PHASE II ARCHAEOLOGICAL ASSESSMENT

MILNERTON LAGOON MOUTH DEVELOPMENT

TECHNICAL REPORT

Prepared for

Milnerton Lagoon Mouth Development (Pty)Ltd

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TABLE OF CONTENTS

INTRODUCTION

Milnerton Lagoon Mouth Development (Pty)Ltd commissioned the Department of Archaeology, University of Stellenbosch to conduct a Phase II archaeological investigation at the Milnerton Lagoongate development.

The brief was as follows:

1. To conduct a Phase II archaeological investigation of any shell midden occurrences.
2. To monitor excavations during the construction period.

An executive report was submitted in June 1996 following an assessment of the shell midden occurrences. This recommended to the National Monuments Council that construction activities on the Lagoongate site proceed with the provisos that there was no encroachment on the 40m setback zone and that the construction work involved in the preparation of the site for development be monitored. This phase of the development has been completed. This is a final report in terms of the brief above giving some technical details (Fig.1)

METHODOLOGY

The main shell midden occurrence described by Kaplan (1995) and Avery (1995) was sampled by test pitting. The position of a deflated stone hearth and the shell midden was plotted (Fig. 2).

The monitoring of the construction work entailed tri-weekly inspections of all trenches and excavations made in construction, laying of services and roads. Sub-surface profiles of the well point was logged and sampled.

SHELL MIDDEN OCCURRENCE IN HUMMOCK DUNE BELT

The midden is located in the hummock dune belt of the 40m set back zone, designated as a managed conservation area. Erosion of the existing primary dune hummocks is marked. Recent storms caused considerable damage to the hummock dune belt as this forms the back-of-the-beach barrier. The dune barrier was breached in several places and wash overs dissected the sands to the basal calcrete layer. As a result of the wash overs the area behind the dunes was flooded. Repeated storm events in the past on this poorly protected section of shore may have destroyed what would have been extensive shell midden occurrences, making any surviving examples all the more significant.

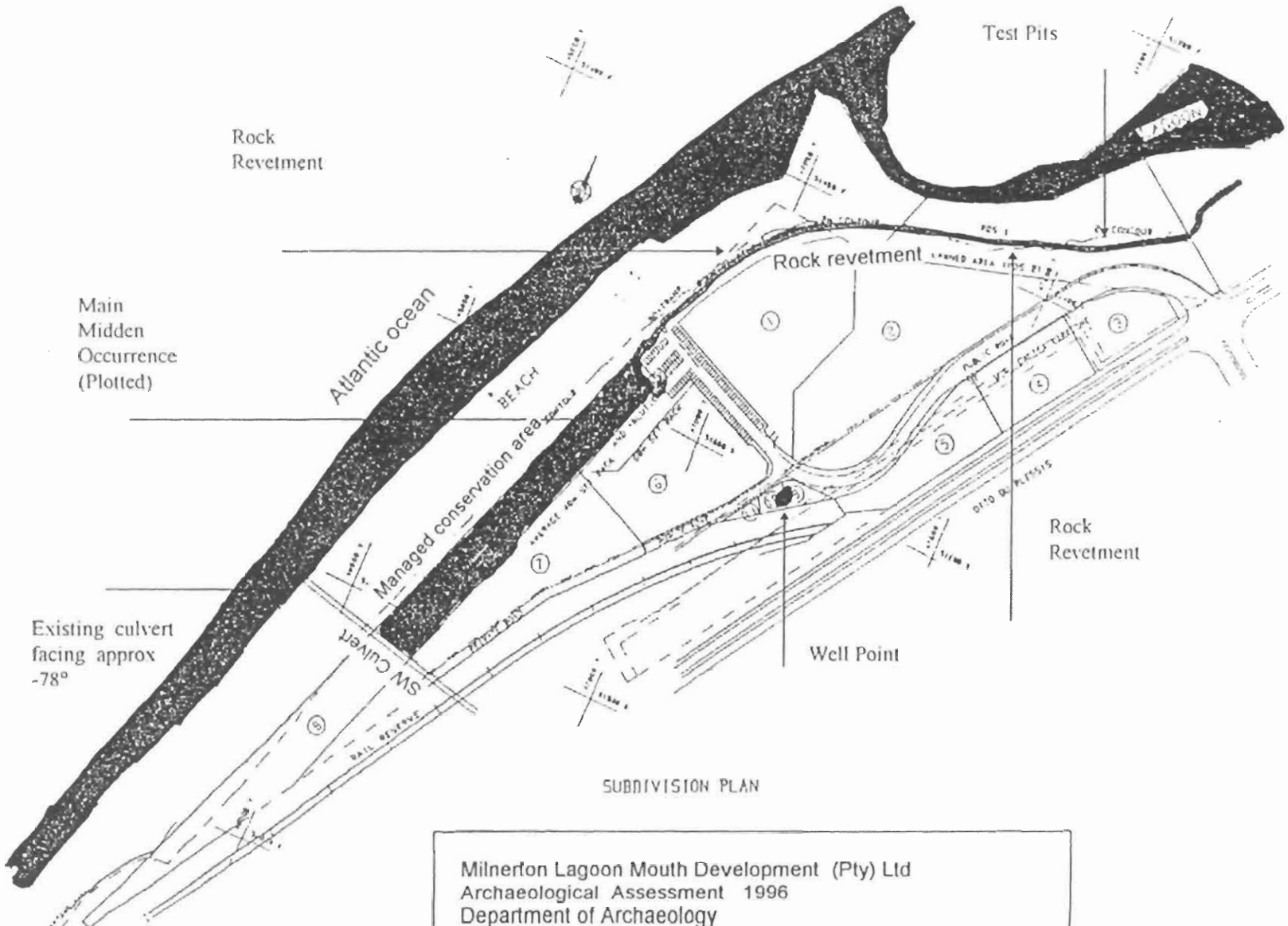

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Figure 1

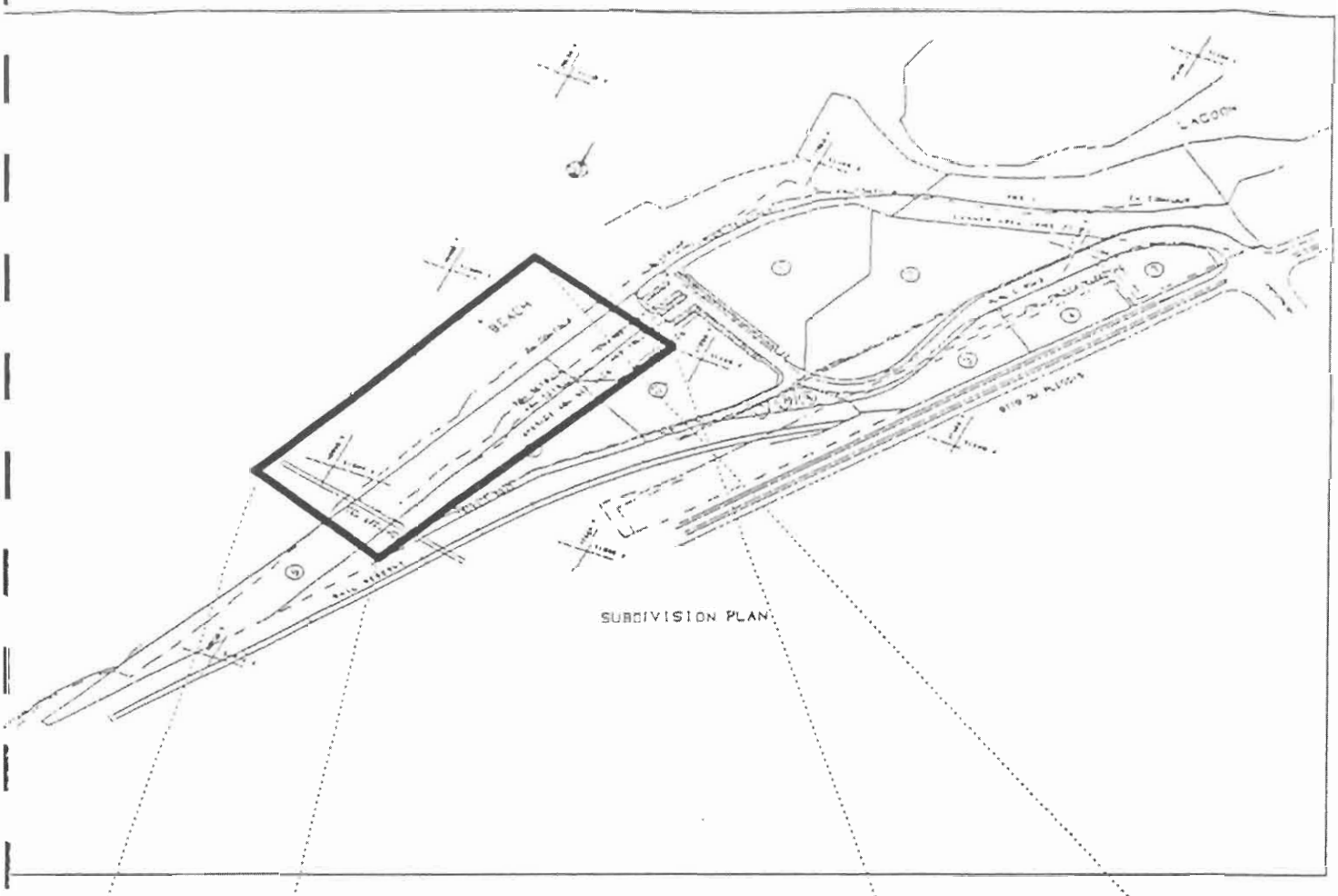
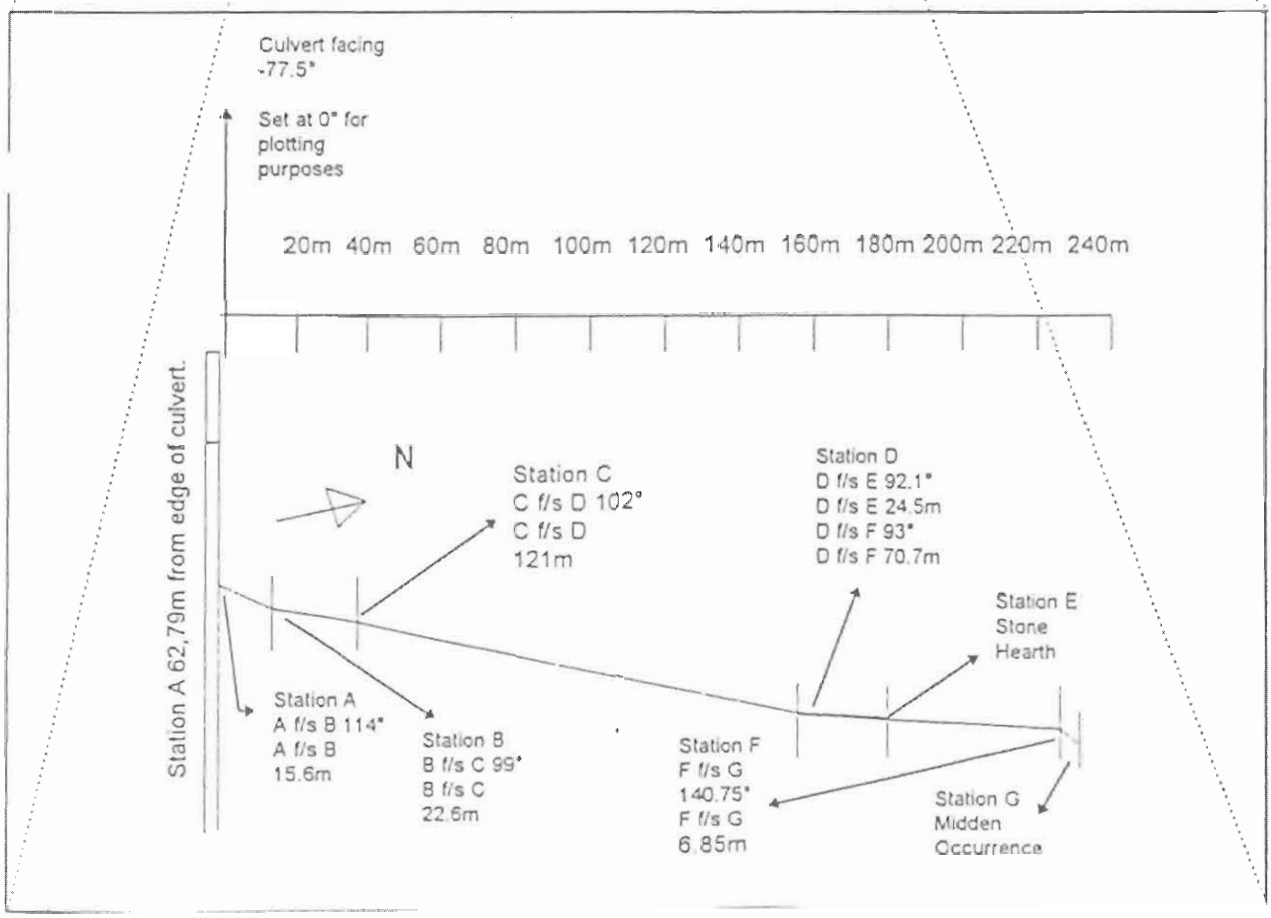


Figure 2

Diagram of traverse locating shell midden and stone hearth.



As noted by Avery (1995), the main and indeed only coherent midden occurs in a dark soil horizon that rests on a calcareous surface. A limited quantity of *in situ* archaeological material was excavated. Test pits dug next to the main midden occurrence indicated it was limited in extent and thus only a remnant. A sample of material was analysed from a 1,5m X 1,0m area. This material included shellfish, artefacts and fauna as detailed below.

SHELLFISH

Shellfish species present in the midden are mainly patellids and bivalves such as *Patella argenvillei, P. granatina, P. oculus, P. cochlear, Choromytilus meridionalis* (black mussel), *Donax serra* (white mussel), *Perna perna* (brown mussel) and *Aulacomya ater* (ribbed mussel). A few fragments of *Haliotis midae* (perlemoen) were also present. The shellfish species inventory is given table 1. This is the shellfish fauna of a rocky coast.

Table 1

Milnerton Lagoon Mouth Development (Pty) LTD					
Shellfish Species Milnerton Midden					
Species	Quant.	MNI	Species	Quant.	MNI
Patella argenvillei	26	26	Perna perna	156	78
Aulacomya ater	19	10	Choromytilus meridionalis	399	200
P. granatina & oculus	198	198	Donax serra	30	15
Helcion dunkeri	2	2	Crepidula porcellana	11	11
Patella cochlear	18	18	Burnupena spp.	65	65
Patella tabularis	2	2	Haliotis midae	fragm.	fragm.
Patella miniata	1	1	Cellana capensis	2	2
Patella concolor	1	1			

STONE ARTEFACTS

The stone artefacts recovered from the midden are typical of an informal Later Stone Age midden industry. Raw materials used were mainly quartz and quartzite. No retouched formal tools were noted. Most pieces recovered are irregular flake fragments and chunks. A grindstone and muller were also collected (Fig. 3).

Figure 3. Grindstone and Muller recovered from main midden occurrence

OTHER FAUNAL REMAINS

A limited quantity of bone was recovered from the main midden occurrence. Mammalian fauna includes a left anterior mandibular fragment of a juvenile *Arctocephalus pusillus* (Cape fur seal), a selection of small bovid limb bones and teeth and unidentifiable bone fragments. Reptilian fauna is represented mainly by tortoise. Fish, bird and small mammals make up a small portion of the sample.

OTHER ARTEFACTUAL REMAINS

A few pieces of ostrich egg shell and red ochre were excavated from the midden. A bone point was also retrieved. No pottery was found. A porcelain shard was found at the lagoon outlet. This beach area is regularly combed by local collectors of palaeontological and archaeological materials. Any artefacts exposed in a deflated midden area would be removed. A quantity of ostrich egg shell beads, some from the main midden occurrence were obtained from one of the collectors (Fig 4). The beads are of a range of sizes including many in a small size range.

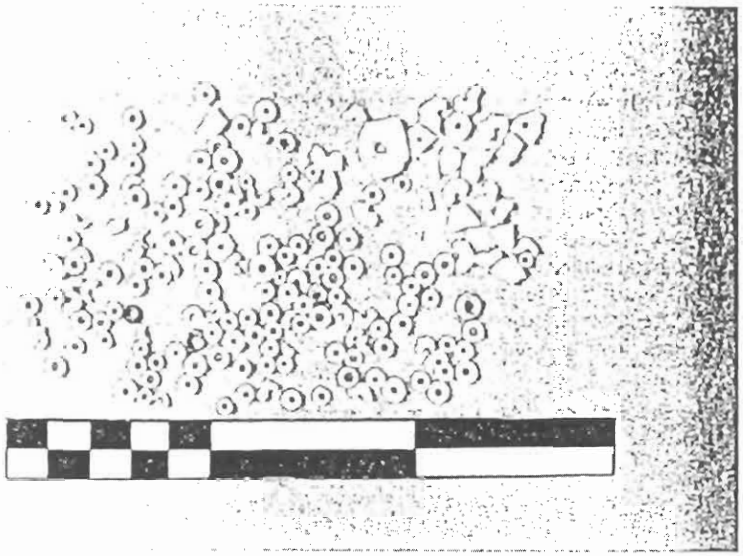


Figure 4. Ostrich Egg Shell

STONE HEARTH

Some 45m south of the main midden is a disturbed stone hearth feature. This is an example of the typical hearth associated with Khoekhoe settlements of the last 2000 years. The feature is perched on a small dune pinnacle and is sensitive.

MONITORING EXCAVATIONS DURING THE CONSTRUCTION PHASE

During the construction phase all earthmoving activities were monitored. An information session involving the construction workers and the monitoring archaeologist was held before any earthmoving was undertaken to alert the workers to the possibility of chance discovery of archaeological materials.

All profiles of trenches were regularly monitored and none revealed any such remains. However, a prominent natural shell bed was intersected in the base of trenches and geo-technical test pits excavated on the site which is of geological interest.

NATURAL SHELL BED (COQUINA)

The natural shell bed or coquina has been correlated with the Velddrif Shelly Sand Member of the Bredasdorp Formation (Kensley 1985, Rogers 1982). It is made up of marine molluscs, calcrete cobbles and pieces of shale. The coquina was exposed on the southern bank of the Diep River mouth (Fig. 5). It extends beneath the existing parking lot to the western boundary of the site opposite Otto Du Plessis Drive. Geo-technical test pits excavated on the southern parts of the property near the existing culvert also intersected the coquina. As noted by Kensley (1985) this shell bed appears to be a Late Pleistocene raised beach. The coquina has been radiocarbon dated to 33 750 ± 1750 years BP (Kensley 1985). This, however, is probably a minimum age and the true age is probably 125 000 years.

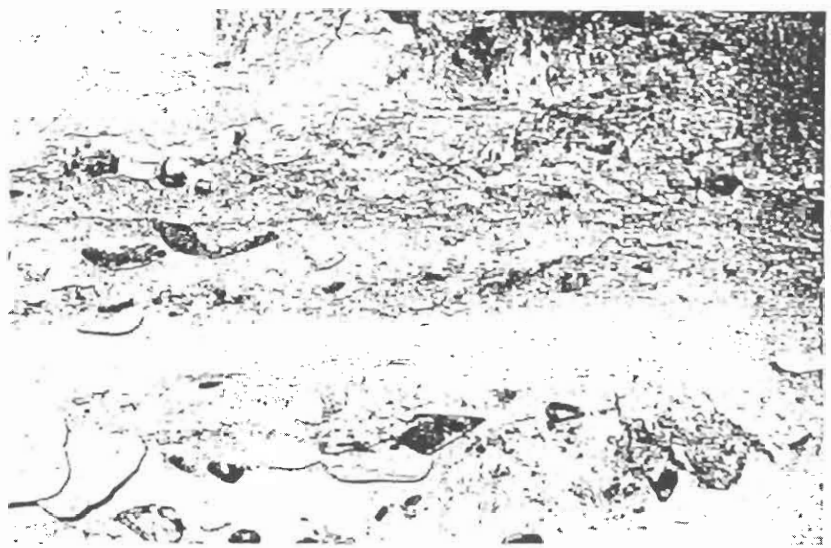


Figure 5. Exposure of the coquina on the southern bank of the Diep River Mouth.

Kensley (1985) reports that the deposit may have resulted from a episode of extinction due to raised salinity levels in the lagoon area. Wave action would then have deposited the shells on the beach. Marine molluscs are adapted to a salinity range between 33°/oo and 37°/oo. If the salinity is raised more than double or dropped by half this range, marine molluscs would not be able to survive (Day 1969). Millard & Scott (1953) describe similar modern events at the Milnerton lagoon where increased salinity levels make it impossible for marine molluscs to survive.

Species present in the coquina are mostly *Donax serra*, *Mactra glabrata*, *Lutraria-lutraria oblanga*, *Choromytilus mendionalis*, *Burnupena spp.*, *Aulacomya ater* and the giant barnacle *Austromegabalanus cylindricus*. Kensley (1985) provides a full species inventory for this Late Pleistocene raised beach occurrence (Fig 6).

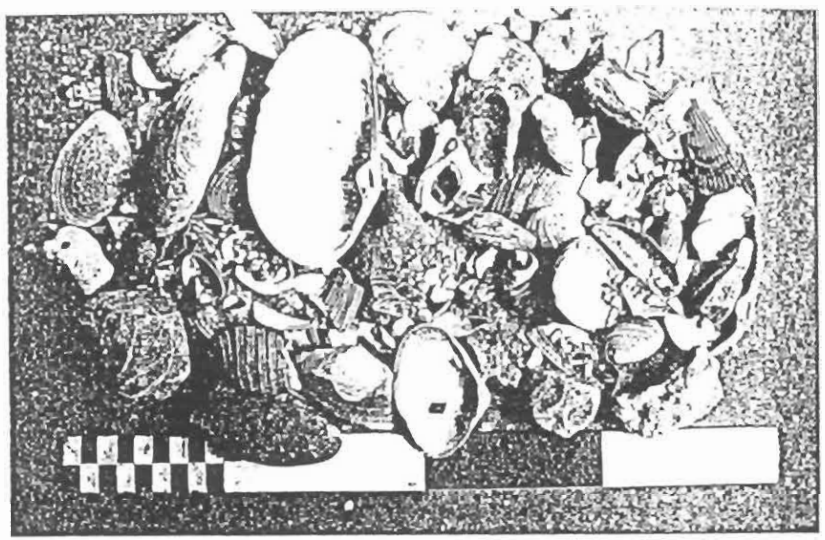
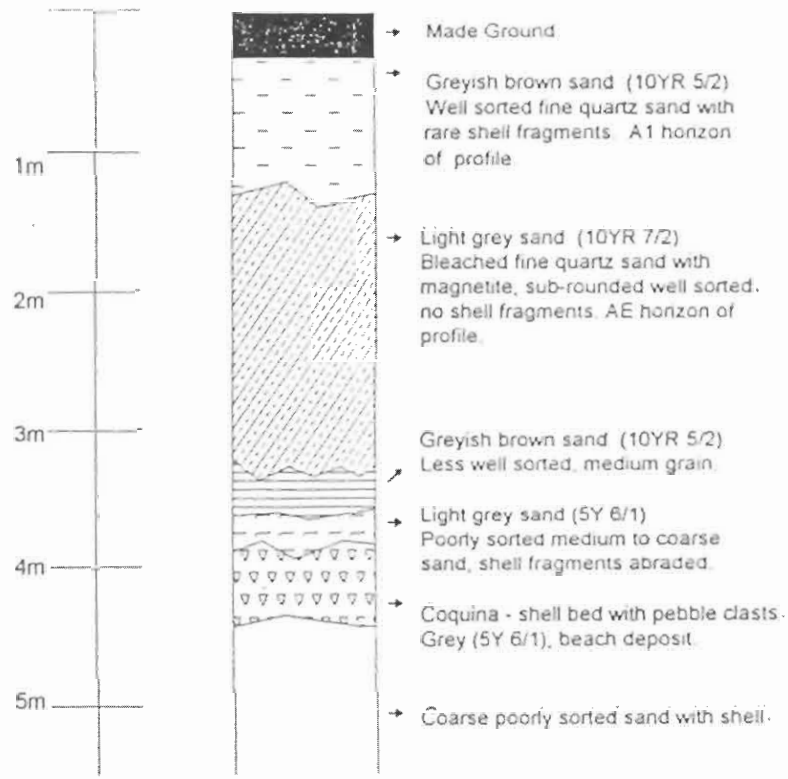


Figure 6. The coquina

STRATIGRAPHY AT THE WELL POINT

A profile of a trench excavated at the well point was logged and sampled. Soil samples were analysed under a binocular microscope and Munsell colour charts were used to record the predominant hue, value and chroma of the sediments (Fig 7).

During the recording of the well point profile a whale scapula was found protruding from the profile wall. The scapula rested directly on top of the coquina (Fig 8). Three marine worm-shells, *Vermetus natalensis*, with a modern range between Saldanha Bay and North Natal are attached to the scapula.



PROFILE AT WELL POINT
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Figure 7

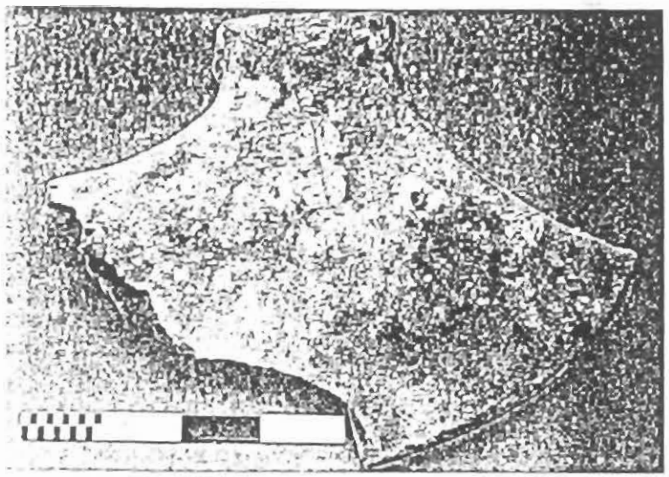

Figure 8. Whale scapula resting on coquina. The worm shells are also visible.

MONITORING EXCAVATIONS OF THE ROCK REVETMENT

A variety of Miocene and/or Pliocene fossils have been recovered by collectors on the Milnerton beach. Early Stone Age handaxes as well as fossils of Pleistocene age have also been collected (Avery 1995). There has been much speculation regarding the source of these fossils and stone artefacts. It was anticipated that excavations during the construction of the revetment might resolve the stratigraphic and chronological details of such finds. In practice the high water table limited stratigraphic observations. From the numerous exposures available, it was noted that the shell in the coquina was of a more fragmentary nature closer to the present coastline. A sandy shelly clay layer, below sea level, was noted extending along the length of the rock revetment. Samples were collected. The occurrence of stems of aquatic plants in their life positions suggest this deposit is associated with a back-barrier lagoon.

Some fossils were excavated from below sea-level by machines digging the revetment trench and included a whale vertebrate (Fig. 9).

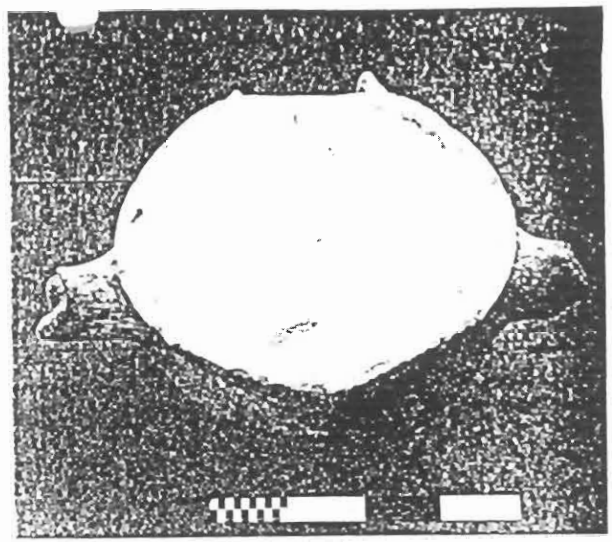

Figure 9. A Whale vertebra from the coquina bed recovered in digging the revetment.

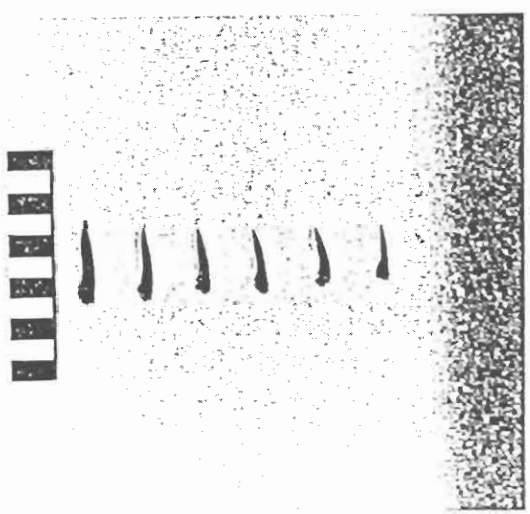

Figure 10. Shark teeth from a gravel bed in the present lagoon outside of the area of development. Material picked up by a local collector

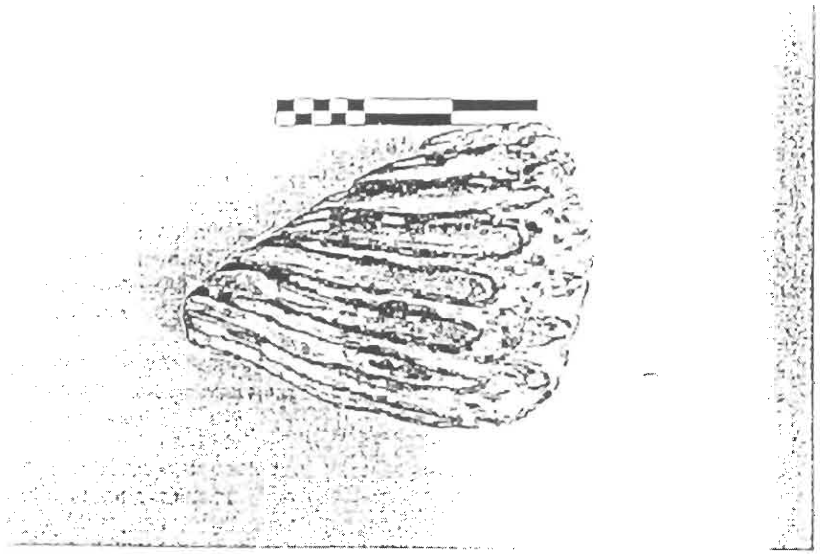

Figure 11a

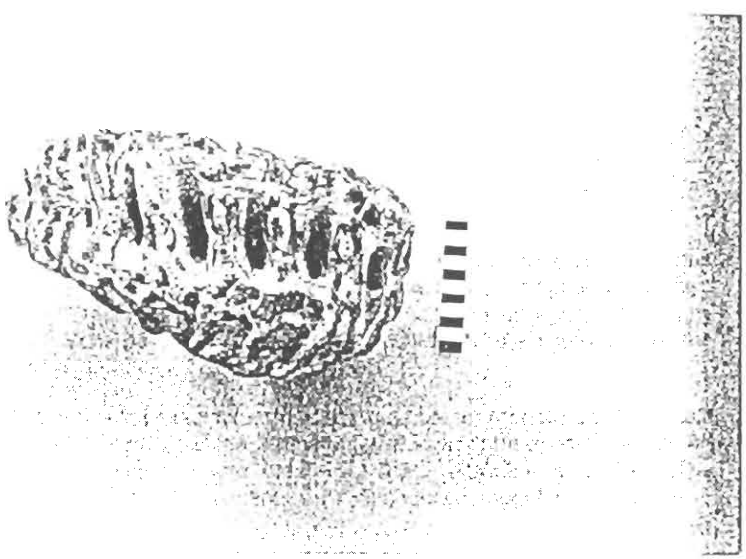

Figure 11b Two views, from the side (11a) and of the damaged crown (11b) of the tooth of an extinct type of elephant. Recovered from the gravel bed in the present lagoon and associated with shark's teeth

CONCLUSION

- The main shell midden occurrence identified as significant in the Phase I assessments was investigated by excavation and a small representative sample of archaeological materials collected from the site. The occurrence has been covered by geotextile and sand bags for protection. It is not considered worth further study but is significant as a shell midden close to Cape Town.
- A stone hearth was mapped near the midden and is a feature of note although the conservation status is low. It indicates a Khoekhoe encampment.
- The coquina is of geological interest as a probable Last Interglacial (125 000 year old) deposit.
- Close monitoring of all phases of construction in the development of the Lagoongate site to this date has not revealed any new archaeological sites.

RECOMMENDATIONS

1. The 40m setback zone conserves the most sensitive section of property and while there is no development in this zone the impact on any archaeological occurrences will be minimal. Regrading of the coast line, however, is of potential concern.
2. The buildings planned for the site are positioned on previously disturbed ground, levelled with a considerable thickness of fill. The potential impact on any archaeological sites would be minimal. The exception is for any possible feature beyond the existing SW culvert on the south end of the property.
3. As mentioned in the executive report, it would be appropriate and of benefit to the developers and the community if appropriate information on precolonial settlement in the area were made available to visitors. The advice of the National Monuments Council could be sought in this regard.

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