COEGA INDUSTRIAL DEVELOPMENT ZONE: CULTURAL SENSITIVITY PHASE 2 REPORT

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SUMMARY

Review of the phase 1 report

A survey of the Coega River estuary was conducted in January 1997 (Binneman & Webley 1997). The survey concluded that:

1. The river gravels which line the estuary contain stone artefacts in secondary context with no associated material. These river gravels were rated as low priority sites.

2. Coastal dunes and dense alien vegetation made it impossible to locate any archaeological sites inland on either side of the Coega River Mouth. There exists a possibility that shell middens may be buried under the dunes.

3. Shell middens were reported west of the River Mouth (Rudner 1968), but these could not be located and are probably buried under dunes and vegetation.

4. A fossil bone accumulation associated with Middle Stone Age (30 000 - 120 000 years old) stone artefacts were located in limestone deposits some 3 kilometres from the Coega River estuary (Gess 1969). Similar bone accumulations may be present in the limestone deposits along the coast.

5. Half a kilometre east of the river mouth, situated on a calcrete floor were large numbersof flaked stone and a number of shell middens. The shell middens were rated as important and it was recommended that these be excavated or sampled before development started. The stone tools were in secondary context and rated low priority.

Cultural sensitivity phase 2 report: October 1998 (see also Appendix 1, non-specialist report)

The purpose of the Phase 2 project was to undertake detailed mapping, excavations and collection of visible archaeological features and any significant material, east of the Coega River Mouth, which would be destroyed during the construction of the harbour development (Fig 1). A period of five days was allocated for the survey. The area was surveyed on foot and important features and material were identified for removal.

The eastern bank of the Coega River mouth consists of low dunes covered by alien vegetation. No archaeological remains or features were located in this area, but removal of these dunes may uncover these features. The area immediately east of these dunes composes a relatively flat calcrete floor or plateau some 10 metres above the high water mark. It runs

parallel to the coast for about 1,2 kilometres. From the immediate coastline it stretches some 200 metres inland until it disappears under low vegetated dunes. Since the initial survey in 1997, low dunes and sand flows have moved on to the calcrete floor, on to an area previously free of dunes, thereby covering archaeological material. The oldest evidence for human occupation observed during the survey along the Coega River coast was a few isolated well-weathered Middle Stone Age stone tools. No fossil bone from late Pleistocene or Holocene time periods were found. If such occurrences were present they were most probably destroyed by sand movement and exposure to other environmental conditions.

The most important features were a number of *in situ* and deflated shell middens. Stone tools, mainly of Holocene Later Stone Age (last 8 000 years) origin were scattered throughout the area. Surprisingly, few pot sherds (from Later Stone Age Khoekoen pastoralist origin - last 2 000 years) were found. No more than ten poorly preserved and eroded fragments were observed, none were decorated or displayed any other diagnostic features.

The stone tools were in secondary context, and it is clear that they originated from a surface above the hard calcrete floor which acted as catchment for the material. Although concentrations of stone tools were observed, no `patterns' or specific activity areas could be identified. Movement from a higher surface and continued dune and wind action has dispersed the tools and subsequently also destroyed the close association between the tools. Dark brown and grey soil horizons have been exposed in areas along the edge of the dunes, overlying the calcretes. Deflated shell middens and stone tools were located on top of these soil surfaces.

Few stone tools were collected due to the `random' dispersal of the material. The Albany Museum already has large collections of similar stone tools.

Thirteen small shell middens were located in the area during the survey. These were plotted using a GSP. Six of the middens were sampled by one a square metre excavation.

A representative sample of the area's archaeological `record' has been removed and development of the area can take place. However, the recommendations outlined in the phase 1 report and below are still to be followed by the developers.

Recommendations

Guidelines and procedures for developers are outlined in Appendix 2.

1. The main concern is the dunes which line both sides of the estuary mouth. Although no archaeological sites were found in these areas there during the survey, they may be covered by dunes and vegetation. It is highly possible that sites, human remains or fossil bone accumulations may be exposed during development, in which case archaeologists must be informed immediately.

2. All the *in situ* shell middens were found along the fringe of the low dunes lining the coastal foreland. Some were partly covered by these dunes and it is highly possible that there are more middens, also possible human remains and even fossil bone accumulations covered by them. If these dunes are removed during development care should be taken not to destroy the middens and archaeologists must be informed immediately when exposed.

3. It is recommended that an archaeologist be on site to monitor the development of these two potentially sensitive areas. Alternatively, it may be necessary to meet with the site manager

before development starts to explain what archaeological remains may be encountered.

General remarks

Legislation concerning palaeontological, archaeological and historical material

The National Monuments Act (Act No. 28 of 1969 amended) protects all palaeontological, archaeological and historical sites and material older than 50 years. It is an offense to destroy, damage, alter, remove from its original site, or excavate any such material without a permit from the National Monuments Council. If convicted of an offense in terms of the Act, a person could be liable for a fine of up to R10 000 or two years imprisonment, or both.

It must be emphasised that the conclusions and recommendations expressed in the cultural sensitivity phase 2 report along the Coega River Mouth coast are based on the visibility of cultural sites and may not therefore, reflect the true state of affairs. Many sites may be covered by soil and vegetation and will only be located once this has been removed. In the event of such finds being uncovered, archaeologists must be informed immediately so that they can investigate the importance of the sites and excavate or collect material before it gets destroyed. The *onus* is on the developer to ensure that this agreement is honoured in accordance with the National Monuments Act.

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RESULTS FROM THE SURVEY: SPECIALIST REPORT

Excavations

Shell midden 1 (33.47.17S; 25.42.14E)

Middens 1 & 2 were situated a few metres apart on the very edge of the low coastal dunes which line the coastal foreland. The full extent of midden 1 is not known because the *in situ* midden deposit was completely covered by dune sand and vegetation. A thin scatter of shell and a few stone tools exposed at the edge of the dune indicated the presence of a possible buried midden. An one square metre excavation revealed a compact midden some 10 cm thick. The midden is estimated to cover an area of at least six square metres. A shell sample will be submitted to CSIR for radiocarbon dating.

Subsistence

The midden comprised mainly *Donax serra* (white mussel) (92,4%), expect for a few small *Perna perna* (brown mussel) (7,6%). The mean size of the *Donax serra* was 58,0 mm (Table 1). No other food remains, i.e., bone or plant remains were recovered.

Cultural remains

A small number of typical Wilton Industry formal silcrete stone tools, including scrapers, an adze and an awl were recovered from the excavation (Table 2). This was the only midden which contained formal silcrete stone tools in the area surveyed. A few small quartzite stone flakes and the occasional hornfels flake were also found among the scatter of shell.

Shell Midden 2 (33.47.18S; 25.42.11E)

Midden 2 was an eroded midden situated on a dark brown soil horizon some 15 metres long and consisted of a thin scatter of fragmented shell. A large number of quartzite flakes, other flaked and battered quartzite implements (hammerstones etc.), a few silcrete flakes, but no formal tools and the occasional hornfels flake were associated with the shell. No stone tools were collected.

Thin scatters of shell and some stone tools were present in deflation hollows in between the dunes, which may indicate that there are more middens in the general area covered by dunes.

Shell middens 3-9

The major concentration of visible shell middens occurred some 100 meters west of Middens 1 & 2. Middens 3-9 were situated in an almost straight line along the fringe of the dunes over a distance of some 200 metres. This may indicate that there are more middens covered by the dunes further inland.

Shell middens 3 & 4 (33.47.19S; 25.42.09E)

Midden 3 and 4 were situated 4 metres apart. Both middens covered about 4 square metres of shallow deposit (5 cm deep), but contained a large number of quartzite stone flakes, cores, flaked cobbles and several lower and upper grindstones and hammerstones scattered on and between the

middens. A few silcrete flakes were found on or close to the middens. A representative collection of stone tools were made. A one square metre was excavated at Midden 3.

Subsistence

Donax serra (97,1%) was the dominant shellfish species collected. The mean size was 58,9 mm. The only other species was *Perna perna* (2,9%) (Table 1). Apart from a few unidentifiable fragile bone fragments, no other food remains was recovered.

Cultural material

Although a large number of flaked stone were present in the vicinity of the midden, only 8 quartzite flakes and one flaked upper grindstone were recovered from the excavation.

Shell midden 5 (33.47.19; 25.42.9E)

This midden was situated 10 metres west of Midden 3 and measured some 7 x 2 metres in size. The deposit consisted of 15 cm of compact shell and a number of non-formal quartzite stone flakes, and occasional hornfels and silcrete flakes.

Some 17 metres north of the midden were three small circular stone feature of fire-cracked stone, presumably fireplaces. A few quartzite flakes were associated with the stone features, but no charcoal was observed to support the observation.

Subsistence

Donax serra contributed 96,4% to the shellfish diet and *Perna perna* only 3,6%. The mean size of *Donax serra* was 59,6 mm. The cranial remains of a small bovid cf. *Raphicerus* sp. were the only mammal remains recovered. These included a horncorn, skull fragments and some teeth, and probably belonged to the same individual. A few marine fish fragments were found, some of these could belong to cf. *Rhabdosargus holubi* (Cape stumpnose). A large number of tortoise carapace fragments were recovered. These probably belonged to the single *Homopus areolatus* (`padlopertjie') identified. The remains of a single sub-adult marine bird, *Phalacrocorax carbo lucidus* (white breasted cormorant) were also found (Table 3).

Cultural material

The only cultural material found in the excavation was 9 untrimmed quartzite flakes.

Midden 6 & 6B (33.47.21S; 25.42.7E)

Midden 6 was partly covered by dune sand and it is estimated to cover some 10 square metres. A shell sample from this midden will be submitted for radiocarbon dating.

Subsistence

As is the case at the other middens, although at a slightly lower percentage, *Donax serra* (84,2%) also dominated the shellfish diet. The mean size of *Donax serra* was 61,8 mm. Slightly more *Perna perna* (15,8%) were collected than at the other middens.

Little mammal remains were recovered, but at least 1 small bovid cf. *Raphicerus* sp. and one medium size bovid were captured. *Donax serra* comprised 92,4% of the shellfish remains and

Perna perna the remainder. Two species of fish were present, *Pomadasys commersoni* (spotted grunter) and cf. *Rhabdosargus holubi* (Cape stumpnose), both are common species in estuaries. These fish were probably taken in the estuary rather than the sandy beach, unless they were collected as beach wash-ups. Remains of two sub-adult marine birds, *Phalacrocorax carbo lucidus* (white breasted cormorant) and *Sphenisus demersus* (jackass penguin), were also found.

Cultural material

A large number of quartzite flakes, other flaked stone and a number of broken upper and lower grindstones were present on the surface. 19 Quartzite flakes (of which one was stained with red ochre) and 4 hornfels flakes were recovered from the excavation. No silcrete implements were found on the surface or in the excavation. Two lower grindstones and an upper grindstone were collected from the surface.

A large number of ostrich eggshell fragments (111) were recovered from the surface and the excavation. Two ostrich eggshell beads and two *Nassarius kraussiana* shells (also called tick shells) were also found during the excavation. These shells are found in estuaries and were often used for making beads (Table 4).

It is not clear if the thin shell concentration, called 6B, is a separate midden or extension of Midden 6. There were a large number of cobbles randomly dispersed and a few flaked stone tools. A small concentration of cobbles and fire-cracked stone was located on the edge of the shell scatter, which may represent a fire place. No charcoal or other evidence were found to support this assumption.

Shell middens 7 & 7B (33.47.20S; 25.42.7E)

This shell midden was 10 metres west of midden 6 and partly covered by dune sand. A thin deposit of less than 5 cm covered some 6 square metres. The midden was not sampled. A few quartzite cobbles and flakes and occasional hornfels flakes were present.

Midden 7B was a small concentration of shell 4 metres west of midden 7. The deposit was less than 5 cm deep and covered one square metre. These middens were not sampled.

Shell middens 8, 8B & 8C (33.47.19S; 25.42.03E)

Twenty metres west of midden 7 were three shell middens close together. Middens 8 and 8B were small concentrations of shell less than 5 cm deep, each covering some 4 square metres. A few broken cobbles, a few quartzite stone tools were present on the surface. Only midden 8c was sampled.

Midden 8C was partly covered by dune sand with some 4 metres of deposit exposed. A one square metre area was excavated to a depth of 10 cm.

Subsistence

Donax serra (97,7%) accounted for the bulk of the shellfish remains and *Perna perna* only 2,7%. The remains of one *Homopus areolatus* and a fragment of ostrich eggshell were the only other food waste recovered. The mean size of *Donax serra* was 62,1 mm.

Cultural material

The only cultural material found were a broken quartzite backed flake, 7 quartzite flakes, 1 hornfels

flake and a *Nassarius kraussiana* shell.

Shell midden 9 (33.47.20.S; 25.42.03E)

Midden 9 was situated some 15 metres west of midden 8 at the edge of dune. Only some three metres of a 15 cm deep deposit was exposed and one square metre was excavated. Apart from one fragment of ostrich egg shell and two small fragments of bone no other food or cultural remains were recovered.

Donax serra (96,1%) and *Perna perna* (3,9%) were the only two shellfish species collected. The mean size of *Donax serra* was 62,3 mm.

Shell middens 10 (33.47.25S; 25.42.04E) & **11** (33.47.25S; 25.42.02E)

Both were thin surface scatters of fragmented shell which covered some 20 square metres. A large numbers of flaked stone were present on and around the features. No other remains were found.

Shell midden 12 (33.47.29S; 25.42.01E)

This shell midden covered some 10 square metres with less than 5 cm of deposit. Apart from flaked stone no other remains were present. A small circular stone feature of cobbles and fire cracked stone was found close to the midden. This may represent a fire place, but no evidence could be found to support this assumption.

Shell midden 13 (33.47.38S; 25.41.45E)

This shell midden was recorded during the first survey, but is now completely covered by dunes.

Historical material (33.47.21S; 25.42.18E)

Two well eroded fragments of Willow pattern porcelain was recovered from a rocky outcrop, which may have washed-up from a nearby nineteenth century shipwreck.

DISCUSSION

Although the area surveyed was occupied extensively in the past (judging from the large quantity of flaked stone scattered throughout the area), the `quality' of the archaeological remains and features in general were poor. The remains date mainly from the past 5 000 years, but there was evidence from occasional well patinated Middle Stone Age stone artefacts that the area was also inhabited between 30 - 120 000 years ago. No Earlier Stone Age tools were found (older than 120 000 years).

Unlike other areas along the Eastern Cape coast, especially the rocky coasts, the Coega River Mouth shell middens were poor in size, depth of deposit, quality and quantity of food waste and cultural material.

Research along the Eastern Cape coast and elsewhere (Binneman 1996; and others) indicated that hunter-gatherer groups settled near rocky coasts to exploit shellfish concentrations. Sandy beaches on the other hand are in general poorer in shell middens, for the reason that there are limited shellfish resources, usually only *Donax serra* (also not visible). Thus, the variety in possible marine resources are limited and therefore one would expect limited occupation along sandy beaches. The Coega River Mouth area is a to certain extent an exception to the rule, probably as result of the presence of large communities of *Donax serra* in the sandy beaches along this part of the Eastern

Cape coast.

The relatively large number of visible *in situ* shell middens (although small), eroded middens and large numbers of flaked stone are indications that the area survey was much preferred by prehistoric groups for occupation. The size of the middens, however, indicate that the time of stay was for short periods only or that the groups were relatively small.

A surprise of the survey was the virtual absence of pastoralist ceramics or remains. The reason for so little evidence for the presence of Stone Age pastoralists in the area is not known. A few circular stone features, usually evidence for pastoralist occupation, were found, but ceramics were absent.

The area was littered by thousands of stone tools, mostly informal quartzite flakes, other flaked stone, hammerstones and upper and lower grindstones. Unfortunately these stone tools were in secondary context and the hard calcrete floor acted as a catchment for them. Originally the tools must have been deposited on dunes or soil horizons much higher than their present position. The only microlithic formal stone tools were manufactured of silcrete and occasionally from hornfels. Formal tools, which are typical of the Wilton Industry, were found at only one shell midden (midden 1). Presumably the silcrete was transported from some distance further inland to the coast, because there are no outcrops close to the coast. The occupants of midden 1 were probably visitors from the inland mountains, who made occasional trips to the coast to supplement the mineral content in their diet. The only `formal' tools made of quartzite were large backed flakes (only a few were observed).

Elsewhere along the Eastern Cape coast, i.e., Cape St Francis coast, a distinction can be made between different middens belonging to different groups based on the stone tool content. These are classified either as Wilton (silcrete or quartz microlithic tools) or Kabeljous (large quartzite tools with backed flakes) Industries. The Wilton Industry middens were created by inland groups who visited the coast occasionally and brought silcrete or quartz with them. The Kabeljous Industry belong to people living along the coast all year round and used locally available quartzite for stone tool manufacture.

The resolution along the Coega River Mouth coast is not so clear, but if the Cape St Francis model can be extended to the surveyed area, then at least one midden (midden 1) can be classified as a typical Wilton midden, and one as a possible Kabeljous midden (midden 8C). A broken backed flake was recovered from this midden. All the other middens sampled are probably also Kabeljous middens, because no silcrete stone tools were recovered from them. If these assumptions are correct then a similar settlement pattern to the Cape St Francis model existed along the Coega River Mouth coast (Binneman 1996).

Apart from the stone tools other cultural material were virtually absent from the middens. The near absence of other food waste from the middens, such as terrestrial mammal fauna, fish and other marine fauna may support the suggestion that the middens represent short stays of a few days or a week or two. During this period the staple food was mainly shellfish.

The fish remains (both species identified are common to estuaries, usually in summer) and *Nassarius kraussiana* shells (also found in estuaries) indicate that hunter-gatherer groups visited the Coega estuary. It is assumed that the fish were captured in the shallow waters of the estuary.

There is little difference in the mean size of the of *Donax serra* between the shell middens. The size ranges are similar to those recorded from shell middens along the Cape St Francis coast. Depending on the time span of the middens, it would appear that the collecting of *Donax serra* by prehistoric people had little effect on the general ecology of these animals. There was a number of *Acatina*

zebra (landsnail) present in all the middens, but it is doubtful if they were collected as food.

CONCLUSIONS

The archaeologists have excavated and sampled most of the important *in situ* features. In general the results were disappointing when compared with other areas along the Eastern Cape coast. No `new or unique' features or material were found during the survey. The shell middens were small with little depth of deposit, dominated by one shellfish species and with virtually no cultural or food remains. No Khoekoen pastoralist sites were found or any significant ceramic remains.

The stone tools were in secondary context and consisted mainly of quartzite flaked cobbles. Therefore no large scale collecting of these artefacts were conducted, because the Albany Museum already houses large collections of similar stone artefacts from the area and from elsewhere along the Eastern Cape coast.

Nevertheless, the excavations have contributed to our understanding of prehistoric coastal settlement and subsistence patterns of an area in which little research has been conducted before.

In general the area is relatively poor in large and important archaeological sites. A representative sample of the area's archaeological `record' has been removed and development of the area can now take place. However, the recommendations outlined in the first report and below are still to be followed by the developers.

RECOMMENDATIONS

1. The main concern is the dunes which line both sides of the estuary mouth. Although no archaeological sites were found in these areas there during the survey, they may be covered by dunes and vegetation. It is highly possible that sites, human remains or fossil bone accumulations may be exposed during development, in which case archaeologists must be informed immediately.

2. All the *in situ* shell middens were found along the fringe of the low dunes lining the coastal foreland. Some were partly covered by these dunes and it is highly possible that there are more middens, also possible human remains and even fossil bone accumulations covered by them. If these dunes are removed during development care should be taken not to destroy the middens and archaeologists must be informed immediately when exposed.

3. It is recommended that an archaeologist be on site to monitor the development of these two potentially sensitive areas. Alternatively, it may be necessary to meet with the site manager before development starts to explain what archaeological remains may be encountered.

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APPENDIX I: NON-SPECIALIST REPORT

The survey was conducted along the coastal foreland east of the Coega River. The area consists of a hard calcrete floor some 10 metres above the high water level. The floor was exposed over a distance of some 1,2 kilometres and 200 metres wide, lined with low vegetated dunes on the land side.

The oldest evidence for prehistoric people living in the area surveyed comes from the river gravels which line the Coega River estuary. Large stone tools, called handaxes and cleavers, dating from the Earlier Stone Age, approximately a million years to 200 000 years ago, were found mixed with river gravels. There was no other cultural material or food remains, i.e., bones of animals preserved. These stone tools were in secondary context (disturbed or transported from their original place of manufacture) and provided limited information and were therefore not collected. The Albany Museum has a collection of these stone tools.

The oldest evidence for prehistoric groups living along the Coega River coast were a few weathered Middle Stone Age stone tools. These stone tools, points and blades, were manufactured between 30 000 and 120 000 years ago (late Pleistocene). No other cultural or food remains (shellfish, marine fauna or terrestrial fauna) were preserved. Fossil bone (bone hardened by ground water and minerals) was found in limestone or calcrete deposits some 5 kilometres inland from the Coega estuary, associated with Middle Stone Age stone tools. The area surveyed consists of calcrete deposits and the possibility exists that similar bone and stone tool concentrations may be found when development takes place.

The majority of the archaeological remains found during the survey consisted of accumulations or heaps of shell (shell middens) and stone tools. These remains date from the past 8 000 years (Holocene). These accumulations of shell, called shell middens, are often concentrated opposite or near rock outcrops where abundant and a wide range of shellfish species are to be found in the intertidal zone. Shell middens are usually, but not as a rule, less abundant opposite sandy beaches, mainly because there is only one shellfish species available, namely *Donax serra* (white sand mussel) which burrow under the sand. Shell middens are not always visible because they are covered by dunes and vegetation and are often encountered during building operations in coastal towns and holiday resorts. Shell middens contain a wealth of information, not only about past subsistence and cultural patterns, but also of past environments. Archaeological evidence indicates that people of different cultural groups exploited the shoreline for food for many thousands of years. The oldest evidence in the world of marine exploitation by early people comes from a cave some 40 km west of Cape St Francis in the eastern Cape and dates to 120 000 years ago.

Shell middens represent the campsites/living sites of indigenous people who exploited the shoreline for food. Most people refer to them simply as `strandloper' remains. However, `strandlopers' were not a distinct ethnic/cultural group, and the term rather describes a way of life or socio-economic activities. Shell middens are simply prehistoric `rubbish' dumps of foodwaste, mainly the shells of the different species collected, deposited by people living along the coast. Apart from the shells, remains of marine fish, mammals and birds and terrestrial fauna and plant foods are also present in the middens. Mixed with the foodwaste are also cultural materials such as stone tools, pottery, bone tools and shell ornaments. Human burials are often found in shell middens.

From the records of early travellers and settlers in southern Africa it is evident that the indigenous population in the eastern Cape consisted of at least three distinct cultural groups exploiting marine resources at the time of contact. Popularly these groups are known as Bushman (hunter-gatherers), Hottentots (Khoekoen pastoralists) and Bantu-speaking people (black mixed farmers). Hunter-gatherers lived in most of southern Africa for the past 20 000 years in small bands within roughly

defined territories. Their movements within these territories depended on the seasonal availability of food resources at different times and places; this also included the coastal resources. Khoekoen pastoralists settled in the Eastern Cape coastal region some 1800 years ago (AD 100), they possessed domestic stock (sheep, goats and cattle) and ceramic vessels (clay pots). Although little is known about the early black mixed farmers in the eastern Cape we know that they were already living in the Great Kei River valley and along the East London coast 1250 years ago (AD 700). Thus, from the historical and prehistoric observations it is clear that the term `strandlopers' refers not to a specific ethnic group or culture, but to several groups.

It is estimated that the oldest shell midden (will be confirmed by a radiocarbon date) is midden 1, which contained microlithic stone tools (small scrapers, bladelets, borers and chisels). Usually these stone tools were manufactured of fine grained raw materials such as chalcedony and silcrete and are found in caves and shelters further inland in the adjacent Cape mountains. These stone tools were made by hunter-gatherer people from a time period called the Wilton Period, and date between 8 000 years old and historical times. Midden 1 was most probably created by an inland group who visited the coast from time to time or on a regular seasonal basis and may date older than 5 000 years old. This also explains the presence of silcrete tools along the coast. There are no silcrete outcrops along the coast and the raw material was brought to the coast by inland visitors.

The majority of the middens along the Coega River coast were probably the remains of groups who were permanent residents of the coast and manufactured stone tools of locally available quartzite and shale beach cobbles. These middens are estimated to date within the past 4000 years. The few ceramic fragments (clay pot sherds) indicate that possibly Khoekoen pastoralists were also living or passed through the area. Unfortunately no evidence of their campsites or remains of domesticated animals such as sheep and cattle could be positively identified. The few pot sherds date within the past 2000 years.

All three these groups exploited the sandy beaches as well as the dune field and the adjacent vegetated habitats. Unfortunately, little food remains (marine fish and birds and terrestrial fauna), apart from shellfish remains were recovered from the shell middens. However, food remains recovered from two middens (middens 5 & 6), provide us with some insights of the prehistoric groups' subsistence patterns. They collected mainly *Donax serra* (white sand mussel) from the sandy beaches, but also collected the little *Perna perna* (brown mussel) that was available from the few rocks present along this part of the coast.

Both the fish species identified *Pomadasys commersoni* (spotted grunter) and cf. *Rhabdosargus holubi* (Cape stumpnose), are commonly found in estuaries, and it is assumed that they captured the fish in the shallow waters of the Coega River estuary. The presence of *Nassarius kraussiana* shells (also called tick shells and often made into beads), which only occurs in estuaries, support this assumption.

The remains of sub-adult marine birds, *Phalacrocorax carbo lucidus* (white breasted cormorant) and *Sphenisus demersus* (jackass penguin) were also found in the shell middens. These birds were either easy to catch or were collected as beach wash-ups. It is also possible that prehistoric groups timed their stay at the coast to exploit this food resource, because marine birds are most vulnerable at the sub-adult stage.

Hunting or trapping of small bovids such as cf. *Raphicerus* sp. (greybuck and steenbuck) probably took place in the adjacent dunes and scrubland. The remains of tortoise (*Homopus areolatus* - padlopertjie) indicate that this was also an important food resource, not only for its flesh, but also for it carapace which can be used as a container. The many ostrich eggshell fragments recovered at midden 6 also underline the importance of ostrich eggs in the subsistence of prehistoric groups. The

egg provided food and the shell was used as a water container and the fragments of broken eggs were made into beads.

The little food waste found, such as terrestrial mammal fauna, fish and other marine fauna, and the relatively small size of the middens, may suggest that the middens represent short stays of a few days or a week or two. During this period the staple food was mainly shellfish. Trips to the coast were probably made on a seasonal basis to supplement the mineral content in their diet.

Apart from the thousands of stone tools which occurred in the area, no other cultural remains were found. These stone tools date within the last 5 000 years, but were in secondary context. Originally the tools must have been deposited on dunes or soil horizons much higher than their present position, and the hard calcrete floor acted as a catchment for them.

Despite the relatively little cultural and food remains recovered from the shell middens, the survey provided important data and contributed to our understanding of prehistoric settlement and subsistence strategies in an area about which we previously knew little.

APPENDIX 2: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL: guidelines and procedures for developers

1. Shell middens

Shell middens can be defined as an accumulation of marine shell deposited by human agents rather than the result of marine activity. The shells are concentrated in a specific locality above the high-water mark and frequently contain stone tools, pottery and bone remains. Shell middens may be of various sizes and depths, but an accumulation which exceeds 1 m^2 in extent, should be reported to an archaeologist.

2. Human Skeletal material

Human remains, whether the complete remains of an individual buried during the past, or scattered human remains resulting from disturbance of the grave, should be reported. Frequently human remains are found buried in a sitting position with a flat stone capping and developers are requested to be on the alert for this.

3. Fossil bone

Fossil bones may be found embedded in calcrete deposits at the site. Any concentrations of bones, whether fossilized or not, should be reported.

4. Stone artefacts

These are difficult for the layman to identify. However, large accumulations of flaked stones which do not appear to have been distributed naturally, should be reported. If the stone tools are associated with bone remains, development should be halted immediately and archaeologists notified.

Table 1. Frequencies of shellfish per volume from the Coega River Mouth shell middens.

	Midden 1			Midden 3			Midden 5			Midden 6			Midden8			Midden 9		
	n	%	mm	n	%	mm	n	%	mm	n	%	mm	n	%	mm	n	%	mm
Marine shell																		
Donax serra	182	92,4	58,0	267	97,1	58,9	319	96,4	59,6	170	84,2	61,8	209	97,7	62,1	173	96,1	62,3
Perna perna	15	7,6		8	2,9		12	3,6		32	15,8		5	2,3		7	3,9	
Total	197	100,0		275	100,0		331	100,0		202	100,0		214	100,0		200	100,0	
Landsnail																		
Acatina zebra	17			5			10			17			3			4		

Table 2. Frequencies of stone artefacts from the Coega River Mouth shell middens.

	Midden 1	Midden 3	Midden 5	Midden 6	Midden 8	Midden 9
Waste						
Flakes						
quartzite	6	8	9	19*	7	
hornfels	7			4	1	
silcrete	19					
Total	**32**	**8**	**9**	**22**	**8**	
Utilised						
Flakes						
hornfels	1					
silcrete	1					
Grindstones						
Rubbers	1					
Flaked rubber		1				
Total	**3**	**1**				
Formal tools						
Scrapers						
silcrete	5					
Adzes						
silcrete	1					
Cores						
silcrete	1					
Awls						
silcrete	1					
Backed flakes						
quartzite					1	
Total	**8**				**1**	

Table 3. Food remains from the Coega River Mouth shell middens.

	Midden 1	Midden 3	Midden 5	Midden 6	Midden 8	Midden 9
Mammals						
cf. *Raphicerus* sp.			1	1		
cf. Medium bovid				1		
Tortoise						
Homopus areolatus			1		1	
Marine birds						
Phalacrocorax c. lucidus			1	1		
Sphenisus demersus				1		
Marine fish						
Pomadasys commersoni				1		
cf. *Rhabdosargus holubi*			1	1		

Table 4. Cultural remains from the Coega River Mouth shell middens.

	Midden 1	Midden 3	Midden 5	Midden 6	Midden 8	Midden 9
Ostrich eggshell						
Beads				2		
Fragments				111	1	
Nassarius kraussianus						
Shell				2	1	