



South African Museum

Archaeological Survey at Ysterfontein: Coast to Ysterfon- teinsoutpan (3318AC)

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Introduction

Participants

The South African Museum was commissioned by Bernard Oberholzer on behalf of the 16 Mile Beach Development Trust to conduct an archaeological survey of the area between the coast (portion of old Forestry area) and the Ysterfontein-soutpan.

V.M. van Zyl prepared the figure.

Mr. and Mrs. I. de Villiers are thanked for their assistance and hospitality.

Objective and Method of Survey

The primary objective of the surveys was to locate, identify and plot on maps archaeological sites on the De Villiers property. It was not considered necessary to cover the whole property at this preliminary stage, the objective being to establish the potential in key areas that might provide suitable locations for development. It was anticipated that sites or artifacts from the Later Stone Age period could occur in the proposed development area.

The survey consisted of an initial examination of existing records in the South African Museum and in archaeological and other publications. The area between the coast and Rooipan was thoroughly traversed on foot. Additional areas on slopes of the east side of Rooipan and around the western and north western shores of the Ysterfonteinsoutpan were traversed. Figure 1 indicates the areas traversed and positions of the sites located during the course of the survey.

Background to the Nature and Importance of Archaeological Sites

For the reader's convenience, brief background information on the nature and importance of archaeological sites is provided in Appendix A.

Archaeological Survey at Ysterfontein: Coast to Ysterfonteinsoutpan

Results

Shell Middens, Stone Artifact Scatters and Palaeontological Sites Located (Figure 1)

The search of records in the South African Museum revealed that some sites were known on the coast in the area to be surveyed. In addition, two publications dealt with archaeological occurrences in the area. Rudner (1968) described a large midden-covered area on high dunes some two kilometres north of the village of Ysterfontein and provided details regarding cultural items and pottery on the various occurrences he examined and collected from. He also noted that Péringuey (1911) had recorded a "Wilton" (Later Stone Age) occurrence at the saltpan at Blombos. At Blombos Péringuey (1911) also noted a deflated area, near an apparently permanent spring, on which were found mineralized bones of extinct buffalo and horse.

During the course of the field survey, archaeological and palaeontological occurrences were located at the coast on low dunes that form the cordon between Rooipan and the sea, which extends further northward at an increasing distance from the coast; on the eastern slopes above Rooipan; and around the Ysterfonteinsoutpan.

The Coast

During the course of the field survey, archaeological occurrences were located at the coast on low dunes that form the cordon between Rooipan and the sea, which extends further northward at an increasing distance from the coast.

A number of Later Stone Age shell middens occurs along the coast, from roughly the boardwalk (1-3) at the house to the northern border of the property (4-10; 12-13). Site 11 is a non-archaeological scatter of mostly white mussels (*Donax serra*) that is exposed at this point, but is also evident in approximately sea-level exposures further south, where it is contiguous with some shell midden exposures. The southern most middens and shell scatters are within 20 to 50 m from the primary dunes (1-6; 7), but north of the track that reaches the coast, middens, a number of which are in good condition, occur further inland along the ridge of relatively high dunes that form part of the cordon of high ground along the western bank of the Rooipan (7-10; 12-14). At the Ysterfonteinsoutpan, scatters of midden material

occur on both high ground and the 'raised platform' around the salt marsh periphery of the pan in the area surveyed between the boundary with Blombos and the 'calcareous island' to the 'south' of the hunting lodge (19-24).

Site 1

Choromytilus meridionalis black mussel midden exposed near the National Parks Board sign over a 5x5 m area on the primary dune slope eroded some years ago by a storm. *Patella argenvillei* (limpet) *Patella granatina*, *Burnupena* sp. (welk), *Bullia* sp. (welk) are also present. Some shell is burnt. Bones of jackass penguin were seen. Three pieces of thin pottery with burnished ochre slip and quartz temper, one of a spout with incised lines; traces of burnt material still adhering to the insides. The incised lines are similar to those on a spout from Ysterfontein illustrated in Rudner (1968)

Research Potential: High

Development Constraint: Severe (cost to mitigate)

This occurrence should be sampled to recover the potsherds, any other artifactual material and the faunal components.

Site 2

A very sparse scatter of *Donax serra* on dune surfaces south of Site 1 towards the house.

Research Potential: Low

Development Constraint: Least

Probably recent shells dropped by gulls. No mitigation is necessary.

Site 3

A scatter of *Choromytilus meridionalis* and *Donax serra* exposed by erosion on the seaward side of the dune ridge occurs just north of Site 2.

Research Potential: Low

Development Constraint: Least

No mitigation is necessary.

Site 4

A scatter of *Donax serra* and *Choromytilus meridionalis* on an old eroded surface amongst superficial vegetation cover just inland of the primary dune (± 25 m from beach). The scatter is on a calcareous 'humic' surface with exposed root casts, suggesting deflation. Some *Patella granatina*, *Patella argenvillei*, *Bullia* sp.; patches of fragmented *Choromytilus meridionalis* and *Patella granularis*; burnt shell patches. Scatter of stone artifacts, including granite cobbles, shale chunks, manganese fragment, red and other silcrete flakes and chunks, small silcrete convex scraper, shale flakes, a few lumps of burnt calcrete.

Research Potential: Low

Development Constraint: Least

The area has been deflated and the possibility is strong that selective collecting by J. Rudner took place in the past. No mitigation is necessary.

Site 5

A sparse patch of *Donax serra* fragments; sparse patches of *Choromytilis meridionalis*, *Patella* spp. *Patella argenvillei*, *Patella granatina*, some of which are more concentrated, occur over the area. Shells of *Burnmupena* sp. are present in small numbers. It is not possible to be sure whether this was continuous or whether the midden patches represent discreet occupations. The latter seems likely, however. The shell scatters extend from about 15 m in from the beach to approximately 100 m inland and over the dune ridge to just above the road that skirts Rooipan. Northwards it extends past the track that goes to the beach. Low-lying areas nearer to the beach and along the track that runs parallel to it are covered with scatters of calcrete and diorite cobbles that get dense further north. These are approximately at sea level and likely to be old marine (?storm beach) deposits. They continue to about 30 m from the beach where dune material begins to slope upwards towards the ridge. Some midden material is associated with this, apparently as a veneer. In addition to cobbles in the areas most likely to be beach deposits, granite cobbles, burnt pieces of calcrete and some diorite boulders (>30 cm) appear to be artifactual and associated with midden material, a lower grind stone, ochre, ostrich eggshell fragments (some burnt), a jackass penguin bone, flaked shale cobbles and the concentrated patches of *Patella granatina*. Scatters of artifacts are variable in density, but are more or less continuous over the whole area. At least one *Choromytilis meridionalis* patch is associated with ostrich eggshell fragments. A sparse scatter of *Donax serra* shells over the area probably results from gulls dropping shells.

Research Potential: Medium

Development Constraint: Moderate (cost to mitigate)

The associations of shell midden patches of different type and associated artifactual material should be examined. Although Rudner may have selected from some exposures, this is probably not as serious a problem at better-preserved patches. Mitigation necessary.

Site 6

Non-archaeological flat area of *Donax serra* shell scatter at sea level with many calcrete and diorite cobbles. Probably an old storm beach.

Research Potential: Low

Development Constraint: Least

No mitigation is necessary.

Site 7

A small scatter of shell and red silcrete artifacts was located on the road at the dune ridge. Downslope, from the road to the flat area of *Donax serra* shell and cobble scatter. Old eroded surfaces, covered by brush are present. Most shell on the slope and lower surface are bivalves, including *Donax serra*, with the odd *Patella* spp. individual and no artifacts. The bivalves are likely to have been gull-dropped.

Research Potential: Low

Development Constraint: Least

No mitigation is necessary.

Site 8

As the track rises to the north over the dune, there is more midden material, including *Donax serra*, *Patella* spp. and *Burnupena* sp. At the side of the track is a *Choromytilis meridionalis* midden with some *Donax serra* and *Patella argenvillei*, *Patella granatina* and *Patella granularis*. Some burnt shell is visible downslope. Apart from a small calcrete cobble and shale flake, no artifacts were seen. The scatter extends downslope until it becomes contiguous with the shell and cobble surface. A number of burnt calcrete pieces was seen in some areas, but it is not clear whether this was caused by a veld fire or indicates campfires of past human activity. A shale pebble hamme was found at the foot of the slope.

Research Potential: Medium

Development Constraint: Moderate (cost to mitigate)

In situ middens should be excavated/collected.

Site 9

Continuing northwards along the road. As the road rises to a flattish area, middens are again visible. Details similar to Site 8.

Research Potential: Medium

Development Constraint: Moderate (cost to mitigate)

In situ middens should be excavated/collected.

Site 10

Continuing northwards along the road, past the flat area of Site 9, and the next rise, is more midden material. Site 10 is a large open area with a scatter of shells and several patches of probably *in situ* midden. To the east of the road is a small group of diorite cobbles with burnt matrix and charcoal and relatively complete *Choromytilis meridionalis*, *Patella granatina*, *Patella granularis*, *Patella argenvillei* and *Burnupena* sp. shells and one *Donax serra* scraper. No other *Donax serra* are associated. This clearly represents a fireplace, and associated midden. As the road snakes to the left and then right before the crest of the high dune, is an *in situ Choromytilis meridionalis* midden. Also some *Patella argenvillei*, *Patella granularis*, *Patella granatina*, a few *Donax serra*, *Burnupena* sp., bird bone and a diorite cobble. At the top is a calcrete outcrop. The scatter extends east across the road towards Rooipan. Here some eroded potsherds with quartz and red silcrete temper and a silcrete 'unifacial' point tip were found, together with many cobbles. This scatter covers a large area, extending over the ridge and down towards the north end of Rooipan, where it becomes very sparse, even in Cape dune molerat heaps.

Research Potential: High

Development Constraint: Severe (cost to mitigate)

In situ middens and associated material must be excavated/collected. The hearth offers an opportunity for a radiocarbon date. Note that other occurrences might also include less obvious datable material.

Site 11

At the northern boundary of the proposed development, approximately 25 m from the beach is a non-archaeological flat area covered by *Donax serra* shells and calcrete and diorite cobbles.

Research Potential: Medium

Development Constraint: Moderate (cost to mitigate)

Radiocarbon dating of one or more of these old beach deposits should be done. Their extent should be mapped.

Site 12

At the dune high point overlooking Rooipan is an apparently continuous *Choromytilis meridionalis* midden scatter broken up by dune hummocks. At some patches *Patella* spp., including *Patella argenvillei*, *Patella granatina*, *Patella granularis*, are more concentrated. Ostrich eggshell fragments (many, some *in situ*), tortoise, ? sheep and penguin bones, an ostrich phalanx, several *Donax serra* scrapers, a hammer stone, manganese piece and shale flakes are associated. The west side of the dune top also has *Choromytilis meridionalis* middens (within 5 m of the track). No *Donax serra* observed here. Ostrich eggshell, shale flakes, burnt calcrete pieces and diorite cobbles are present. There were a few *Donax serra* shells on the talus below the *Choromytilis meridionalis* midden. The occurrence extends further west and downslope, where many *Patella* spp., especially *Patella argenvillei* shells are visible. *Patella cochlear* was seen. *Donax serra* scrapers, ostrich eggshell, tortoise and penguin bones were seen. The scatter extends into the 'barcan' dunefield, where sparse non-archaeological *Donax serra* and *Choromytilis meridionalis* are probably gull dropped.

Research Potential: High

Development Constraint: Severe (cost to mitigate)

In situ midden material and associated artifacts and faunal remains should be excavated and collected.

Site 13

Continuing northward, there is a scatter of mainly *Choromytilis meridionalis*, *Patella argenvillei* and *Patella granularis* shells and fragments on the east side of the road. This extends onto the road around the next bend. Calcrete and diorite pieces, red and yellow silcrete over an area of 10x10 m. Some material is *in situ*. The scatter is also present on the west side of the road, but with less *Choromytilis meridionalis* and greater fragmentation. A small upper grindstone of diorite was seen here and another was on the track.

Research Potential: Medium

Development Constraint: Moderate (cost to mitigate)

The *in situ* material and associated artifacts should be excavated/collected.

Site 14

Approximately 20 m south of the boundary marker on the seaward dune slope is a dense patch of *Choromytilis meridionalis* fragments with *Patella argenvillei*, *Patella granatina*, *Patella granularis*, *Burnupena* sp. and sparse *Donax serra*. Shell extends to the marker and east in line with the boundary for some 15-20 m, becoming very sparse towards Rooipan. A lower grindstone of diorite, pebble hammer, flakes, manganese piece, ostrich eggshell, burnt shell and bones of a large antelope/cattle and small antelope were seen.

Research Potential: Medium

Development Constraint: Moderate (cost to mitigate)

Any *in situ* midden and the associated artifacts, etc., should be excavated/collected.

Rooipan

A series of scatters of shell fragments, mostly very sparsely visible in sand brought to the surface by Cape dune molerats, occurs on raised ground north of Rooipan (15), on the slopes of the high ground bordering the east side of the Rooipan (16) and east of the small pan 'north east' of Rooipan (18).

The scatter of midden material on raised ground north of Rooipan (15), occurs amongst outcropping calcrete pieces that include sub-fossil marine shells deposited during a ?Late Pleistocene higher sea level. These deposits were also encountered during the survey for Gypsum Industries (Avery 1994).

East of the small pan 'north east' of Rooipan are numbers of dioritic cobbles and at least one silcrete flake that have eroded out of outcropping calcrete hardpan (17). It is not clear whether the cobbles derive from an archaeological or a geological context or, indeed, whether the flake (of undoubted human origin) was secondarily mixed with the cobbles during past marine or fluvial activity. What is clear, however is the possibility that material earlier than the Later Stone Age Shell middens may occur in the area. In this context it should be noted that an artifact characteristic of the Middle Stone Age was found on the southern periphery of the pan during a survey for Gypsum Industries (Avery 1994).

Site 15

East of the track along the northern tip of Rooipan (west) and along the boundary fence is a low hillock (calcrete outcrop) on which is a sparse scatter of *Choromytilus meridionalis*, *Patella argenvillei*, one *Donax serra* and burnt shell. Small diorite pebbles and lumps, a silcrete flake, red silcrete flakes and ostrich eggshell. Some of the calcrete nodules in the outcrop have marine fossils of probable Pleistocene age embedded in them.

Research Potential: Medium

Development Constraint: Least

Some attempt should be made to establish the relationship of the marine fossils in this outcrop and those reported by Avery (1994).

Site 16

On the east bank of Rooipan, a very sparse scatter of shells, silcrete artifacts, quartz chunk, diorite pieces and the odd piece of ostrich eggshell occurs in dune molerat heaps. An area furthest 25 m north of the northernmost gypsum pit, between an ephemeral track and the fence line seems to have a slightly higher density. It appears that there were patches of shell scatter going south between the ridge and the pan edge. The odd patch only was found east of this slope, but still in the general context of ridge/slope to pan. Odd gull-dropped *Donax serra* shells are found over the area.

A possible Middle Stone Age flake, with prepared platform, on silcrete and a diorite piece, but no shell, was found on the dune slightly to the east where calcrete nodules were outcropping. This was in the general vicinity of Site 17.

Research Potential: Low

Development Constraint: Least

No mitigation is necessary.

Site 17

Southeast of the small pan is a scatter of *Choromytilis meridionalis* fragments, probably of Later Stone Age age. On the slope, are a number of diorite pieces and pebbles, some of which are embedded in the outcropping calcrete. A quartz pebble may have been artifactual. Artifacts were a quartz chunk and a pink/orange silcrete flake. This flake had calcrete adhering to it, associating it with the calcrete outcrop. Although the platform was unprepared, this artifact is undoubtedly older than the previously described later Stone Age middens. It is likely to be associated with the Middle Stone Age flake noted above. It is clear that the outcropping calcrete is of Pleistocene age. Its stratigraphic relation to the calcrete with marine shells is unclear.

Research Potential: Medium

Development Constraint: Moderate (cost to mitigate)

Since this is an occurrence of reasonable antiquity, some attempt should be made to relate it to the fossilized marine shell component of the calcretes.

Site 18

At the top of the ridge east of the small pan and along the boundary fence, is a sparse scatter of *Choromytilis meridionalis* and *Patella* spp. fragments. Some ostrich eggshell and a bone fragment were seen.

Research Potential: Low

Development Constraint: Least

Ysterfonteinoutpan

At the northwestern tip of the pan near the hunting lodge, is a water hole (?natural). the platform adjacent to this has midden scatters (19-22) that would need to be tested, if development was considered in that area, to ascertain whether any in situ midden exists under the surface. Site 20 is a scatter of shell and artifacts on the dune crest above the platform. In addition, the easterly extent of this includes scattered remains of porcelain, plates, bowls, etc. (21). This may relate to the extraction of salt, since this area is at the northern point of the old 'causeway' built by salt extractors and should be investigated.

At the small calcrete-capped 'island' just to the south of the hunting lodge, there is a Middle or Late Pleistocene occurrence that includes mineralized bones of tortoise and antelope (24). Artifacts are present, but it is not clear whether they are associated with the bones or the much more recent shell midden occurrences that also occur on this area. It appears that the bones are being brought to the surface by Cape dune mole rats, but the surface may also be eroded.

Site 19

Along the track that skirts the raised bank of the Ysterfonteinpan. A scatter of shells, including *Patella argenvillei*, *Choromytilis meridionalis*, *Patella granat-*

ina, *Burnupena* sp. and *Donax serra* occurs at the burnt (exposed) area, on the dune slope above it and up to the top of the dune. More shells and quartz flakes were present at the top. A quartz 'bipolar' core was seen.

Research Potential: Low

Development Constraint: Moderate (cost to mitigate)

Since middens around a pan such as this have not been studied, some collection of the scattered artifacts, etc., is warranted.

Site 20 (see Site 22)

At the 'hunting lodge' on the north eastern tip of the pan in this area, just west of Site 19, is a scatter of *Patella argenvillei*, *Choromytilis meridionalis* and *Burnupena* sp. on the flat raised bank of the pan, extending some 25 m along the road, and visible mainly in dune molerat heaps. A quartzite (?) flake with pebble cortex, some bone fragments and a steenbok vertebra were seen. This site extends across the track towards the 'hunting lodge', where it is designated Site 22.

Research Potential: Medium

Development Constraint: High (cost to mitigate)

The occurrence should be tested to establish whether *in situ* midden is present under the surface. If this proves to be the case, the occurrence must be excavated.

Site 21

Some 70 m east of the waterhole, is a scatter of shell fragments in dune molerat heaps on a flattish area extending some 20 m from the road. *Patella argenvillei*, *Choromytilis meridionalis* and scarce *Burnupena* sp., *Donax serra* and *Bullia* sp. shells are present. Stone artifacts are sparse and include a quartz chunk. In addition to the Stone Age material, there are a number of European artifacts, mainly ceramics, including 'Chinese' ware, fragments of plates, etc. (willow pattern, blue and white, green transfer, concentric edge pattern, green leaf pattern), glass and a sheep's phalanx. A pile of calcrete lumps was also present. This area is very close to the northeastern end of the 'causeway' used historically by salt collectors, and may in fact result from this activity.

Research Potential: High

Development Constraint: Severe (cost to mitigate)

If testing reveals that the site has either shell midden or historical remains *in situ*, adequate excavation and collecting will be necessary.

Site 22 (see Site 20)

A concentrated scatter of shells and fragments on a low rise above the track, extending approximately northwest to within 40 m of the fence. *Patella argenvillei*, *Patella granatina*, *Patella granularis*, *Choromytilis meridionalis* and the odd *Burnupena* sp. fragments are present. A few silcrete flakes (some large and thick), small diorite cobble fragment (hammered and ground), other diorite cobbles, quartz chunks and a seal bone were seen. There does not appear to be any *in situ* material, with the possible exception of the lower area nearer the pan, where dune molerats are bringing up fragments.

Research Potential: Medium

Development Constraint: Severe (cost to mitigate)

A collection of shell and artifacts should be made at the rise and surrounds. If testing reveals shell midden remains *in situ*, adequate excavation and collecting will be necessary.

Site 23

A scatter of shells of similar type to the above occurs on the dune slope immediately behind the 'hunting lodge' and south to the pump and reservoir where the terrain flattens. *Choromytilis meridionalis*, *Patella* spp. and *Burnupena* sp. are present. A diorite cobble flake was seen. Near the road, fragments are quite dense, but dumping of recent shell has taken place to stabilize the surface. This area would need testing to establish whether any archaeological midden existed. Ceramic, stoneware and glass fragments are present, but may relate to historical or more recent use of the area. The shell midden scatter extends along the slopes and track to Site 20.

Research Potential: Low**Development Constraint: Least**

In view of the disturbance in this area, it is probably not worth further investigation. No mitigation is necessary.

Site 24

Further south, at a small calcrete outcrop, are two types of occurrence. A Later Stone Age scatter of *Choromytilis meridionalis*, *Patella argenvillei*, *Patella granatina* and one *Donax serra* is present on the koppie and the raised bank of Ysterfonteinsoutpan. Quartz cobble chunks, weathered shale and silcrete flakes are present. There is also a sparse scatter of mineralized tortoise and antelope bones of Pleistocene age in dune molerat heaps at the base of the south west end of the koppie, just before the slope becomes flat, where there appears to have been an old field. Ferruginized and calcareous nodules are also associated with the fossils. Artifacts may be associated.

Research Potential: High**Development Constraint: Severe (cost to mitigate)**

The fossil occurrence, in particular, would have to be tested. If any *in situ* material underlies the surface, appropriate excavation could be extensive. The banks of Ysterfonteinsoutpan would need testing to establish whether any *in situ* shell middens exist. If so, excavation would be necessary.

Conclusions

- 1) It is important to note that, should any archaeological, historical or palaeontological occurrence be endangered by development, archaeological and/or palaeontological work will have to be undertaken to ascertain the nature of the archaeological occurrences and, where appropriate, to recover, by excavation and collection, large enough samples to be preserved for future research. The National Monuments Council is currently formulating standards for the recovery of appropriate samples in cases where archaeological and palaeontological sites are to be destroyed, directly or indirectly, during the course of building development. These are aimed at preserving heritage material, but also with a view to ensuring that the interests of developers are accommodated as far as possible.
- 2) No archaeological excavation of shell middens has previously taken place at Ysterfontein. Details regarding the middens and the past human activity they represent at the coast are, therefore, unavailable. Furthermore, the occurrence of shell middens along the periphery of an inland pan is not a common feature and represents a virtually unknown store of information. The archaeological resources on the De Villiers Trust property are non-renewable and further study is necessary. Kaplan (1993) places the area in his B category, based on the fact that some archaeological information is available, but that it originates from unsystematic observations of variable quality.
- 3) A selection of the shell midden occurrences with *in situ* material preserved would have to be excavated and associated artifact scatters collected. Some surface recording of shell midden scatters might be necessary if testing proved that these are the only remains around the salt pan.
- 4) The palaeontological potential of the 'island' area must be investigated further. Although such fossils are known from eroded areas along the west coast, these occurrences are few in number (Klein 1976; Avery 1988). This and the possibility that the fossils are in association with human activity makes this area extremely important and sensitive.
- 5) The occurrence that could potentially represent the greatest problem to development is that (above) of the Pleistocene fossils. Its extent and the depth of overlying recent sands are unknown. If the occurrence is extensive and likely to be damaged by proposed development, the cost of mitigation would be high, since the normally dispersed nature of such occurrences would require large areas to be cleared and excavated.
- 6) Some indication of the stratigraphy and marine shell content of the calcretes at Rooipan would have to be ascertained if development was to take place here. The possible historical site should be investigated further in order to establish whether in fact this occurrence is of historical note.

- 7) The possibility that sites, including burials, exist under the surface must be considered where any digging is considered. It is also possible that sites will be located in areas not searched.
- 8) With the possible exceptions of site 24 and the historical locality, none of the other occurrences would prevent development taking place, provided that adequate testing, excavation and collecting had been undertaken prior to construction. Given that the known distribution of sites is extensive and localities are often on desirable building ground, the costs of such work would be reasonably substantial. The most appropriate time to determine this would be during the planning of actual placement, when it will be possible to establish exactly what areas will be threatened.

Recommendations

- 1) In addition to the several sites () that warrant a second-phase operation (more-detailed archaeological study that might include surface collection and/or excavation, for which funds would need to be budgeted in planning), any other sites of importance identified during the course of building should be subject to mitigation. Any sensitive sites that will be affected by increased human pressures outside the areas developed should also be included. Mitigation of all sensitive sites prior to the development taking place would minimize the need for additional protection of sites in the area over the long term and would, thereby, reduce some costs.
- 2) Given the known site distribution it will be easier for the Planner to plan the position of units with a view to minimizing impact on archaeological and palaeontological sites. This could also reduce some costs.
- 3) Positions of sites should be checked against a proper land survey of proposed erven. This should be undertaken at an early stage to enable small modifications to be made, if necessary. This is the stage at which it will be possible to make final estimates of mitigatory action required and to establish whether there are appropriate alternatives to excavation.
- 4) Bearing in mind that sub-surface occurrences might exist, provision should be made for the salvage of any additional material or occurrence of importance that might be identified during the development. During the course of construction, an archaeologist should be contracted to monitor any excavations required by construction, laying of services, roads, borrow pits, etc. It is particularly important in this context that any human burials be carefully excavated by an archaeologist and sensitively treated. The costs of excavation of any additional archaeological sites or burials uncovered during the course of such work should be covered by a contingency fund.
- 5) Any development outside of the areas examined in this report or change to existing infrastructure beyond the boundaries of the proposed development should be preceded by an archaeological survey and any mitigatory work that might prove to be necessary.
- 6) A local Management Plan should include protection for the surrounding archaeological sites by means of clearly demarcated routes that will minimize the impact of construction and, later, of increased public access. Mitigation of all sensitive sites prior to the development taking place would minimize the need for such protection and reduce long-term costs to the developer and subsequent owners.

+36

+368

+369

Appendix A

The Importance of Archaeological Sites

In the southern African context archaeological evidence provides the only information on the existence and activities of prehistoric indigenous peoples. Archaeological evidence also supplements the scanty documentary information which was recorded by the early explorers, travellers and colonists from 1488 onwards and the effects of colonization on indigenous peoples.

Coastal sites are important as sources of information on some of the earliest contacts between European navigators and the indigenous peoples of South Africa. In addition to sites at which people lived and left remains of their equipment, huts, fireplaces and food debris, human burials are often found in the coastal dunes. Such skeletal remains are important in our ongoing search for a better understanding of the biology and life-styles of the indigenous peoples of the region during the various phases of their socio-cultural development.

Archaeological deposits often include sediments, pollens, old owl pellet accumulations, bones, shells and other material that can provide information on past environments and climatic conditions. This is important as context for past human behaviour, but also provides long-term databases on natural fluctuations that are relevant, for instance, to modern studies relating to understanding the effects of global warming.

Archaeological sites, whatever their nature, together with the artifacts and other information they contain, are a finite and non-renewable cultural resource and are part of our heritage.

All prehistoric archaeological sites as well as certain proclaimed cultural-historical sites and shipwrecks from a designated period are protected by the National Monuments Act, No. 28 of 1969 as amended. A permit from the national Monuments Council is required to destroy any occurrences covered by this legislation.

Archaeological sites preserve only the durable parts of the activities that took place on them. Variable conditions have led to different components being preserved in each. In view of this every site has the potential to make a contribution to knowledge and should be assessed carefully before its destruction can be contemplated.

Archaeological sites are sensitive and, once exposed or subjected to increased human pressure resulting from development, can be rapidly destroyed. Controlled, systematic investigation or preservation of such sites is therefore important if we are now, and others in the future, to obtain a better understanding of how the multi-cultural past of South Africa has contributed to the present and may do so in the future.

We need to preserve archaeological sites. Unfortunately, however, the continued and increasing demand for land developments of various kinds, particularly along the coast, results in the large-scale destruction of such sites. Sites previously safely archived in the ground need to be archived in appropriate archaeological collections for future research.

- The problem is often compounded since forward planning by many developers lacks an archaeological component, thereby placing undue pressure on archaeologists to react swiftly at a late stage.

- This problem may be further exacerbated if, as happens in many cases, development commences before archaeologists are advised or consulted. Apart from potential destruction of sites before any meaningful research can be carried out, work can be delayed and costs increased by having to deal with intervention by archaeologists and the National Monuments Council.
- The solution lies in adequate forward planning and consultation with archaeologists competent to assess localities, advise on minimizing mitigatory work and to do any archaeological recovery that proves to be necessary.

Housing and recreational developments introduce increasing numbers of people to an area. This occurs firstly, during the construction stage and secondly, with the arrival of the new inhabitants. Increased population heightens the pressures on archaeological sites over a wider area than that covered by buildings or individual properties. The negative result of construction and mining is obvious. On the other hand some important archaeological sites have been exposed during construction work. Provision should be made for the study of such discoveries, however, or their potential is nullified. Careful forward planning, including the pre-construction involvement of archaeologists, and control during the construction stage can limit the extent of damage to archaeological sites with minimal delay, if any, to private companies.

After completion of the development the potential danger to archaeological sites may still remain and strict management controls may be required over the longer term. Recreational activities such as braais and the increase in the number of people introduce new hazards. In areas such as the West Coast where the natural vegetation is sparse, and where the sand is mobile if exposed, the short-term threat to archaeological sites is greatly increased by uncontrolled movement of people and the effect on vegetation cover of trampling and of veld fires which can result from their presence. Preservation of vegetation cover and provision of controlled access from housing to recreational areas will help to maintain stable dunes and to reduce the danger of wind erosion which rapidly exposes and destroys archaeological sites.

Site Visibility and Predictability of Site Location

Because of time and its stabilizing effect on the sandy substrate, as well as its humic content and moisture-retentive quality, archaeological sites, and shell middens in particular, are likely to become vegetated. As a result, not all archaeological sites are readily visible to the observer, since the density, height and type of natural vegetation can effectively mask the presence of surface archaeological sites. Drift-sand areas and dune fields often contain sites because sand movement and erosion remove overlying sediments and expose underlying archaeological sites.

Generally, sites are located at a convenient distance from available resources such as food or water or a source of raw material for the manufacture of artifacts. This distance, which can be up to 10 to 12 km or more, is also governed by such factors as the availability of shelter, prevailing wind, aspect or visibility. However, since environments have changed over the millennia, the present-day availability of resources cannot always be used to predict the location of archaeological sites. Exceptions exist, but in the light of what is known about the distributions of sites it can be predicted with reasonable certainty that archaeological sites will occur near outcrops of intertidal rocks, in caves or rock shelters or where rocky outcrops provide shelter, in dune fields and wherever there are Middle and Upper Pleistocene calcretes and ferricretes. These factors should be borne in mind when contemplating development or mining.

Types of Sites and Chronology

The prehistory of southern Africa is conventionally divided into three Stone Age periods: Early, Middle and Later. The Iron Age, which relates to settlement by black African agriculturalist peoples in the eastern and central regions, does not occur in the western Cape. Sites relating to these periods can occur in many forms and states of preservation.

Early Stone Age (approximately 2 million to 200,000 years ago)

Early Stone Age sites, usually represented only by stone artifacts and debris and very rarely with preserved bone. It should be noted that one of the most important Early Stone Age/fossil bone occurrences in Africa is in Middle to Late Pleistocene sands in the vicinity of Langebaan (Singer & Wymer 1968; Klein 1978). A problem in the study of Early and Middle Stone Age occurrences in particular, is the difficulty in distinguishing between food debris from human activity and food remains and bones left on a surface by larger carnivores or scavengers, since both can occur on the same surface over time (Avery 1988).

Middle Stone Age (200,000 to approximately 30,000 years ago)

Middle Stone Age sites are also usually represented only by stone artifacts and debris but are occasionally associated with fossilized shells and/or animal bones (Mabbutt *et al.* 1955; Klein 1976; Volman 1978). Such sites are most often in the open but they are known to occur in rock shelters in other parts of the province (Schweitzer 1970; Singer & Wymer 1982). Again, it is possible that subsurface sites containing important information may be exposed during construction work.

Later Stone Age (approximately 30,000 to 300 years ago)

Later Stone Age sites are more recent and their state of preservation is often not as poor as with earlier sites. They are generally numerous because they are on or near the surface and therefore tend to be more visible. These may occur in different forms:

Open Scatters of Artifacts, Bones, etc. As in the case of earlier periods, many archaeological sites are only represented by remnants that have been able to withstand the ravages of time. In many instances the only clues to the existence of an archaeological site will be a scatter of stone artifacts, and sometimes potsherds, exposed on the surface or in an eroded gully. In exceptional cases, bones and shells might also be preserved. Such scatters often extend over a number of hectares.

Shell Middens. Shell middens are the most obvious archaeological remnants on the coast. Shell middens are heaps of food and artifactual debris left by people (Robertshaw 1978, 1979; Schweitzer 1979; Parkington *et al.* 1988). Shell middens may vary in size from less than one metre in area to more than 0,5 hectare in extent. Most middens contain bone, stone artifacts and pottery as well as marine shell and are usually the most highly visible sites. Their size and frequency are greatest near the shore, particularly in the vicinity of rocky intertidal zones. When examining shell middens, it is also necessary to consider the surrounding areas in which people lived and conducted everyday activities, including features such as huts and fireplaces. Unless this is done the information that can be obtained from such sites may be biased. Because shell middens are usually associated with beaches or dune fields which are unstable they are often exposed by wind. Where conditions in the past were suitable middens may extend almost continuously over long distances of coastline.

Tidal Fish Traps. Fish traps are artificial tidal pools constructed of boulders in the intertidal zone of rocky shores (Avery 1975). In the recent past some examples were rebuilt and used by local landowners.

Burial Sites. Graves are often found in or near shell middens, but can be expected almost anywhere. They are sometimes marked by a cairn of rocks, though this may only occur where the depth of soil was insufficient for adequate burial.

Grave goods are rare, and it is consequently of great importance to record them and their exact context since they can provide information on aspects of past behaviour which are not otherwise available.

European Contact and Colonial Periods (from AD 1488)

These include shipwrecks, survivors' camps, early and later dwellings and structures relating to colonial lifestyles and expansion and evidence, often in Later Stone Age sites, of contact with indigenous peoples and the effect this had on their lifestyles.

The Importance of Palaeontological Sites

Palaeontological material is sensitive and important for much the same reasons as for archaeological occurrences (see above). Palaeontological sites can be in old rock formations and in cemented or loose sediments in volcanic craters, caves, limestone deposits and in the open. Some occurrences become exposed on the surface, but others are covered by variable depths of rock or loose overburden. Borehole cores often provide important palaeontological and palynological (fossil pollen) material. The oldest fossils in South Africa (algal cell and bacterium) are found in the eastern Transvaal Figtree cherts that are 3,2 billion years old. South Africa is also renowned for the mammal-like reptiles that are found in ± 300 million year old Karoo rocks (Cluver 1991). Fossilized remains of animal, mollusc and plant ancestors of our more recent fauna and flora occur, for instance, at Langebaanweg in the western Cape (Hendey 1982). Fossilized remains of hominid or early human ancestors are found in association with other fossils in deposits dating to the past 3 million years.

Palaeontological sites include fossilized, and more recently, sub-fossil remains of marine, fresh water and terrestrial animals, molluscs and plants. Impressions of plant remains or traces of early animals, e.g. tracks, burrows or fossilized droppings, are also important signs of past life.

Palaeontologists are interested in the evolution, interrelationships, development and demography of fossilized animals and plants through time. Extinct groups and ancestral species are associated with earlier remains, but it should be noted that some extinctions have taken place as recently as 10,000 years ago, while those of the Blue antelope and quagga took place in recent historical times.

Palaeontological evidence has provided valuable evidence on the origin of our modern continents. Palaeontological deposits also include sediments, pollens, old owl pellet accumulations, bones, shells and other material that can provide information on past environments and climatic conditions. During the last 3 million years this is important as context for past human evolution and behaviour, but also provides long-term databases on natural fluctuations that are relevant, for instance, to modern studies relating to understanding the effects of global warming.

Palaeontological sites, together with the sediments and other information they contain, are a finite and non-renewable scientific resource and are part of our heritage. All palaeontological material is protected by the National Monuments Act, No. 28 of 1969 as amended.

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