RBM Zulti North for 20 years.

A total of 9 new sites were recorded, several sites were continuously monitored and sampled, and 6 sites were excavated. It appears that MPE continues towards archaeologically sensitive areas and for the first time in several years we have recorded a site in the vicinity of MPA. MPC is entering an area that has been partially mined by dry mining. MPD did not progress far in terms of distance in 2015.

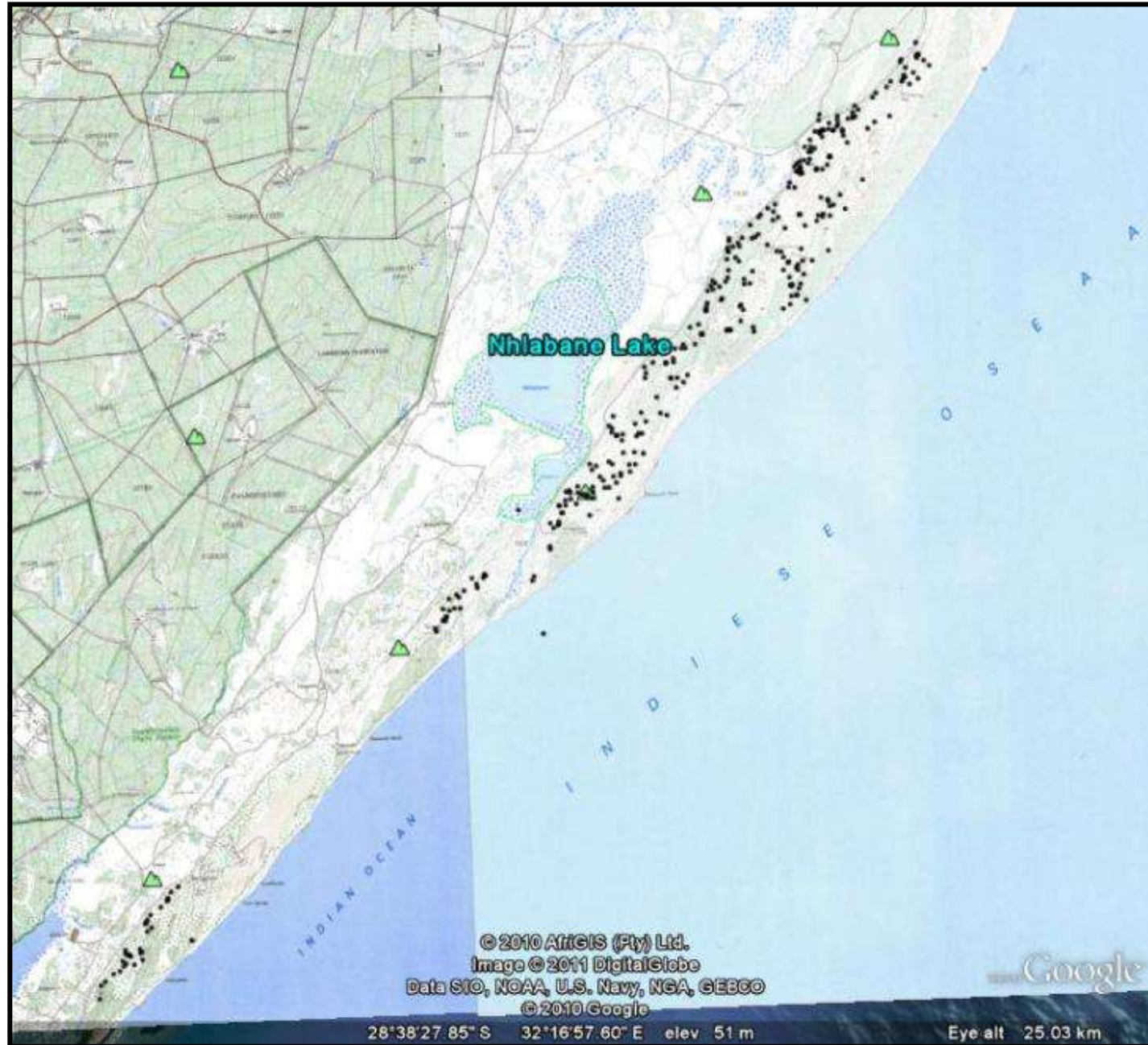
There have been at total of 439 archaeological sites recorded in the Zulti North mining lease since 1995. This number excludes large sites that have been subdivided. Most of these sites date to the Late Iron Age and Historical Period. Three San hunter-gatherer sites have been recorded and/or excavated. These sites are rare in the dune system as they tend to be ephemeral or assumed to be Iron Age sites.

The excavation results have yielded an increase in general sample size of faunal remains, shellfish species data, such as mean sizes and density, and these have relevance to contemporary research. The excavations still yield results that are different to previously excavated sites. The importance in the excavations is that there is a very tight sequence over the last 1700 years in the dune system. That is, the sites will eventually give a near continual coverage of the last 1700 years in the dunes. It is rare to cover a long continual period in a well defined area.

**Fig. 1: Location Of The Zulti North Mining Lease**



**Fig. 2: Location Of Recorded Archaeological Sites In The Mining Lease**



# METHOD

All sites are grouped according to low, medium, and high significance for the purpose of this report. Sites of low significance have no diagnostic artefacts, especially pottery. Sites of medium significance have diagnostic artefacts and these are sampled. Sampling includes the collection of artefacts for future analysis. All diagnostic pottery, such as rims, lips, and decorated sherds are sampled, while bone, stone, and shell are mostly noted. Sampling occurs on most sites. Sites of high significance are excavated and/or extensively sampled. Those sites that are extensively sampled have high research potential, yet poor preservation of features. We attempt to recover as many artefacts from these sites by means of systematic sampling, as opposed to sampling diagnostic artefacts only.

## Defining significance

Archaeological sites vary according to significance and several different criteria relate to each type of site. However, there are several criteria that allow for a general significance rating of archaeological sites.

These criteria are:

### 1. State of preservation of:

- 1.1. Organic remains:
  - 1.1.1. Faunal
  - 1.1.2. Botanical
- 1.2. Rock art
- 1.3. Walling
- 1.4. Presence of a cultural deposit
- 1.5. Features:
  - 1.5.1. Ash Features
  - 1.5.2. Graves
  - 1.5.3. Middens
  - 1.5.4. Cattle byres
  - 1.5.5. Bedding and ash complexes

### 2. Spatial arrangements:

- 2.1. Internal housing arrangements
- 2.2. Intra-site settlement patterns

2.3. Inter-site settlement patterns

### **3. Features of the site:**

3.1. Are there any unusual, unique or rare artefacts or images at the site?

3.2. Is it a type site?

3.2.1. Does the site have a very good example of a specific time period, feature, or artefact?

### **4. Research:**

4.1. Providing information on current research projects

4.2. Salvaging information for potential future research projects

### **5. Inter- and intra-site variability**

5.1. Can this particular site yield information regarding intra-site variability, i.e. spatial relationships between various features and artefacts?

5.2. Can this particular site yield information about a community's social relationships within itself, or between other communities?

### **6. Archaeological Experience:**

6.1. The personal experience and expertise of the CRM practitioner should not be ignored. Experience can indicate sites that have potentially significant aspects, but need to be tested prior to any conclusions.

### **7. Educational:**

7.1. Does the site have the potential to be used as an educational instrument?

7.2. Does the site have the potential to become a tourist attraction?

7.3. The educational value of a site can only be fully determined after initial test-pit excavations and/or full excavations.

The more a site can fulfil the above criteria, the more significant it becomes. Test-pit excavations are used to test the full potential of an archaeological deposit. These test-pit excavations may require further excavations if the site is of significance. Sites may also be mapped and/or have artefacts sampled as a form of mitigation. Sampling normally occurs when the artefacts may be good examples of their type, but are not in a primary archaeological context. Mapping records the spatial relationship between features and artefacts.



# RESULTS

## SURVEYS

Often sites are covered by vegetation during a survey and thus their extents are estimated. We continue to monitor the site until it is mined and update the records accordingly. Some sites are not photographed as the dense vegetation does not allow for any representation. All diagnostic pottery, unique finds, well preserved faunal remains, and occasionally shell is sampled from each site regardless of its significance. The sampling strategy allows for most sites to be represented since dune mining will destroy the site. It is also for this reason that sites with intact middens and/or deposit are targeted for excavations, since few of these remain intact after bush clearance.

Some sites are repeatedly surveyed during the course of the year, e.g. MPE110. MPE110 was excavated in 2014, and we were expecting human remains to occur.

## MINING POND A

### MPA 42

MPA 42 is located on the second dune cordon from the ocean. The site extends over a 10m x 20m area and consists of a surface scatter of Mzonjani pottery (Fig. 3). The site is ~10m underneath the surface and was exposed when the dune slumped during the creation of an access road. The site is of low significance, and was sampled. MPA42 will be monitored for as long as it remains possible.

**Fig. 3: MPA042**



## MINING POND C

### MPC099

MPC099 was exposed by bulldozer clearance during road construction to one of the AMS areas (fig. 4). An elephant cranium was recovered from the general area several years ago. The site is located on both sides of the access road and on the second dune cordon from the ocean. It consists of a single shell midden (mainly *P. perna* and oyster) over 5 – 10m width across the whole top of the dune along with surface pottery (red burnish) and coral.

The site is of medium significance and test-pits were done (see Excavations). It will be monitored for as long as remains possible.

**Fig. 4: MPC099**



## MINING POND D

### MPD 105

MPD 105 was exposed by bulldozer clearance and is located in between the second and third dune cordons from the ocean. The site consists of a scatter of marine shell (mainly

*P. perna* and oyster), thin-walled and decorated pottery (Mzonjani) and water worn pebbles.

The site is of low significance and no further mitigation is required, however, it will be monitored for as long as remains possible.

## MINING POND E

### MPE 164

MPE 164 is located at the top of the first dune cordon from the ocean. It consists of 2x marine shell (Mainly *P. perna* and oyster) middens on either side of the dune and a surface scatter of artefacts over a 50m x 15m area. The surface artefacts consist of undecorated pottery, bovid bone and upper grinding stones.

The site is of medium significance and will be monitored for as long as it remains possible.

**Fig. 5: MPE 164**



## **MPE 165**

MPE 165 is located at the top of the second dune cordon from the ocean. It consists of two shell middens and a surface scatter of artefacts over a 50m x 30m area. The marine shell consists mainly of *P. perna* and oyster. Other artefacts include upper grinding stones and lower grinding stones. No pottery was observed, which makes it possible that the site dates to the Stone Age, however, no stone tools were observed either.

The site is of medium significance and will be monitored for as long as it remains possible.

## **MPE 166**

MPE 166 is located in the centre of the dune system. It consists of a single shell midden of mostly *P. perna*, oyster and limpet) along with several upper grinding stones and undecorated pottery on the surface, spread across a 50m x 7m area.

The site is of low significance and no further mitigation is required, however, it will be monitored for as long as remains possible.

## **RED DUNES**

The Red Dunes occurs on the hinterland side of the main dune system. It is named as such due to the reddish colour of the sand, something noted on the 1942 1:50 000 topographical maps. We have kept the name for historical prosperity.

## **RD 029**

RD029 is located in the red dune system, on the second dune cordon from the ocean (fig. 6). The site covers an area of 50m x 50m. The site consists of a surface scatter of *P. perna*, oyster, fire-cracked stones, bovid bone, pottery, upper and lower grinding stones and iron ore.

RD029 is of low/ medium significance and has been sampled. The site will be monitored.

**Fig. 6: RD029**



**RD030**

RD030 is located in the central part of the Red Dune system (fig. 7). It is a multi-component site consisting of a surface scatter of Indeterminate Iron Age pottery, an Mzonjani potsherd (fig. 8) and a LSA Irregular core.

The site is of low significance, but will be monitored for as long as it remains possible.

**Fig. 7: RD030**



**Fig. 8: Mzonjani Potsherd, RD030**



## **AMS**

AMS refers to the Dry Mining activity areas. These occur in different areas of the dune system during the year.

### **AMS032**

AMS032 is located on/ in the first dune cordon from the ocean and was exposed by a collapsing dune. The site consists of at least one intact brown mussel midden, Mzonjani pottery on the surface and many upper grinding stones as well as white beach sandstone lower grinding stones.

AMS032 is of low/medium significance and we will sample the shell midden in the near future.

# EXCAVATIONS

We have set aside 28 days a year to undertake excavations in the dunes. This is based on 21 years experience working within the Zulti North mining lease. We normally excavate in the mornings, and then undertake sorting in the afternoon. This is especially important in summer months when the heat and humidity can impact on company health and safety policies.

The excavated material from all of the sites is summarised in Table 1. This is a brief summary of the excavated finds and is not meant to be a full analysis, as that is beyond the scope of work.

**Table 1: Summary Of Finds From Excavated Sites**

	Unit	MPC099 <sup>1</sup>	AMS030	MPD084	MPE0159	RD020
<b>dm<sup>3</sup></b>		216.75	101.3	600	285	251.3
<b>Bovid</b>	grams	3838	80	9	186	80
<b>Fish</b>	grams	0	11.5	0	432	11.5
<b>Daga</b>	grams	0		0	1034	0
<b>Other Shell</b>	grams	28	64	472	1562	64
<b>Water worn stone</b>	grams	94.5	347	1328	556	347
<b>Upper G/Stone</b>	grams	0	580	0	12	580
<b>Lower G/Stone</b>	grams	0	0	0	608	0
<b>Nassa. beads</b>	(f)	0	1	0	6	1
<b>Coral</b>	grams	0	0	0	2	0
<b>Charcoal</b>	grams	52.5	14	206	109	14
<b>Iron fragment</b>	grams	0	0	0	56	0
<b><i>P. perna</i></b>	Left (f)	320	733	988	786	733
<b><i>P. perna</i></b>	Right (f)	293	743	1104	915	743
<b><i>P. perna</i></b>	grams	3488.5	9916	22336	915	9916
<b>Pottery</b>	grams	1426	3046	484	3512	3046
<b>Total</b>	grams	9540.5	15536	26927	10691	14059

## AMS 30

AMS 30 was recorded in September 2014. It is located on the first large dune cordon from the ocean and consists of a single shell midden with a complete absence of pottery, a thick ash layer and apparently a lot of charcoal. The lack of pottery suggested that the site might date to the Late Stone Age.

<sup>1</sup> This excludes MPC99 that was a small sample excavation.

The excavation exposed the shell midden, and a cultural horizon that varied between 20cm and 30cm in thickness (fig. 9). High winds over a weekend did however cover the excavations with loose sand, and the excavations were stopped due to continual sand backfilling.

**Fig. 9: AMS 30**



### **Method**

The site was divided into 5, 1m x 1m squares (Fig. 10) around the midden that was identified in 2014. The excavation area was first levelled and stepped to prevent slumping. The squares were excavated from the outer edges first, working our way towards the obvious shell midden located roughly in the centre. The shell midden was concentrated around Square 3 and bulk samples were taken. Non-bulk samples were sorted and only the shell material was discarded. These were sorted according to basic categories as seen in Table 1.

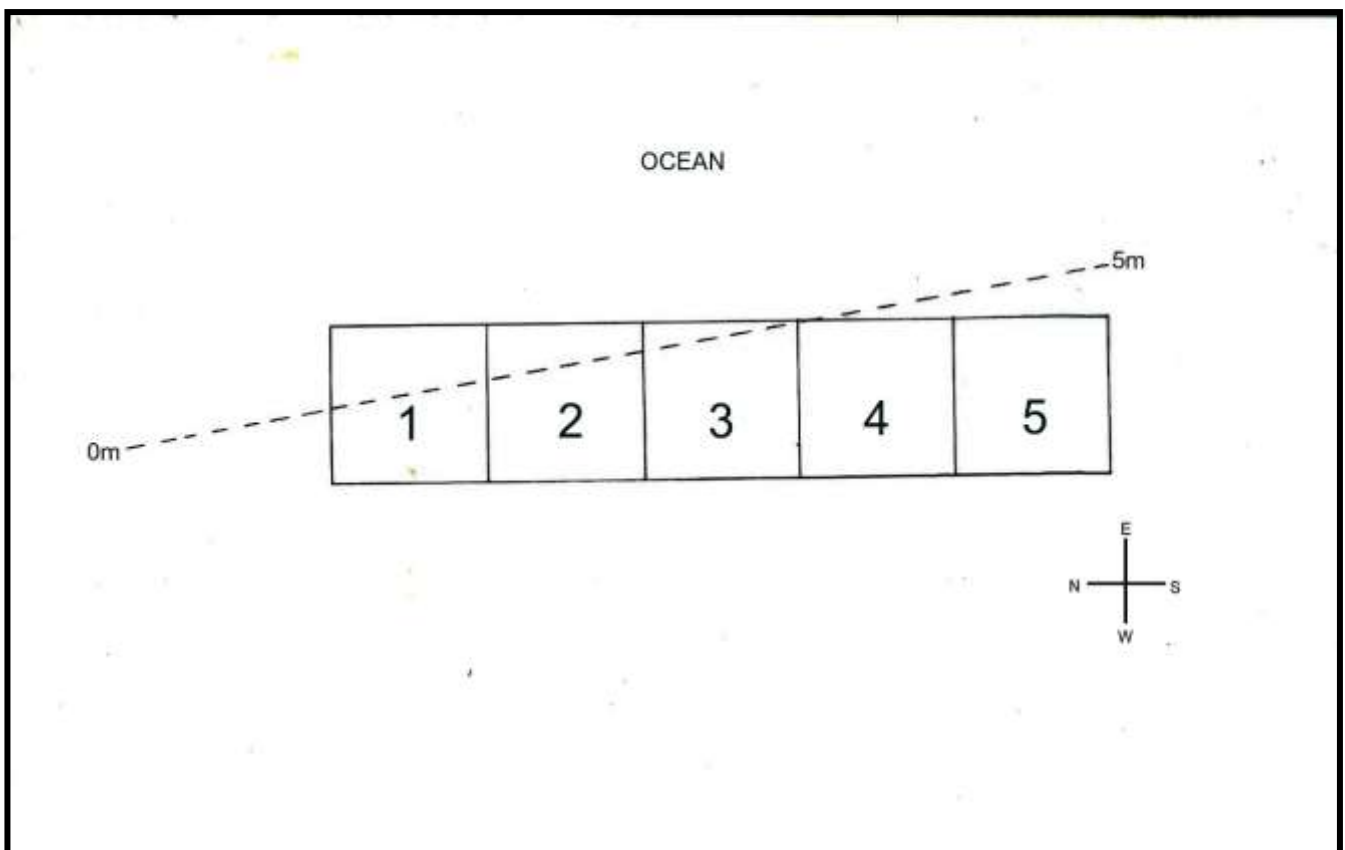


## Stratigraphy

The site went to a maximum depth of 15cm in some of the squares without shell middens. The main cultural horizon to occur at was a maximum of 5cm in depth (fig. 11). Below the midden was a hardened clay-like soil with a lot of charcoal. This appears to be some sort of insect nest. This was not excavated and the charcoal from the site cannot be used for reliable radiocarbon dating.

The site appears to be a single occupation horizon, with main midden already slumped down the dune face.

**Fig. 10: Main Excavations At AMS 30**



**Fig. 11: Sections At AMS 30<sup>2</sup>**



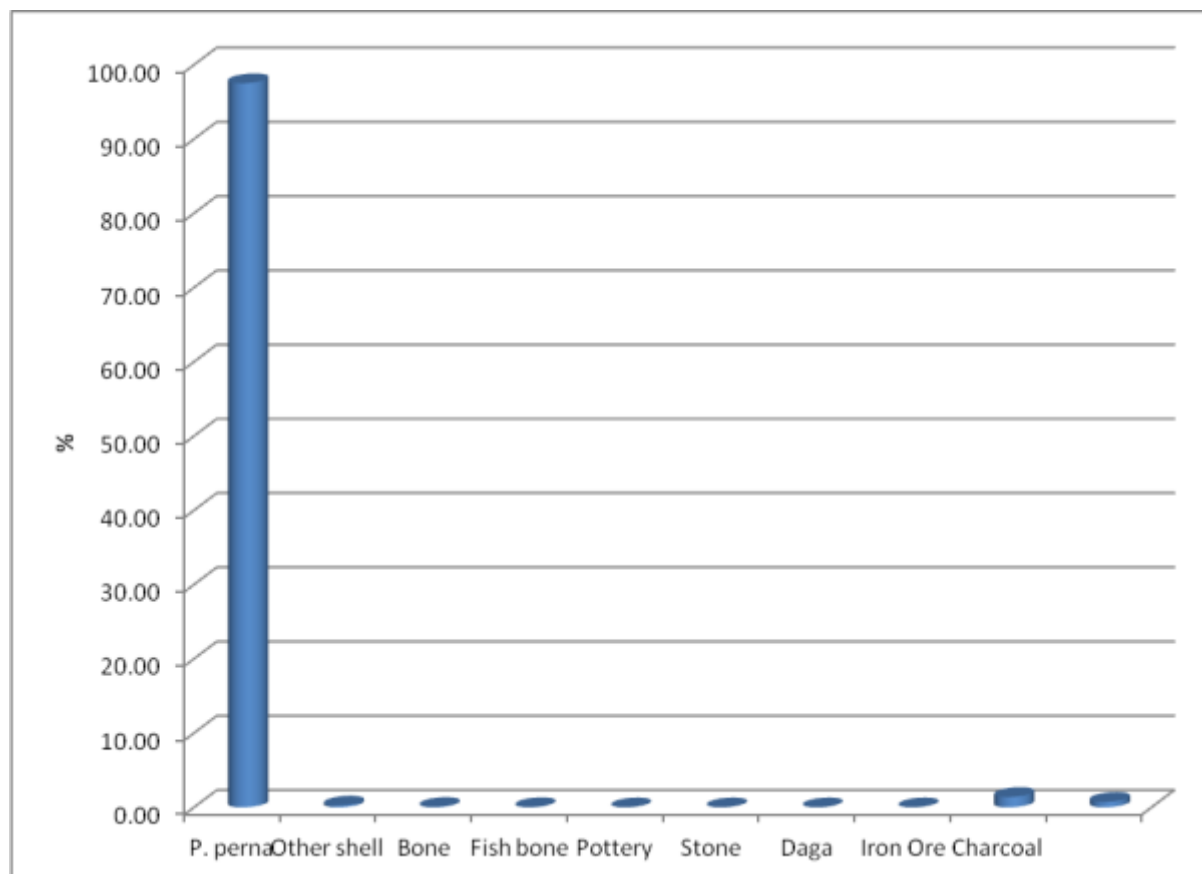
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<sup>2</sup> Scale is on the cultural horizon

## Results

Table 1 summarises the results from the excavation and these are shown in Figure 12.

**Fig. 12: Artefact Categories As Percentages Of Total Artefact Weight**



### Faunal Remains

The faunal collection consists mostly of bovid remains, and a few fish remains.

### Charcoal

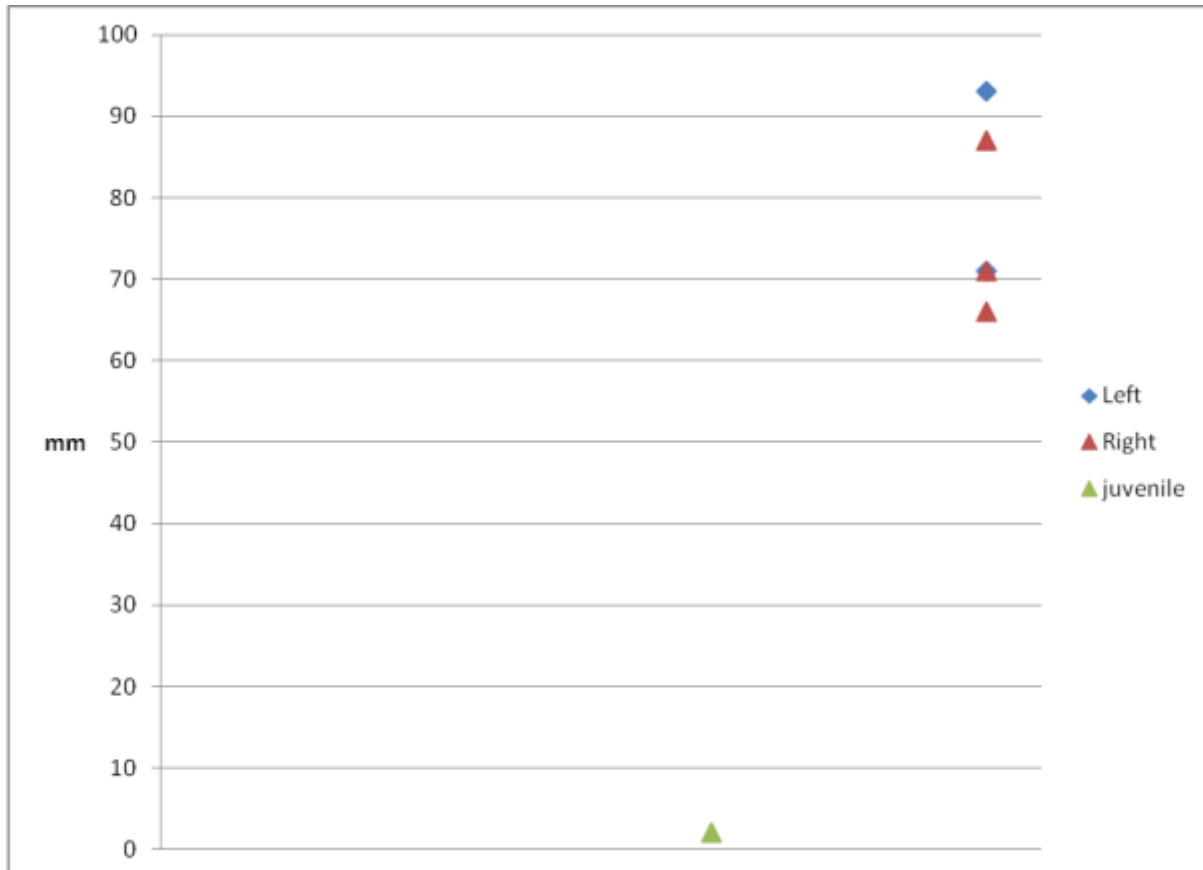
Only 12.5g of charcoal was excavated from the site. This charcoal might not be in situ.

### Shell

The main shell species at AMS30 is brown mussel (*P. perna*), while there is a small amount of oyster, key-hole limpets, and whelk. Brown mussels constituted 97.5% of the artefact weight.

Only 5 *P. perna* were measurable and they had an average length of 77.6mm (fig. 13). This tends to be on the large side of excavated *P. perna* in the mining lease.

**Fig. 13: P. perna Measurements**



The site did not yield the material we were expecting, especially the reliable charcoal sample. No further excavations will occur at AMS30.

## **RD020**

RD020 is located on the top of dunes at the Red Dunes west of Sokhulu Reservoir. 'Red Dunes' is the referring name to this area on the 1942 topographical maps. The site was exposed for drilling activity and reported to us via the SOP5. The site consists of a single *P. perna* midden (fig. 14), upper grinding stones, bovid bone and shell-impressed pottery (Tsonga, Group 7) visible on the surface. There was a possible human bone fragment on the surface of the site. It appeared that the site would extend further north into the sand dune. Test pit excavations were undertaken in October 2015.

**Fig. 14: Exposed Shell Midden at RD020 Before Excavations**

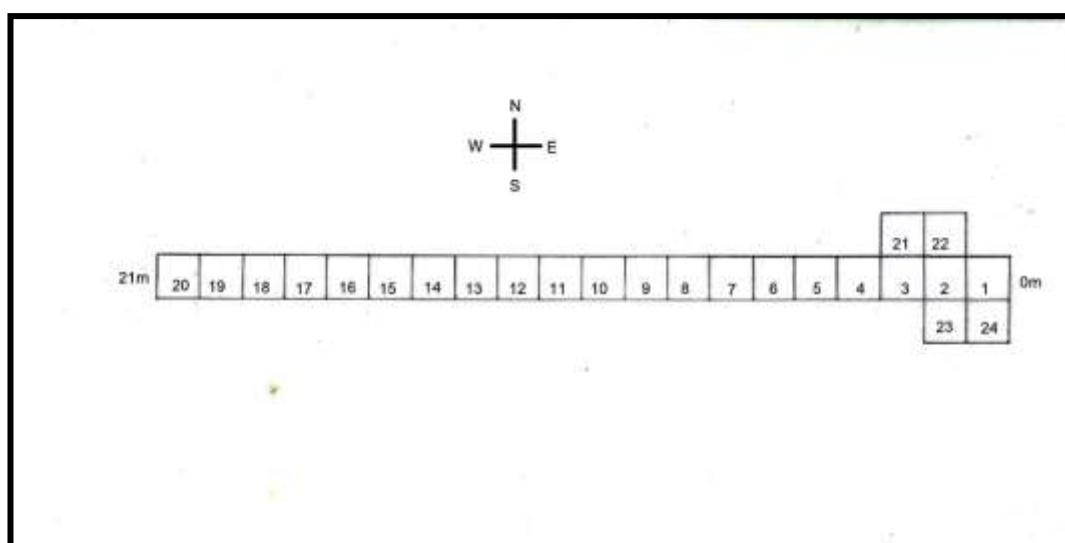


### **Excavation**

The site was divided into 24 (1 x1m) squares along a 20m baseline (fig. 15). This initially covered the shell midden and a possible living area or cattle byre. The midden was sampled as it was well preserved and appeared to continue into the sand dune.

The shell midden occurred on the eastern side, with a thin living floor towards the west. The living floor was covered by 2m -3m of sand (fig. 16).

**Fig. 15: RD 020 Site Map**



### **Stratigraphy & Excavation**

The soil above the midden varied from 100cm – 80cm in depth. The midden was ~2m in diameter forming a basin-shaped deposit. The centre of the basin was ~20cm thick and 50cm – 60cm in diameter. The basin area was fairly loose sand mixed with complete shells. The areas outside of the main basin were thin and highly disturbed by root activity. Fig.17 shows these sections and part of the remaining midden.

The excavated site had one main shell midden, although we expect more middens to occur within 50m of this midden. The midden had a noticeable amount of closed *P. perna* i.e. they had been cooked, but had not opened. There were several burnt shell fragments in this midden. A few of these were sampled and bagged individually. Complete *P. perna* were measured on site – there were very few complete shells.

The excavations did not extend further north as there was too much sand above the site, and we believed we had sampled the site sufficiently.

**Fig. 16: View Of The Excavation At RD020**



**Fig. 17: Partial Section Of Lens 1 At RD020**



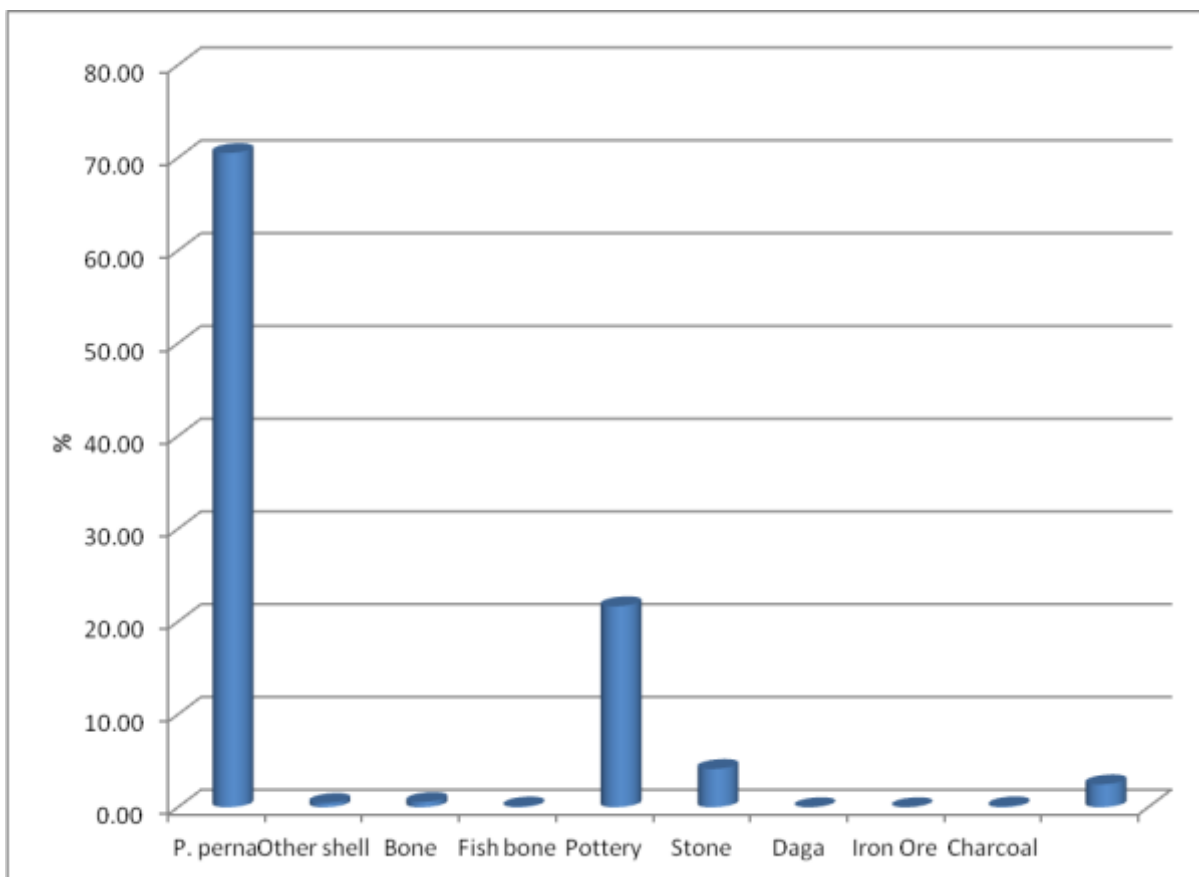
## **Results**

Table 1 summarises the results from the excavation. Figure 18 shows these results as a percentage of each category to the total artefact and ecofact weights from the excavation.

305.745dm<sup>3</sup> of shell midden deposit was excavated while only 2, 2m x 2m squares were excavated on the western side. There was no midden in the latter area.



**Fig. 18: Finds As A Percentage Of Total Weight.**



**Fig. 19: Fish Mandible At RD020**



## **Faunal Remains**

There are very few faunal remains in this midden. Two fragmented bovid bones were excavated, and several fish bones. The fish remains consisted mainly of vertebra and vertebrae spines. No otoliths were noted however a well preserved fish mandible was excavated (fig. 19).

## **Charcoal**

Very little charcoal was excavated from the deposit – only 19g. The charcoal is *in situ* from the midden.

## **Stone**

The stone from the sites consists mainly of water worn stone and one smoothed stone. There is a noticeable lack of grinding stones in the excavation, and surrounding area on the surface.

## **Small finds**

Three 'Nassa.' beads and two fragments were excavated. A small amount of daga floor was thrown in the midden.

There is a distinct lack of small finds in this midden.

## **Shell**

The most common shell is *P. perna*, or the brown mussel, and it appears to be the staple food, as in most of the shell middens. Other types of edible shellfish include oyster, whelk, and limpets. Other shell species that were probably not eaten include lichen, barnacle, clams and key-hole limpets.

The bulk shell samples consist of 15% of the excavated material. Only the left/right hinges from the bulk samples were counted, while all complete shell were measured. The bulk samples yielded a maximum of 743 mussels. These mussels varied in size however none were measurable as they tend to break in the deposit

## Pottery

A total of 3046g of pottery was collected at the site: this excludes surface finds from various surveys. The pottery is mostly undecorated however a few sherds have shell impressed decorations. A large pot has a row of circular impressions followed by lip notching on the lip. This is the first recording of this decoration in the dune system (fig. 20)

**Fig. 20: Decorated Pottery At RD020**



The excavations at RD020 are complete, but the site will still be monitored.

## MPE159

MPE 159 is located on the second dune cordon from the ocean. It consists of two shell middens, one that was excavated in November 2014, and another that was partially exposed by bush clearance and excavated in November 2015. There are two human bone fragments in the vicinity of the lower midden which makes the site of high significance. The middens are very well preserved, and the 2014 excavations yielded a lot of material.

Two middens were noted in the road cutting and these became the 2015 excavations. The site was cleared by bush clearance 1 month before excavations, and an upper 1m – 2m of sand removed. A second site (MPE158) was also cleared in this manner but was not excavated this year.

### **Excavations:**

The site was divided into 17, 2m x 2m squares along a 34m baseline, with the squares to the East of the baseline forming the A-line and the squares to the West of the baseline forming the B-line (fig.'s 21 - 22). A C-line was also included for the shell middens in the road cutting. The squares were excavated from the outer edges first, working our way towards the obvious shell midden located roughly in the centre. The midden was exposed by removing the overburden. The shell midden was excavated stratigraphically, while the areas around it were excavated in 10cm spits. The second midden appears to be separate from the main midden; however this could have been a result of root and bulldozer activities. They were excavated separately, but combined in the analysis.

Rows A and B were excavated in 2m x 2m squares with 1m x 1m quadrants. Squares A15 – A17 were excavated. The C row or shell middens, were excavated in 1m x 1m squares and 50cm x 50cm quadrants

### **Stratigraphy & Excavation**

The soil above the midden had mostly been removed by bush clearance activity. The middens were located in Squares C14, C15, C17, C18, C21, and C23. The midden did extend slightly into the western squares; however they had mostly petered out and were not worthwhile excavating. .The middens were compacted and fragmentary on the edges. This is a partially a result of the bush clearance and the basin shape of the midden: a few animal burrows also occurred in the midden.

The midden was a maximum of 10cm thick in the centre. The squares to the south of the middens were excavated to 50 – 90cm below the surface. The western row was significantly deeper then the two rows to the east. This could be a result of a

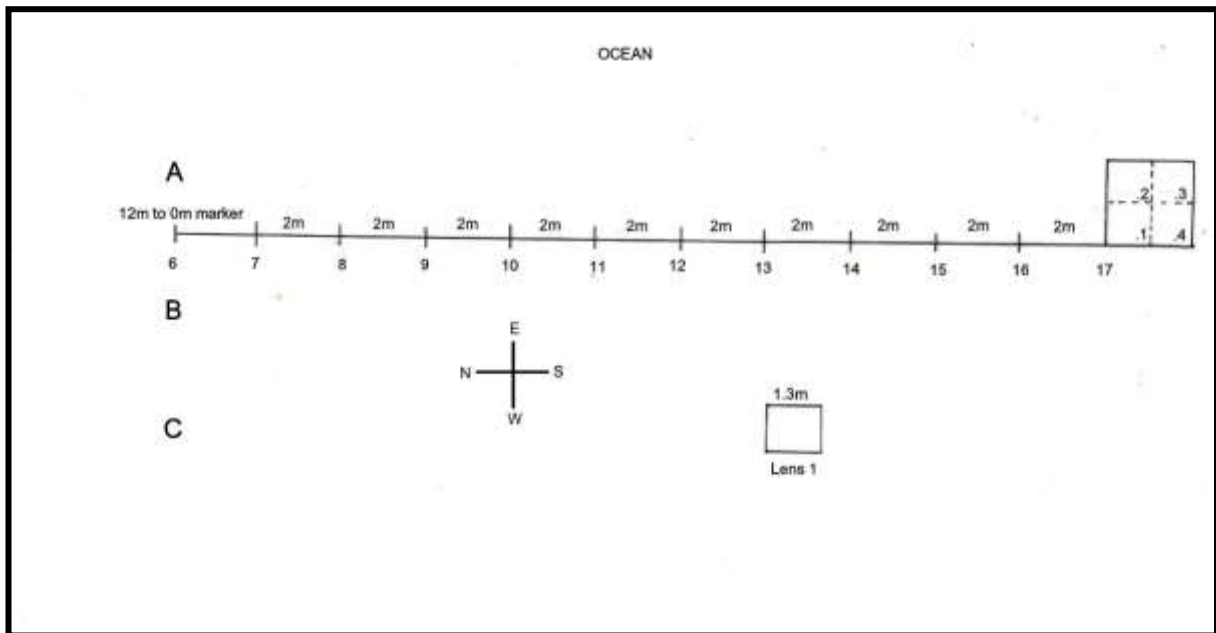
dip in the dune. There was also a 20cm – 30cm drop in the depth of the basal layers between the squares 13 – 15 and the midden in squares 16 – 18.

The excavation map and sections are shown in figure 23.

**Fig. 21: General View Of The November 2014 Excavation Area**



**Fig. 22: MPE 159 Site Map**



### Results:

Table 1 summarises the results from the excavation. Figure 24 shows these results as a percentage of each category to the total artefact and ecofact weights from the excavation, and it compares the 2014 and 2015 middens. *P. perna* is the most dominant category in the excavations; however, unlike the previous two sites there is an almost 10% drop in the percentage total of *P. perna*. The increase in the relative percentages of bone, other shell species, and daga is the cause of this.

### General Deposit

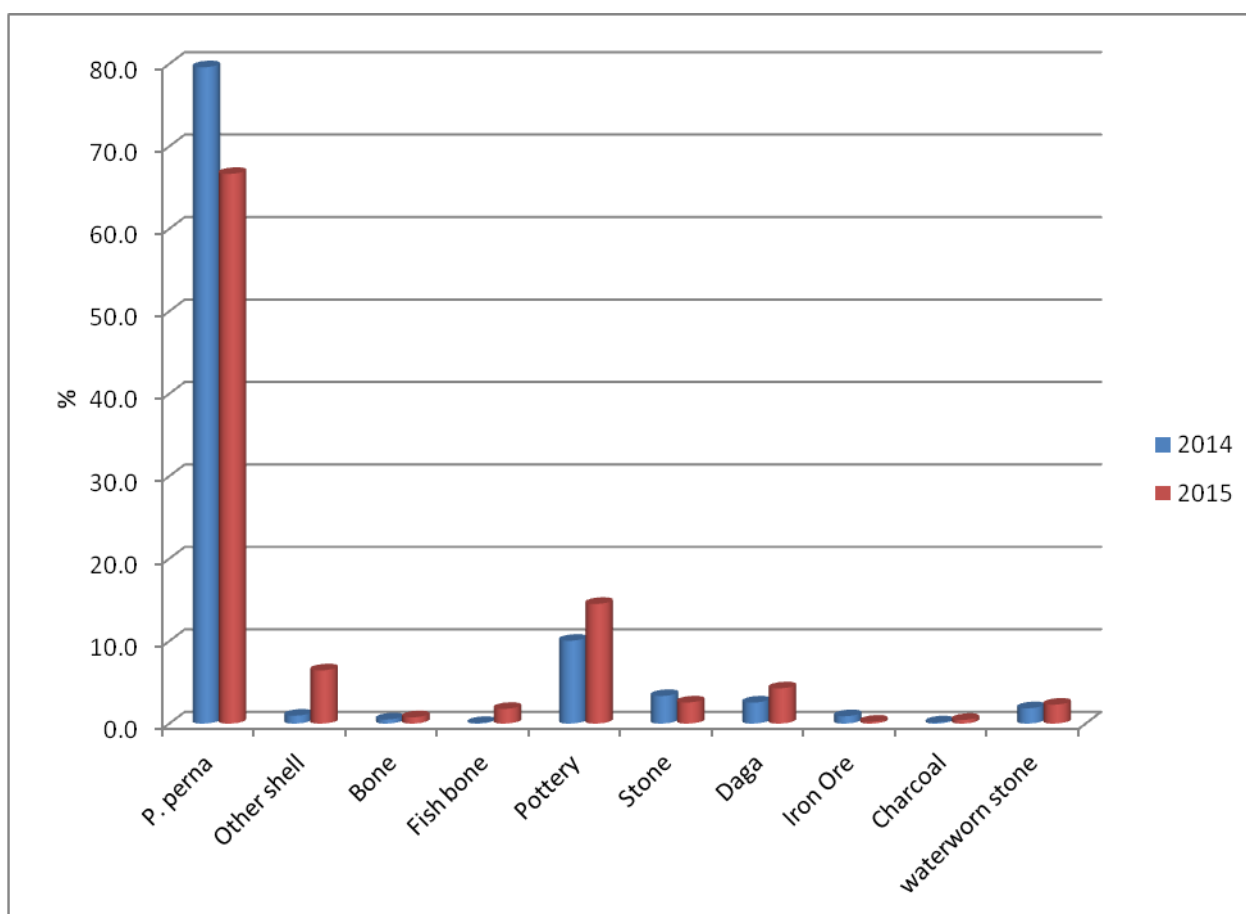
The total shell midden deposit excavated was 285dm<sup>3</sup>. If the A line was added it would skew the data, especially when comparing to the 2014 excavations. This is approximately a third of the 2014 excavations' deposit.

The shell middens were ~1m below the general living area of the A-B lines. The midden was level, i.e. not angled, and thus it is either in a large pit or the area was levelled during occupation.

**Fig. 23: Excavations Of Shell Midden And The A-B Line At MPE0159**



**Fig. 24: Results from the 2014 & 2015 excavations**



### **Faunal Remains**

There are few faunal remains in the middens. Most of the bone comes from a few bovid fragments. There is a sharp increase in the amount of fish in this midden compared to the other midden, as well as when compared to other excavations. This could be from 1 – 2 large fishes that were thrown away onto this midden; regardless it is the highest fish sample from a site so far excavated.

### **Charcoal**

A small amount of charcoal was excavated from the site in comparison to the other sites. All of the charcoal came from the shell midden.



## Stone

The stone from the sites consists mainly of water worn stone and smoothed stones. The upper and lower grinding stones were mostly fragments, and because of their size, they appear to be occur more at the site, but consist only of 2 and 1 fragments respectively.

## Small finds

There are a 6 *Nassarius krausiaris* beads from the midden and two fragments were excavated.

A small amount of daga floor was thrown in the midden, but most of the daga came from Square A15. Larger daga fragments occur in squares 12 – 14, suggesting that these are the house floors.

All of the iron ore occurs in Squares 15 and 16.

## Pottery

Very little diagnostic pottery was found at the site. The only decorated sherd has 5+ rows of triangular impressions. The decorated sherds suggest that they belong to the Group 5 and 6 classes of decorated pottery. This would date the sherds anywhere from 1250 ACE – 1500 ACE.

## Shell

The most common shell is *P. perna*, or the common brown mussel, and it appears to be the staple food, as in all shell middens. Other types of edible shellfish include limpets (specifically *Siphonaria capensis*), oyster, and whelk. Other shell species that were probably not eaten include chitons, barnacle and key-hole limpets.

Only eleven *P. Perna* shells were measured, and they had an average length of 42cm. This is slightly larger than the mussels from the 2014 excavations (Table 2).

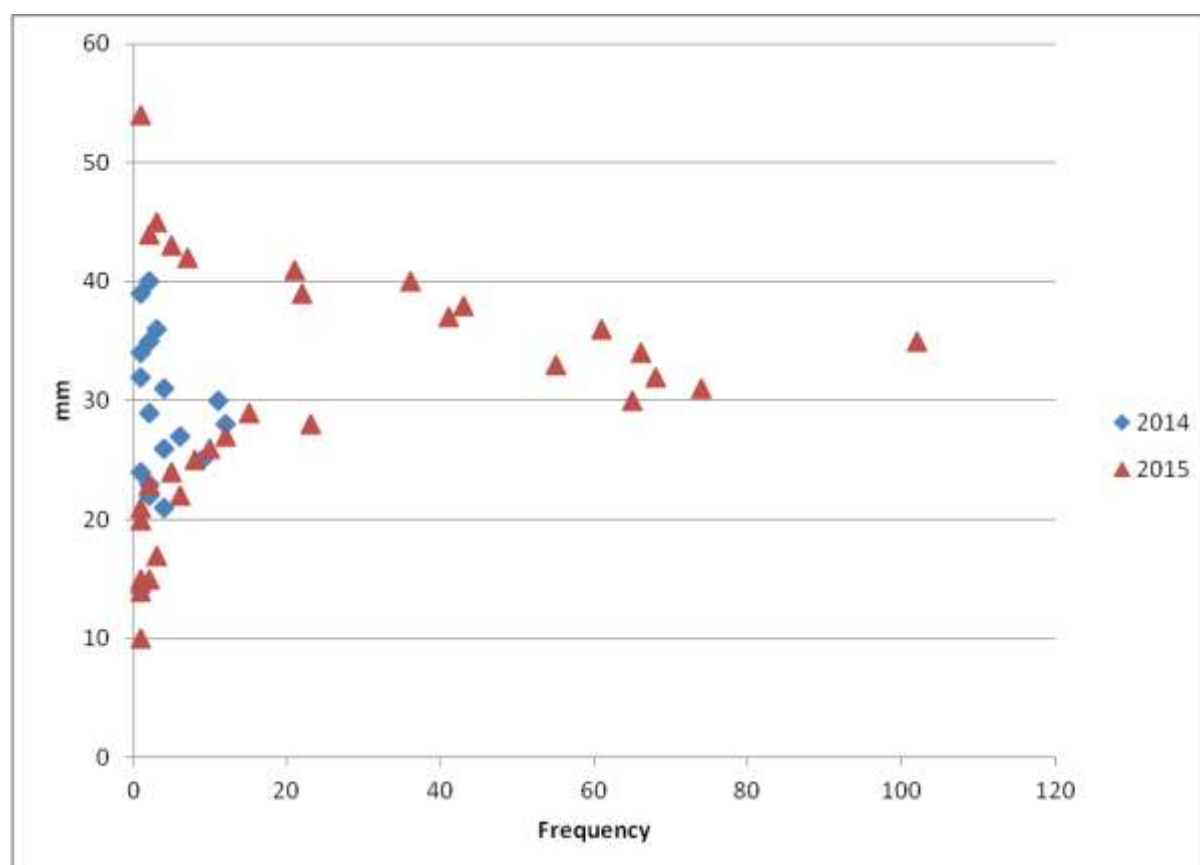
There is a substantial increase in the amount of *Siphonaria capensis* at this site, and these formed most of the 'other shell' category. These limpets occurred in a

specific area of the midden and appear to be a single dumping episode. As with the 2014 excavations, the results suggest that all sizes of limpets were being gathered (fig. 25, Table 3).

**Table 2: *Perna perna* Measurements at MPE159**

	2014			2015		
	Left	Right	Total	Left	Right	Total
<b>average</b>	34.4	41.5	37.6	37.5	44.5	42
<b>median</b>	30	47	40	30	46	46
<b>max</b>	49	49	49	42	60	69
<b>min</b>	20	30	20	14	10	10
<b>Total</b>	5	4	9	4	7	11
<b>Juveniles</b>	182			10		
<b>Juvenile Length</b>	<10cm					

**Figure 25: *Siphonaria capensis* Measurements at MPE159**



**Table 3: Siphonaria capensis Measurements**

	<b>2014</b>	<b>2015</b>
<b>Average</b>	28.66666667	30.3125
<b>Median</b>	28.5	30.5
<b>Max</b>	40	54
<b>Min</b>	14	10
<b>F</b>	68	763
<b>not measurable</b>		302

The shell midden represents a change in the general midden patterns we have noted in other excavations. More of the site will be excavated in 2016 where we intend to expose another shell midden, as well as the living area. We will attempt to link these excavations to the 2014 excavations.

### **MPC099 & MPC099b**

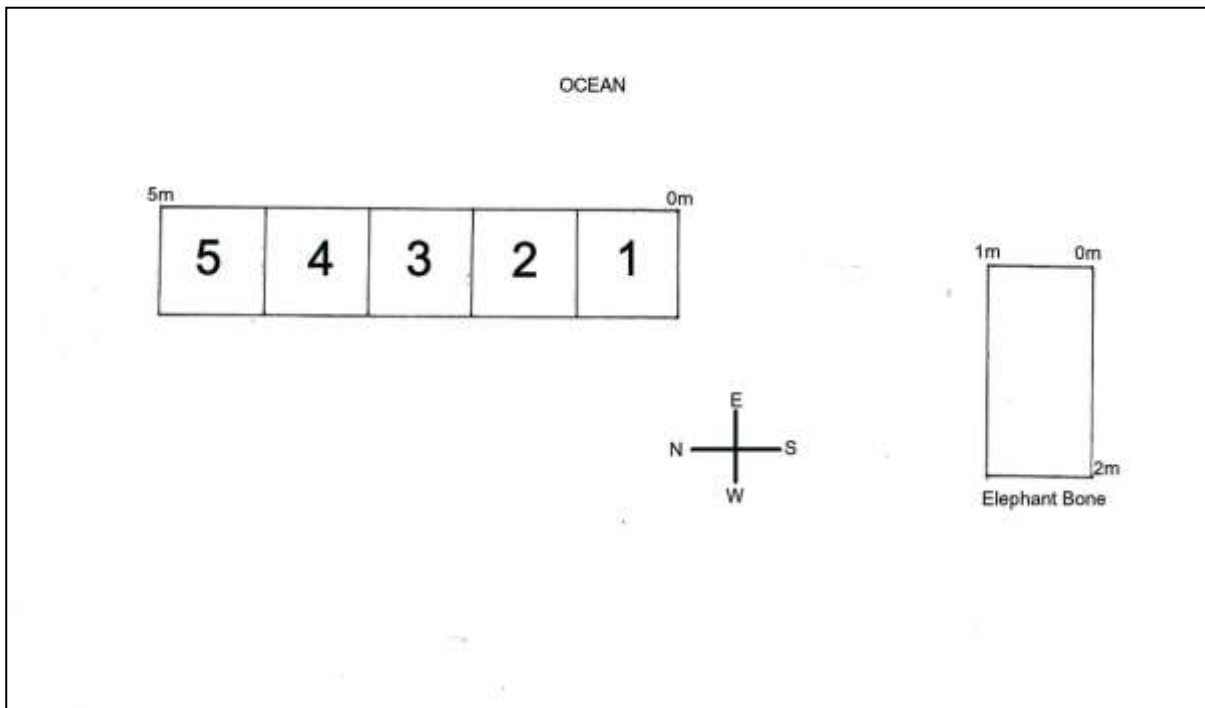
MPC 099 was exposed by bulldozer clearance during road construction and was recorded in October 2015. The site is located on both sides of said road and on the second dune cordon from the ocean. It consists of a single shell midden (mainly *P. perna* and oyster) spread across the whole top of the dune along with surface pottery (red burnish) and coral. The site is of medium significance and was excavated in late October 2015. MPC099 might be linked to the elephant cranium that was recovered from Dry Mining in ~2009.

MPC099b was a small shell midden opposite MPC099. It was excavated and sampled from a 50cm X 50cm area.

### **Excavations**

The site was divided into five, 1mx1m squares (fig. 26). During the initial survey a large *in situ* bone was visible on the surface. This specific bone was excavated just to the South of the main excavation, as Elephant Bone. The excavations occurred  $\frac{3}{4}$  up the small dune face and about 2m below the surface (fig. 27). The excavations were stepped into the dune to avoid slumping.

**Fig. 26: MPC099 Site Map**



**Fig. 27: Excavations At MPC099**



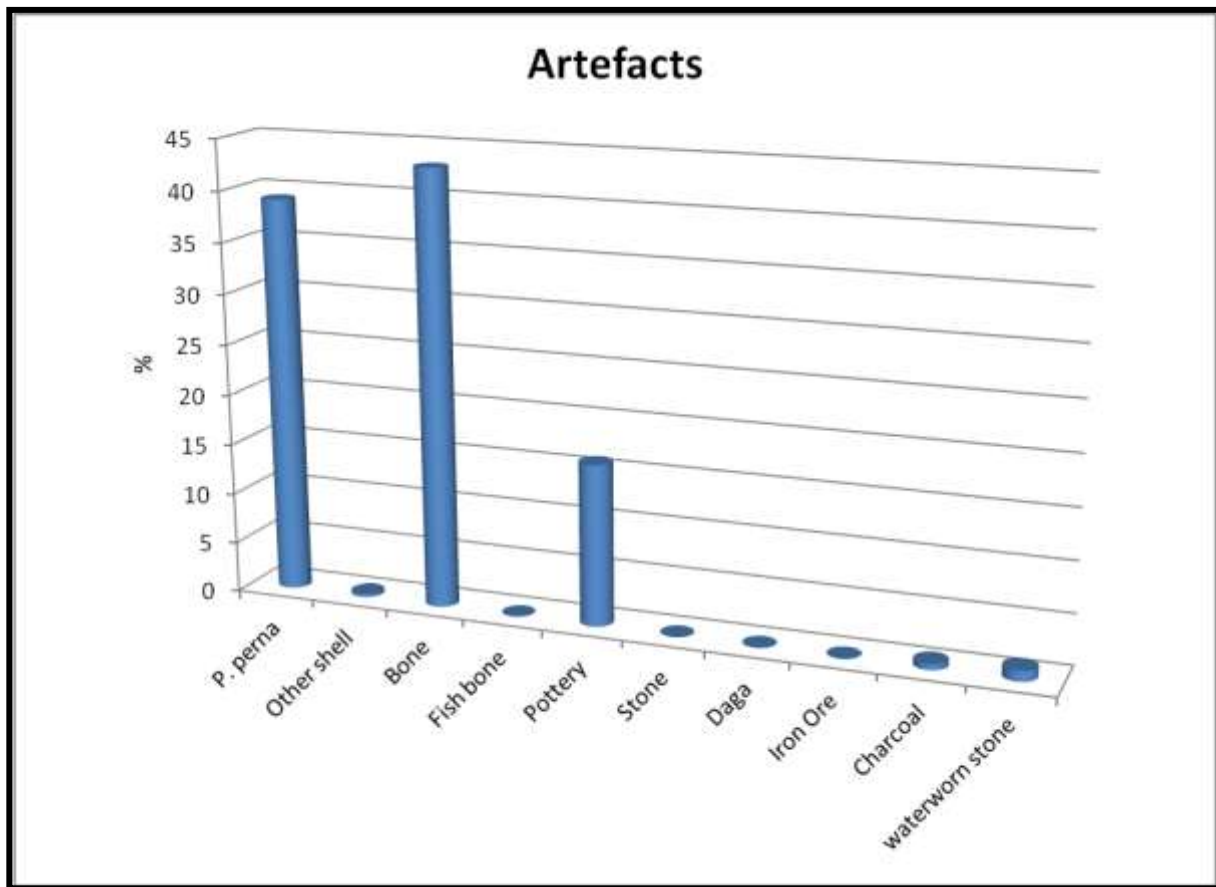
## General Deposit

216.75dm<sup>3</sup> of shell midden deposit was excavated. The midden consists of a compacted single shell lens that was very ashy in places (fig. 28). The midden did not extend further into the dune, i.e. to the east, and it appears that much of the dune has slumped down the dune face. The excavated finds are summarised in fig. 29.

**Fig 28: Sections At MPC099**



**Fig. 29: Artefacts As % Of Total Artefact Weight At MPC099**



### **Faunal Remains**

The main faunal remains come from the “Elephant Bone” area. The area was first noted as having fragile bone remains which we originally thought could be a human burial that had been damaged by bulldozer activity. The excavation revealed a limb that was 30cm – 35cm in width and more than 1m long. The bone was extremely fragile and brittle and could not be removed as one piece. The sand was very dry and loose around the limb as well. On drying the bone collapsed into small fragments, and a sample of the bone was taken.

### **Charcoal**

The excavations yielded a good sample size of charcoal. The charcoal is suitable for radiocarbon dating.

## Stone

No grinding stones were excavated at MPC099. Only 94.5g of water-worn stone was removed from the midden. This is a much lower percentage than the other excavated sites.

## Small finds

Only one 'Nassa.' bead and one worked shell fragment was excavated. The worked oyster came from MPC099b (fig. 30).

**Fig. 30: Worked Shell At MPC099b**



## Pottery

The pottery at MPC99 and MPC099b is undecorated. This suggests it probably dates to the Historical Period.

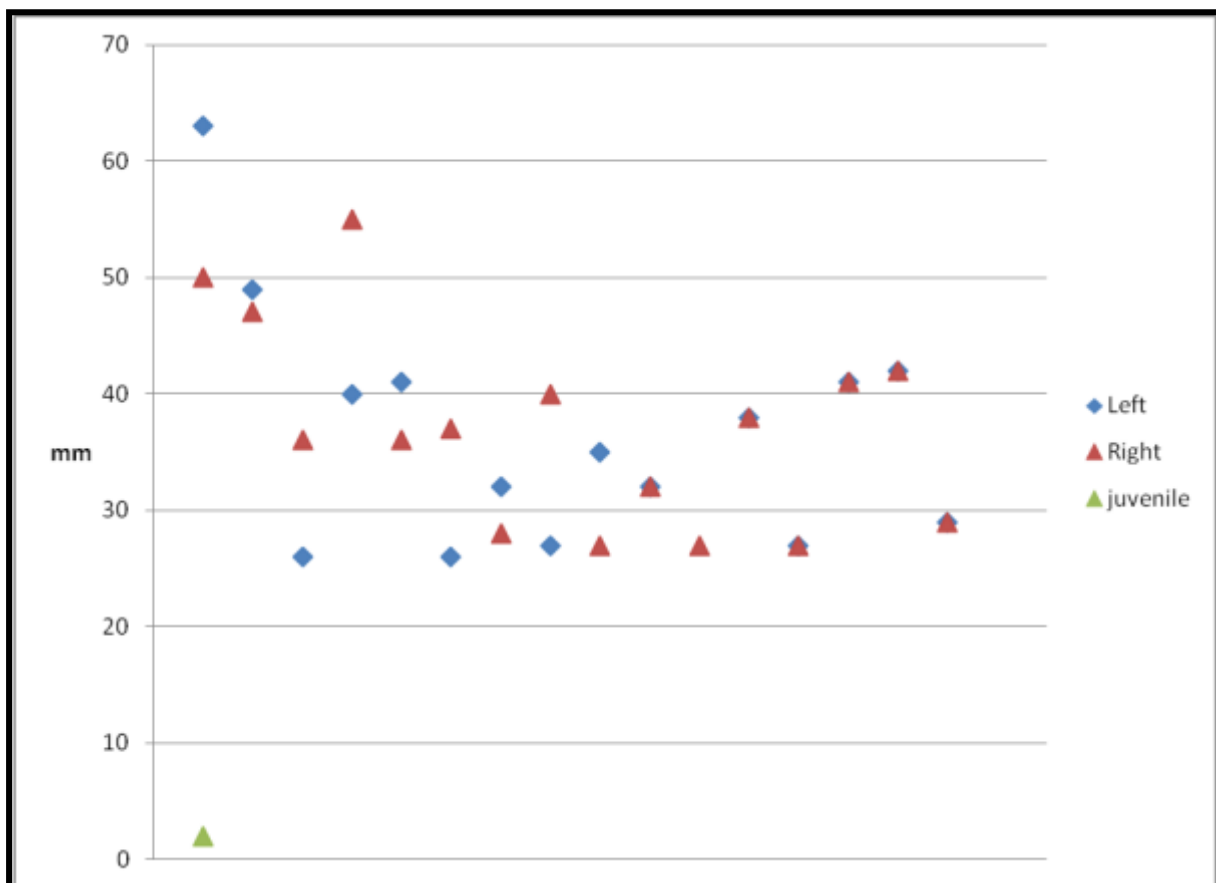
## Shell

The shell consists mainly of *P. perna*, with a few oyster, key-hole limpets, and barnacle. The *P. perna* tend to be smaller in comparison to other sites, however this is probably due to the small sample size (table 4; fig. 31).

**Table 4: *P. perna* Measurements At MPC099**

	Left	Right	Total
average	36.5	37	36.8
median	35	36.5	36
max	63	55	63
min	26	27	26
Frequency	15	16	31
Juveniles	1	2	
Juvenile Length	<10cm		

**Fig. 31: *P. perna* Measurements At MPC099**



The excavations at MPC099 and MPC099b are completed; however, the site will be monitored as it extends to the east.



## MPD84

MPD084 was originally recorded in 2009 and noted as a small site with (un)burnt *P. perna* and bovid bone. The site was located on the western side of the dune and noted for monitoring. Subsequent to the recording, human skeletal remains were noted in the dry mining sieves in 2015. Only the cranium, a few vertebrae and phalanges and some of the limbs were recovered. The skeleton appears to be well preserved and dates within the last 200 years. However, a second cultural horizon was noted in the dune face ~5m – 10m below the surface. This horizon consisted of a thick shell midden with a lot of charcoal. Fig. 32 shows the site in relation to the dune face.

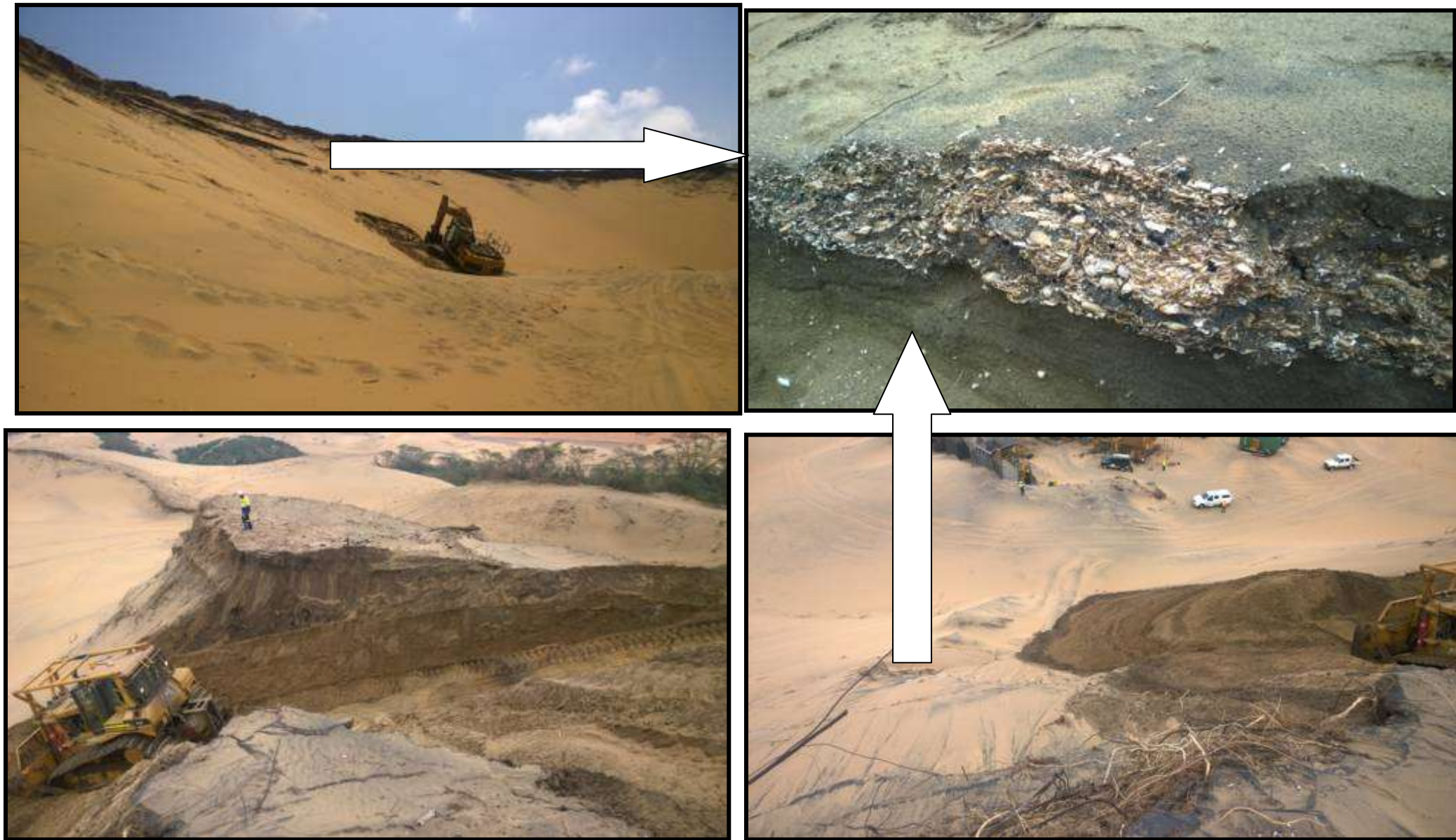
The Dry mining plant was closed for maintenance a few days after the human skeletal remains were retrieved, and we decided that it would be the correct time to remove the shell midden. In this way the midden would be removed during the plants down time and thus not interrupt work schedules later on. The main problem with the shell midden site was the various safety concerns that included:

- Dune slumping
- An unstable dune face
- Steep angle behind the dune face
- The midden was  $\frac{3}{4}$  up the dune, or covered by 5m – 10m of sand
- A platform to archaeologically excavate was not possible due to possible slumping from above the midden

After a site safety meeting it was decided to remove a side of the dune, build a stable platform for the excavator to stand, and then the excavator would remove part of the midden in its bucket and move it to a safe working area. Two excavator buckets were removed that was the equivalent of 900cm<sup>3</sup> of deposit. Thus while we lost the stratigraphy of the midden, we still retained a good sample in a safe working environment. RBM should be commended in supplying the unscheduled HEM for a day to remove the midden, whilst maintaining its safety and heritage standards.

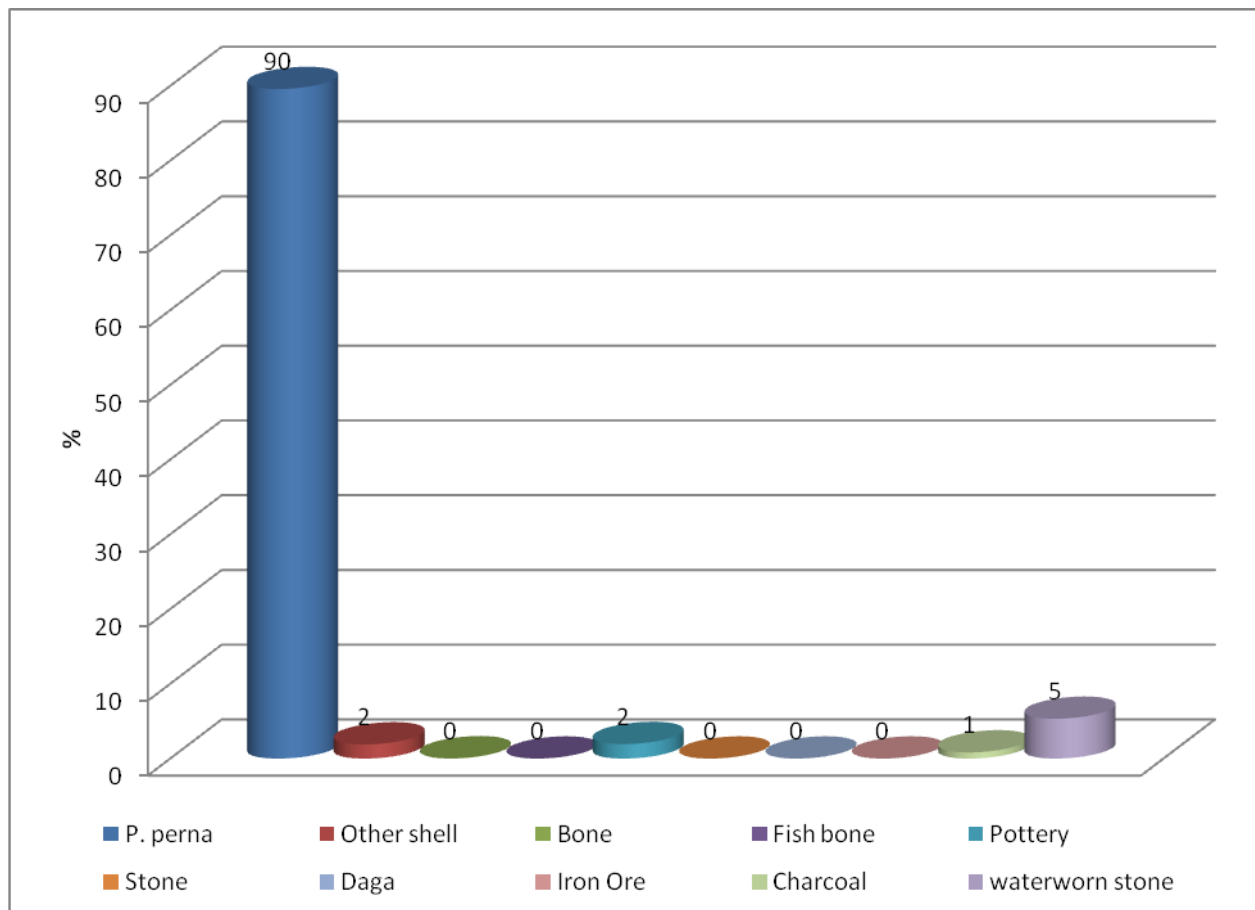
The site is still being monitored for further finds.

**Fig. 32: Location Of MPD84 And Site Removal Processes**



A total of 64.5kg of archaeological material was sieved from the two excavator buckets. Due to budget and time constraints we only sorted 35% (or 22.3kg) of the material as a bulk sample: the rest remains as unsorted bulk for future research. Fig. 33 summarises the results.

**Fig. 33: Finds As A Percentage Of Total Weight At MPD084**



### **Faunal Remains**

Only 9g of faunal remains were noted from the midden. This is in big contrast to other excavated sites.

### **Charcoal**

There is a very large amount charcoal in the midden: 202g. This amount is substantially more than the other excavated sites and can be used for radiocarbon dating.

## **Stone**

No grinding stones came directly from the midden; however there was 1.3kg of waterworn stone. This is a large amount when comparing with other sites.

## **Small finds**

A total of 30 'Nassa.' beads were recovered from the sorted midden.

## **Pottery**

The pottery from the midden is undecorated, and in a low quantity. However, there is an uncovered part of the site behind the dune, at the same level, that has Group 6 pottery, i.e. circular and rectangular impressions. Some Early Iron Age sherds were noted on the northwestern slope as well. This suggests that the site has at least three occupations: Early Iron Age (Mzonjani Phase), Late Iron Age (Moor Park Phase) and Historical Period. Given the location of the midden on the dune system I would tentatively date it to the LIA occupation.

## **Shell**

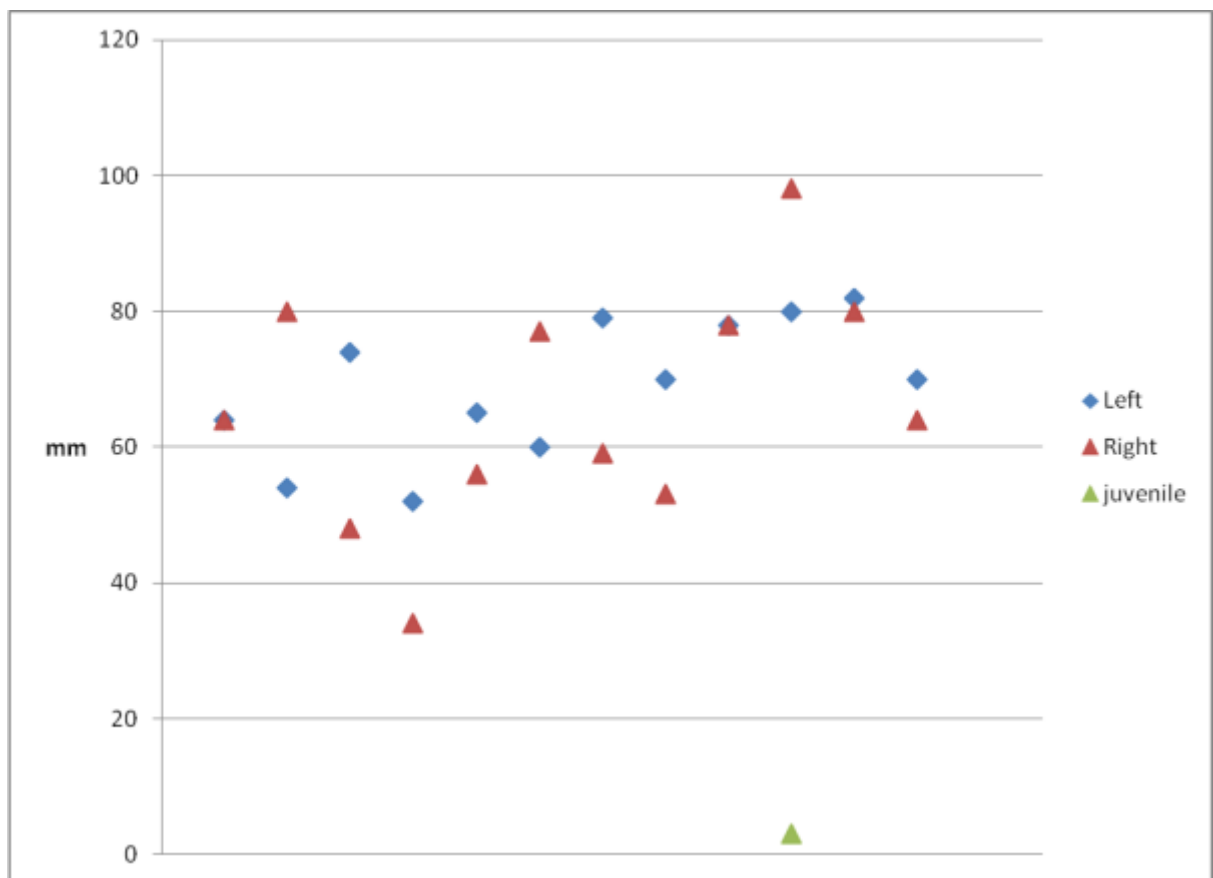
*P. perna* is the most abundant shell species at the site. The midden was very compacted; hence there are only a few measurements. The *P. perna* are of an average size of 67mm, and have a wide variation in size differences (table 5; fig. 34). Some *S. capensis* also occurred at the site and these were also harvested in groups (Table 6; fig. 35).

The excavations at MPD084 are complete; however the site will be monitored for potential human remains.

**Table 5: *P. perna* Measurements At MPD084**

	left	right	total
average	69	65.91	67.5
median	70	64	67.5
max	82	98	98
min	52	34	34
f	12	12	24
Juveniles	1	2	3
Juvenile length	<10		

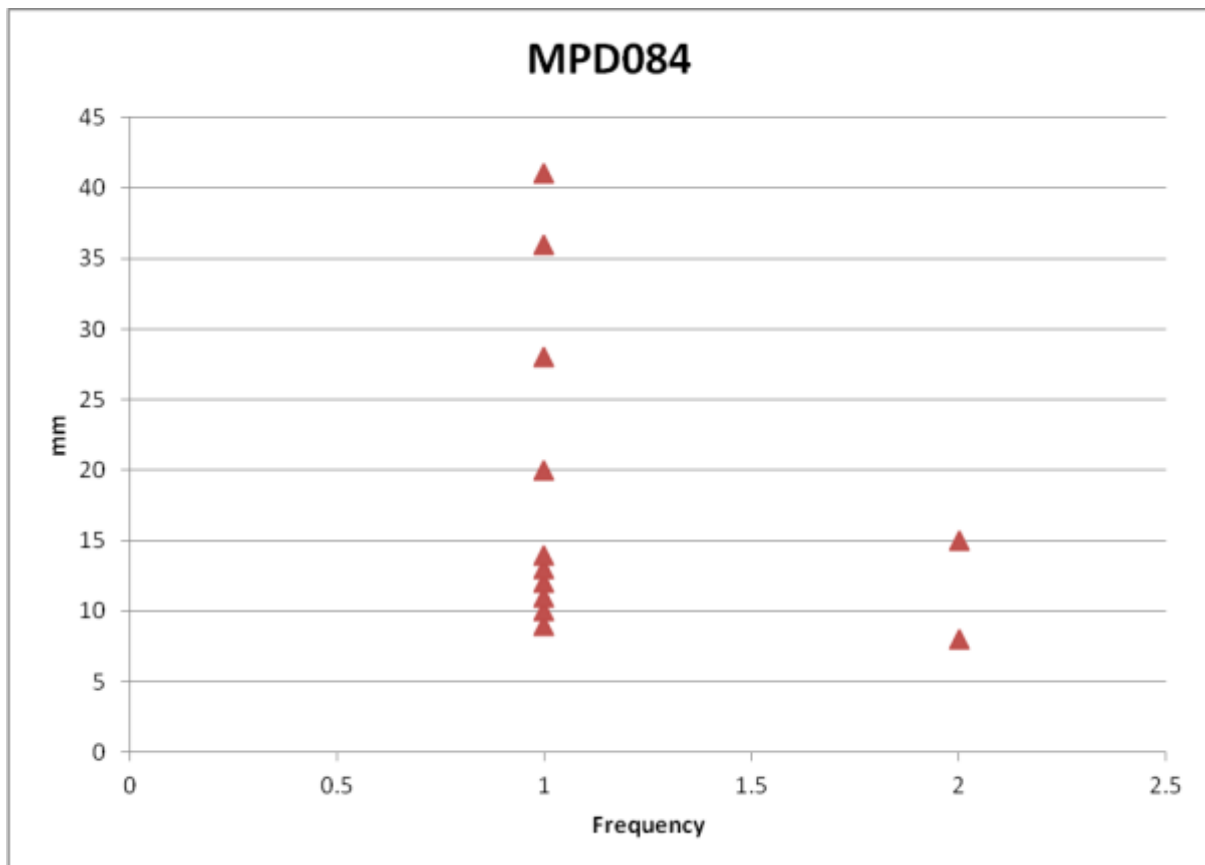
**Fig. 34: *P. perna* Measurements At MPD084**



**Table 6: *S. capensis* Measurements At MPD084**

Mean average	18.08333333
Median average	13.5
Max	41
Min	8
Frequency	12

**Fig. 35: *S. capensis* Measurements At MPD084**



## CONCLUSION

A total of 9 archaeological sites were recorded in 2015, and 6 sites were excavated. Many of the sites from 2014 – 2015 were also monitored during the year and sampled when necessary. The sites dated from the Late Stone Age to the early 20<sup>th</sup> century and form part of an increased sample size of archaeological sites in the mining lease. Early Iron Age sites appear to have decreased in occurrences, while there is an increase in Late Iron Age and Historical Period sites. This is, however, due to the location of the mining operations that are currently concentrating on taller dunes, which were favoured by the latter settlements. There should be an increase in Early Iron Age sites once MPE extends along the lower areas north of Sokhulu Reservoir.

The current heritage mitigation is still uncovering new finds, and increasing data to the general heritage of the area. The shell midden at MPE159 that had a marked change in shell species and the elephant leg at MPD084, are a few examples. The low numbers of recorded sites in 2015 is mostly due to fewer areas being cleared for mining, not due to a decrease in potential finds.

Shell middens, and their surrounding areas, are always targeted as these yield better preserved artefacts and human remains. The increase in faunal remains assemblages is important for the eventual reconstruction of the animal species over time in this area. For example, the occurrence of a developed elephant cranium in 2010 and the leg in 2016 within the dune system is intriguing. Smaller mammal and bird remains would also be informative, as would be the smaller shell species that are palaeo-environmental indicators. The coral fragments, limpets and even the *P. perna* have potential for scientific research if the isotopes are analysed, e.g. in sea temperature changes over time. The *P. perna* size measurements have use through not only indicating human harvesting patterns through time, but also the impact this may have made on the shellfish populations. This in turn would have relevance for more recent impact studies undertaken brown mussel exploitation KwaZulu-Natal and further afield. Some of the research (e.g. Proudfoot et al, 2006) suggests that there is a significant change in species size over time due to human exploitation. The archaeology tends to suggest that the opposite. It is important that the shell middens along the eastern seaboard are systematically sampled and excavated as these

have relevance to contemporary research (see research undertaken by the Oceanographic Research Institute (<http://www.seaworld.org.za/research/>) as one example. The sampling and excavations of these middens is also important in that dune mining removes the entire midden during operations, and thus the material is lost forever.

Human skeletal remains dating back to the 12<sup>th</sup> century have been uncovered. We expect an increase in 18<sup>th</sup> – 20<sup>th</sup> century human remains in the area around Sokhulu Reservoir, as the recorded sites suggest this area was more recently occupied. We have also uploaded the location of settlements in 1937 and given this data to RBM Mine Planning. In this way we should be informed when areas with potential human remains will be cleared.

Two sites have been marked for excavations in 2016. This includes a continuation at MPE159 and beginning of MPE158.

## REFERENCES

- Oceanographic Research Institute 2014. <http://www.seaworld.org.za/research/>
- Proudfoot, L., Kaehler, S. McGarry, D. , Uppink, P. Aereboe, M and Morris, K. 2006 Exploitation status of infralittoral abalone (*Haliotis midae*) and alikreukel (*Turbo sarmaticus*) in the southern section of the Eastern Cape coast. *South Africa. South African Journal of Science* **102** 162 - 168



**APPENDIX A**  
**SITE RECORD FORMS**

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY:

Stone Age	ESA:		MSA		LSA		ISA	
Rock Art	Paintings		Engravings		Other			
Iron Age	EIA:	X	LIA		IIA			
Historical	Historical Period:		Recent Past (last 60 yrs):					

Recorder's Site No.: MPA 42

Official Name:

Local Name:

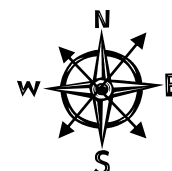
Map Sheet:

GPS reading: S: 28' 36.518" E: 32' 18.687" Alt: 53m

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION

MPA 42 is located on the second dune cordon from the ocean.

It is of medium significance and has been sampled. The site will be monitored.



SITE DESCRIPTION:

Type of Site: Open

Merits conservation: It is of medium significance and has been sampled. It will be monitored for as long as it remains possible.

Threats: Yes

What threats: RBM Mining

RECORDING:

Digital pictures Yes Tracings:

Drawings:

Recorder/Informant: Name: Gavin and Louise Anderson

Address: PO Box 102532, Meerensee, 3901

Date: 17/03/2015

Owner:

References:

DESCRIPTION OF SITE AND ARTEFACTUAL CONTENT.

The site consists of a surface scatter (10m x 20m) of Mzonjani pottery.

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY:

Stone Age	ESA:		MSA		LSA		ISA	
Rock Art	Paintings		Engravings		Other			

Iron Age	EIA:		LIA	X	IIA			
Historical	Historical Period:		Recent Past (last 60 yrs):					

Recorder's Site No.: MPC 099

Official Name:

Local Name:

Map Sheet:

GPS reading: S: 28° 34.428" E: 32° 21.063" Alt: 44m

**DIRECTIONS TO SITE: SKETCH OR DESCRIPTION**

MPC 099 was exposed by bulldozer clearance during road construction. The site is located on both sides of said road and on the second dune cordon from the ocean.



**SITE DESCRIPTION:**

Type of Site: Open

Merits conservation: The site is of low significance and no further mitigation is required, however, it will be monitored for as long as remains possible.

Threats: Yes

What threats: RBM Mining

**RECORDING:**

Digital pictures Yes Tracings: Drawings:

Recorder/Informant: Name: Gavin and Louise Anderson

Address: PO Box 102532, Meerensee, 3901

Date: 23/10/2015

Owner:

References:

**DESCRIPTION OF SITE AND ARTEFACTUAL CONTENT.**

It consists of a single shell midden (mainly P. perna and oyster) spread across the whole top of the dune along with surface pottery (red burnish) and coral.

## UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

### SITE CATEGORY:

Stone Age	ESA:		MSA		LSA		ISA	
Rock Art	Paintings		Engravings		Other			
Iron Age	EIA:	X	LIA		IIA			
Historical	Historical Period:		Recent Past (last 60 yrs):					

Recorder's Site No.: MPD 105

Official Name:

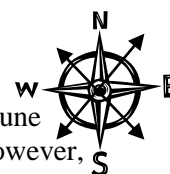
Local Name:

Map Sheet:

GPS reading: S: 28' 33 42.5" E: 32' 21 26.3" Alt: 107m

### DIRECTIONS TO SITE: SKETCH OR DESCRIPTION

MPD 105 was exposed by bulldozer clearance and is located in between the second and third dune cordons from the ocean. The site is of low significance and no further mitigation is required, however, it will be monitored for as long as remains possible.



### SITE DESCRIPTION:

Type of Site: Open

Merits conservation: The site is of low significance and no further mitigation is required, however, it will be monitored for as long as remains possible

Threats: Yes

What threats: RBM Mining

### RECORDING:

Digital pictures Yes Tracings:

Drawings:

Recorder/Informant: Name: Gavin and Louise Anderson

Address: PO Box 102532, Meerensee, 3901

Date: 22/05/2015

Owner:

References:

### DESCRIPTION OF SITE AND ARTEFACTUAL CONTENT.

The site consists of a surface scatter (20m x 30m) of marine shell (mainly P. perna and oyster), thin-walled, decorated pottery (Mzonjani) and water worn pebbles.

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY:

Stone Age	ESA:		MSA		LSA		ISA	
Rock Art	Paintings		Engravings		Other			
Iron Age	EIA:		LIA		IIA			
Historical	Historical Period:	X	Recent Past (last 60 yrs):					

Recorder's Site No.: MPE 164

Official Name:

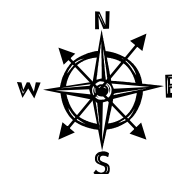
Local Name:

Map Sheet:

GPS reading: S: 28. 53870 E: 32. 37600 Alt: 111m

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION

MPE 164 is located at the top of the first dune cordon from the ocean.



SITE DESCRIPTION:

Type of Site: Open

Merits conservation: The site is of medium significance and will be monitored for as long as it remains possible.

Threats: Yes

What threats: RBM Mining

RECORDING:

Digital pictures Yes Tracings:

Drawings:

Recorder/Informant: Name: Gavin and Louise Anderson

Address: PO Box 102532, Meerensee, 3901

Date: 21/07/2015

Owner:

References:

DESCRIPTION OF SITE AND ARTEFACTUAL CONTENT.

It consists of 2x marine shell (Mainly P. Perna and oyster) middens on either side of the dune and a surface scatter of artefacts over a 50m x 15m area. The surface artefacts consist of undecorated pottery, bovid bone and upper grinding stones.

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY:

Stone Age	ESA:		MSA		LSA		ISA	x
Rock Art	Paintings		Engravings		Other			
Iron Age	EIA:		LIA		IIA			
Historical	Historical Period:		Recent Past (last 60 yrs):					

Recorder's Site No.: MPE 165

Official Name:

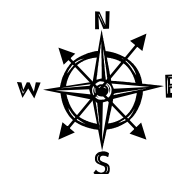
Local Name:

Map Sheet:

GPS reading: S: 28.53877' E: 32.37666' Alt: 128m

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION

MPE 165 is located at the top of the second dune cordon from the ocean.



SITE DESCRIPTION:

Type of Site: Open. Midden

Merits conservation: The site is of medium significance and will be monitored for as long as it remains possible.

Threats: Yes

What threats: RBM Mining

RECORDING:

Digital pictures Yes Tracings:

Drawings:

Recorder/Informant: Name: Gavin and Louise Anderson

Address: PO Box 102532, Meerensee, 3901

Date: 09/09/2015

Owner:

References:

DESCRIPTION OF SITE AND ARTEFACTUAL CONTENT.

It consists of 2x marine shell (Mainly P. Perna and oyster) middens and a surface scatter of artefacts, incl. upper grinding stones and lower grinding stones, over a 50m x 30m area. No pottery was observed, which makes it possible that the site dates to the Stone Age, however, no stone tools were observed either.

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY:

Stone Age	ESA:		MSA		LSA		ISA	
Rock Art	Paintings		Engravings		Other			
Iron Age	EIA:	X	LIA		IIA			
Historical	Historical Period:		Recent Past (last 60 yrs):					

Recorder's Site No.: MPE 166

Official Name:

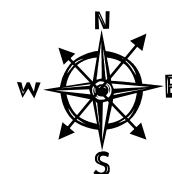
Local Name:

Map Sheet:

GPS reading: S: 28. 53692' E: 32.37576' Alt: 112m

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION

MPE 166 is located in the centre of the dune system.



SITE DESCRIPTION:

Type of Site: Open

Merits conservation: The site is of low significance and no further mitigation is required, however, it will be monitored for as long as remains possible

Threats: Yes

What threats: RBM Mining

RECORDING:

Digital pictures Yes Tracings:

Drawings:

Recorder/Informant: Name: Gavin and Louise Anderson

Address: PO Box 102532, Meerensee, 3901

Date: 22/11/2015

Owner:

References:

DESCRIPTION OF SITE AND ARTEFACTUAL CONTENT.

It consists of a single shell midden (mostly *P. perna*, oyster and limpet) along with several ugs's and undecorated pottery on the surface, spread across a 50m x 7m area.

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY:

Stone Age	ESA:		MSA		LSA		ISA	
Rock Art	Paintings		Engravings		Other			
Iron Age	EIA:		LIA		IIA	x		
Historical	Historical Period:		Recent Past (last 60 yrs):					

Recorder's Site No.: AMS032

Official Name:

Local Name:

Map Sheet:

GPS reading: S: 28°34.114" E: 32°21.430" Alt: 26m

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION

AMS032 is located on/ in the first dune cordon from the ocean and was exposed by a collapsing dune. It is of low/medium significance and we will sample the shell midden in the near future.

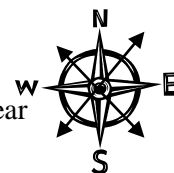
SITE DESCRIPTION:

Type of Site: Open. Midden.

Merits conservation: It is of low/medium significance and we will sample the shell midden in the near future.

Threats: Yes

What threats: RBM Mining



RECORDING:

Digital pictures N/A

Tracings:

Drawings:

Recorder/Informant: Name: Gavin and Louise Anderson

Address: PO Box 102532, Meerensee, 3901

Date: 26/01/2015

Owner:

References:

DESCRIPTION OF SITE AND ARTEFACTUAL CONTENT.

The site consists of at least one intact brown mussel midden, Mzonjani pottery on the surface and many upper grinding stones as well as WBS lower grinding stones.



UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY:

Stone Age	ESA:		MSA		LSA		ISA	
Rock Art	Paintings		Engravings		Other			
Iron Age	EIA:		LIA		IIA	x		
Historical	Historical Period:		Recent Past (last 60 yrs):					

Recorder's Site No.: RD029

Official Name:

Local Name:

Map Sheet:

GPS reading: S: 28° 31.913" E: 32°22.318" Alt: 30m

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION

RD029 is located in the red dune system, on the second dune cordon from the ocean. It is of low/ medium significance and has been sampled. The site will be monitored.

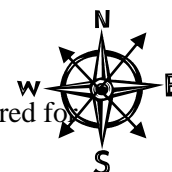
SITE DESCRIPTION:

Type of Site: Open

Merits conservation: It is of low/ medium significance and has been sampled. It will be monitored for as long as it remains possible.

Threats: Yes

What threats: RBM Mining



RECORDING:

Digital pictures Yes Tracings: Drawings:

Recorder/Informant: Name: Gavin and Louise Anderson

Address: PO Box 102532, Meerensee, 3901

Date: 26/01/2015

Owner:

References:

DESCRIPTION OF SITE AND ARTEFACTUAL CONTENT.

The site consists of a surface scatter of p.perna, oyster, fire-cracked stones, bovid bone, pottery, upper and lower grinding stones and iron ore.

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY:

Stone Age	ESA:		MSA		LSA	x	ISA	
Rock Art	Paintings		Engravings		Other			
Iron Age	EIA:	x	LIA		IIA	x		
Historical	Historical Period:	?	Recent Past (last 60 yrs):					

Recorder's Site No.: RD030

Official Name:

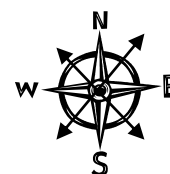
Local Name:

Map Sheet:

GPS reading: S: 28.53023' E: 32. 36247' Alt: 78m

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION

RD029 is located in the central part of the Red Dune system.



SITE DESCRIPTION:

Type of Site: Open

Merits conservation: The site is of low significance, but will be monitored for as long as it remains possible.

Threats: Yes

What threats: RBM Mining

RECORDING:

Digital pictures Yes Tracings:

Drawings:

Recorder/Informant: Name: Gavin and Louise Anderson

Address: PO Box 102532, Meerensee, 3901

Date: 09/09/2015

Owner:

References:

DESCRIPTION OF SITE AND ARTEFACTUAL CONTENT.

It is a multi-component site consisting of a surface scatter of Indeterminate Iron Age pottery, an Mzonjani potsherd and a LSA Irregular core.