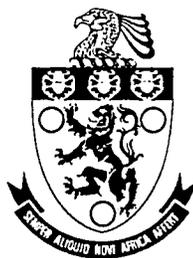


**ARCHAEOLOGICAL AND  
PALAEOLOGICAL SURVEY ON  
TYGERFONTEIN 564, MALMESBURY  
DIVISION**

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**FINAL REPORT ON A PRELIMINARY ARCHAEOLOGICAL AND  
PALAEOLOGICAL SURVEY ON TYGERFONTEIN 564, MALMESBURY  
DIVISION**

**1. INTRODUCTION**

This report was commissioned by Derek Chittenden & Associates on behalf of their clients. It was also requested that the report on Tygerfontein be prefaced by some background comment on the importance and nature of archaeological sites. During the course of the survey occurrences that may be primarily of palaeontological importance were located. As the factors that affect them are essentially similar, this aspect has been incorporated with the archaeological observations.

Conservation of plants, animals, habitats and environments - and here the habitat of prehistoric humans and animals is included - must meet a dual function. It must provide long-term security for the ecosystems which are directly or indirectly exploited by humanity so as to meet the current and future needs of human society. It must also meet the moral obligation of humanity, as the super-dominant species on Earth, to ensure a long-term prospect of survival of the plants and animals sharing the Earth with us. The need for an integrated plan of management to ensure the survival of both people and the natural systems we depend on and exploit is a matter of prime urgency.

**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 and travellers from 1488 onwards.

Coastal sites, especially in the western and southern Cape, are also important as some of the earliest contacts between European navigators and the indigenous peoples occurred in this region. 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. The skeletal remains are important in our continuing quest to understand the biology of the indigenous peoples of the region during the various phases of their sociocultural development.

Systematic archaeological research has been carried out in South Africa for only about the past 60 years. During this time, and especially in the last 40 years, research development has resulted in the use of increasingly sophisticated methods, including radiocarbon dating and the study of stable carbon isotopes in human bones to determine diet.

Archaeological sites, whatever their nature, together with the artefacts and other information they contain, are a finite and non-renewable cultural resource and are part of the national heritage. Archaeological sites are sensitive and, once exposed or subjected to increased pressure from development, are rapidly destroyed.

Preservation or controlled, systematic investigation of such sites is therefore important if we are to now, and others in the future, 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. 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.

There is, therefore, a need to preserve archaeological sites. Unfortunately, however, the continued and increasing need for land developments of various kinds, particularly along the coast, results in the large-scale destruction of such sites. There are relatively few archaeologists in South Africa and their funding is extremely limited; it is thus difficult for them to deal adequately with the additional burden resulting from the exposure and potential destruction of archaeological sites as a result of development. The problem is compounded by the fact that in many cases development commences before archaeologists are advised or consulted, and sites are then destroyed before any meaningful research can be included in existing programmes. Rescue or salvage operations which result from this are inadequate.

Coastal housing 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 particularly when digging is involved, is obvious although in some cases 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 involvement of archaeologists, and control during the construction stage can limit the extent of damage to archaeological sites.

After completion of the development the potential danger to archaeological sites may still remain and strict management controls are required over the longer term. Leisure activities such as braais and the increase in the number of people introduce new hazards to the area. 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 and trampling of people and especially the effect on vegetation cover of veldfires which can result from their presence. Preservation of vegetation cover and provision of controlled access from housing to recreational areas is essential in order to maintain stable dunes and to reduce the danger of wind erosion which rapidly exposes and destroys archaeological sites.

#### SITE VISIBILITY

The density, height and type of natural vegetation can affect the visibility of archaeological sites. The dense scrub and inland vegetation on Tygerfontein effectively masks the presence of surface archaeological sites. In general, sites are not likely to be visible in areas in which the vegetation cover exceeds about 50 per cent. Because of their stabilizing effect on the sandy substrate, as well as their humic content and moisture-retentive quality, archaeological sites, and shell middens in particular, are likely to become vegetated.

Wind-blown sand which forms drifts and dunes can also effectively mask sites. These sites may be sporadically exposed by wind erosion if the covering is not too deep.

### PREDICTABILITY OF SITE LOCATION

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 artefacts. This distance is also governed by such factors as the availability of shelter, prevailing wind, aspect or visibility.

In the light of what is known from the distributions of sites on the West Coast, it can be predicted that archaeological sites will occur near outcrops of intertidal rocks, in caves or rock shelters or where rocky outcrops provide shelter and wherever Middle and Upper Pleistocene calcretes and ferricretes are exposed.

## 2. TYPES OF SITES

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 peoples in the eastern and central regions, does not occur in the western Cape.

The time-span of the sites indicated in Figures 1-5 is relatively recent in terms of the million or so years of human existence in southern Africa. It should be anticipated that sites or artefacts from the Stone Age periods will occur in the proposed development area.

### EARLY STONE AGE

Early Stone Age sites, usually represented only by stone artefacts and debris, may be found in the area. Sites containing fossilized bone and stone artefacts are known from the west coast and could be encountered during any construction projects. 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; Avery 1988). A problem in study of Early and Middle Stone Age occurrences in particular is the difficulty in distinguishing between human activity and food remains and bones left on a surface by larger carnivores or scavengers, both of which can occur on the same surface over time.

### MIDDLE STONE AGE

Middle Stone Age sites are also usually represented only by stone artefacts and debris but on the west coast may also be associated with fossilized shells and animal bones (Mabbutt *et al.* 1955; Klein 1976; Volman 1978). Such sites are most often in the open along this stretch of coast 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

Later Stone Age sites are generally numerous because they are on or near the surface and therefore tend to be more visible. These may occur in different forms:

Fish traps. Fish traps are artificial tidal pools constructed of boulders in the intertidal zone of rocky shores (Avery 1975). These were not expected in the survey area due to the lack of boulder-covered shores and gullies.

Shell middens. Shell middens are heaps of food and artefactual debris left by people (Parkington 1976; Robertshaw 1978, 1979; Schweitzer 1979). 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 and artefacts 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 inter-tidal zones. Because shell middens are usually associated with beaches or dunefields which are unstable they are often exposed and destroyed by wind. Where conditions in the past were suitable middens may extend almost continuously over long distances of coastline. When examining shell middens, it is also necessary to recognize the areas of discarded materials (midden) as well as the overall area 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. After erosion or development, however, such important detail is often destroyed and sometimes only the durable artefacts survive - those made of stone, including hearths, and those of clay, such as potsherds.

Graves. Graves are often found in or near shell middens. The Khoisan (Khoikhoi and San) appear to have buried their dead at or near the place where death occurred, so that graves could be found anywhere in the proposed development area where there is (or was) sufficient depth of soil or sand.

Graves 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 as they provide information on aspects of life and death which is not otherwise available.

### 3. ARCHAEOLOGICAL AND PALAEOANTHROPOLOGICAL SURVEY OF TYGERFONTEIN.

#### OBJECTIVE

The primary objective of the survey was to locate, identify and plot on maps any archaeological, palaeontological or historical sites in the area of the proposed development on the farm Tygerfontein in the Malmesbury Division.

#### SURVEY METHOD

The survey consisted of a detailed examination of existing records for archaeological, palaeontological or historical sites. This was followed by a comprehensive survey, on foot, of the areas to be developed. Map 1 shows the extent of the farm Tygerfontein and indicates the positions of the sites located.

#### ENVIRONMENT OF THE AREA

Moll *et al.* (1984) have identified the vegetation of the area as West Coast Strandveld which consists of broad-leafed shrublands on the coastal calcareous sands interspersed with fynbos vegetation on the inland areas. A stream, known as Dwars Rivier, flows intermittently along the southern boundary of the farm. The coastal formation is dominated by a sandy beach which forms the farm's western boundary. Unlike Jackalsfontein to the south (Van Rijssen *et al.* 1989), where the beach is backed by a series of dune ridges, the coastal foreland of Tygerfontein is divided into three main regions. In the southern part the beach merges with a series of dune ridges which are sparsely vegetated by salt-resistant plants; in the central part the beach is backed by an unconsolidated sand cliff of varying height which has a denser vegetation cover than the dune areas; in the northern part the beach extends only from the base of low to medium height calcareous cliffs which are sparsely to densely covered by broad-leafed shrubs also typical of sand substrates. The inland area is covered by dense coastal fynbos vegetation dominated by Restionaceae. A large rocky outcrop occurs on the beach just beyond the northern boundary of the farm. This was undoubtedly the source of large numbers of shellfish used by the prehistoric inhabitants of Tygerfontein. The dominant species of shellfish noted was the black mussel although smaller numbers of limpets were noted.

.../Results

## RESULTS

Seven sites were located (see Maps 1-5).

### Site 1

This site lies approximately 500 m northwest of the old Rietduin farmhouse. It is an oval, wind-deflated hollow lying on the coastal face of the dune ridge (Fig. 1). The erosion has exposed Middle or Upper Pleistocene ferruginous sand and some calcrete nodules amongst which are stone artefacts, and fossilized bone. The artefacts consist of silerete, shale, quartz and quartzite flakes, cores and chunks which are indistinguishable from those of the Middle or Late Stone Age. They do not appear to be directly associated with the bone. On the southern edge of the depression is a scatter of fossilized bone fragments (Fig. 2); to the east of this was found a portion of hyaena mandible (Fig. 3). On the northern side is the exfoliating remains of an elephant tusk (Fig. 4). This suggests that the human activity represented by artefacts is only a part of the activities represented in the prehistoric landscape.



Figure 1.

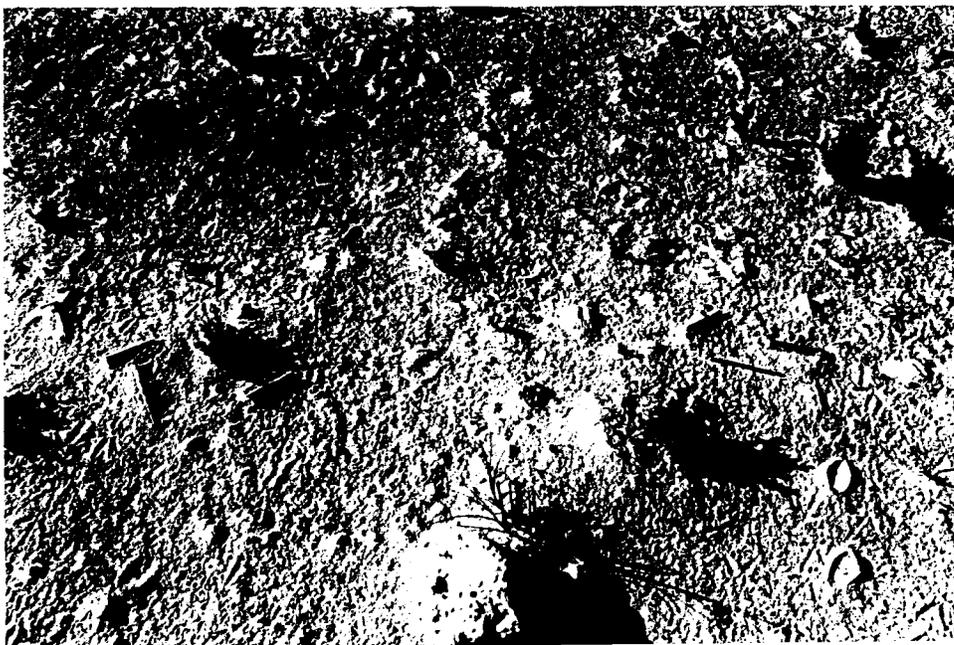


Figure 2.



Figure 3.

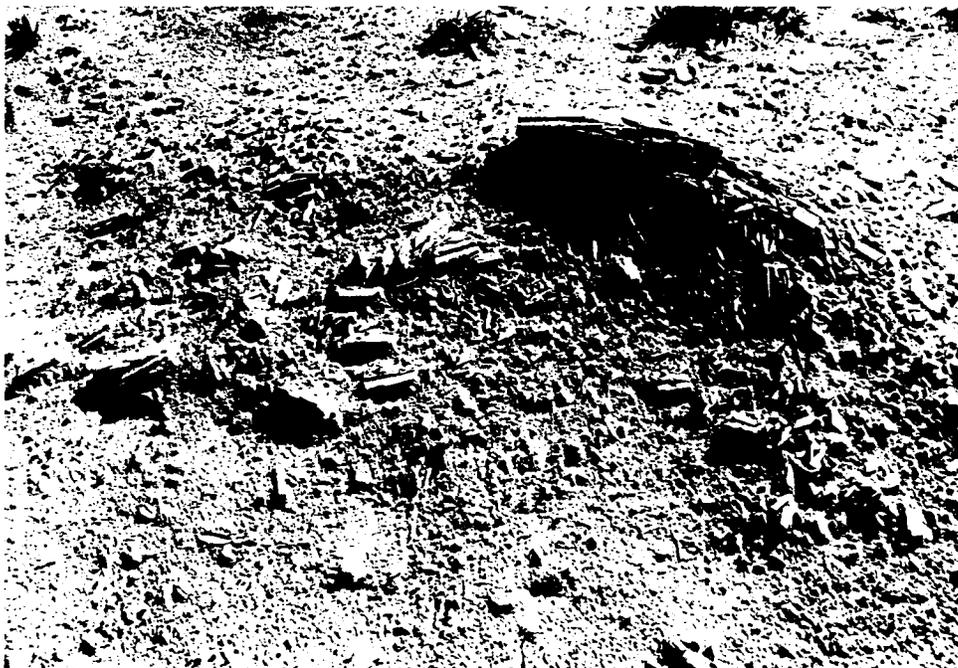


Figure 4.

Site 2 (Fig. 5)

This site lies about 700 m north of Site 1 and is an oval depression eroded into Middle or Upper Pleistocene ferruginous sand and calcrete on the northwestern side of the calcrete ridge. It consists of some quartzite cobbles and a siltcrete core as well as fossilized bone and bone fragments.

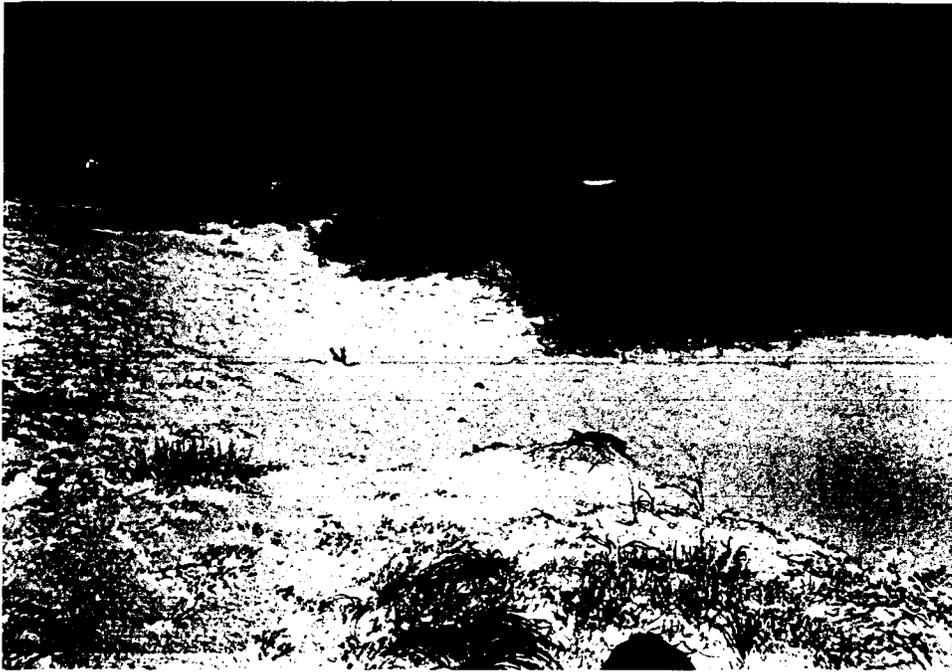


Figure 5.

Site 3 (Fig. 6)

This site lies about 200 m north of Site 2. It is about 50 m long, extends in an uphill direction and consists of quartz, quartzite, shale and silcrete flakes, cores and cobbles as well as bone and fossilized bone (Fig. 7).



Figure 6.

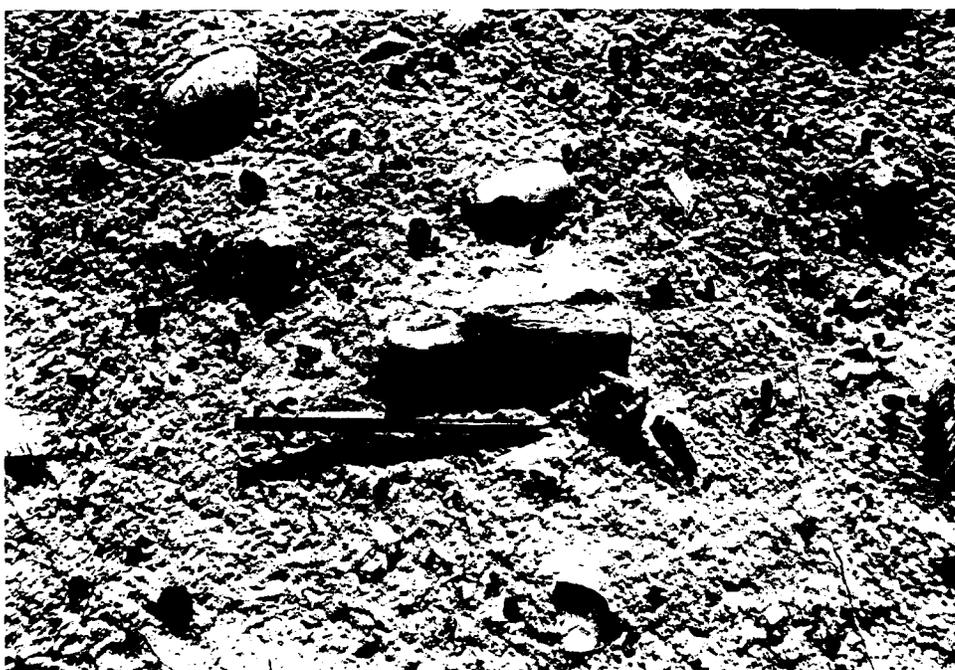


Figure 7.

Site 4 (Fig. 8)

This site lies about 300 m northwest of Site 3 on the seaward face of the calcrete ridges. It is a wind-deflated hollow about 40 m in diameter with silcrete, shale, quartz and quartzite flakes, cores and chunks. Amongst the animal remains are horse teeth (Fig. 9) and a horn core of an eland.



Figure 8.

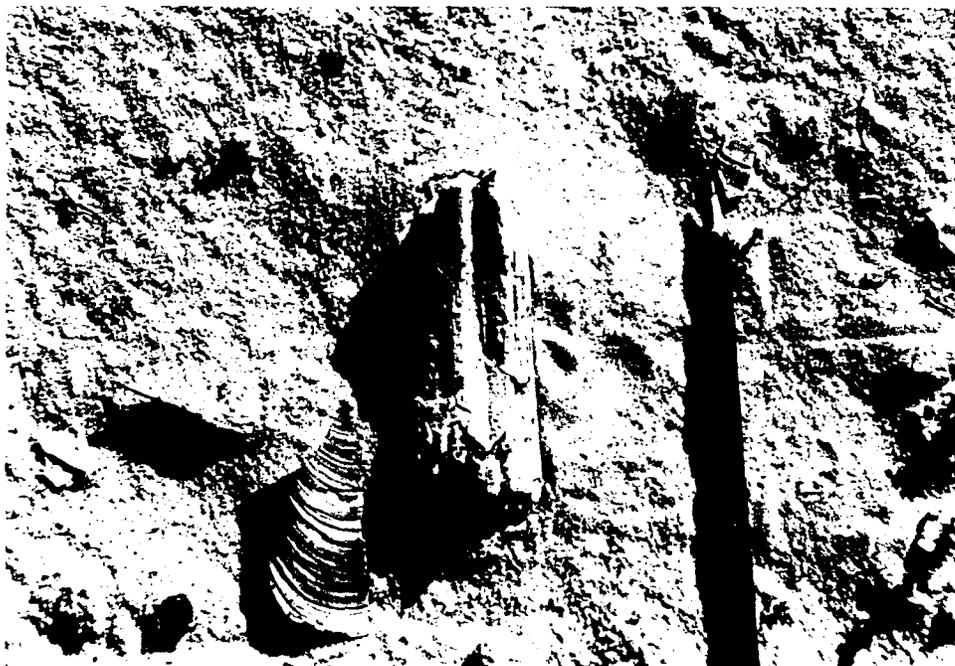


Figure 9.

Site 5 (Fig. 10)

This site is typical of a Late Stone Age coastal site shell midden and lies about 1,5 km from the northern boundary of the farm, on the calcereite ridge, directly seaward of the windmill next to the track. The site, which consists of an extensive surface scatter of artefacts and marine shell, extends approximately 300 m along the ridge. Some areas of shell are in their original positions and have not been eroded. Stone artefacts found include quartzite hammerstones, quartz, quartzite and silcrete flakes, cores and chunks as well as a silcrete scraper (Fig. 11). A number of pieces of unidentified bone, the shells of black mussels, limpets and white mussels (Fig. 12), as well as other marine shells and ostrich eggshell were noted. We were later advised that a local farmer had found two human burials in the dunes close to the site, but no further information was available.



Figure 10.

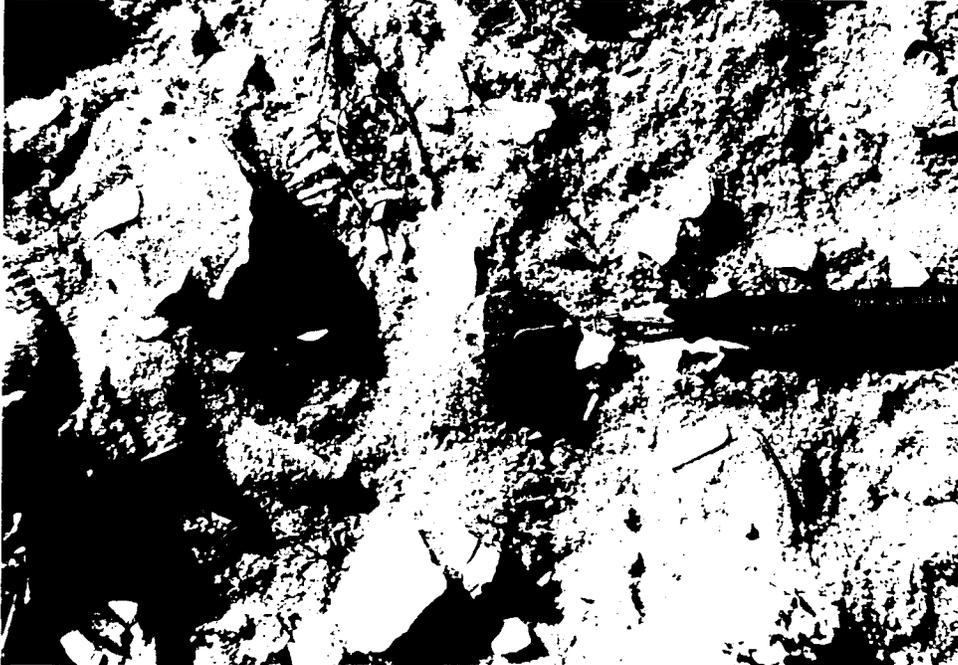


Figure 11.

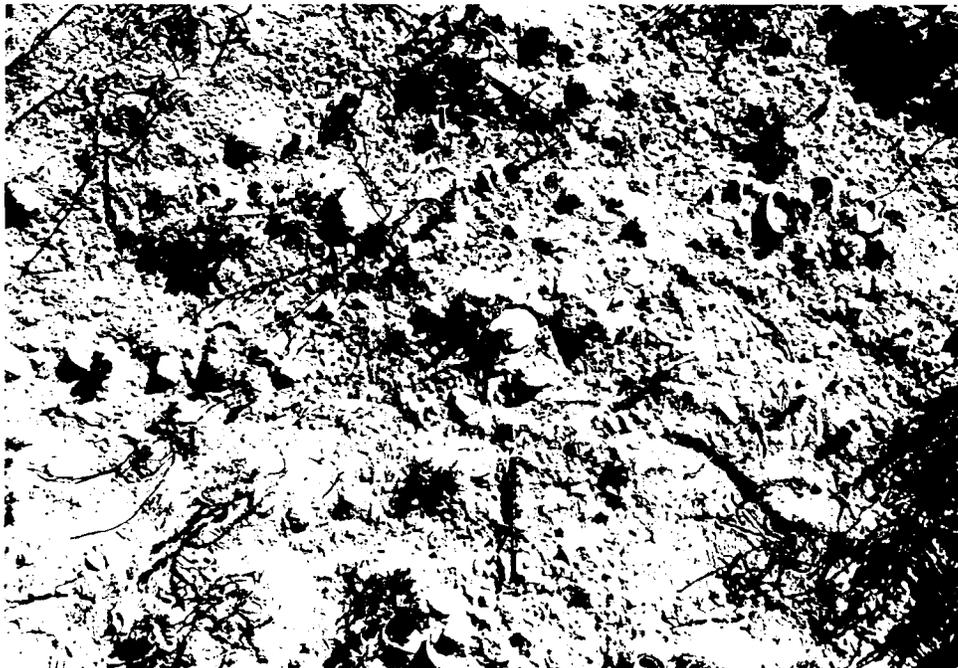


Figure 12.

Site 6 (Fig. 13)

The site lies on the seaward side of the dunefield to the west of Rietduin farmhouse. It is a large wind-deflated area approximately 150 m wide and is characterized by many white mussels which have been dropped by kelp gulls. Within this scatter, however, are also pieces of ostrich eggshell, a few broken quartzite cobbles and a number of pieces of indigenous pottery with quartz temper which date to the Late Stone Age (Fig. 14).



Figure 13.



Figure 14.

Site 7

A small scatter of silcrete and quartzite flakes and cores of Middle and Late Stone Age origin was found on the calcrete ridge about 100 m north of Site 1.

**DISCUSSION**

Archaeological sites preserve important information that can be used to reconstruct aspects of past human behaviour, environments and human response to the changes in environment.

The sites on Tygerfontein are important because of the relative rarity of the early evidence preserved.

Middle and Upper Pleistocene archaeological and palaeontological sites

Sites 1 to 4 are of some importance as there are stone artefacts and fossilized bone pieces present in each of the sites and the time span covered is probably in excess of 100 000 years. Site 7 is of less value on its own but is none the less important in the context of sites 1 - 4.

Late Holocene sites (younger than 2000 years old)

Site 5 is the most important of the purely archaeological sites as it shows the greatest variety of artefacts and food remains. Further burials, which will contribute to the greater understanding of human occupation and resource use on this part of the West Coast, may be recovered.

Site 6 is of less value on its own but is none the less important in the context of the other Later Stone Age sites in the area.

Non-archaeological/palaeontological considerations

Non-archaeological sites observed are limited to the old farmhouse on Rietduin and the spring at the wind pump near Site 5. The presence of this spring may have encouraged the prehistoric peoples to utilize the marine and terrestrial food sources of the area and to establish a living site in the dunes.

The calcrete and unconsolidated sand cliffs along the central and northern part of the coast are unstable and, in the case of the sand cliffs, very active as evidence was found of recent subsidence in two places. This emphasizes the instability of the local substrate and the need for sound management over the long-term in order to protect archaeological occurrences.

Consideration should be given to the predictions for a possible rise in the mean sea level in the next few decades and the consequent probability of increased erosion of beach deposits along all parts of the coast. The distribution of sea-borne debris in the low-lying dune areas could be taken as an indication of the present extent of storm-wave activity.

#### 4. CONCLUSIONS

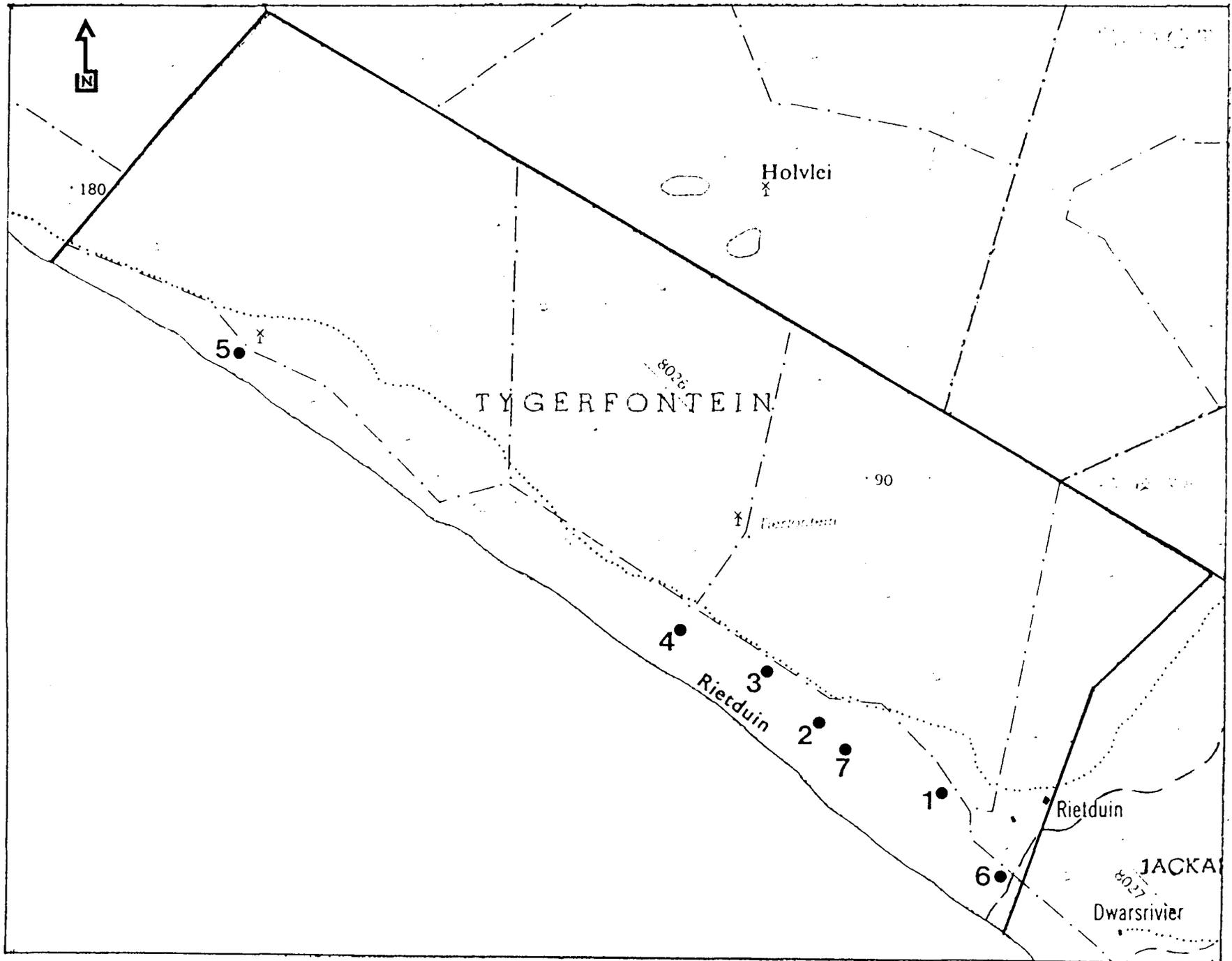
1. The Tygerfontein area is sensitive to erosion and contains potentially important archaeological and palaeontological material and information which will be threatened by development.
2. It must be borne in mind that development of this nature will create immediate and future additional pressure on an already fragile environment.
3. If, however, in designing the development, attention is given to the location of the housing units and amenities in relation to the archaeological and palaeontological sites potential damage may be reduced.
4. The possible exposure of further finds in the dune areas in the vicinity of all the sites should not be overlooked as the majority of those found had been exposed by wind removal of the overlying sands. Any land clearing or levelling operations in the dunes or calcrete areas are likely to uncover further palaeontological and archaeological sites.

## 5. RECOMMENDATIONS

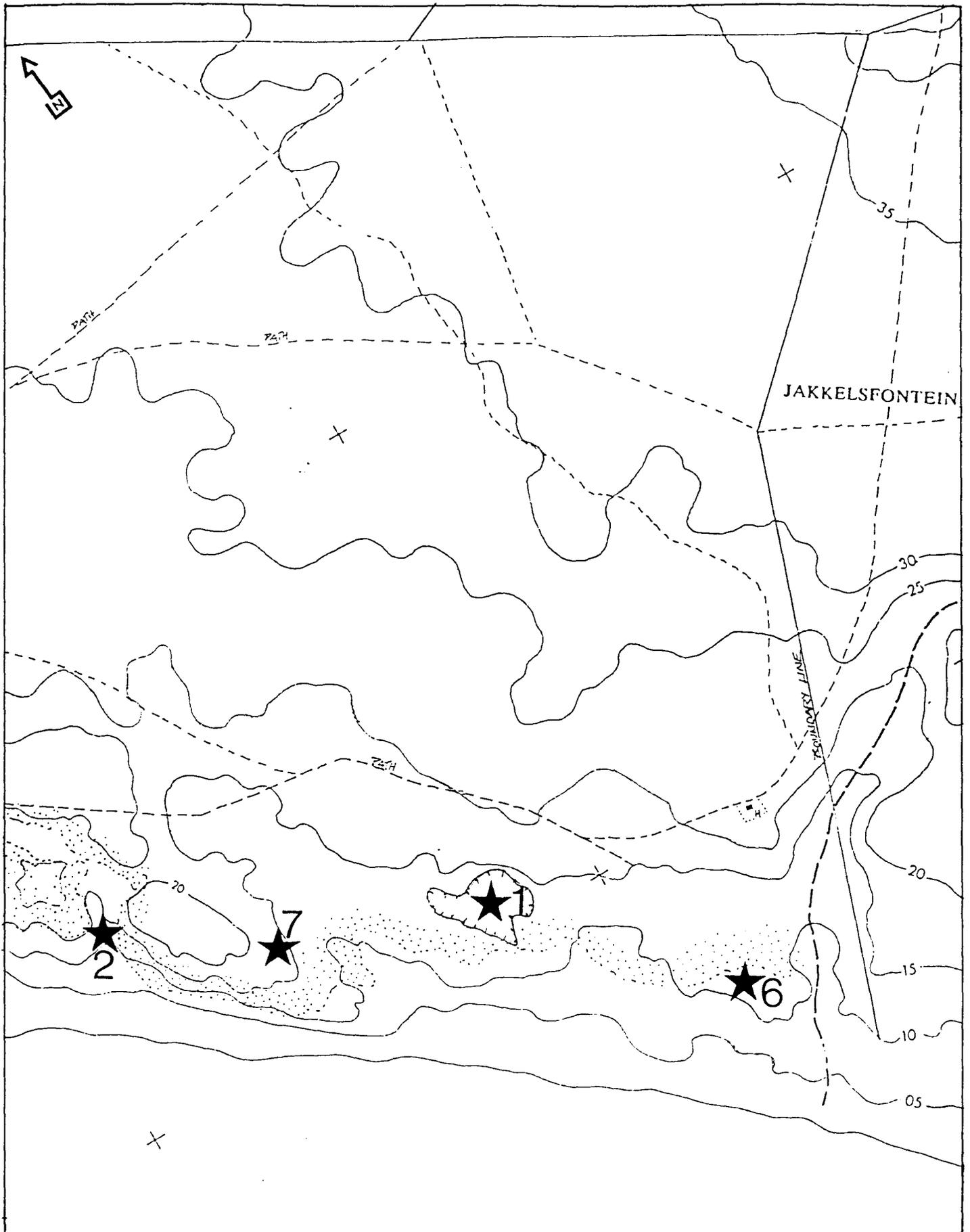
1. No development should take place on the calcrete ridges or along the coast in the vicinity of the sand and calcrete cliffs which are likely to preserve archaeological and palaeontological sites in their sediments.
2. During all construction activities (roads, trenching, land-clearing, etc) care should be taken to minimize damage to known archaeological or palaeontological sites. Any new occurrence should be reported immediately so that its importance can be assessed.
3. Provision should be made in the development budget for a more systematic investigation of the sites on the calcrete ridges and also for an archaeologist to be present or available during all land clearing operations and excavations in the vicinity of any of the sites in order to assess the potential for and importance of any sub-surface finds that may be exposed.
4. A management plan to control access through and to specific areas should be devised and implemented in order to reduce the detrimental effects of increased population pressures over the long-term.
5. The old house could be restored and converted into an information/education centre dealing with the fauna, flora and past history of the area.

## 6. REFERENCES

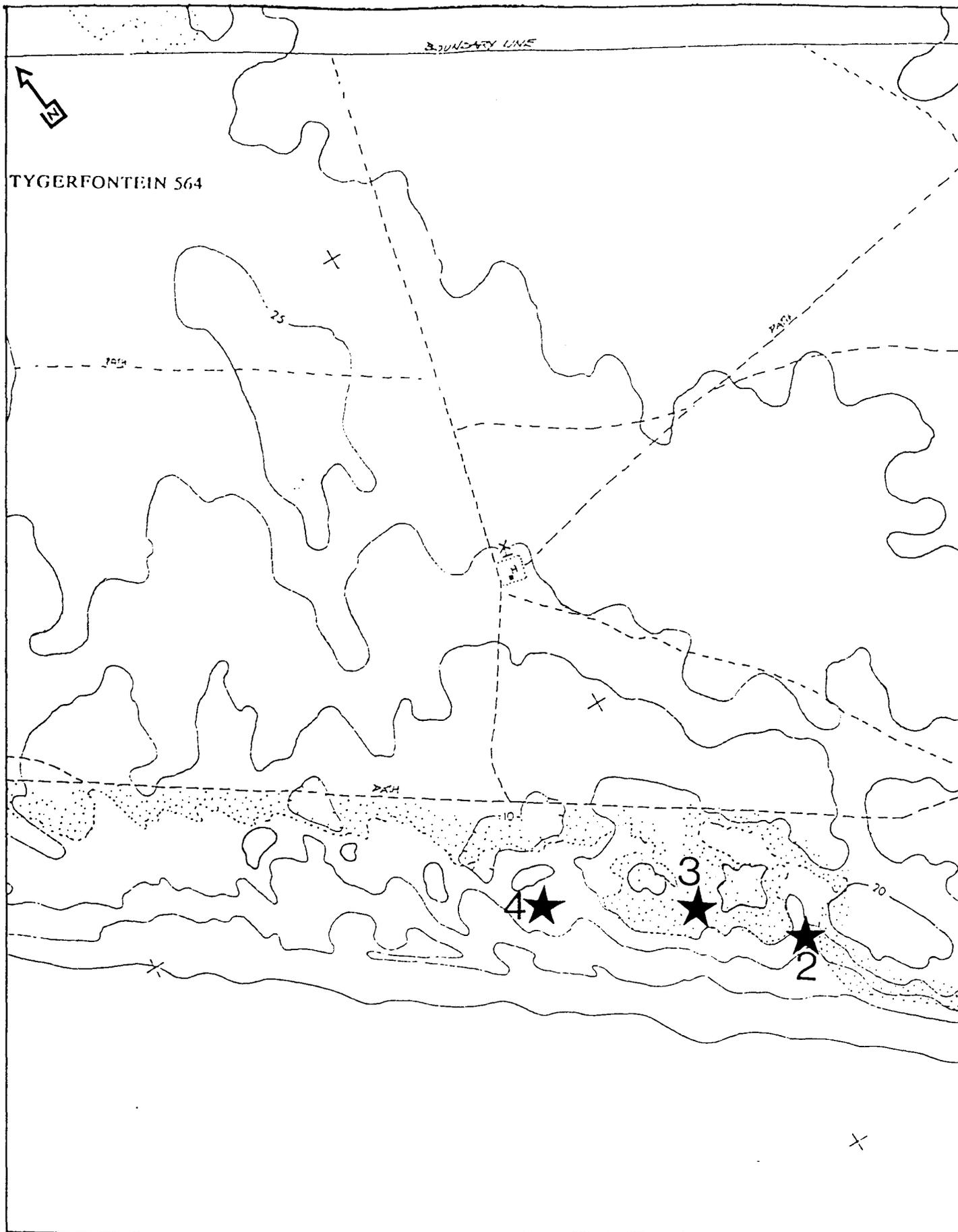
- Avery, G., 1975. Discussion on the age and use of tidal fish traps (visvyvers). *South African archaeological Bulletin* 30: 105-113.
- Avery, G., 1988. Some features distinguishing various types of occurrences at Elandsfontein, Cape Province, South Africa. *Palaeoecology of Africa*. 19: 213-219.
- Klein, R.G., 1976. A preliminary report on the 'Middle Stone Age' open-air site of Duinefontein. *South African archaeological Bulletin* 31: 12-20.
- Klein, R.G., 1978. The fauna and overall interpretation of the 'Cutting 10' Acheulean site at Elandsfontein (Hopefield), southwestern Cape Province, South Africa. *Quaternary Research* 10: 69-83.
- Mabbutt, J.A., Rudner, I., Rudner, J. & Singer, R., 1955. Geomorphology, archaeology and anthropology from Bokbaai, Darling District, Cape Province. *South African archaeological Bulletin* 10: 85-93.
- Moll, E.J., Campbell, B.M., Cowling, R.M., Bossi, L., Jarman, M.L., and Boucher, C., 1984. *A description of major vegetation categories in and adjacent to the Fynbos Biome. South African National Scientific Programme Report 83*. Pretoria: National Programme for Environmental Sciences, CSIR.
- Parkington, J.E., 1976. Coastal settlement between the mouths of the Berg and Olifants Rivers, Cape Province. *South African archaeological Bulletin*. 31: 127-140.
- Robertshaw, P.T., 1978. Archaeological investigations at Langebaan Lagoon, Cape Province. *Palaeoecology of Africa* 10/11: 139-148.
- Robertshaw, P.T., 1979. Excavations at Duiker Island, Vredenburg District, Cape Province. *Annals of the Cape Provincial Museums (Human Sciences)* 1(1): 1-26.
- Schweitzer, F.R., 1970. A preliminary report of excavations of a cave at Die Kelders. *South African archaeological Bulletin*. 25: 136-138.
- Schweitzer, F.R., 1979. Excavations at Die Kelders, Cape Province, South Africa: the Holocene deposits. *Annals of the South African Museum*. 78: 101-233.
- Singer, R., & Wymer, J., 1968. Archaeological investigations at Saldanha skull site in South Africa. *South African archaeological Bulletin* 23(91): 63-74.
- Singer, R., & Wymer, J., 1982. *The Middle Stone Age at Klasies River Mouth in South Africa*. Chicago: University of Chicago Press.
- Van Rijssen, W.J., Wilson, M.L. & Avery, G., 1989. Preliminary archaeological survey of development project on Jackalsfontein 572 in the Malmesbury Division. Final report prepared for Derek Chittenden and Associates.
- Volman, T.P., 1978. Early archaeological evidence for shellfish collecting. *Science* 201: 911-913.



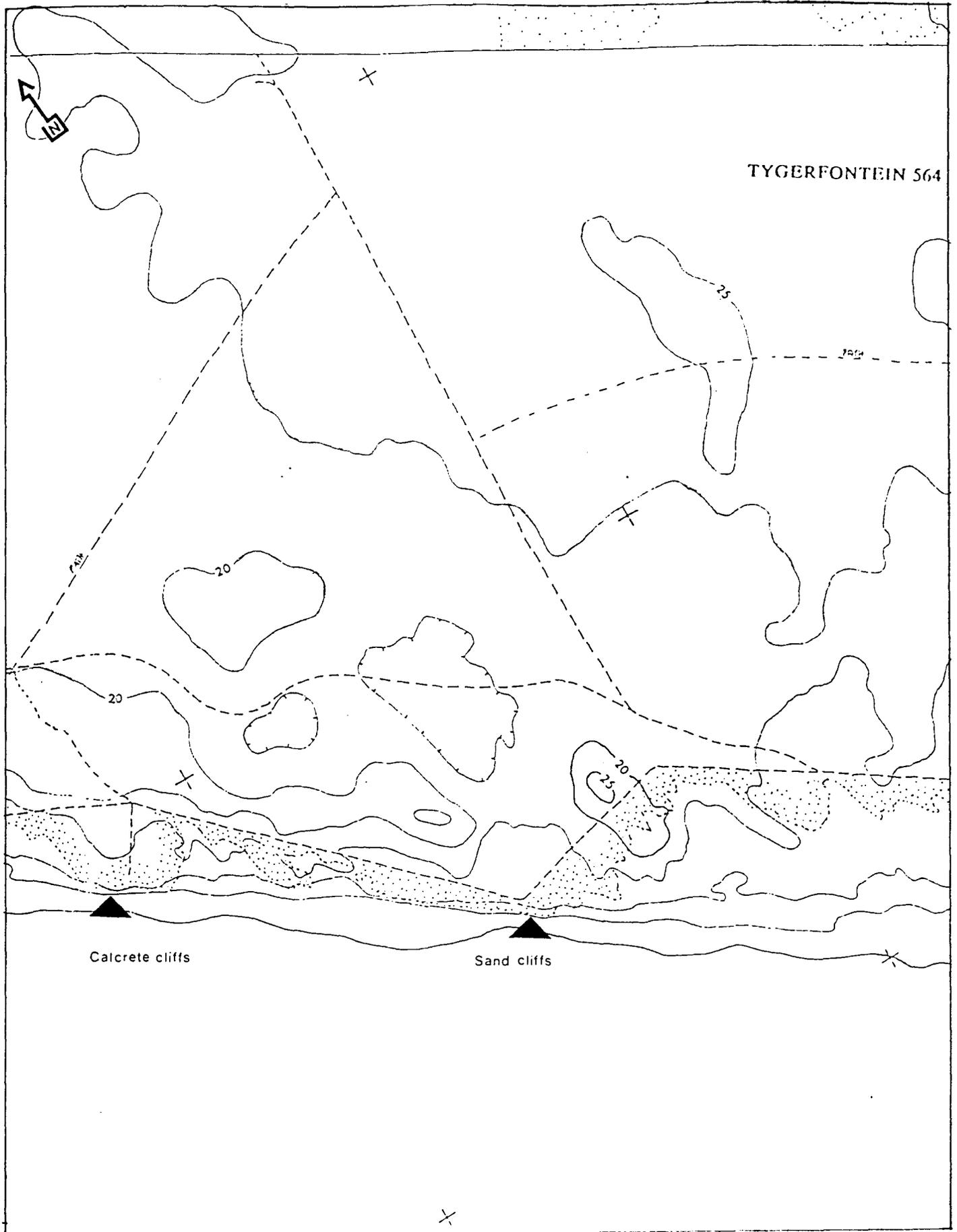
Map 1. The general location of the seven palaeontological and archaeological sites found in the proposed development area.



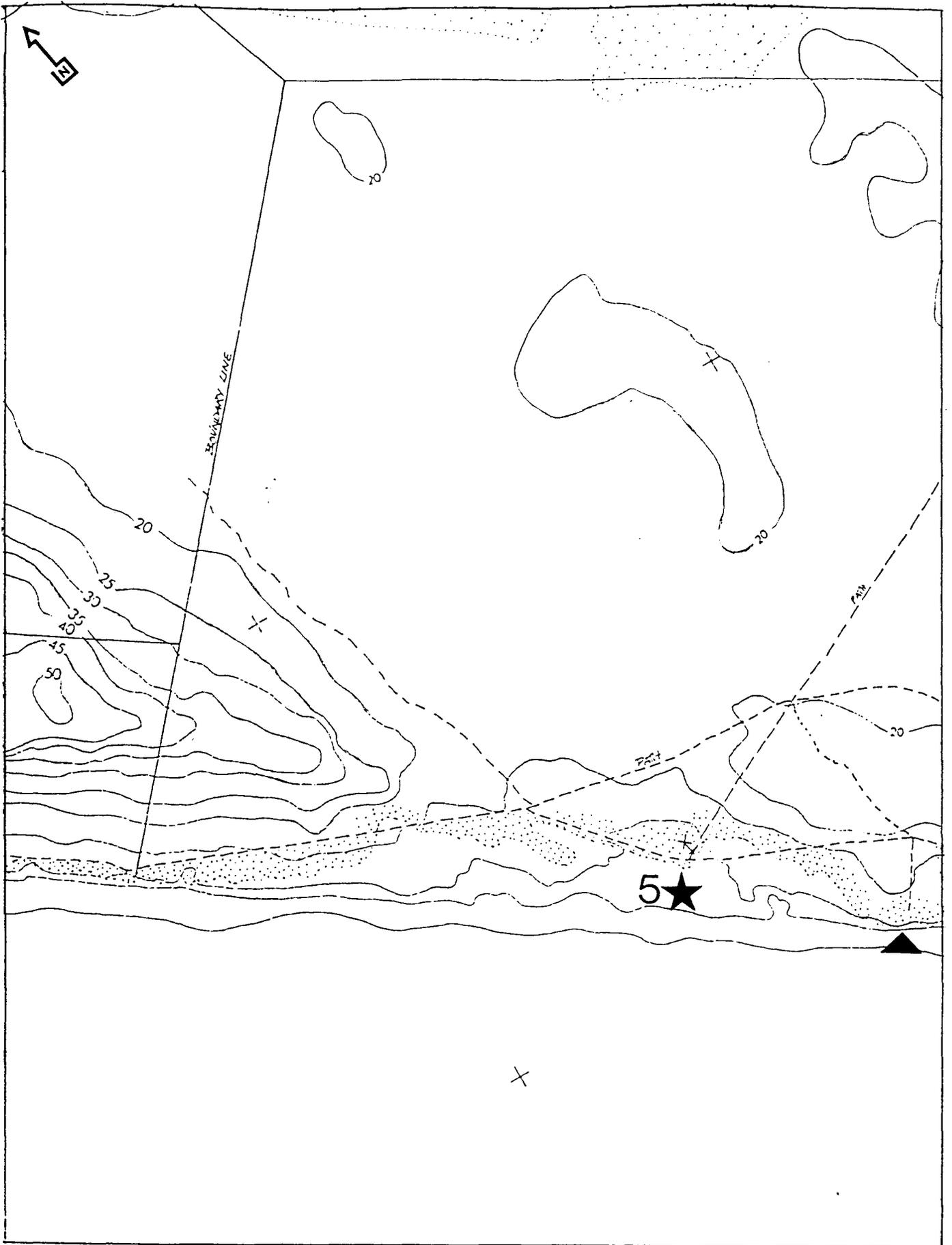
**Map 2.** Location of Sites 1, 2, 6 and 7 on the coastal side of the dune/calcrete ridge interface.



Map 3. Location of Sites 2, 3 and 4 on the calcrete ridges.



**Map 4.** Location of the calcrete and unconsolidated sand cliffs . The markers indicate the position of the more active areas of erosion although the cliffs extend for a greater distance in each direction



Map 5. Location of Site 5 which consists of an extensive scatter of archaeological material along the cliff top and into the adjoining dunes.