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Geoffrey Irwin, *Land, Pā and Polity*

LAND, PĀ AND POLITY

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A study based on the Maori fortifications of Pouto

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1 A SPATIAL APPROACH TO THE STUDY OF PĀ

Already there are more than 30,000 archaeological sites recorded in New Zealand. Among these, are some 5,550 fortified sites classified as pā which are large and conspicuous and commonly considered to dominate their settlement patterns. Over the years, more than 60 have been excavated, in some way, and a great deal has been found out about them. Approximately 30 have been radiocarbon dated.

Yet, in spite of this, we are still unclear on certain points, for instance:

1. It is not known when pā were first built, nor even when a majority of them was built.
2. It is not known where the early ones were built or how the idea, or the need for pā, may have spread.
3. There are no clear trends to be seen in the evolution of pā even though they vary tremendously in their size, form and structural histories.
4. In precise terms, there is much uncertainty about the range of ways in which pā were used in the past.

Of course there are all sorts of theories on such questions (Davidson 1984:182) and some are very compelling. However, they have been difficult to test in the field and have lingered in the literature as a plausible mixture of deduction and dogma (Irwin 1982).

One reason for this is that fortified sites have tended to be investigated in isolation from what lies around them. Thus, they could be compared with other pā, some distance away, but not related to their own landscapes and other sites nearby. Often the elements of these were unknown. With exceptions (e.g. Cassels 1972, Davidson 1978) pā have been studied, in an immediate sense, in an environmental and social vacuum, notwithstanding the very high quality of many excavations which is seldom equalled today.

With the great spate of site recording of the last 15 years (Mitchell 1979, Furey 1980, Bulmer 1981) the position has changed. Just lately archaeologists have been able to take more of a settlement pattern approach to pā, looking at all the sites in an area, not just the odd one (e.g. Prickett 1980). This gives a rather fuller context for study.

The work described here is one attempt to study fortified sites in the context of a local settlement system. As such it takes a deliberately extensive rather than intensive approach. However, such work will provide a focus for finer-grained work to follow. The difference between the two is not so much one of precision but rather one of scale. All that counts is that the kinds of conclusions drawn remain appropriate to the quality of data.

This report is organised as follows. Chapter 2 establishes in a general way that a range of settlement systems did exist and sometimes survive well enough to study. Chapters 3 and 4 describe the field work in one selected case - the pā of Pouto - and consider some of the implications for pā taxonomy that arise. Chapter 5 analyses the site distribution of Pouto while Chapter 6 attempts to trace the changes that took place as a settlement system matured through time. There are implications for social groups and their political relations in times of peace and war. Chapter 7 considers general theories about pā and some

wider implications for New Zealand prehistory. Because archaeological settlement patterns are so variable, one cannot generalise far from just one case. Identification of any wide patterns of change must wait upon the results of other studies.

2 PATTERNS OF SETTLEMENT PATTERNS

The site recording projects initiated by the NZ Historic Places Trust, the NZ Forest Service and other public bodies now number over a hundred. In these surveys, in the files of the NZ Archaeological Association's Site Recording Scheme and in the Trust's site Index there is a wealth of data available for settlement pattern study. It is amenable to rapid computer analysis in combination with the input of digitised ecological and other data, the use of mapping programs and graphic display. Naturally, the quality of the survey information, which will be discussed again below, is variable. However, inspection of the material for Northland, Auckland and Coromandel supports the following observations.

1. There are places where pā are densely packed in the landscape while undefended sites are much more numerous again.
2. More importantly, in some areas but not all, the pattern of settlement appears to be coherent in terms of how sites are distributed with respect to the environment and to one another. Their distributions are not random. There is some clear structural sense to them which inspires confidence in them as samples.
3. Yet, if we compare different areas, we find systematic differences in site distribution. In short, settlement patterns can differ markedly and general theories about the role of pā, or other classes of site, will have to accommodate this variability. Moreover, the situation supports the notion that the whole settlement pattern is a useful and natural unit of study. A small number of the many possible examples are illustrated below and each accompanied by a very brief commentary.

SOUTH KAIPARA HEAD

A concentrated band of pā runs up the South Kaipara Head, south of Shelly Beach, generally up to two kilometres inland (Fig. 1). Only a few sites are on the harbour itself, one of which is Otakanini (the southernmost) excavated by Groube and Bellwood (Bellwood 1972), which can be seen immediately as atypical in this respect. Most of the pā are close to streams running into tidal creeks and estuaries open to the harbour. These would have been navigable to some distance inland and especially at high tide. Fresh water would have been no problem.

Elevation

Most of the sites are sitting around the 2-300 ft contours and not by any means at the highest points of the peninsula. They seem to be maximising closeness to stream valleys and creeks and places where local relief offers defensible locations. The symbols shown for pā refer to their Groube (1970) classes which are accepted, here at least, without argument (although recent inspection of the sites suggests some could be re-classified within that).

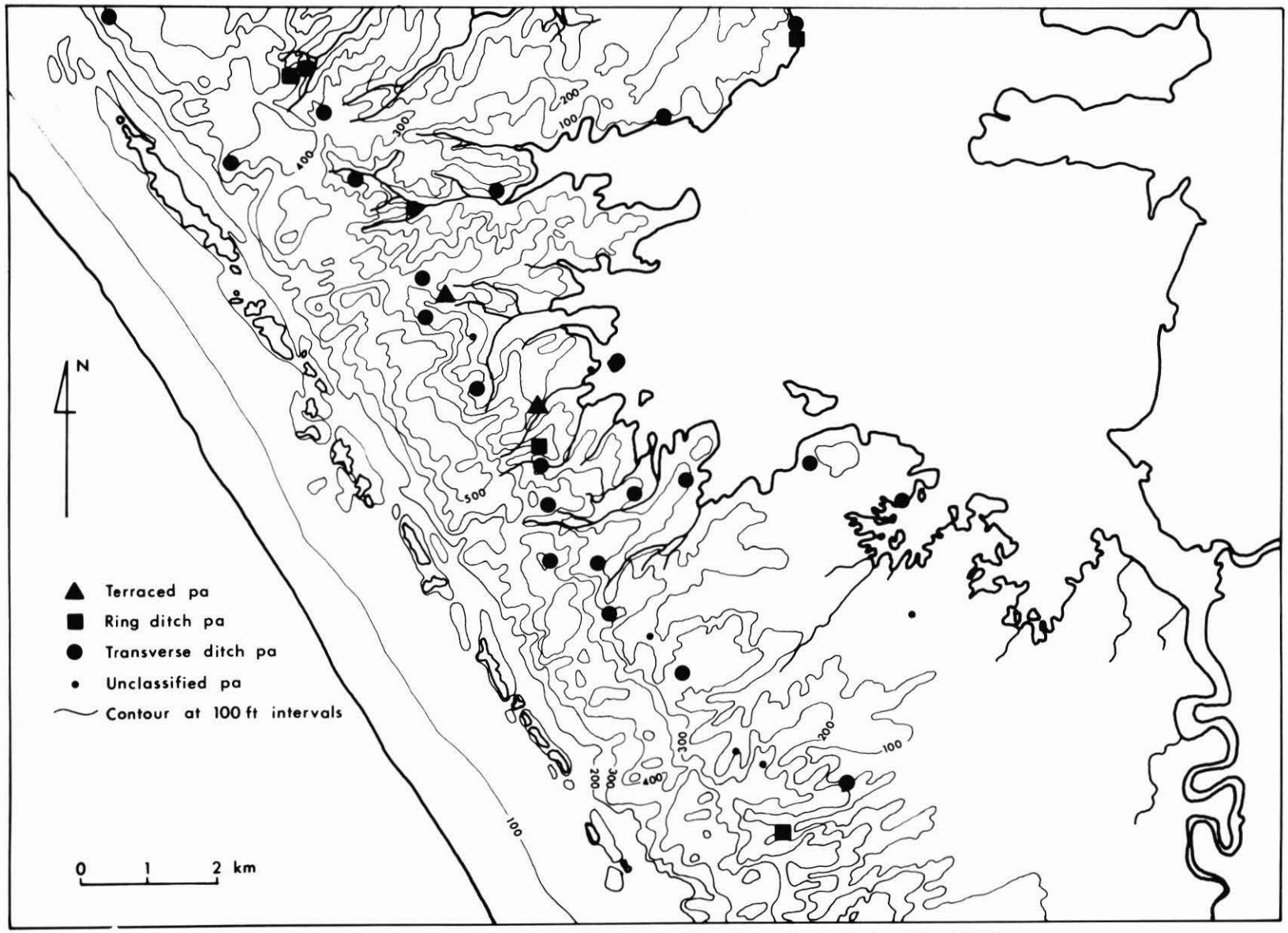


Figure 1. South Kaipara sites (Leighton 1975, Baquie 1976, Douglas and Nugent 1976, Spring-Rice 1977)

Soils

The soil map (Fig. 2) tells more of the story. There is a real association of sites with a zone of light sandy loam Redhill soils, which are the best on the peninsula. Although the soil map is less precise than the site distribution, it is clear that pā are rare on the younger, less-developed Pinaki sand to the west, or on the more leached Houhora and Tangitiki soils closer to the harbour. Even two pā on the harbour (one is Otakanini) can be seen to lie on an outlier of the Redhill. The other harbour pā were probably located with respect to important waterways and marine resources.

Undefended sites

Figure 3 shows the close association between pā and the various undefended sites, primarily pits, terraces and shell and fishbone middens which occur in various combinations and sizes. There are no sites recorded on the string of lakes towards the west. This, and more particularly, the absence of coastal middens on the Tasman shore - now lying under the Woodhill State Forest - must be regarded as a major sampling problem.

Another point to note is that, while the various ecological zones run lengthwise along the peninsula, the stream valleys and estuaries cut across it. They provide natural sampling units. Often, on the north head of the Kaipara, site variability is replicated from one to the next, which gives the chance to investigate different settlement models. In all, the Kaipara heads present very coherent site distributions which alter both north and south of the region illustrated here.

TE PAKI AND NORTH CAPE

Soils

In Figure 4, the distribution of pā in the far north is plotted against soils. For simplicity, these are grouped into four classes ranked from 1 to 4. Zones 3 and 4 are poorly drained; Zone 4 is the more strongly leached and podsolised. Zones 1 and 2 are better drained and less badly leached. Pā clearly avoid the worse soils. Where they do not evidently there are good reasons for it, as with the sites on Parengarenga Harbour or the sites in Zone 3 which lie close to better soil nearby. The few exceptions to the pattern do not signify much on such a general soil map.

Elevation

Pā plotted by elevation (Fig. 5) produce a very coherent pattern too. The 100,300 and 500 ft contours make the best discrimination as can be seen, for example, in the many sites which hover near 500 ft on the ridges and spurs on the edge of the high country. Even elsewhere, where the land is lower, pā can be seen to select for points of local relief. Thus site location neatly accommodates both soils and elevation and no doubt other things as well.

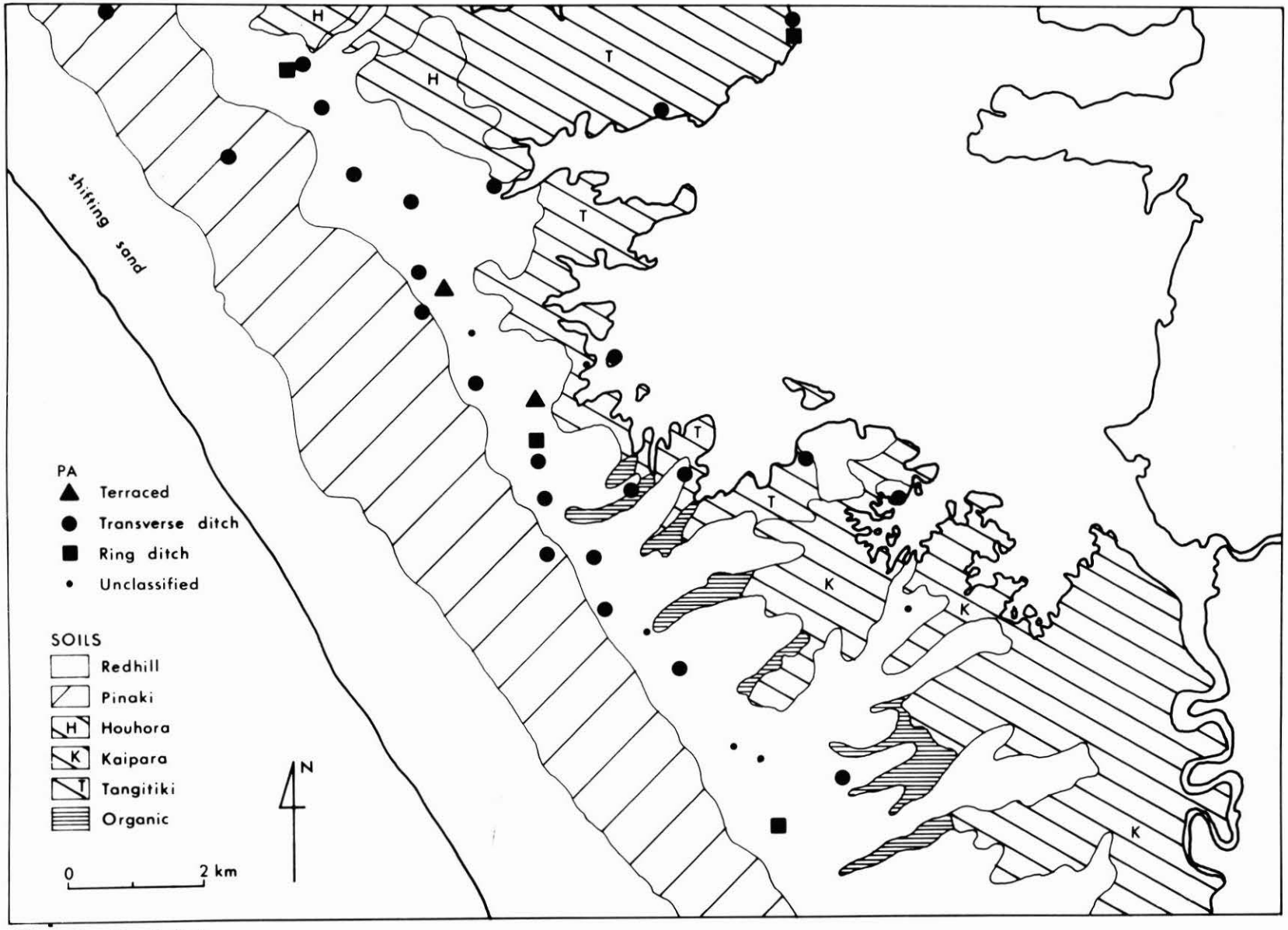
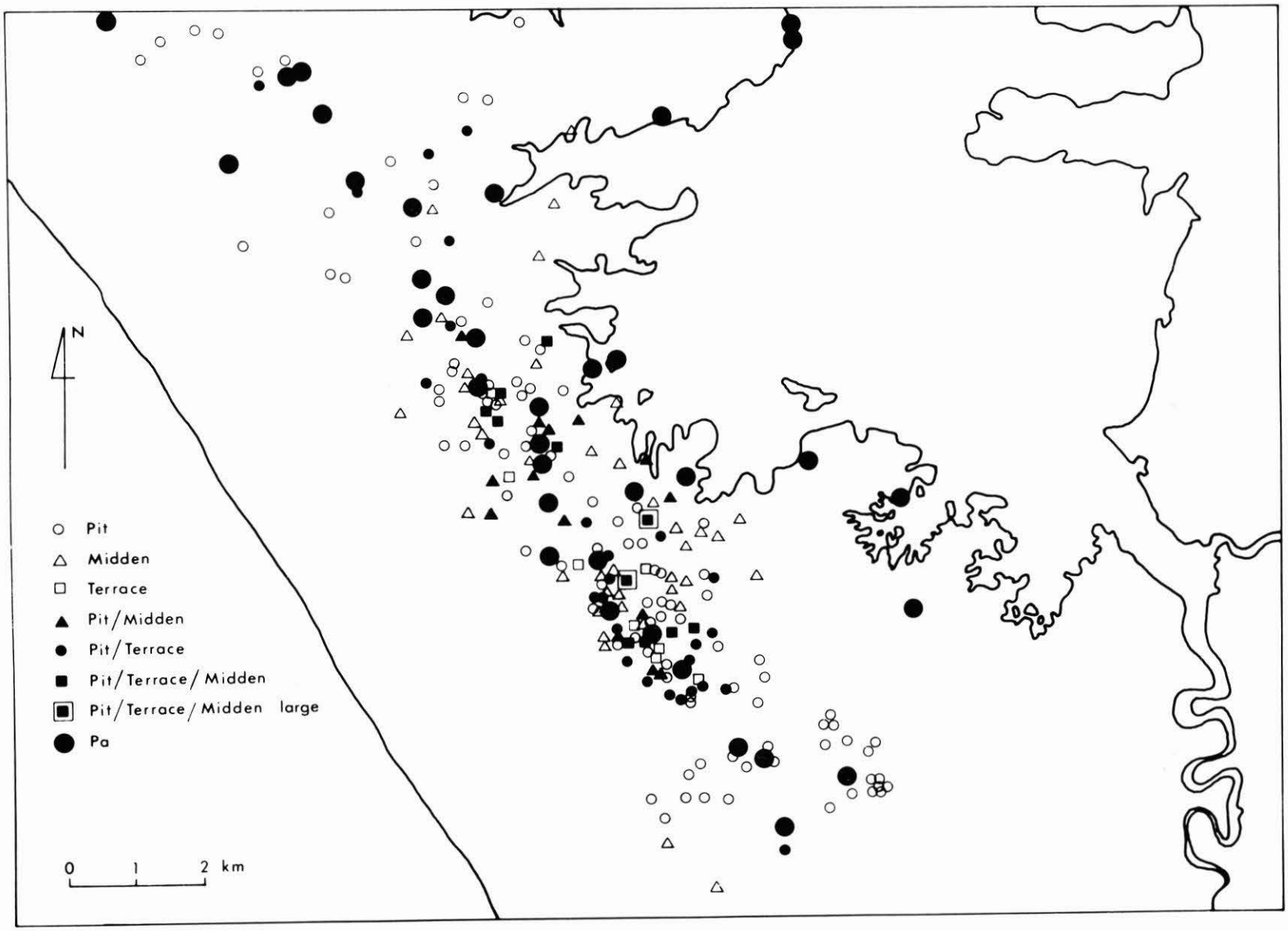


Figure 2. South Kaipara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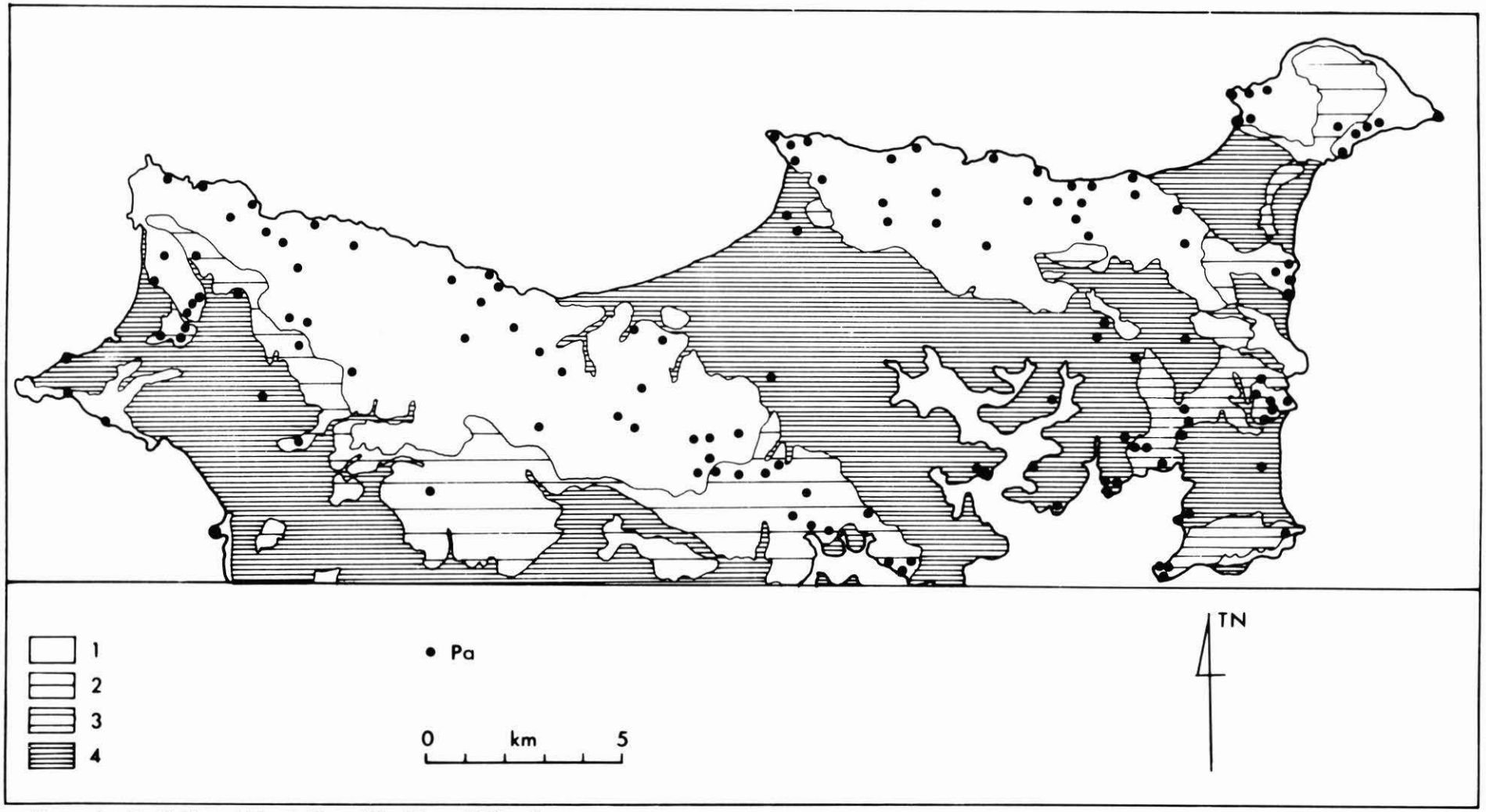


Figure 4. Te Paki and North Cape (Davidson 1975a–d)

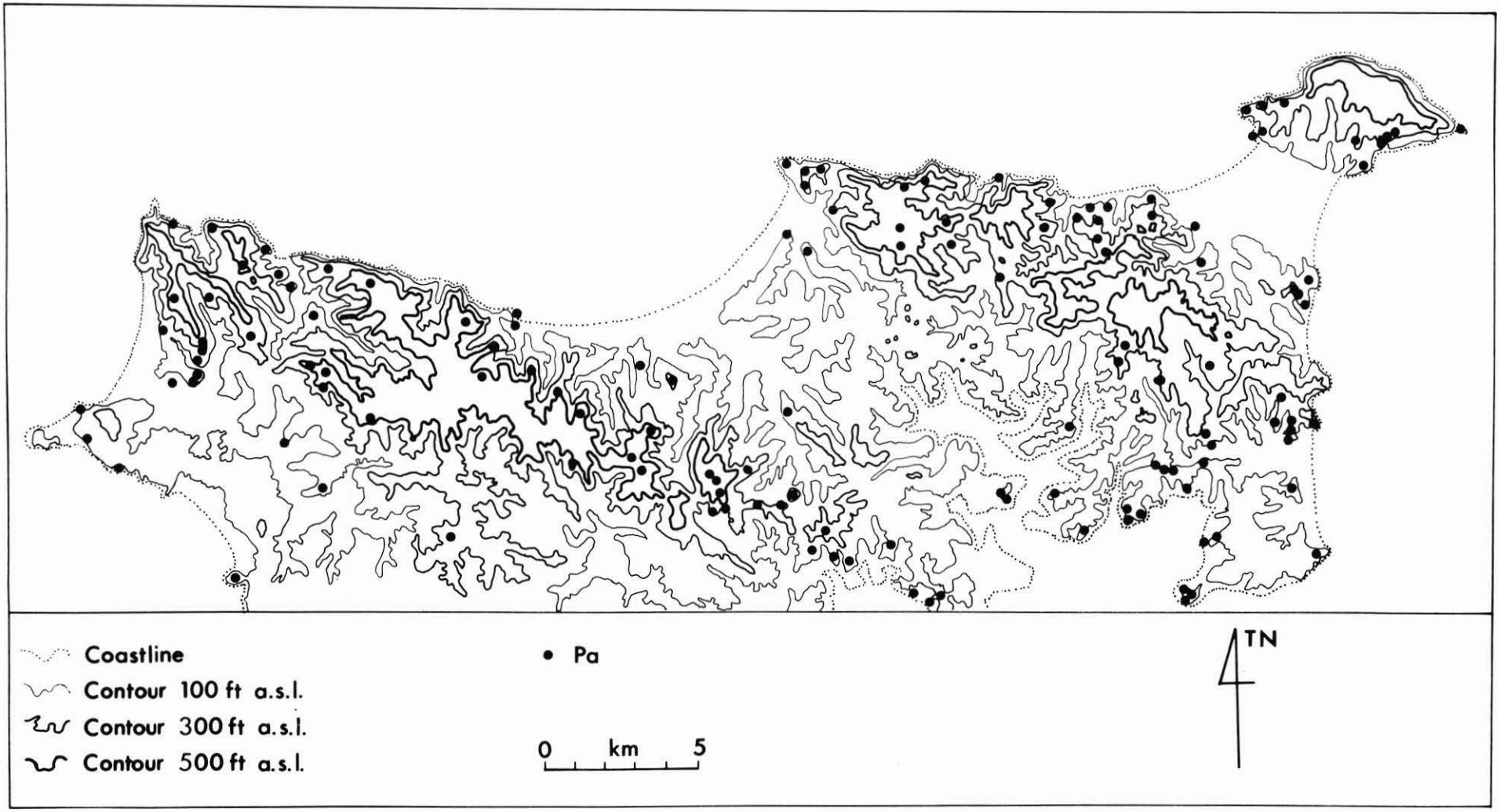


Figure 5. Te Paki and North Cape

HEREKINO/WHANGAPE

A glance at the distribution map (Fig. 6) will show that pā lie on the two harbours, in the sheltered valleys sloping down to them and across the stretch of land between them. They do not occur on the rocky west coast, at the eastern and inland end of the harbours, nor on the sands, the poorly-drained soils or the steeplands. Undefended sites generally follow pā distribution with a notable concentration in the north valley towards the Herekino Gorge where all the pā are Groube-class 1. Pā make up some 17% of sites, pits and terraces collectively 77%, while midden at 6% may be underrepresented. Occupation follows what were and are the major communications routes.

MAHURANGI

Two harbours, Mahurangi and a smaller one at Sandspit, are shown in Figure 7 with a stretch of sea coast between them. Many pā cluster on promontories near the harbour entrances but are distributed more sparsely up them. This case demonstrates how fortified sites are conspicuous enough to be known outside the areas of detailed survey which is not the case for undefended ones. Within such areas there are large numbers of middens and storage pit sites, although the latter can be found around the harbours but rarely along the more exposed coast.

WAIHEKE ISLAND

While much of western Waiheke has been developed for housing many sites survive in the eastern end which is fairly well surveyed except for the part of the southeastern corner that is under scrub. The northern coasts of the island are composed of cliffs and sandy beaches exposed to the sea. A succession of small bays in the Waiheke Channel is more sheltered as are the large tidal bays which face south to the shallow Tamaki Strait. Most of the pā enjoy the natural defences of coastal headlands supplemented by transverse ditches and banks. Some five inland pā are at higher elevations on ridges while a sixth, the highest, is on a hilltop (Fig. 8). Pā are quite regularly distributed which suggests some contemporaneity.

In the eastern end of the island (Figs. 9 and 10) undefended sites occur more or less continuously around the coast. These are generally pits, terraces and middens, alone or in combinations. Middens are almost exclusively coastal. In addition, there are many undefended sites inland, particularly pits and terraces. The inland sites are fewer at higher elevations,on soils of low fertility and rare in areas of swamp (which is not to imply swamps were unused). No site is very far from fresh water. There is a pocket of dense settlement in a sheltered valley to the north of Awaawaroa Bay. Undefended sites are also thick around the shores of the sheltered southern bays with their extensive drying flats.

AHUAHU (GREAT MERCURY ISLAND)

Great Mercury lies off the eastern coast of Coromandel. Figure 11 shows the north end of the island; most of the interior of the larger southern end is "badlands". This offshore island has a warmer climate than the mainland and excellent conditions for horticulture (Edson 1973).

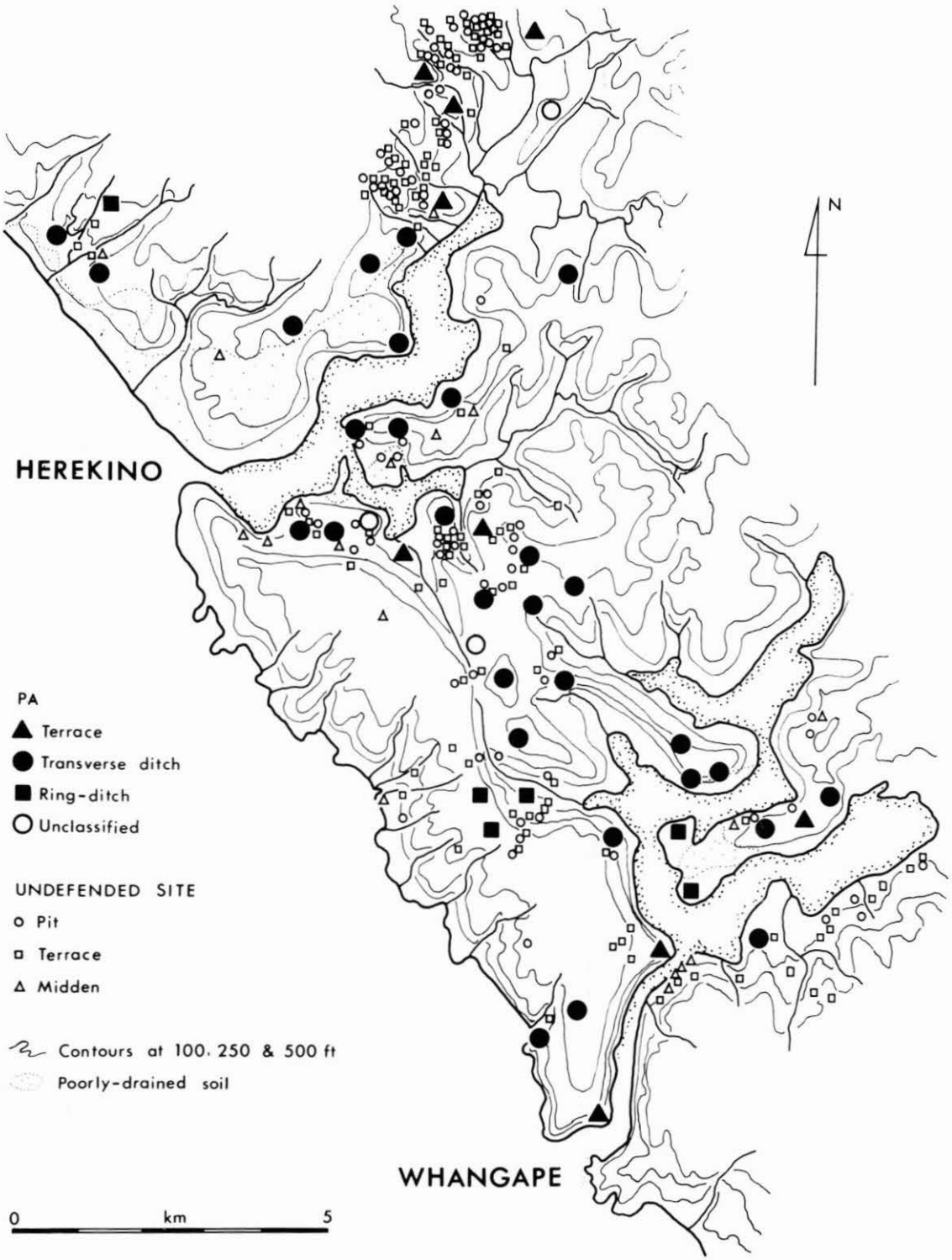


Figure 6. Herekino and Whangape (Leahy and Walsh 1979)

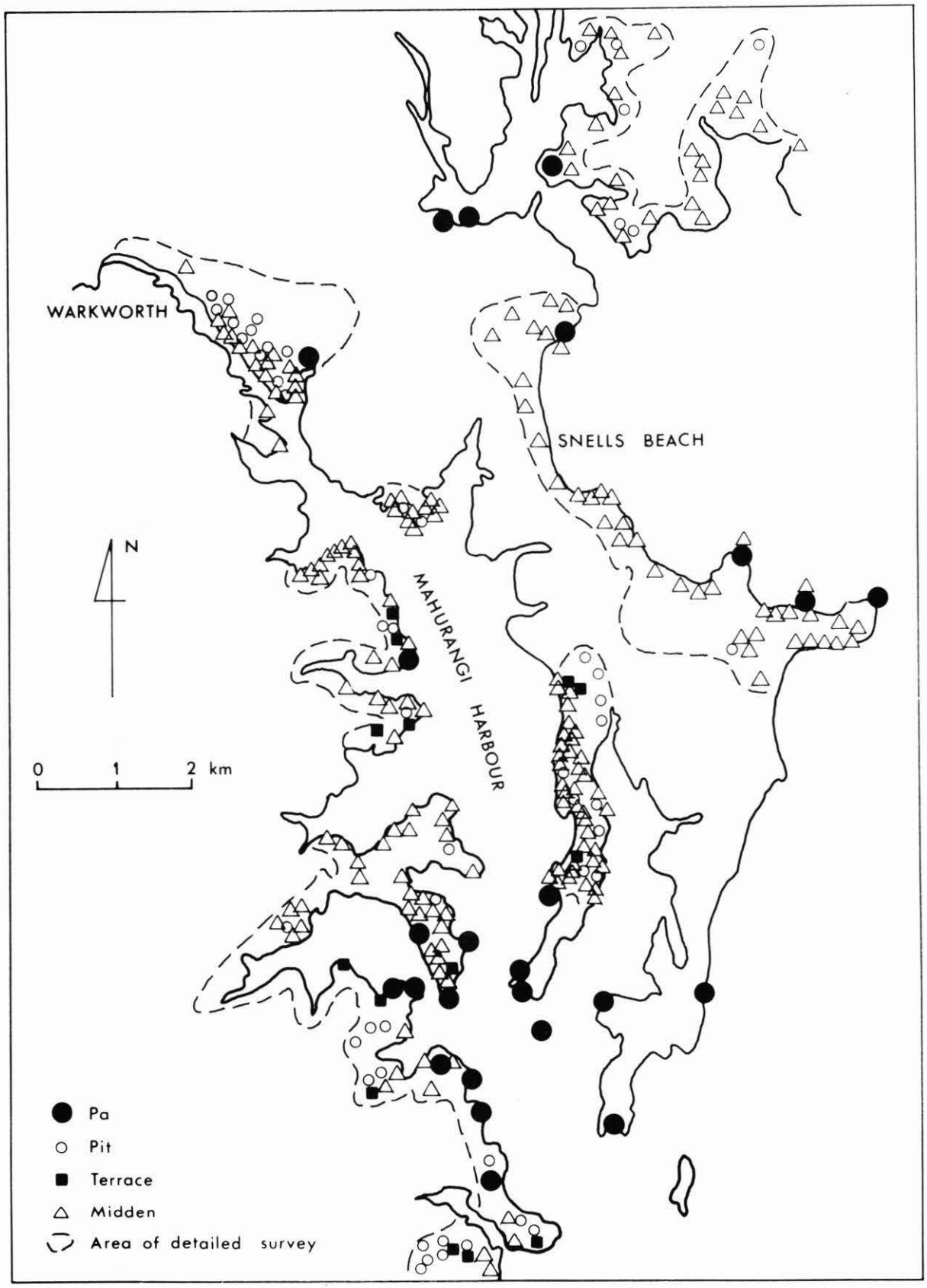


Figure 7. Mahurangi Harbour (Morwood 1975, Walton 1976, Nichol 1977, 1980)

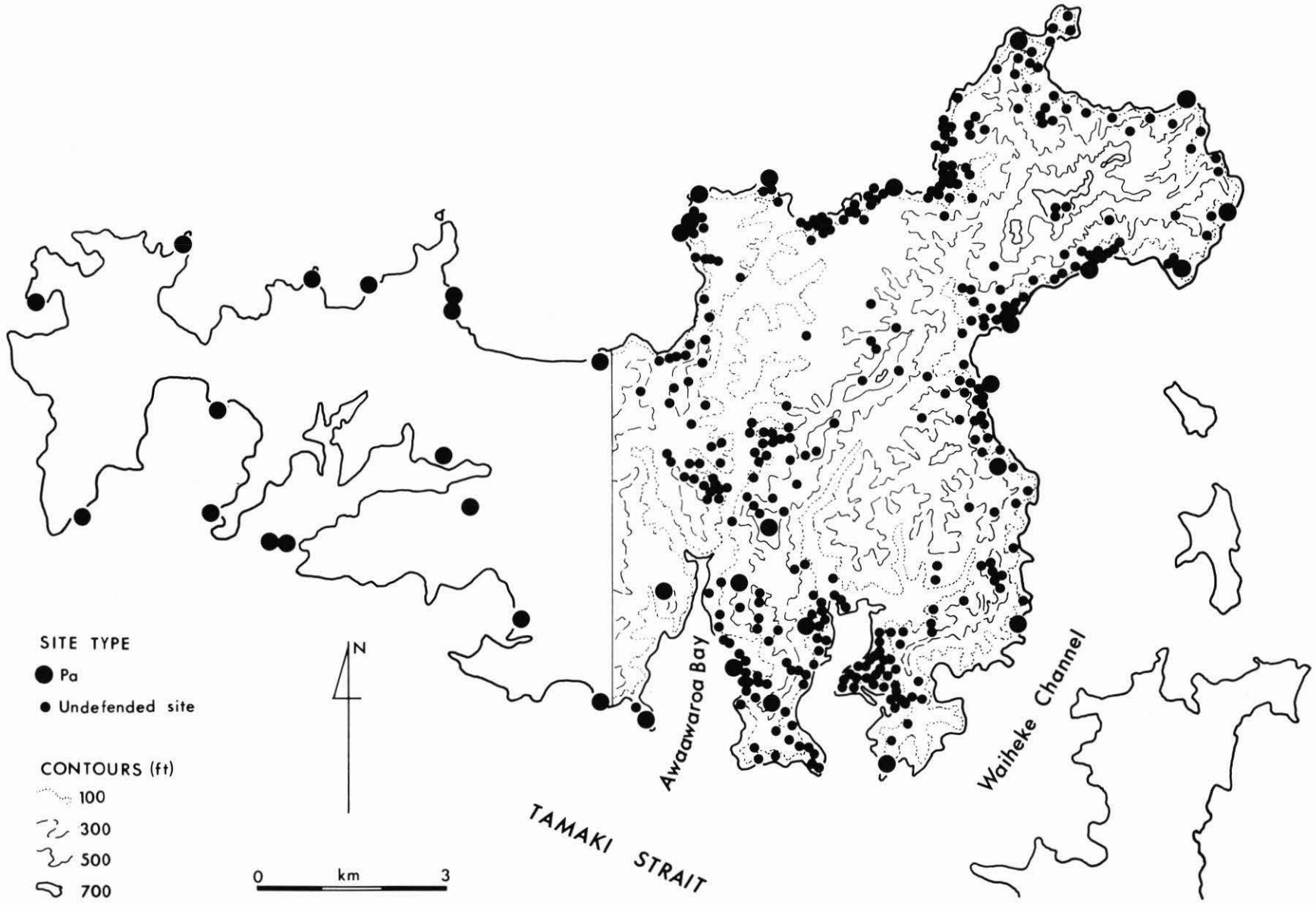


Figure 8. Waiheke Island (Atwell 1976, Rickard 1981)

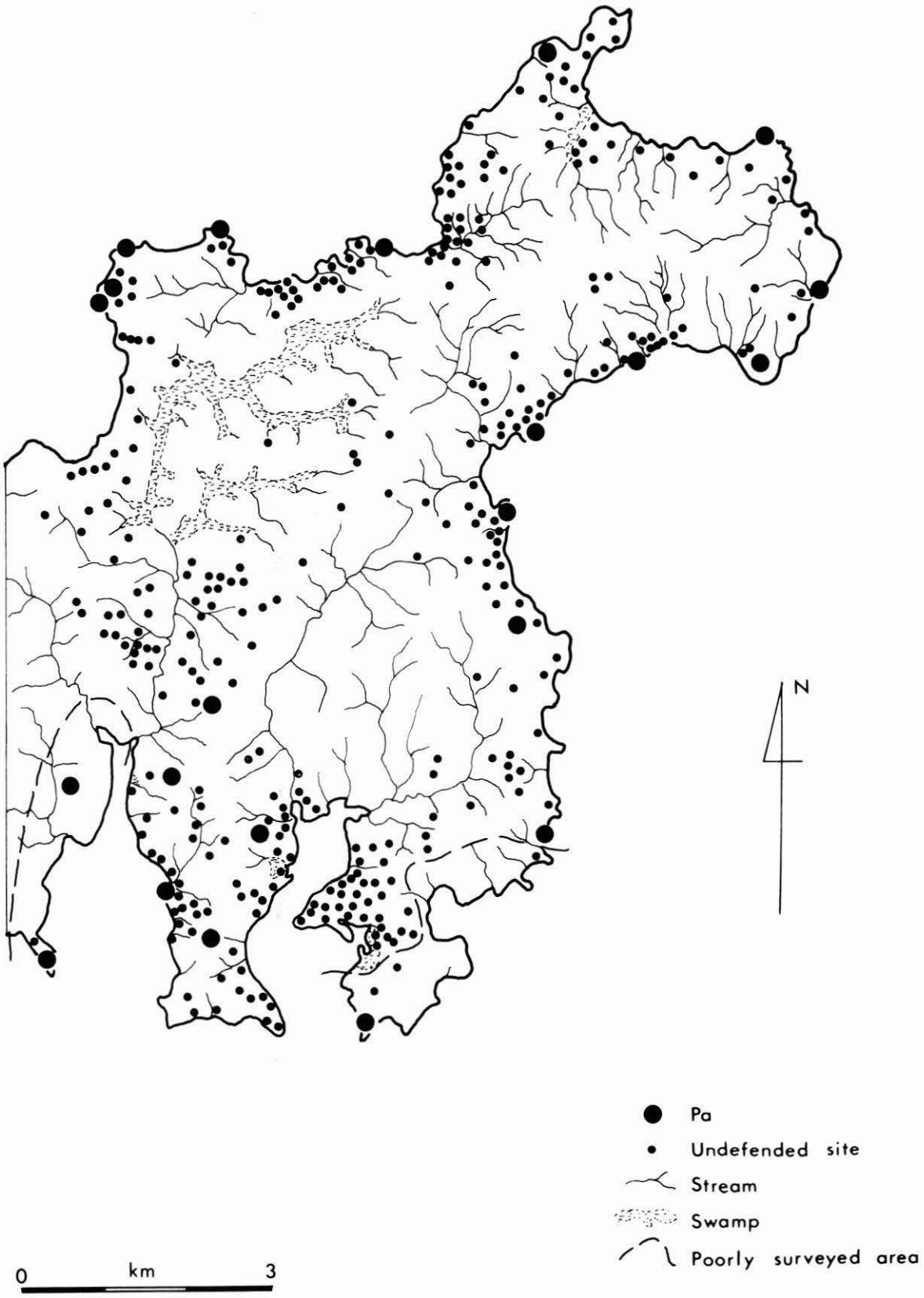


Figure 9. Waiheke Island

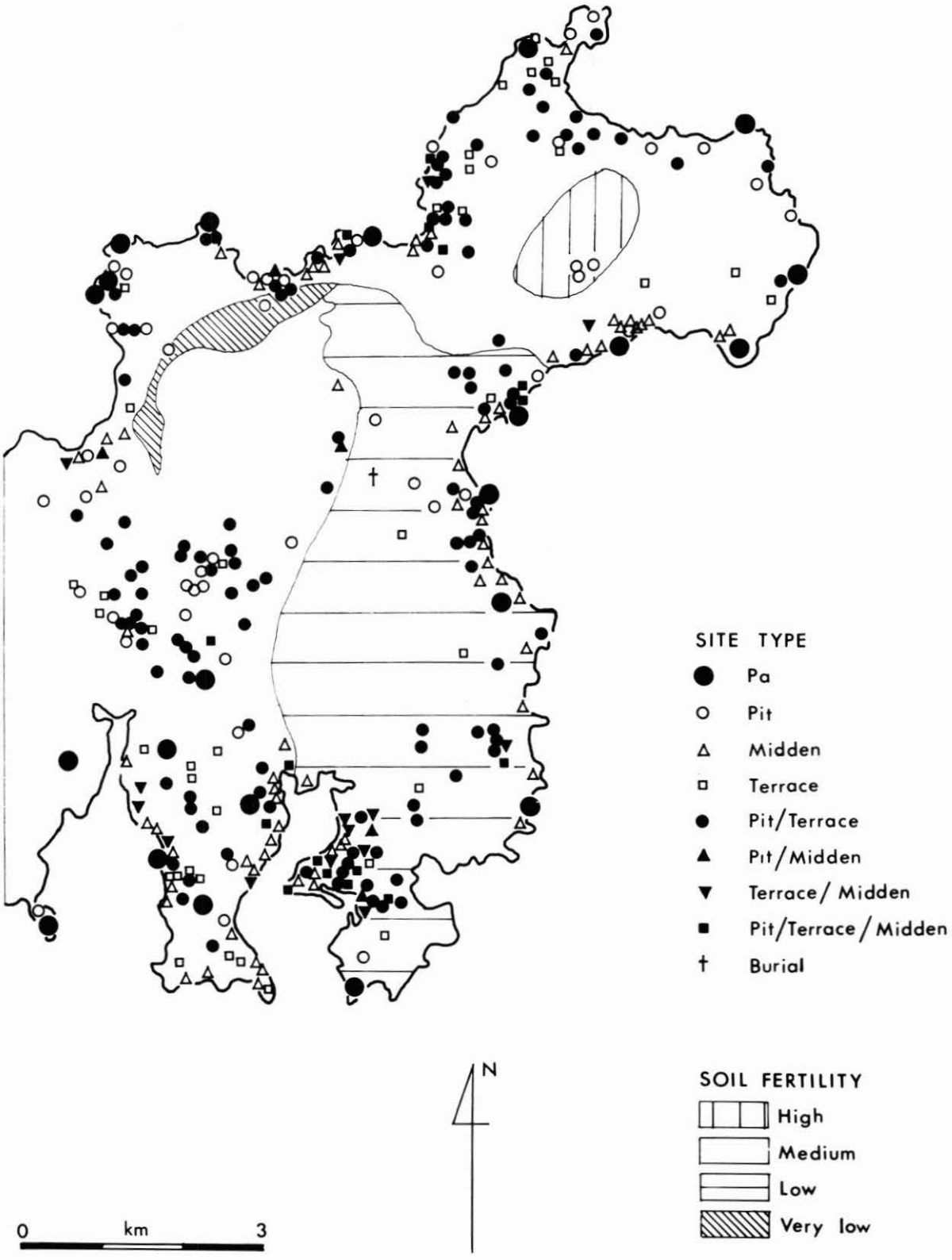


Figure 10. Waiheke Island

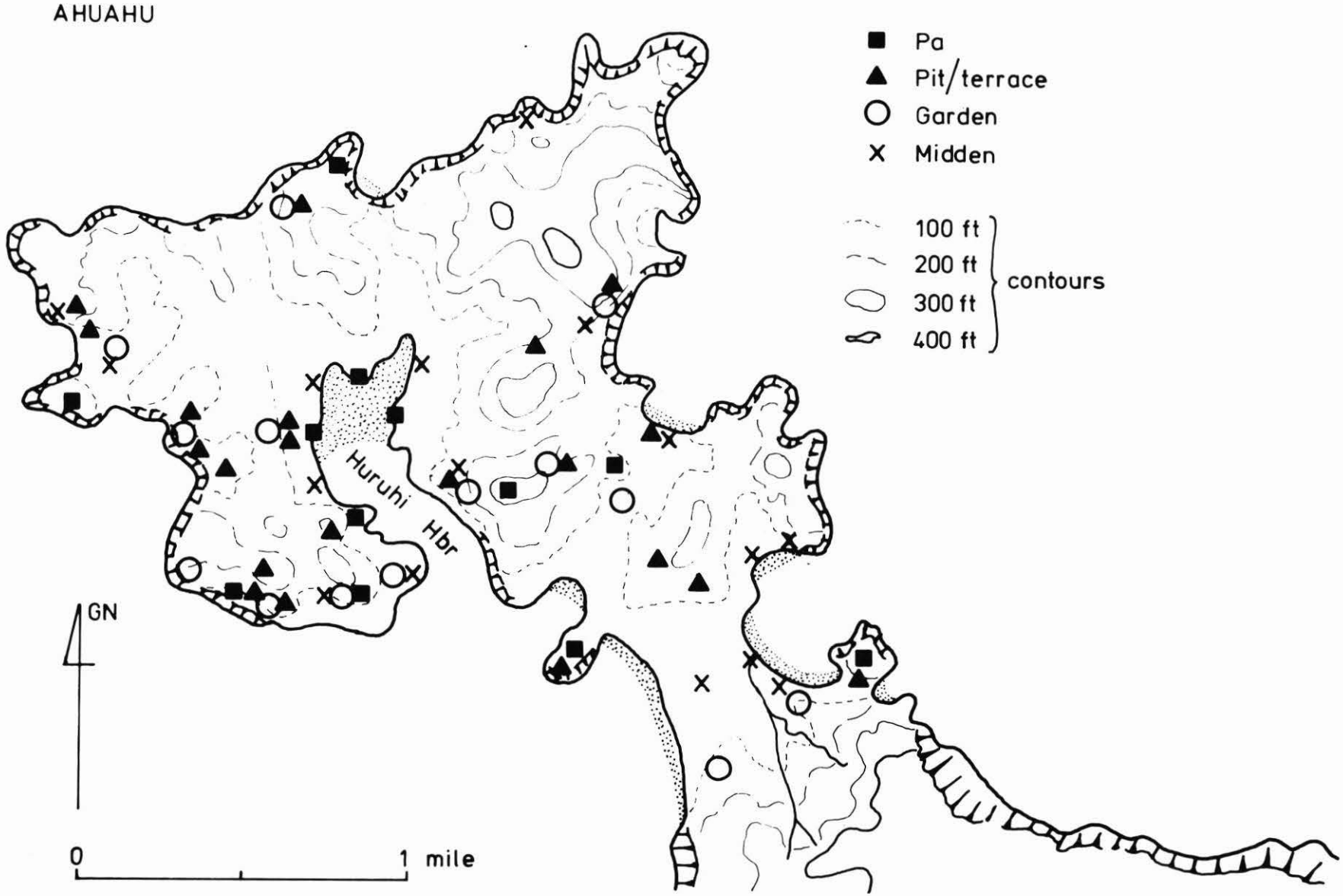


Figure 11. Ahuahu (Great Mercury Island) Edson 1973

There is very extensive evidence of both wet and dry land gardening for which the island is renowned in tradition (P. Mizen pers. comm.). The island has superb marine resources. There are also several sources of high quality industrial stone.

A dozen pā are packed into just a few square kilometres. Generally they are coastal. One of them is Stingray Point Pā which was among the earliest sites excavated by Golson in the 1950s. Another - Waipirau Pā (N40/184) - was excavated by the writer early in 1984. There are conspicuous stone-built gardens in the vicinity of pā and associated kumara storage pits. The distribution of middens is what might be expected (Fig. 11).

In terms of elevation, one can distinguish the pā on low headlands around the harbour from the ones on higher headlands around the open coast. Or else, in two cases, they are located on a suitable ridge and a knoll. The land around the harbour forms a sheltered basin which slopes towards it. It would seem likely that the sites here may be among the oldest. The shores of the harbour are littered with huge quantities of flaked stone including adze pre-forms. Much of the rock is imported and it is suggested that the island was a fairly important centre of secondary processing and distribution of Tahanga basalt at an early time. The possibility exists that whereas there was an early cluster of settlement around the harbour, later on as more pā were built, settlement became dispersed among more distinct land-ownership units. Evidently stone-working dropped off too.

THE QUALITY OF SURVEY DATA

There is a range of sometimes coherent patterns to be found in archaeological settlement patterns. In some way these reflect the ecological and social relations of settlement systems of the past. While inevitably there are boundary problems in spatial analysis, the situation lends weight to the argument that the study of individual sites requires reference to their wider settlement contexts and that these, in themselves, constitute useful sampling units. This is in spite of the truism that the blanks on maps can mean sites as yet undiscovered or already destroyed, as well as their genuine absence, in addition to the confusion that can follow from the presence of sites of different age.

Because of their conspicuousness there may be fewer sampling problems with pā sites than with others. While their variability of form and function may still be poorly understood, they fall naturally into a group on the sole criterion of their obvious natural and/or artificial defences. The classification of undefended sites is more problematical. Firstly, their qualitative distinction from defended sites may be artificial. Secondly, while as an undifferentiated group, their spatial distributions promise coherence, further classification has its problems.

To investigate this, a study was made of 62 field surveys conducted in Northland and Coromandel. Survey areas were compared in terms of their similarity in the frequency of sites by the site types nominated by the surveyors. In all, 108 different site types were listed. Because nomenclature was clearly haphazard the number of site types was rationalised and reduced by combination to 28. A cluster analysis of the surveys was then carried out. To some extent, as one would expect, the clustering brought together survey areas which were contiguous and alike environmentally. However the results also reflected a randomness due to arbitrary classification. This was in addition to the distortion that results from differences in methodology and the completeness of survey.

However, all is not lost. Study of site record forms often allows the systematic reclassification of sites. What is implied, however, is that the very valuable mass of survey data gathered so zealously over the years, requires a little digestion before it can be used. The same attention would help future surveys to be better directed as well.

3 THE PĀ OF POUTO

Having decided to study pā in a settlement context, one further ingredient is needed in choosing a place to work, and that is a fair range of types,whatever these may be. Pā occur in a great variety of sizes, forms, general locations and particular topographic situations. Structurally they range from simple to complex. Academic attempts to systematise them go back at least 70 years and, no doubt, will continue. However, there is no substitute for field work to decide which of our theories about pā to hold or jettison. For instance, to tell what variability can be attributed to time difference, topography, function, or to any regional or cultural styles. This brings us to the Kaipara where the University of Auckland Archaeological Society has been active since the mid-1950s. It was simply a very favoured place to live in the past and there are a great many sites.

THE POUTO ENVIRONMENT

Pouto means "cut off" which it was physically, from the rest of the North Kaipara Barrier, by the stream system flowing into Okaro Creek (Fig. 12). There are no climatological records from Pouto apart from rainfall but summers are warm and winters mild.

Temperature

At Dargaville, the range is from a mean monthly minimum of 0.1°C in July to a mean monthly maximum of 28.3°C in February (Ministry of Transport 1973). Ground frosts occur rarely over the period March to November on an average of 8.8 days per annum but they are virtually unheard of in Pouto where proximity to the sea has a modifying effect on the climate.

Rainfall

For Dargaville (20 m a.s.l.) the mean is 1253 mm p.a. and at North Head (16 m a.s.l.) it is 1157 mm. There is a winter maximum and summer minimum and summer rainfall is highly variable. Nowadays farmers sometimes have difficulty carrying stock through the summer but never in wintering it. In pre-European times, it is said that kumara would be all right if the leaves had established sufficient ground cover by January.

Wind

The prevailing wind is from the southwest. The pre-European horticultural landscape on the harbour side of the peninsula had some shelter from this but not from the occasional northeasterly gales.

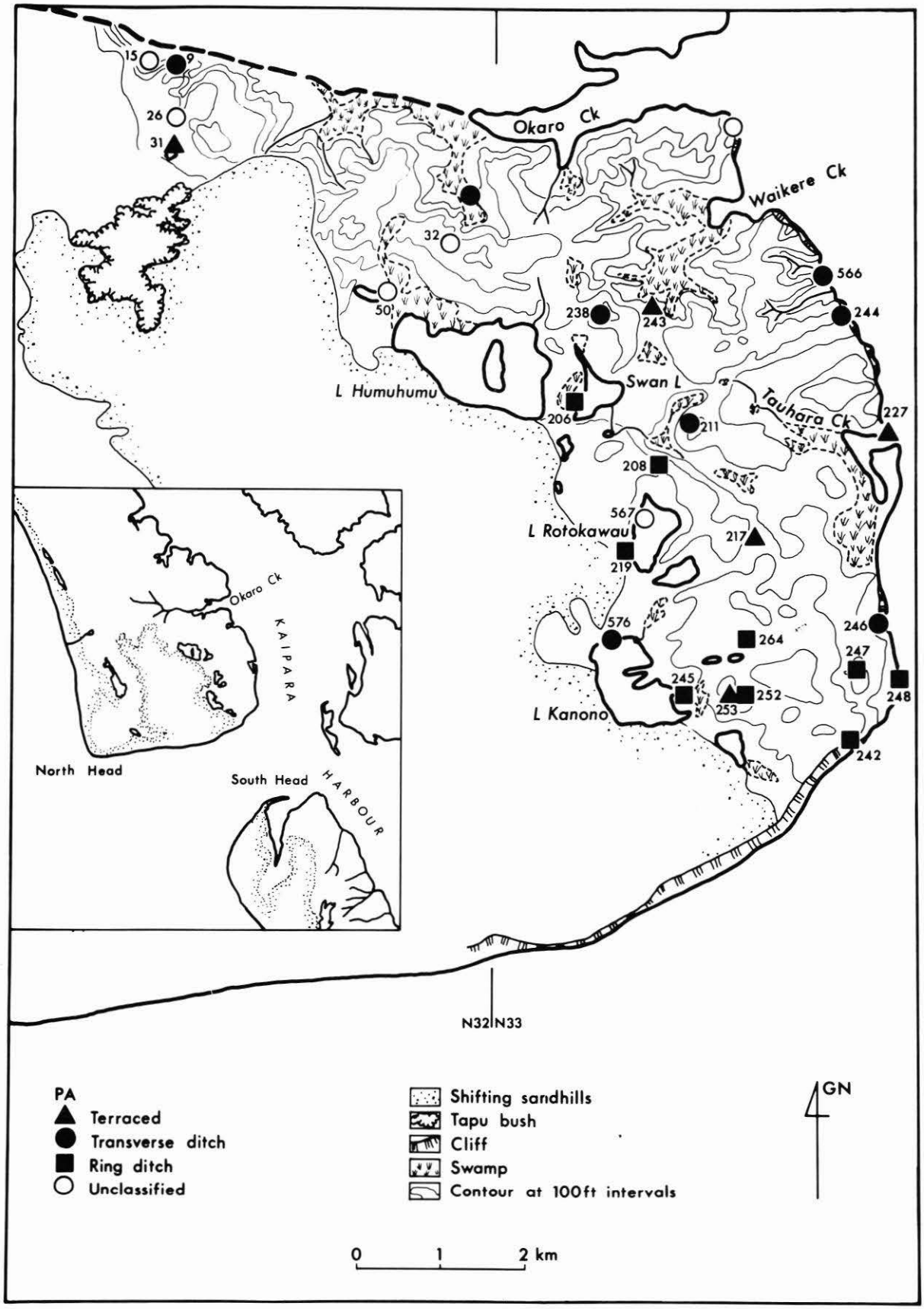


Figure 12. Pā of Pouto

Soils

The North Kaipara Barrier is one of several major occurrences of sand that have formed on the northwest coast of the North Island. Its soils reflect a complex topography that has resulted from the influences on dune accumulation of climatic change, sea level changes and fire. The relevant soils are as follows (Fig. 13).

1. Tangitiki. On parts of the harbour side of the barrier, these podsolised yellow-brown earths have developed on Pleistocene marine terrace remnants. They formed under vegetation which induced leaching and a low natural fertility (Cox n.d.).

2. Redhill. Younger Pleistocene dunes have blown over these surfaces from the seaward coast and weathered to form northern yellow-brown sands. In the study area, these occur as sandy loams in an expanse of easy rolling country below 500 ft which is well, but not excessively, drained. The texture of these soils was preferred by the Maori for kumara (Best 1925:120). Residents who can still remember first ploughing in the district speak of hundreds of acres of Maori gardens.

3. Pinaki. On the western side, the Redhill has been partly overlain by younger Holocene sands which, together with the Redhills themselves, have suffered erosion in Maori and European times. Pinaki soils have formed in these weakly stabilised areas. It has a distinct topsoil but shows little or no subsoil development.

4. Unconsolidated dune. In the central south of the peninsula are large areas of drifting or recently stabilised dune sands. Their origins are something of a mystery which will be discussed below. Currently they are being planted in exotic forest.

5. Parore. Organic soils occur in low-lying flat areas at the heads of estuaries and in swampy regions inland.

6. Takahiwai. These poorly drained soils are the result of the silting up of estuaries mainly in modern times.

7. Whananaki. Formed from waterlaid Holocene sands with low dunes and thin wind-borne deposits, in Pouto, these occupy a spit separating an estuary from the harbour.

Marine Resources

Too numerous to mention individually, the marine resources available were those of ocean beach and an extensive harbour with estuaries, drying sandbanks, and mangroves. Several rivers flow into the Kaipara. In addition there were numerous inland lakes, ponds and freshwater swamps with their resources including shellfish, eels, birds and plants.

Communications

The Kaipara offered the easy communications of harbour and river. In particular, a number of rivers penetrate close to the east coast. Portages in some places completed this important link. The long western beaches meant easy travel for those on foot.

In short, the Kaipara heads provided favourable conditions for the settlement that is so conspicuous in the archaeological record. Most of

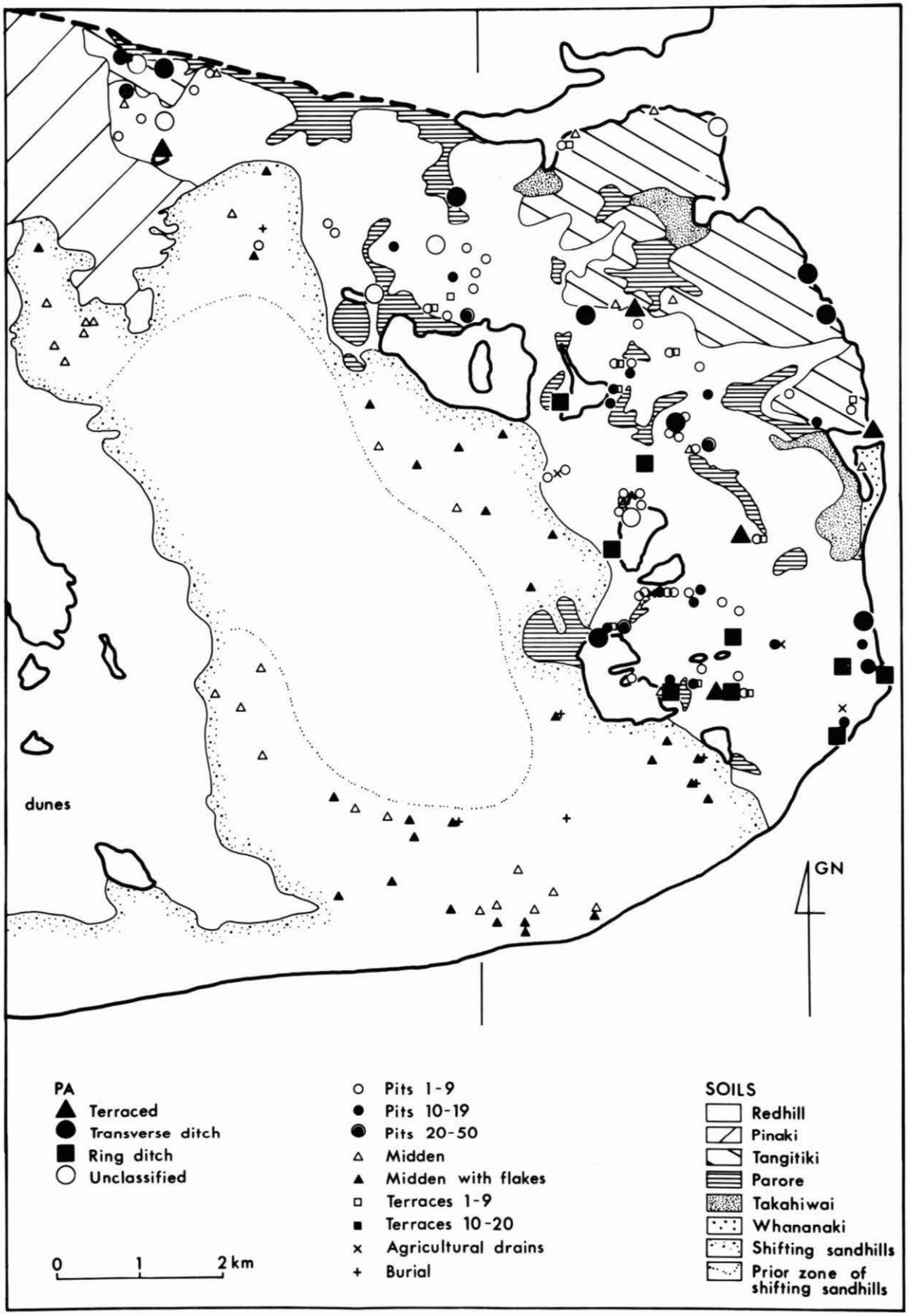


Figure 13. Pouto sites and soils

the forest had been cleared in pre-European times and the vegetation indicated some intensity of occupation at the end of this period (Beever 1981:107). Evidently there is some considerable time depth to occupation also as suggested by a number of surface collected Archaic adzes from Pouto and a site of similar age at South Head.

Only one necessary resource was lacking on the Kaipara sand barriers and that was stone suitable for cooking and for industrial use. However, both were available on the mainland side of the harbour and on the Northern Wairoa River (Arlidge 1955, Black 1964, Ferrar 1934, McCarthy 1972).

THE PĀ OF POUTO

N33/243 Waikere Creek Pā (Fig. 14).

This is small simple terrace pā on a low knoll a short distance from the upper reaches of Waikere Creek (Fig. 12). It has a platform some 20 m long with a low step in it, a surrounding scarp and other terraces below. Approximately a dozen pits are visible from the surface. Some site recorders might justifiably classify this as an undefended pit and terrace site. Indeed, it was not until it was excavated that it was established that the site had been fortified. The conventions used in this drawing (Fig. 14), and those that follow, are commonly used for fortified sites, except that where modern erosion has occurred, say, at the top of a scarp, this is represented by a dashed line rather than a solid one. Dark shading is used for ditches, light shading for raised banks.

N33/217 (Fig. 15).

This pit and terrace site has no surface evidence of artificial defence. It has not been excavated beyond a test pit in one of its storage pits. Its claim to consideration as a pā lies in the obvious natural defensibility of its location at the end of a steeply-falling ridge. At the time it was mapped it was not thought to be a pā but it was of interest nevertheless. In taxonomy the pigeonholes of classification are static and discrete and items which are ambiguous, marginal or deviant promise insights into evolutionary process. As it happens a case will be made below, on distributional grounds, that perhaps this site should be thought of as a pā after all. One could not expect the distinction between defended and undefended sites to be clear cut on surface evidence. Excavated evidence may make it more difficult, not easier.

N33/227 Tauhara Pā (Fig. 16).

The name of this pā means "odd one" or "having no fellow" (Williams 1971). This description certainly fits its location on the north point of the entrance to Tauhara Creek where it is cut off from the land behind a deep gully (Fig. 12). The name is apt also in that Tauhara is one of the earliest of the Pouto pā known in tradition and, moreover, has produced the earliest radiocarbon age from a fortification there. It may have been one of the earliest forts and also one of the longest occupied as it is known to have fallen to a Nga Puhi raid in the early 1820s, many of the victims being buried there.

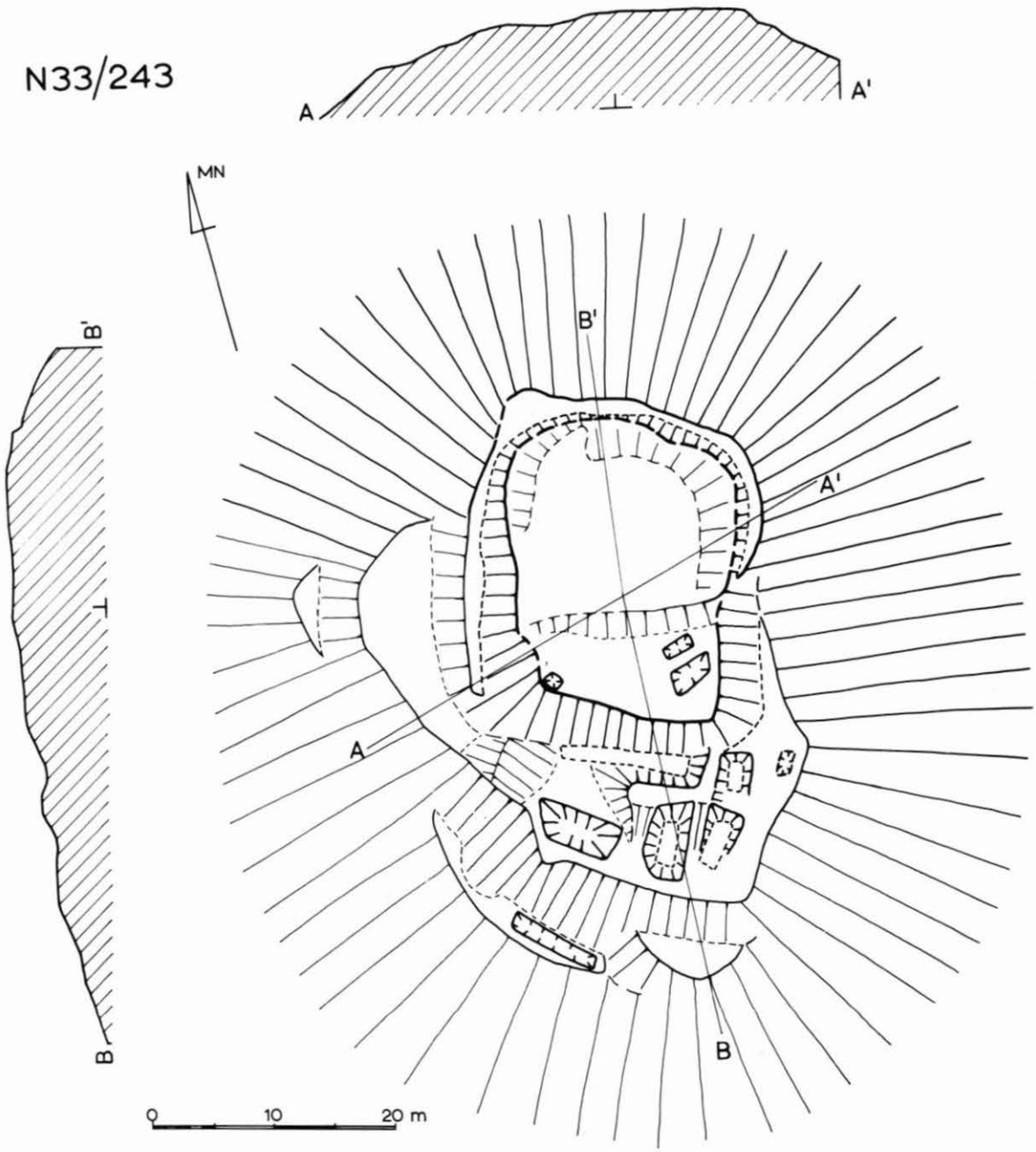


Figure 14. Waikere Creek Pā N33/243

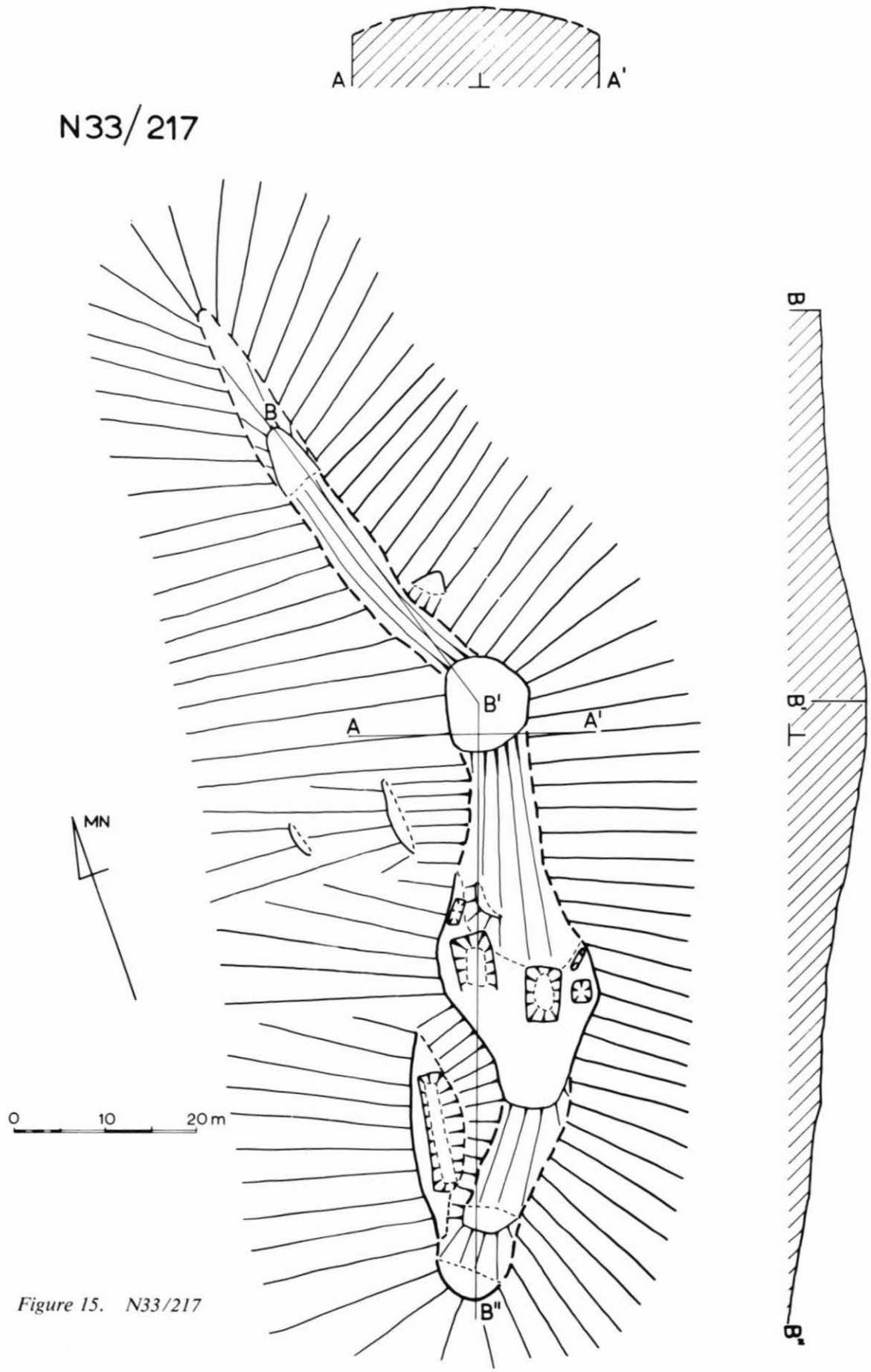


Figure 15. N33/217

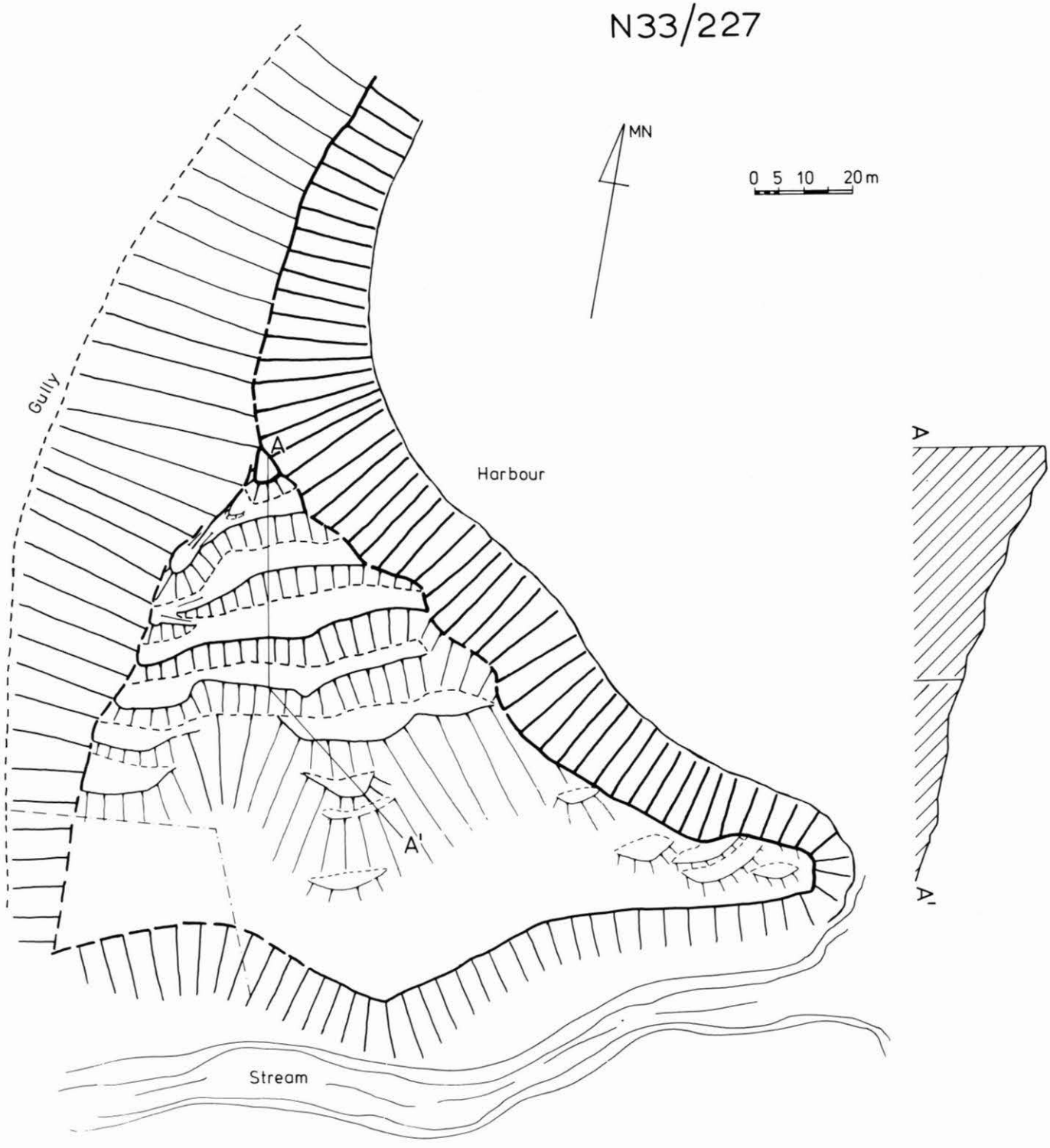


Figure 16. Tauhara Pā N33/227

Tauhara is a large site but was formerly much larger, having been heavily eroded on its seaward side for most of this century. It consists of a set of ascending terraces facing south, the easiest line of approach. There is a suggestion that it may have lost its topmost tier too. Protection on the other two sides was by a steep gully and a coastal cliff. Other surface features are rare but considerable structural detail, including midden, can be found by inspecting the exposed cliff section.

N33/253 Kanono Pā (Fig. 17)

This site is 3 km inland on a hilltop 345 ft a.s.l. overlooking Lake Kanono. It is one of the two highest pā in Pouto. It has a long, generally featureless platform on one level. This is surrounded by a scarp below which lies a terrace. The terrace is broadest on the western side and most distinct there and towards the south. On both of these sides the hill falls steeply whereas the slope to the north is rather more gentle. On the eastern side the terrace below the scarp is indistinct in places. Below it the land flattens considerably and there is an expanse of land rather larger than the area of the pā, beside and a little below it, occupying the rest of the top of the hill. On the ends of the pā a few subsidiary terraces are found on the descending slopes. Some half dozen scattered pits can be seen. According to Groube's (1970) criteria this is a terraced pā but, using terminology similar to his, it could equally well be styled a ring scarp or ring scarp and terrace form.

N33/566 (Fig. 18).

This pā is on a narrow ridge, with a gully on either side, that runs into a sea cliff. The ridge descends towards the pā and a pit lies at approximately the lowest point. Thereafter, the ground rises a little towards a remnant of outer bank, a transverse ditch and then a scarp which rises towards the small defended platform on which some slight terracing is apparent although damaged by trees. The bottom of the ditch is not flat, but rises towards the centre of the ridge, to fall again on the other side following its contour. The natural steepness of the side slopes is not great but has been enhanced by the construction of what appear from the surface to be a lateral terrace on either side. The size of the defended area is less than 100 m^2, but this has been reduced by the advance of the eroding cliff face which again, with some discomfort, can be inspected.

N33/244 (Fig. 19)

In contrast with the site above and lying in a very similar situation approximately 500 m to the south is N33/244. It differs in being on a wider, slightly higher ridge and enclosing a much larger flat and featureless interior. The defences were still sharp and in better order. The presence of rotting timber in two postholes suggested a young age for this site.

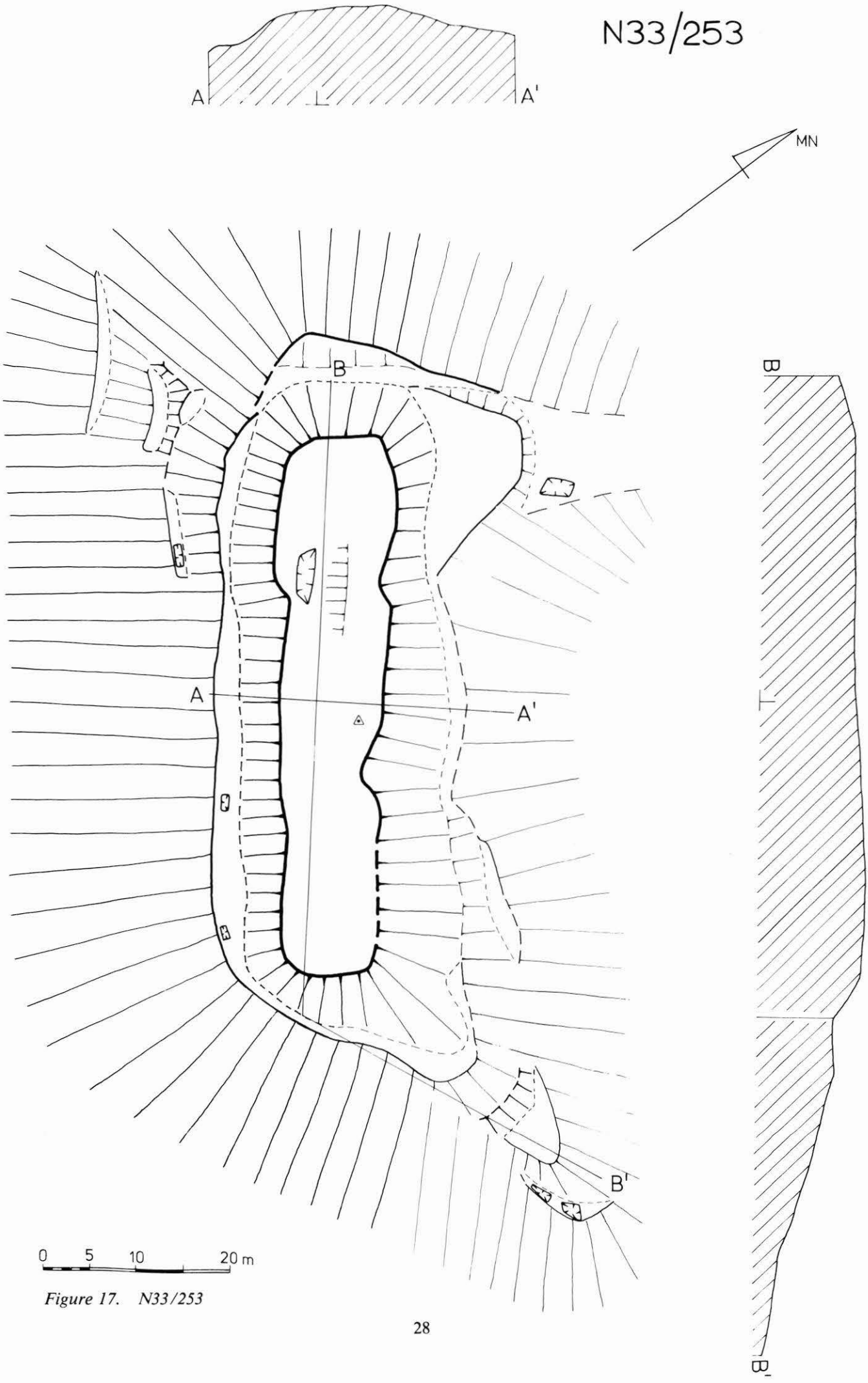


Figure 17. N33/253

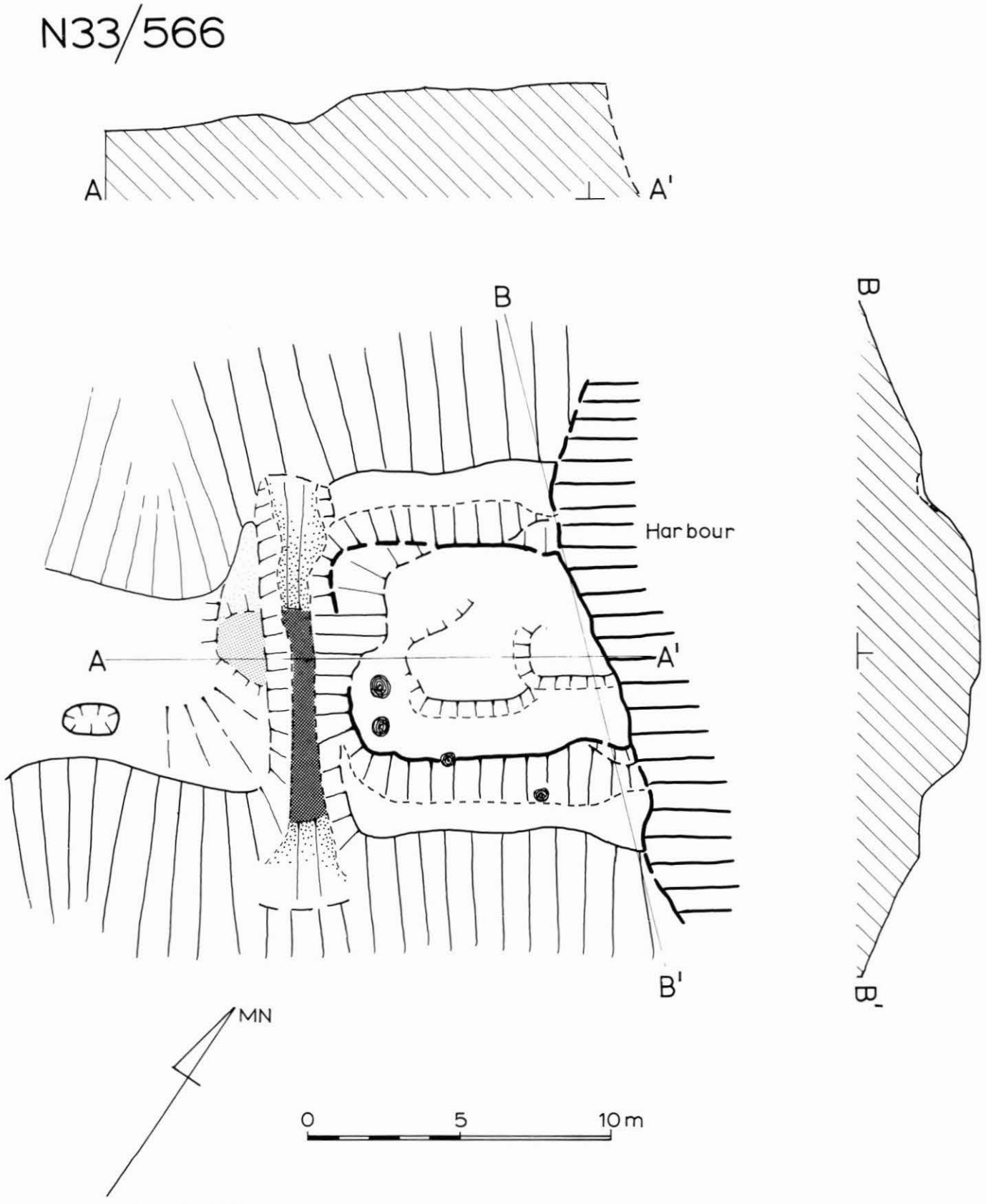


Figure 18. N33/566

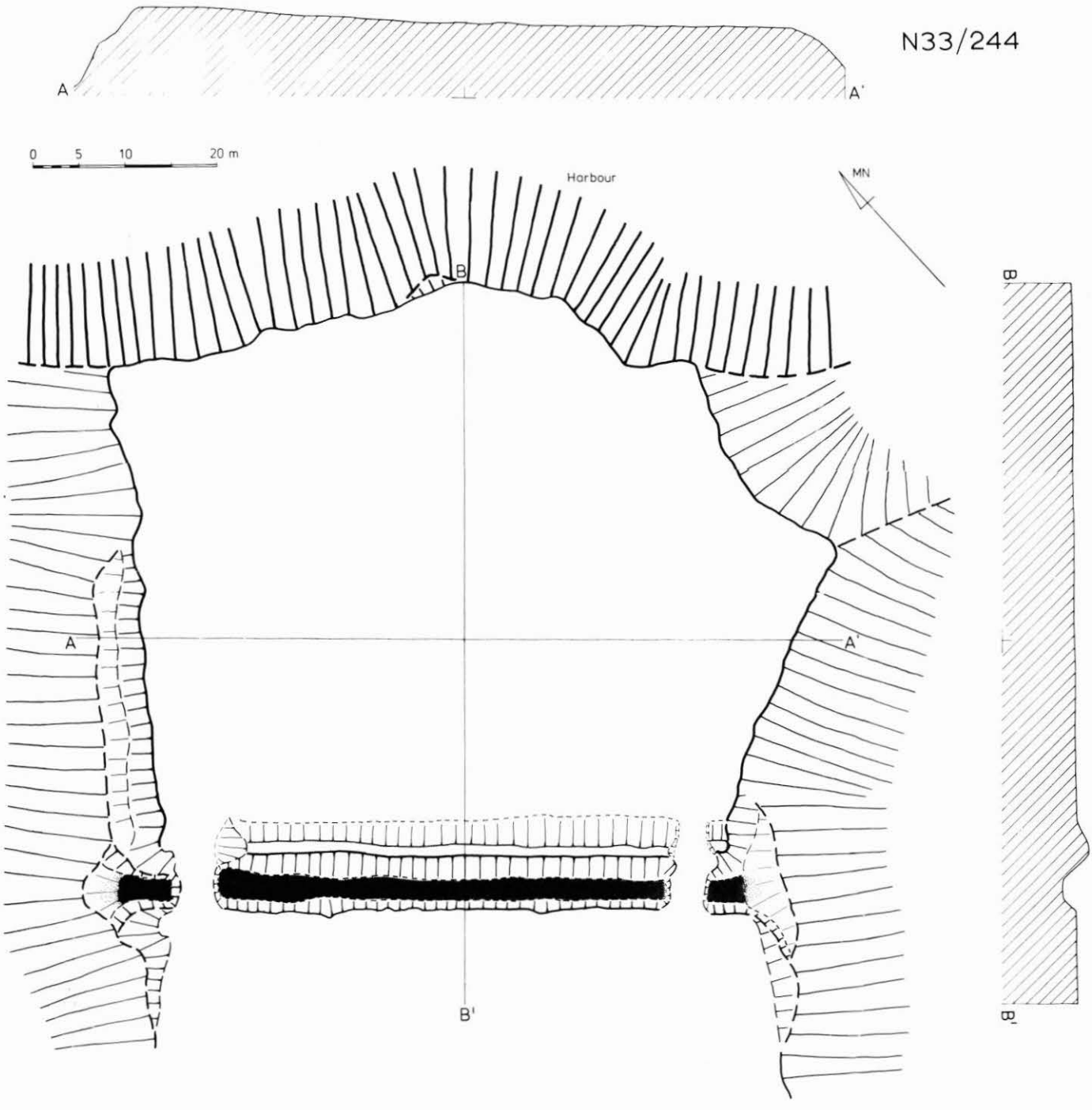


Figure 19. N33/244

N33/238 Wharepapa Pā (Fig. 20)

This pā stands inland from Waikere Creek at 345 ft a.s.l. on one of the highest hills in the farmland region of Pouto. On the western side the land falls away from the pā but just below it on its other side is an extensive flat which occupies the rest of the hilltop. At each end the defences take the form of a simple transverse ditch and internal scarp with a raised bank on top. Lateral defence was provided by a scarp steepened by the building of a terrace below. The line of the terrace is occasionally blurred by slumping. On excavation it proved to be less simple than it seemed from the surface. Inside, the pā is fairly flat and featureless; there are numerous pits outside.

N33/211 (Fig. 21).

Located on a low ridge falling away from its southwestern side, this pā has a large freshwater pond just below it on the other side. The site is approached from two ends by a narrow ridge and is less than 10 m wide inside. Most of the raised platform inside is taken up with a set of pits whose layout implies some contemporaneity. The two sides are made more steep as the result of the two lateral terraces built on each side. At each end, these continue beyond the line of the transverse ditch and bank in a way which further enhances defence. Ring ditch pā with continuous transverse and lateral ditches and similar elevated interiors occur on almost identical landforms in Pouto. The reason for the differences in form is intriguing.

N32/9 Rangitane (Fig. 22)

This is a massive transverse ditch pā mapped by K.M. Peters. It lies between 400 and 500 ft a.s.l. high above the stream and gully system which feeds Okaro Creek. In fact it commands the point where Pouto is geographically cut off from the rest of the North Kaipara Head. As such, it is an admirable place for the landward defence of all that lies to the south of it. There are seven sets of defences and many other features which stretch along a major ridge for more than 600 m.

N33/252 (Fig. 23)

This is a small ring ditch pā at the top of a smoothly-rounded ridge. The ditch runs around three sides but evidently was not needed on the western side which is steeper. The scarp inside the ditch is considerably eroded, as shown in the drawing (by broken lines), and inside on the raised platform, there is room for three or four pits.

N33/264 (Fig. 24)

This is a similarly simple three-sided ring ditch pā with pits.

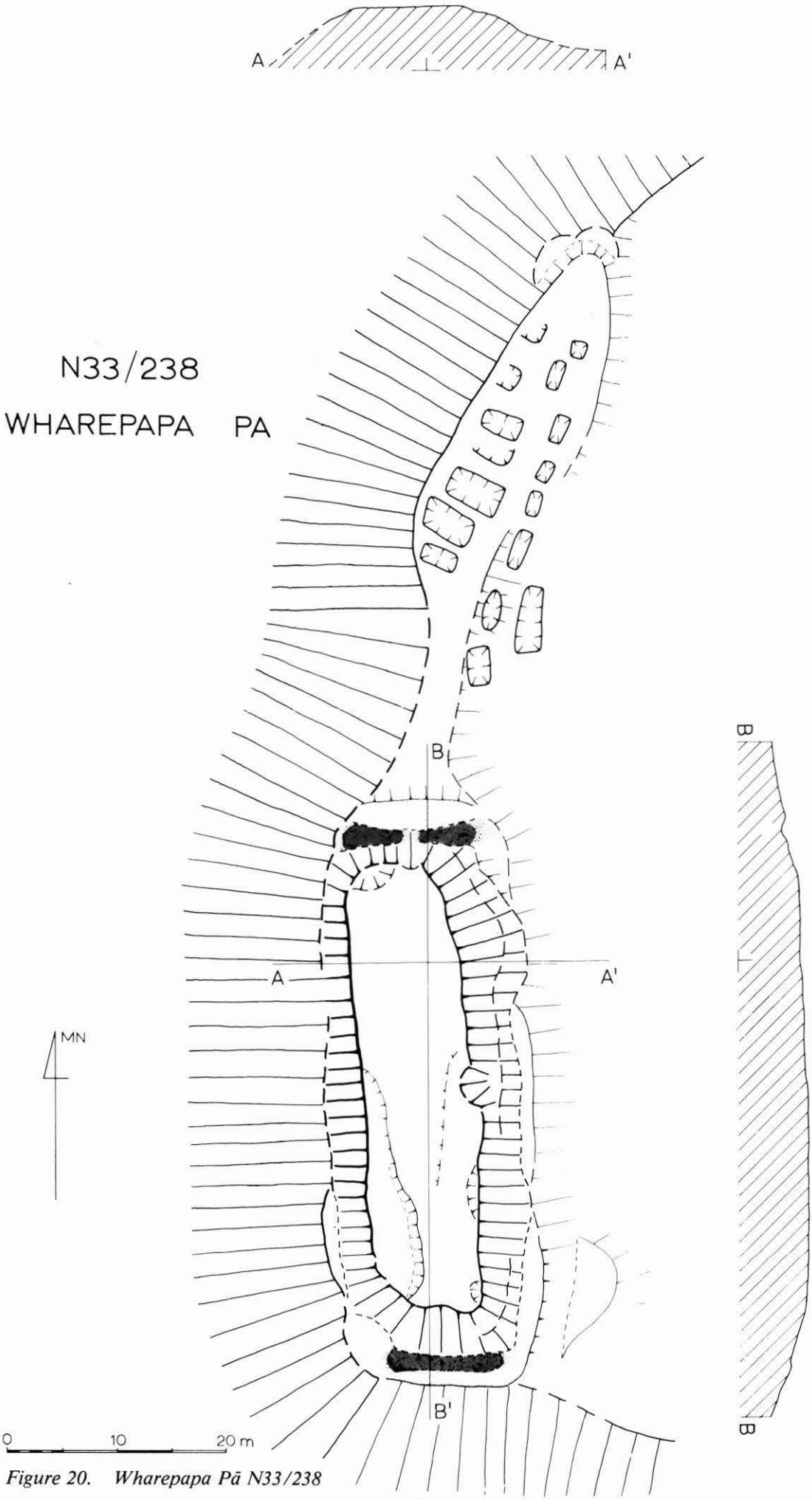


Figure 20. Wharepapa Pā N33/238

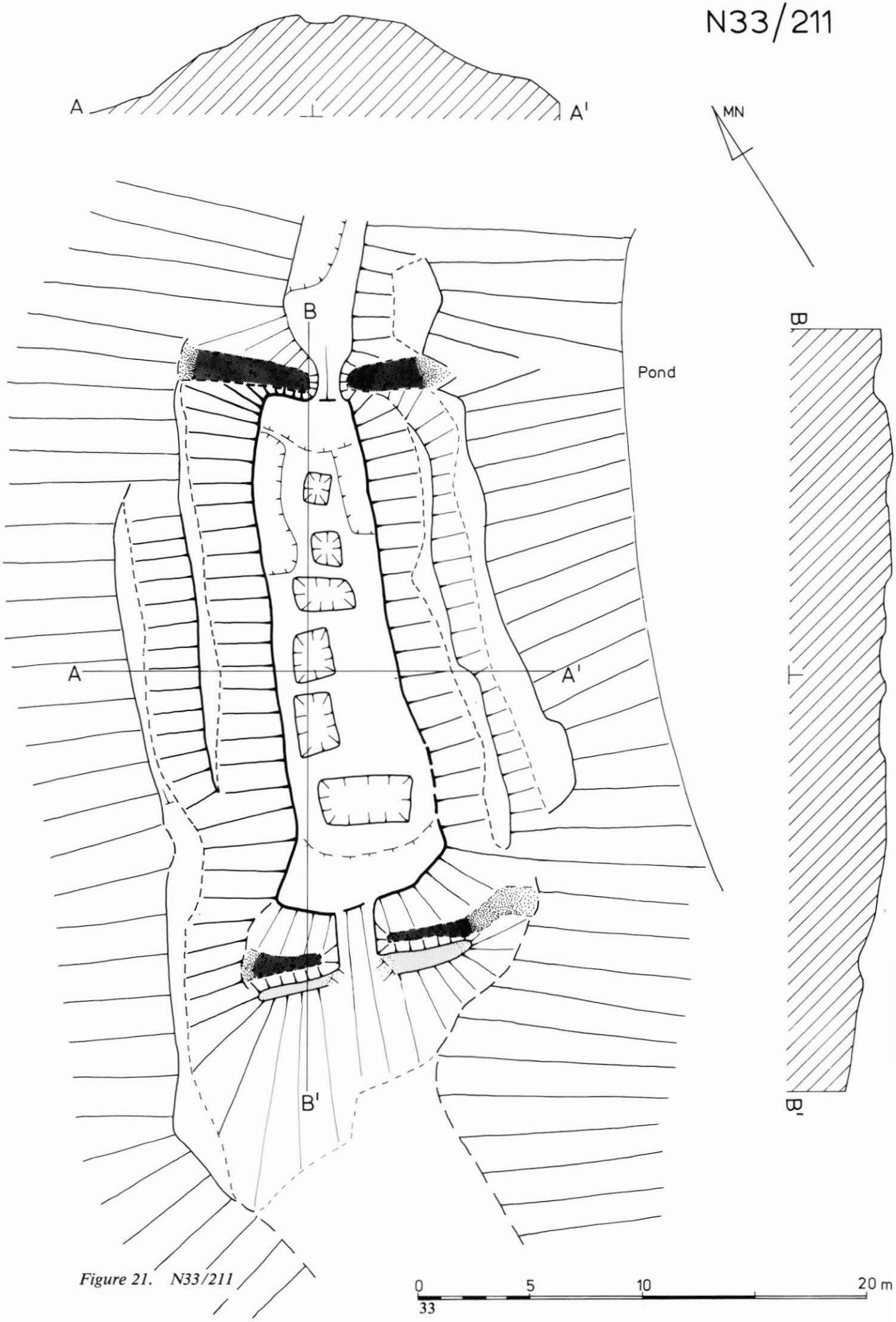


Figure 21. N33/211

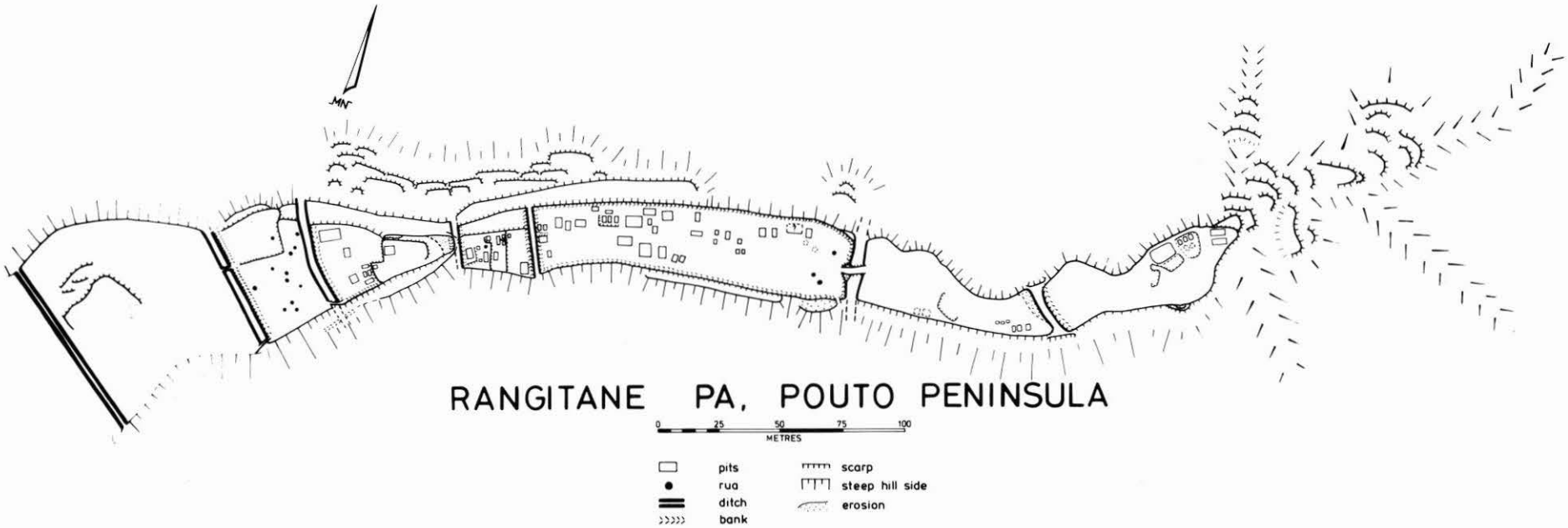


Figure 22. Rangitane Pā N32/9

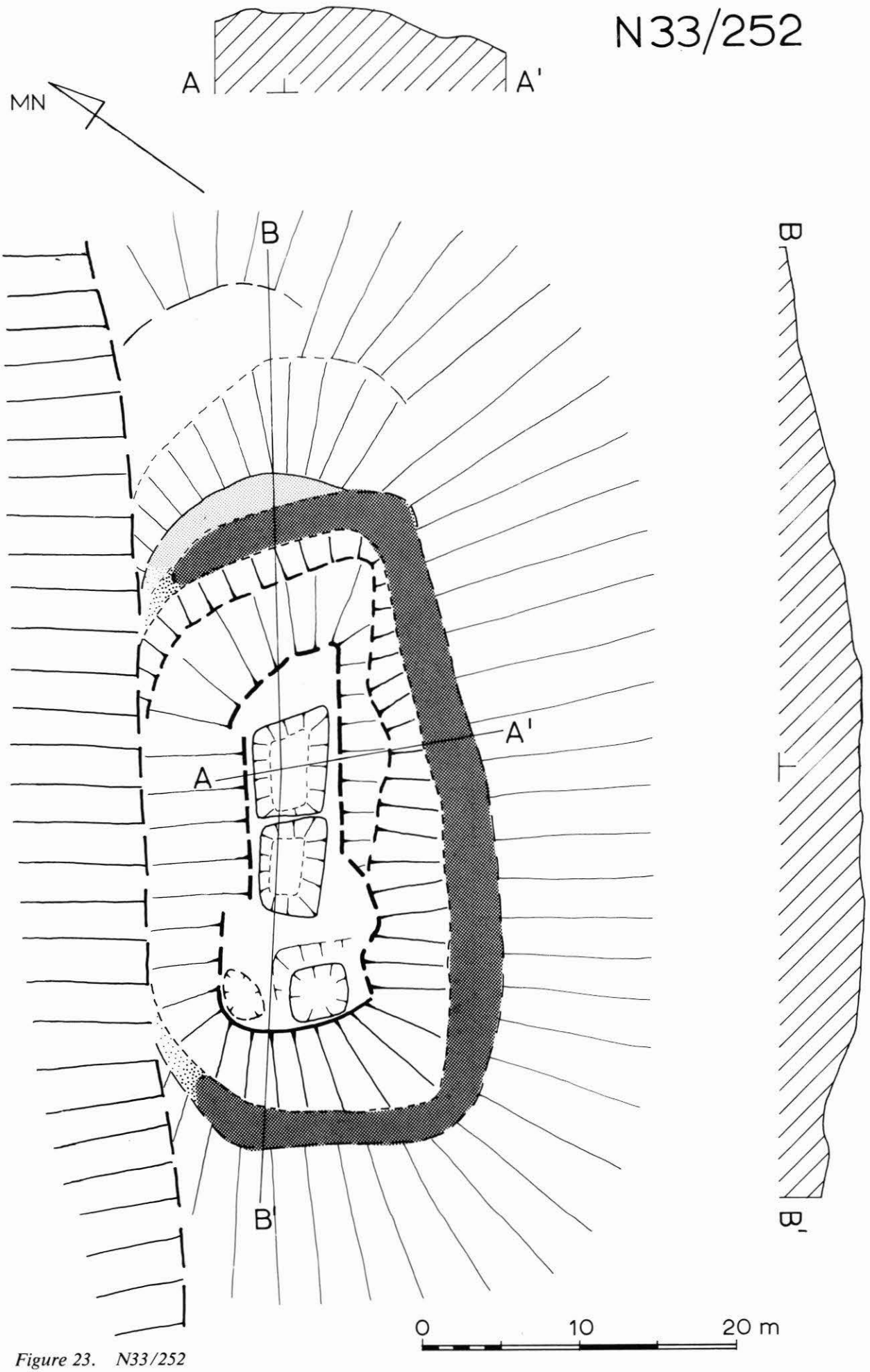


Figure 23. N33/252

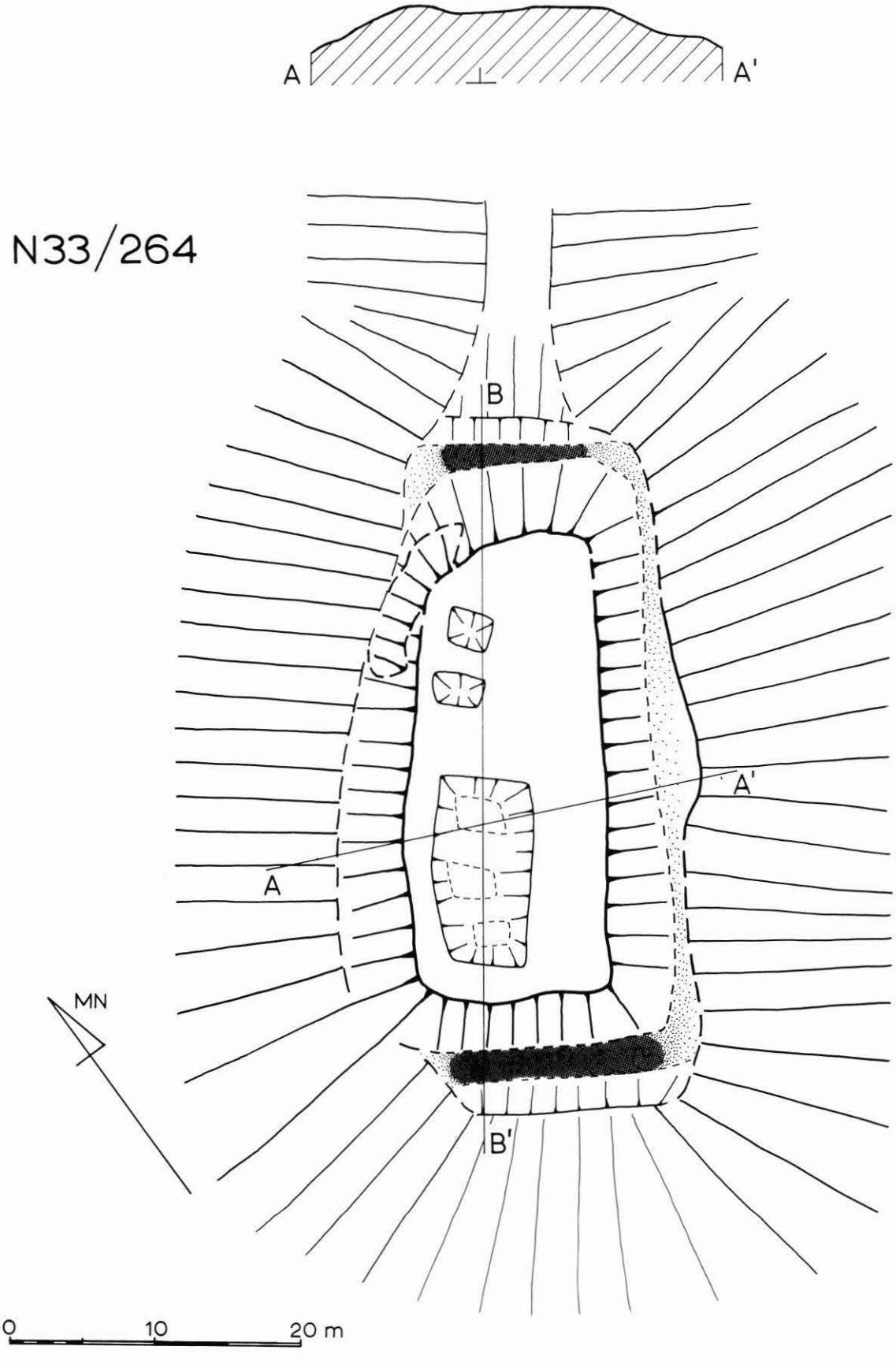


Figure 24. N33/264

N33/206 (Fig. 25)

This is a perfectly orthodox four-sided ring ditch on a low hilltop overlooking Swan Lake without internal features. The interior dimensions are barely 20 m x 10. There is an eroded inner bank and scarp with surrounding ditch and an outer bank visible in places. Some terracing occurs below the defences.

N33/247 (Fig. 26)

This ring ditch pa is an historic cemetery. Experience has shown that pā sites with such smooth grassed contours have usually had their banks eroded and ditches well filled in this soft sandy environment. As drawn, their structures are considerably blurred.

N33/208 (Fig. 27)

Prominent on one of the highest hills of Pouto, this dominates the central part of the former gardening landscape. It is a large site with a distinct internal platform whose shape conforms to the pattern of some large pits. There are external terraces. Generally the features of this pā are sharply defined and, as with several others, it gives an impression of recency.

N33/219 (Fig. 28)

On a low prominence beside Lake Roto Kawau the land falls away on three sides of this pā, but only gently on the western side where there are eight exterior pits. Apart from eroded patches, this site is still clearly defined as well.

N33/245 (Fig. 29)

This is a similarly located low-lying pā inland beside Lake Kanono. it has a complex shape which conforms generally to the easy terrain. In places the defences are multiple. The site is badly eroded.

N33/242 (Fig. 30)

High on the edge of the cliff overlooking the harbour entrance is this simple ring ditch form whose features are rather blurred with infilling and erosion.

N33/248 Pouto Point Pā (Figs. 31 and 32)

This large complex multiple ring ditch pā on a prominence at the southeastern point of the Pouto peninsula, was still in use in the early nineteenth century. At its core there is a closed ring ditch form while outside is a larger area enclosed by a defensive line which ends in the south by running into a cliff and, at the north, a scarp. On the north-eastern slopes between the pā and the harbour are a set of large artificial

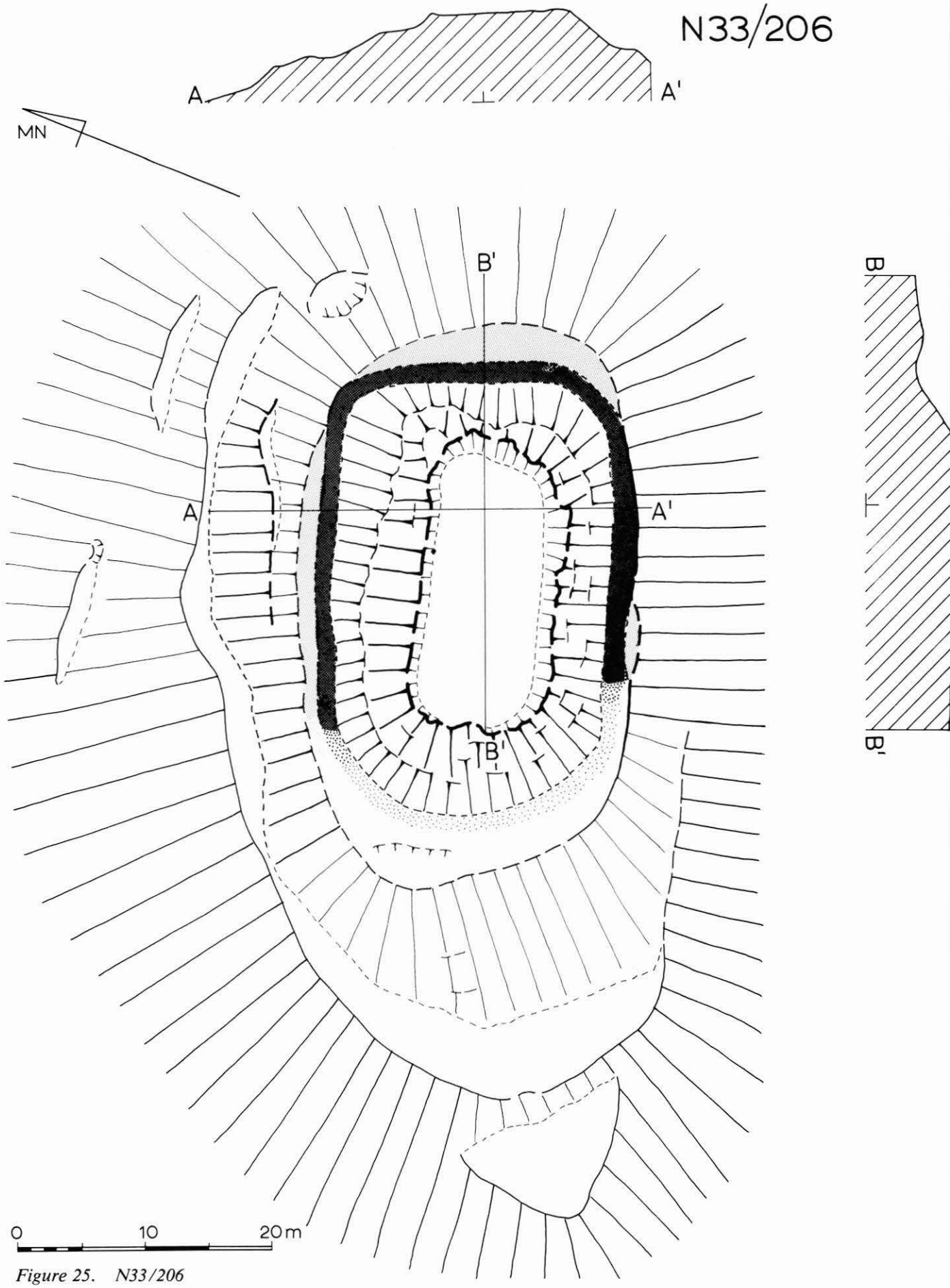


Figure 25. N33/206

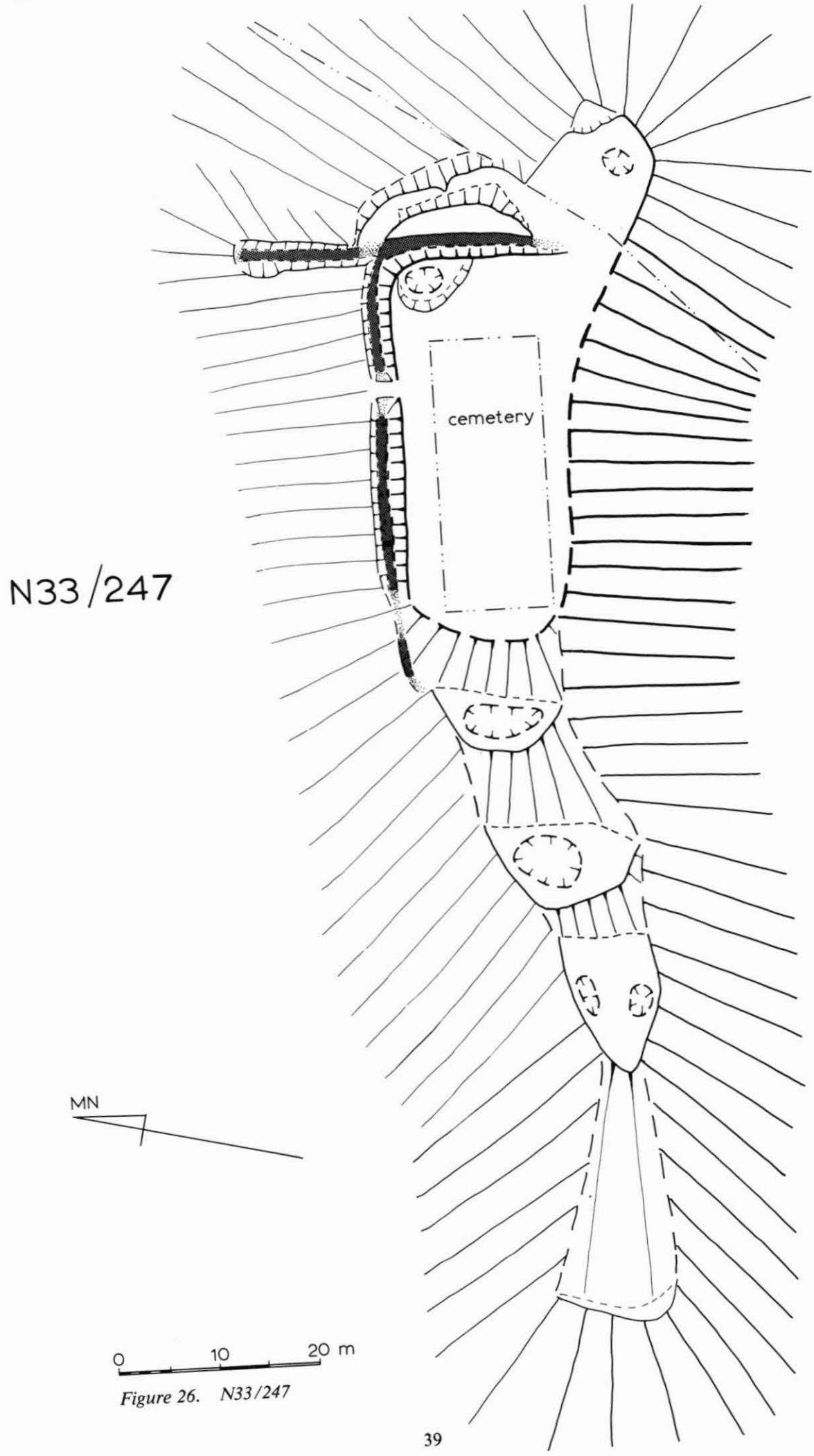


Figure 26. N33/247

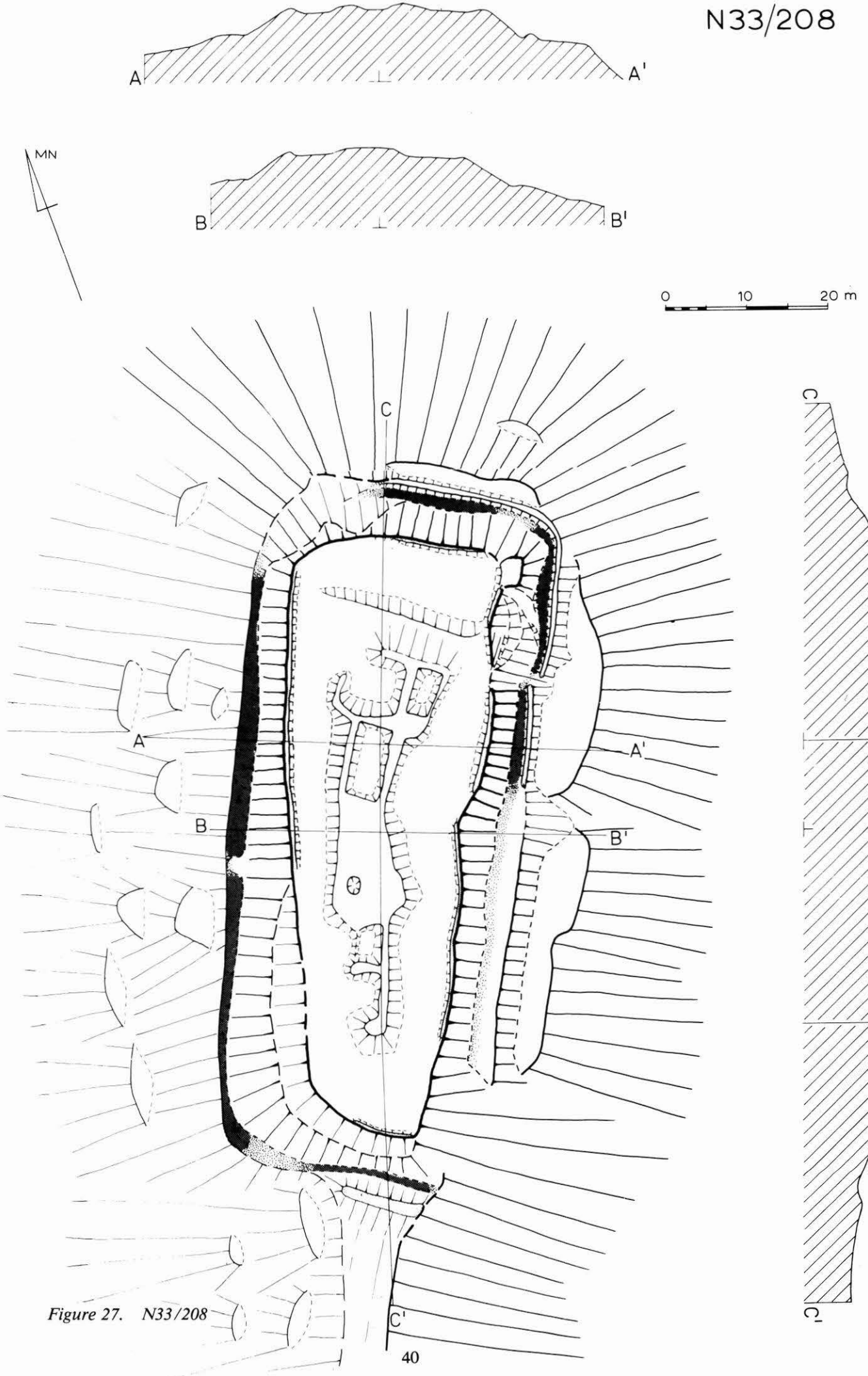


Figure 27. N33/208

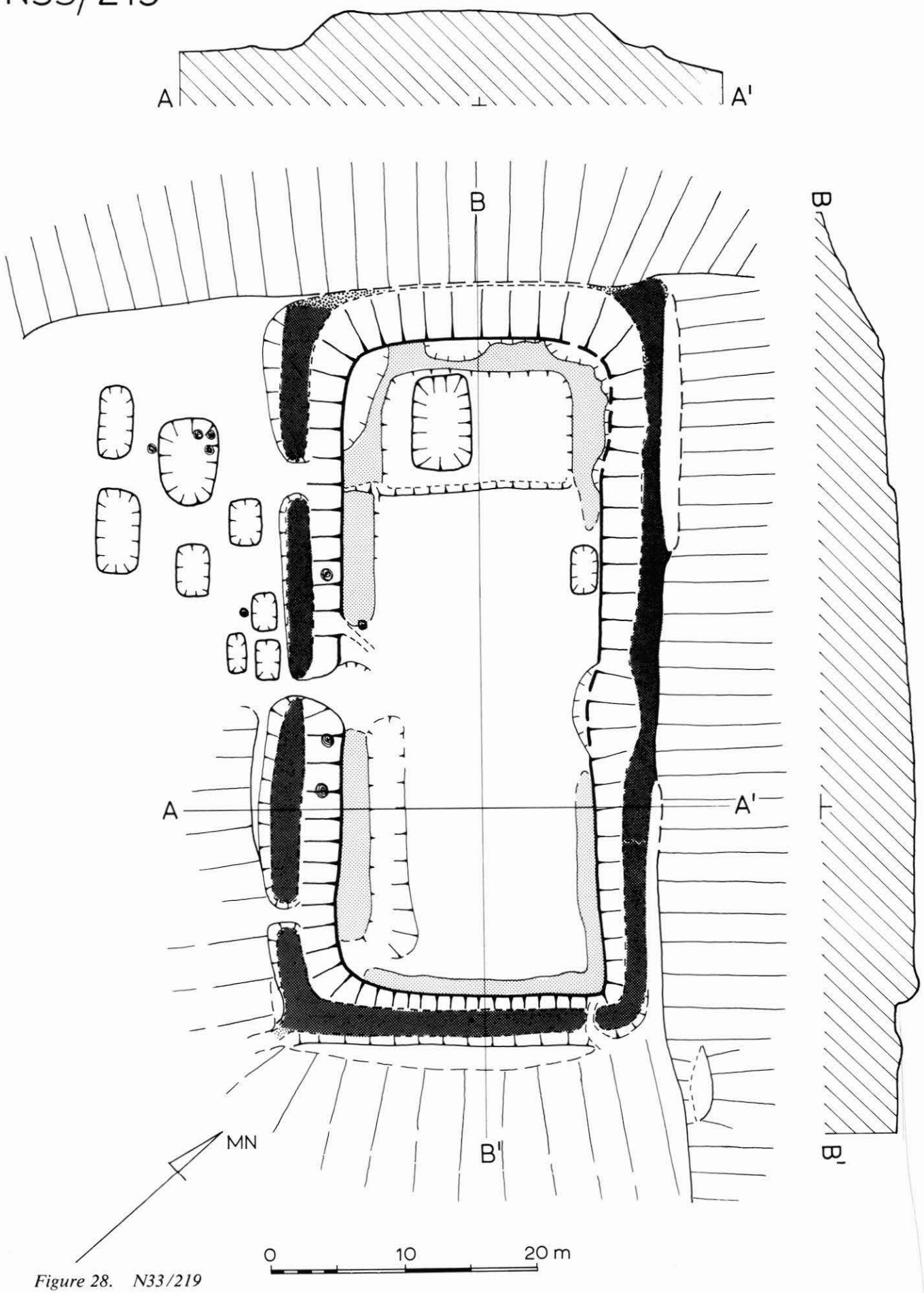


Figure 28. N33/219

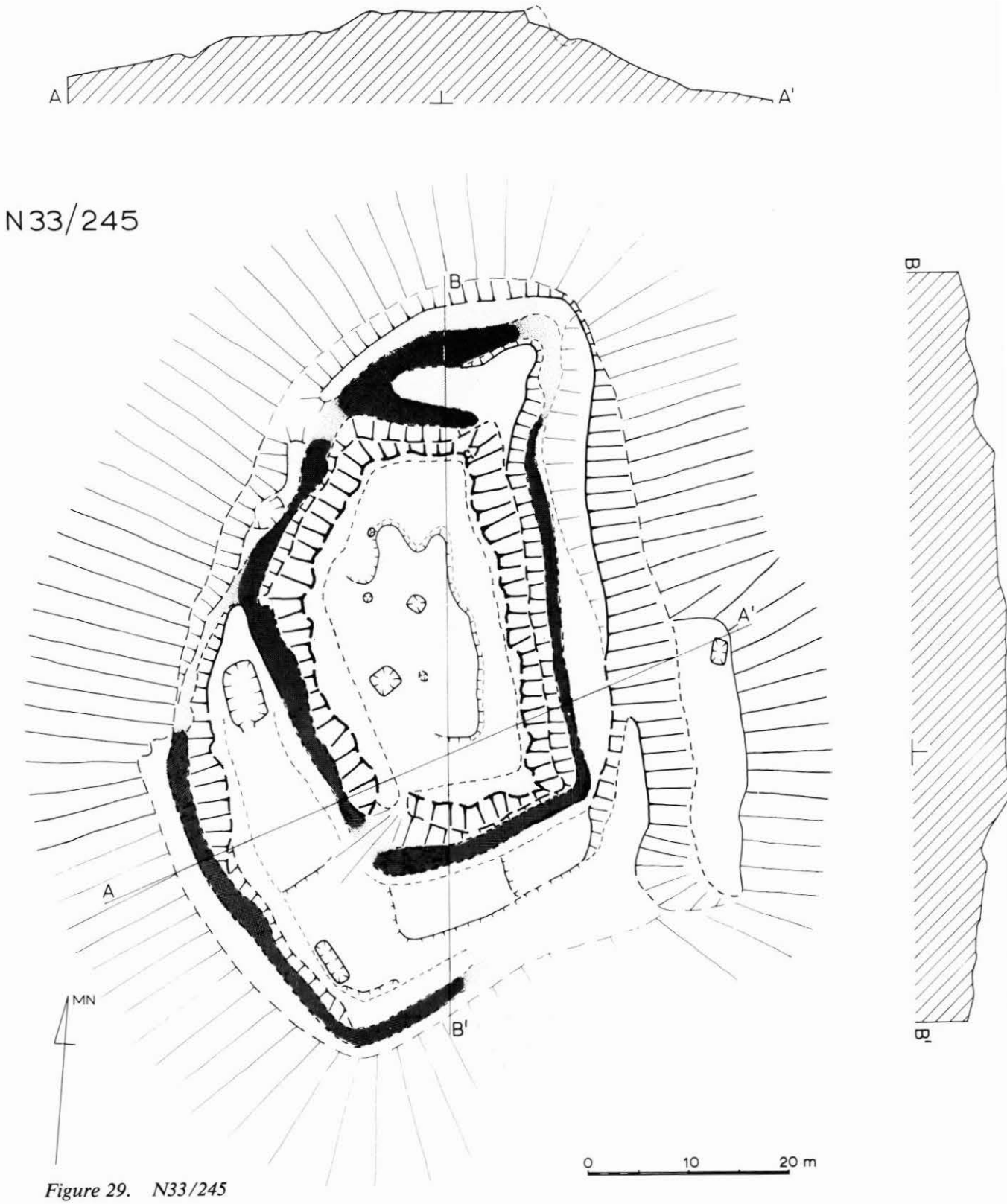


Figure 29. N33/245

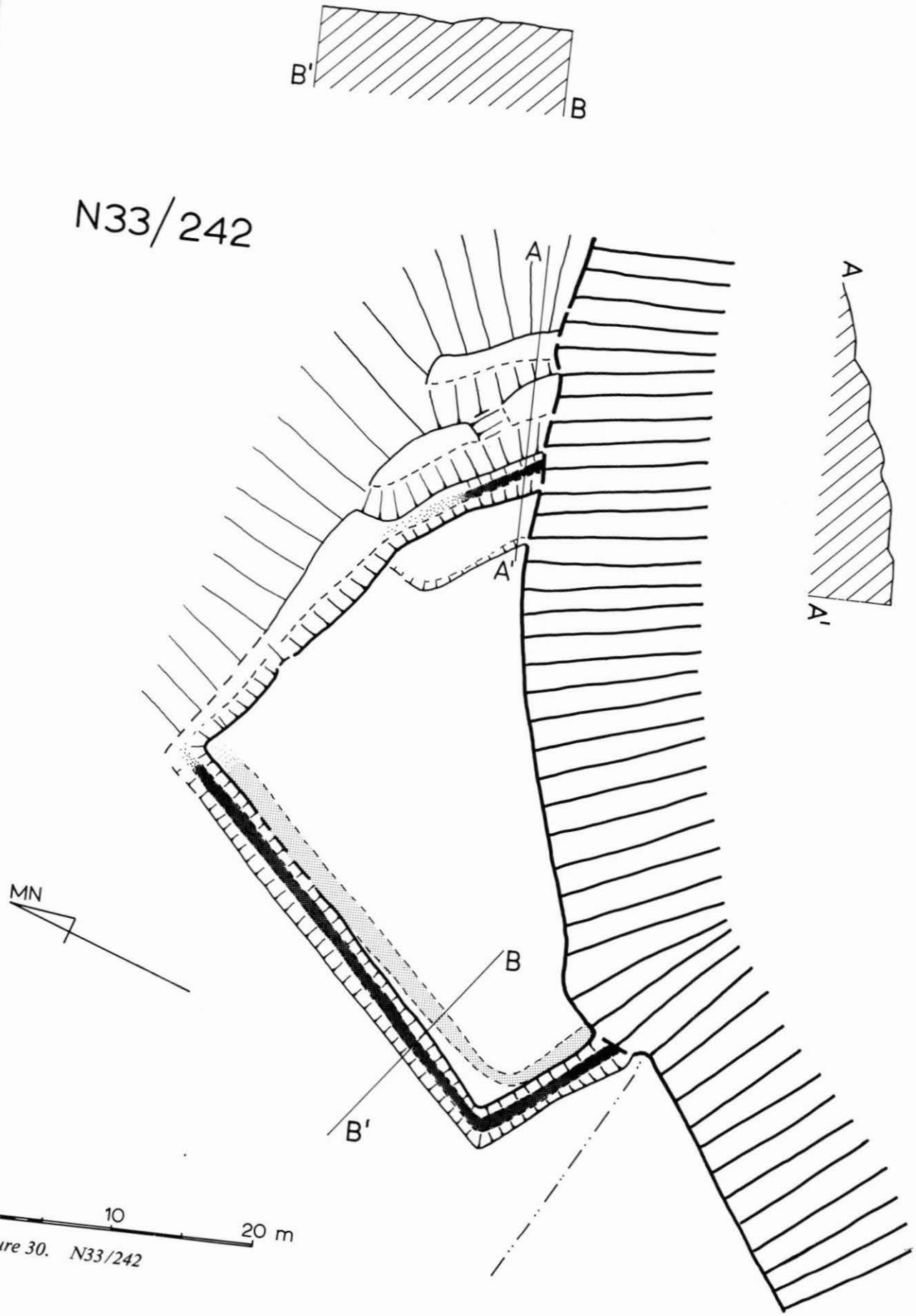


Figure 30. N33/242

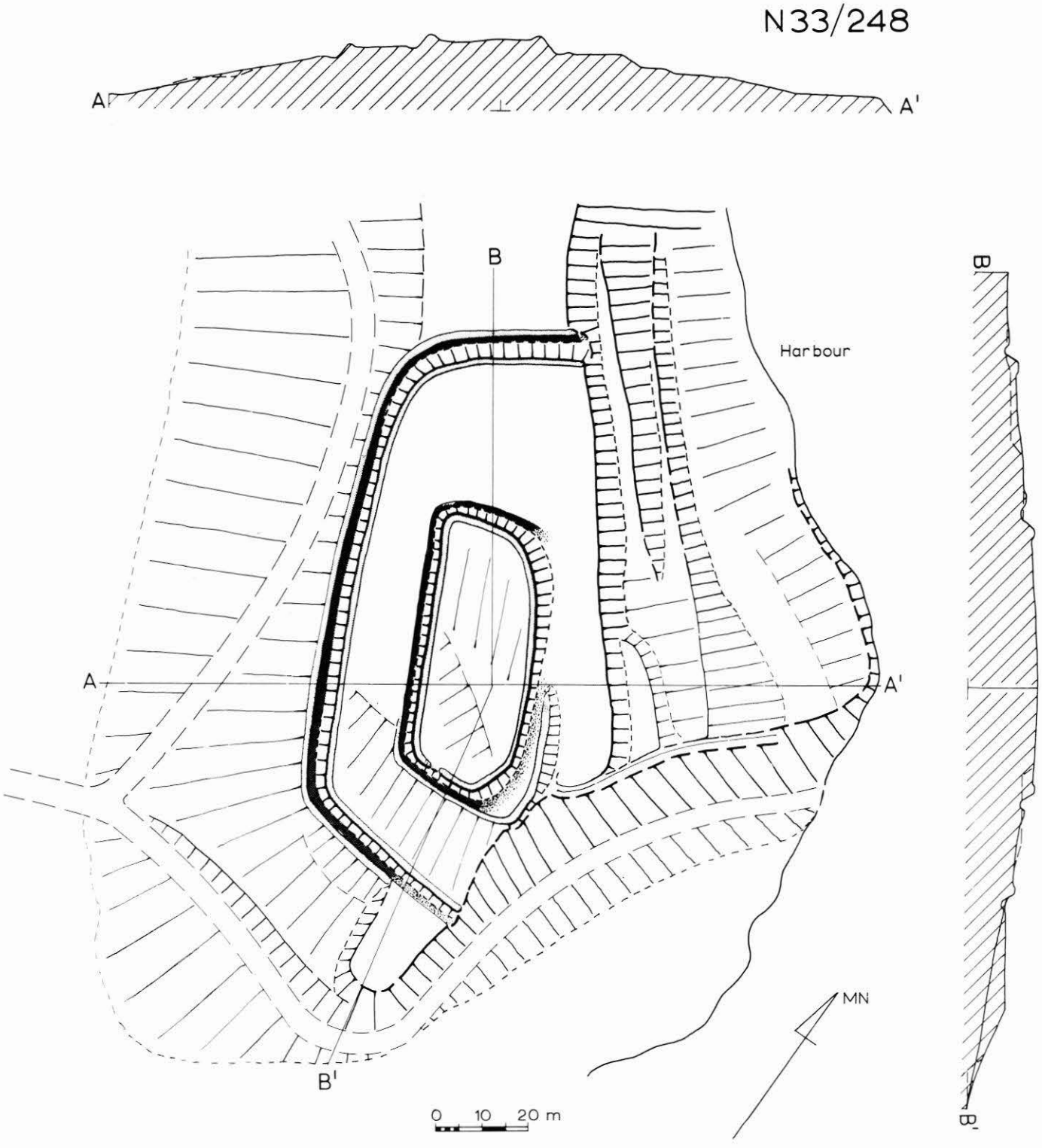


Figure 31. Pouto Pā N33/248

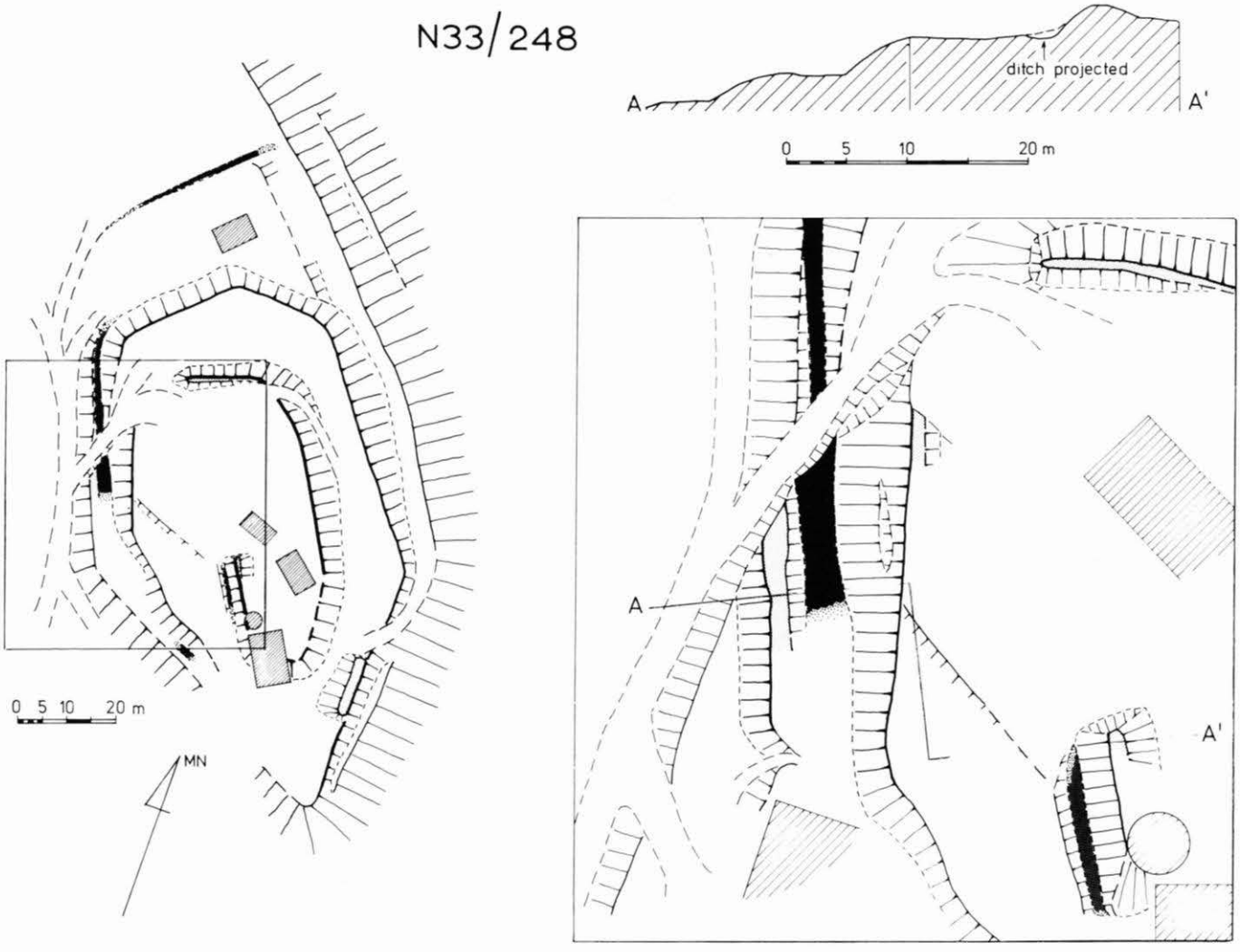


Figure 32. Pouto Pā N33/248

terraces. Figure 31 is a plan of the site reconstructed from ground mapping and aerial photographs taken in 1960 prior to the building of many of the roads and retirement cottages that cover the site today. Figure 32 provides details of the mapping that went on, around and even under the houses. This is an important site which commands the seaward approaches of the peninsula from other parts of the harbour and especially from South Head and Okahukura.

N33/246 Tawhiri Pā (Fig. 33)

Tawhiri is on a free-standing coastal hill cut off by the currently advancing sea cliff. It is complex and difficult to classify and most probably went through episodes of rebuilding in the past. In its early form it was defended by scarps and terraces. The ditch appears to be a later addition in one, or possibly two, stages. In form and construction it conforms to Groube's (1970) Class 3b and is one of a number on the Kaipara heads. This class of pā is arguably the least satisfactory in the Groube classification (Fox 1976:20).

N33/567 (Fig. 34)

A kind of pā formerly unknown in Pouto was found on a low island beside the western shore of Lake Roto Kawau. It sits on its small island rather like the flattened crown of a hat might rest on its wide brim. Moreover, while the core of the site was made up of an irregular sandstone outcrop, most of the material had been quarried nearby and carried in. The form of this site is uncertain. Certainly the raised and generally rectangular platform is surrounded by a scarp. But how far the shallow ditch visible at the southern end extends is unclear.

A similar very low-lying dry land lake site was discovered on the northern shores of Lake Kanono but not in time to be included in the mapping programme although it is shown in the various distribution maps as N33/576. It lies a few metres above lake level on a narrow peninsula cut by a transverse ditch. It is not artificial. The presence of yet another similar site on Lake Humuhumu, is a distinct possibility.

MODELS FOR THE HISTORY OF POUTO PĀ

Pā are found on the coast, in a horticultural hinterland and on the interior lakes. They occur in a number of topographic situations. They may be elevated or low lying. They come in a range of sizes and forms. Allowing for the possibility of some contemporaneity, one would expect there to be a range of ages, durations and structural complexity.

Thus the data are capable of generating a whole range of model histories for what might have happened as this particular settlement system of fortified sites matured through time, from whatever were its beginnings. For instance one could consider the possibility that the earliest pā would be in generalised locations on harbour creeks and estuaries and that, through time, there was a progressive penetration inland towards the lakes. Immediately one could point to N33/243 the small terrace pā on the shores of Waikere Creek. A little further inland, at a higher elevation, is the transverse ditch Wharepapa Pā

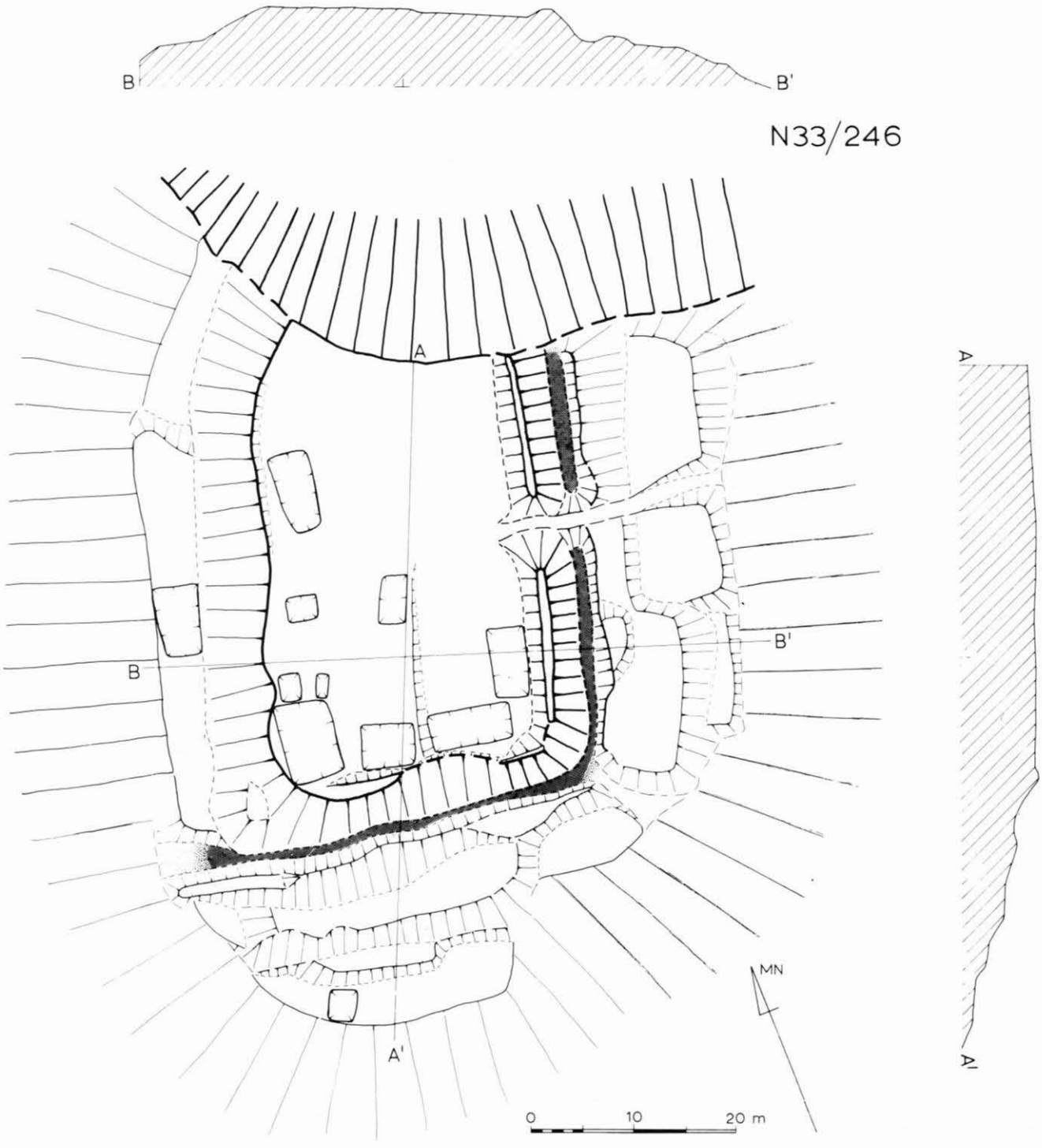


Figure 33. Tawhiri Pā N33/246

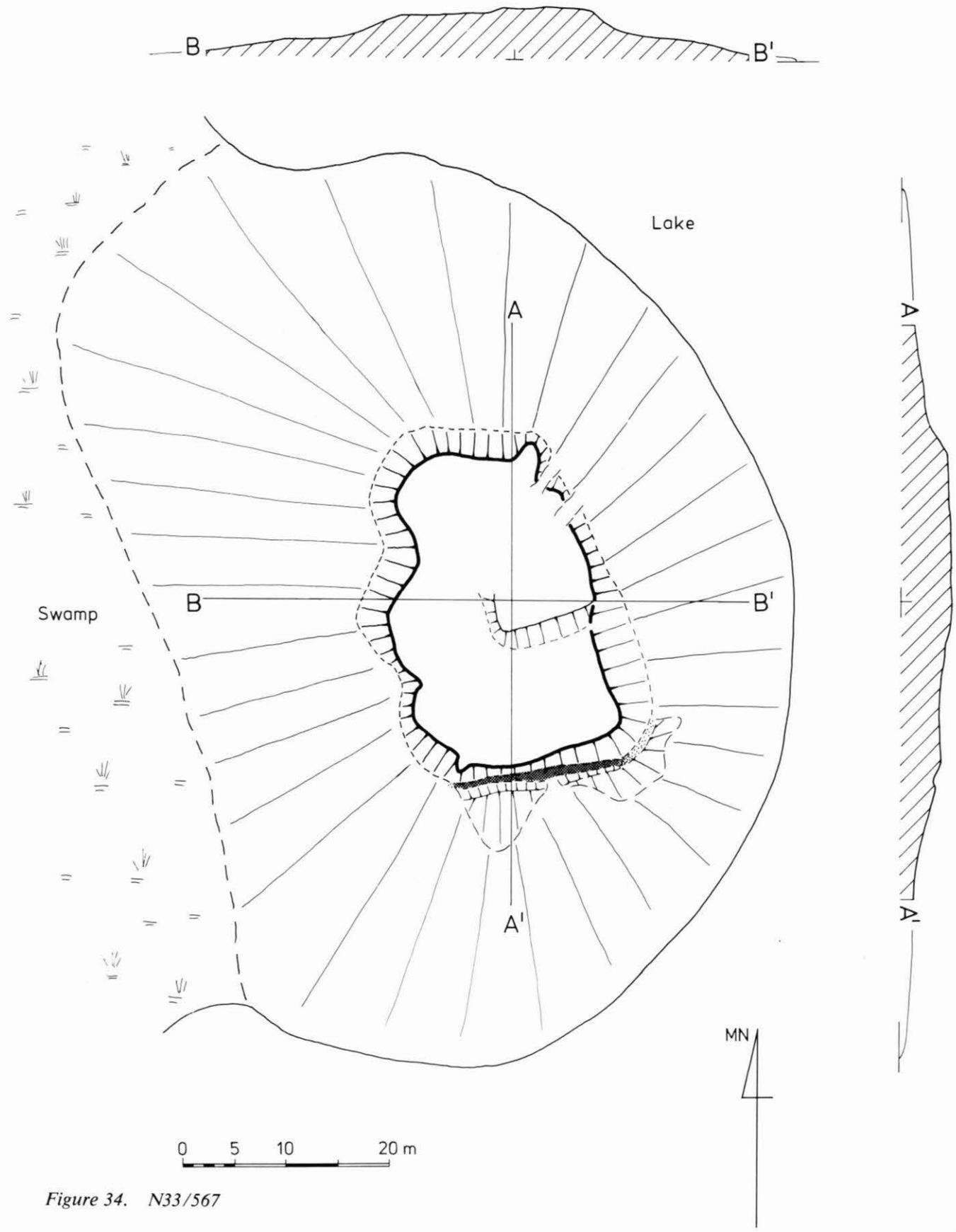


Figure 34. N33/567

N33/238. Beyond that just above Swan Lake, is the compact ring ditch pā N33/206. A similar morphological and spatial sequence could be noted spreading inland from Tauhara Creek from N33/227 to N33/211, N33/208 and N33/219.

Arguing rather differently one could compare sites of different form in essentially identical locations and ascribe the difference to time. Equally one finds numerous examples of similar sites to different locations.

In short, the data provided a range of experimental situations. We were not committed to any, but instead, wished to find out as best we could what the outlines of this local history actually were. The results, to be described below, suggest that certain current theories about fortifications might be abandoned. It is more difficult to suggest which others might be accepted because this, of course, is a single case and can be expected to be idiosyncratic as well as somewhat fraught with sampling error. Nevertheless some tentative conclusions will be put forward.

4 EXCAVATION, DATING AND TAXONOMY

There are 20 reported pā in Pouto south of a line connecting Waikere Creek to Lake Humuhumu. This was our area of detailed survey. Most of the sites both here and to the north were first recorded in 1971 by a team led by K.M. Peters (Harnett 1972).

Field work was carried out during the summer of 1981-82. Most of our attention was directed to pā. All of these lay under pasture and were very accessible. However, many of them were beginning to display serious destruction. The harbour coast of Pouto is eroding and while this continues the pā on the cliffs will gradually fall into the sea. For this reason, a number of pā were already virtually half-sectioned. It was a relatively simple matter to lower oneself over the edges, clean the exposed faces and examine the stratigraphy. Similarly, because of the running of cattle on this soft sandy country, the inland pā are showing increasingly severe erosion especially of the defences. By inspecting these too, it was possible to gather information on site structure. The situation bodes ill for the future but it meant that we were able to gather a lot of information quickly. Agricultural activity is intensifying on the Kaipara heads. With increasing deer farming and the conversion of pasture to orchard the archaeological landscape is under great pressure which should be monitored.

The sequence of work was as follows. All pā were mapped, usually by plane table sometimes by tape, compass and level. In association with this a fluxgate gradiometer was run across recorded profiles. The signal was passed to a continuous chart recorder and the plot was annotated as appropriate with all of the visible details of surface features. Later on, the correspondence between surface, excavated and gradiometer information could be established, which meant that, with some caution, one could generalise beyond the excavated data.

Substantial excavations were made at two sites and trenches cut through the defences of two more. Various test pits were dug and exposed sections cleaned and inspected at all of the others. Samples for dating were collected from all sites except two. The strategy was to carry out pieces of precise work and then apply the results as extensively as possible. A core was collected from near the neck of Swan Lake for pollen analysis but, at the time of writing, that is incomplete. Some study of local history and tradition was carried out from various written sources, Land Court records and interviews with residents.

EXCAVATION

Waikere Creek Pā (N33/243)

This site, just inland of Waikere Creek, is a small terrace pā on a low knoll. Of small size and simple structure, beside the estuary, with gardening soil close to hand and with sufficient elevation for some defensibility, it could conform to a model of an early fortification. On the other hand, some site recorders would consider it to be an undefended pit and terrace site of indeterminate age. Because of the possibilities and the ambiguities this was one site selected for investigation. Three long trenches were excavated on different axes (Fig. 35). Topsoil was removed by traxcavator, rather timidly as it transpired, as there was

Plate 1. The harbour coast of Pouto showing Tawhiri Pā (N33/246)

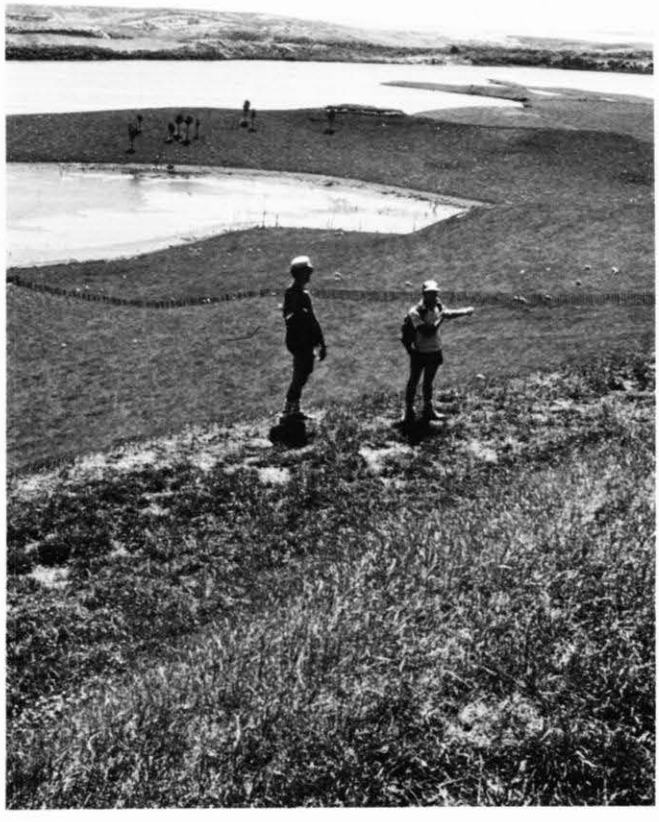


Plate 2. Standing on N33/253 with N33/245 in the distance by Lake Kanono

Plate 3. The heavily eroded defences of N33/245

Plate 4. The eroded sections of N33/245 which are typical of inland Pouto sites

Plate 5. A cleaned section of the defences of N33/206

Plate 6. The eroded cliff section of Tawhiri Pā (N33/246), which is typical of pā on the harbour coast

Plate 7. Waikere Creek Pā (N33/243) prior to excavation

Plate 8. Waikere Creek Pā (N33/243), Trench 2 excavations

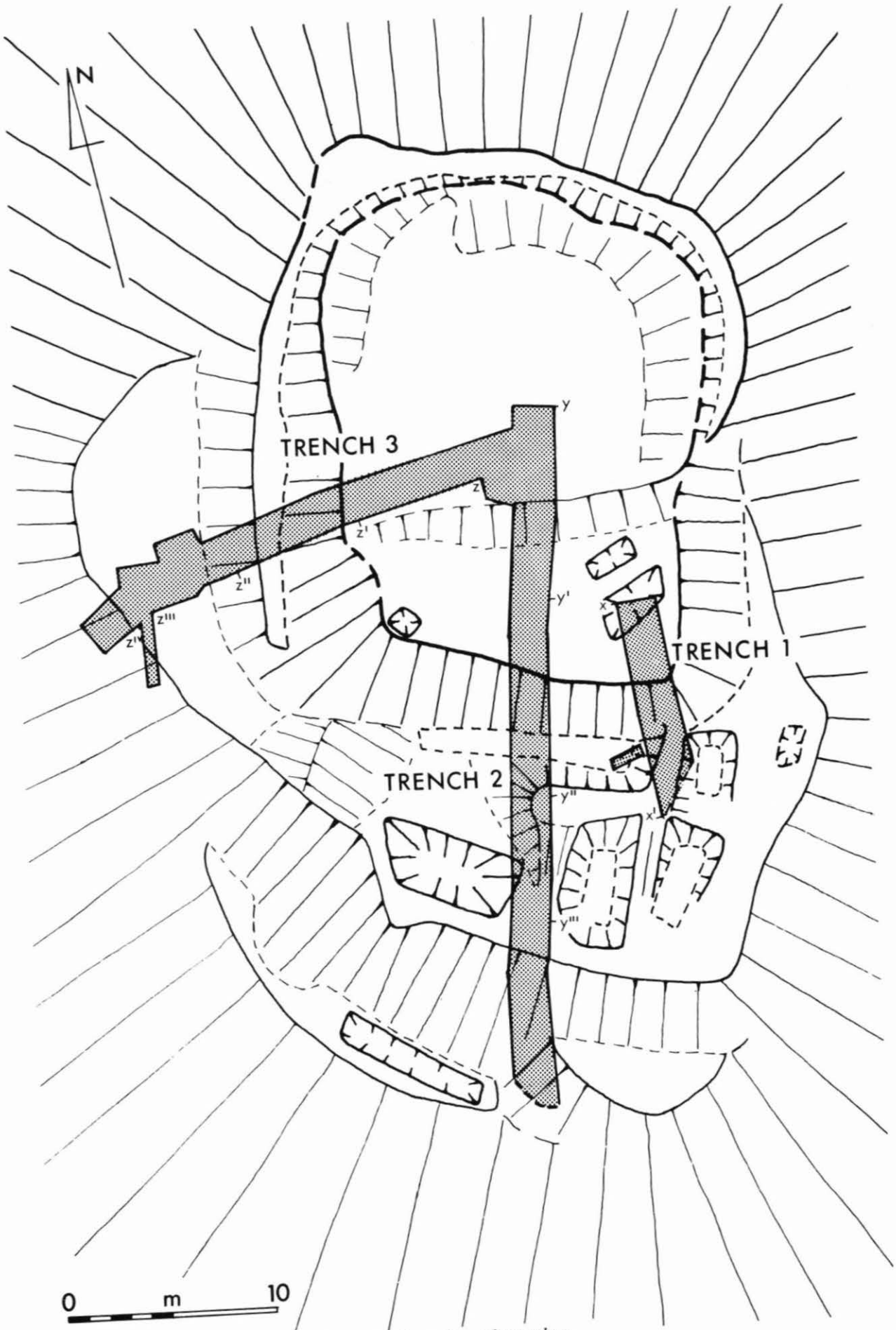


Figure 35. Waikere Creek Pā N33/243. Location of trenches

still a lot of digging left to be done by hand.

Trench 1

The plan and section drawings of Trench 1 are shown in Figure 36. Stratigraphy consisted of a soft sandstone natural (Layer E), a weathered sandy subsoil (D) and a developed topsoil (A). Beyond that, there were layers of fill (B and C) and other cultural features. The earliest structure in this trench was the end of a long narrow pit that extended west into Trench 2 (Fig. 35). This was interrupted by a small squarish bin aligned with a second, and with a larger pit all of the same stratigraphic age. This pit had been filled deliberately, the surface above raised, and afterwards all truncated by a feature interpreted as a defensive scarp evident in the section (Fig. 36). Even though the trench crossed the scarp on a two metre front, no postholes were found that could be interpreted as part of a palisade line. Further details of the dimensions of features, etc., are available in the archive of the Department of Anthropology, University of Auckland.

Trench 2

This began on the top platform of the site and ran south crossing all visible features. It is illustrated in three successive figures (37, 38 and 39). Beginning at the top (Fig. 37) the earliest features were three small pits and a sunken wall slot which conceivably could have been the corner of a house whose construction was similar to ones found at Mangakaware 2 (Bellwood 1978), Hamlins Hill (Irwin 1975) and Orakei (excavated by L. Groube). Afterwards, the pits were filled, their surfaces carefully levelled and a rectangular house was built which measured approximately three metres by four. A hearth near the centre of the house at its northern end was dug into the fill of one pit. Two other features visible in Figure 37 are hearths. At the northern wall of the house a modern sheepdog burial was encountered, which gives the site its local name of "Jock's Knob". In deference to the landowner, excavation was not continued in this direction and it was not possible to find out whether there had been a verandah at the northern end of the house.

Figure 38 shows the part of Trench 2 that crossed the defences, where a bank had been raised above the fill of an earlier pit. Samples for dating were taken from the upper pit fill (NZ 6550) and another from a hearth which stratigraphically immediately followed the bank (NZ 6584). The top edge of the bank was subsequently rounded off by erosion, but not sufficiently to explain the lack of postholes indicating a fence line at the top of the scarp. This site evidently had a raised earthern bank, which is interpreted as a defensive structure, but no associated palisade. Below the scarp was a shallow ditch some 3.8 m wide which interrupted the sides and fill of an earlier pit. Figure 39 shows the features at the low end of the trench.

Trench 3

The upper part of this trench, which proceeded west from the house, is illustrated in Figure 40. There are various pits and bins in evidence including one pit dug on the line of the scarp. At this point the scarp was much lower than in the other trenches. Below it there was a terrace and above it no evidence for any fence. Also shown in Figure 40,

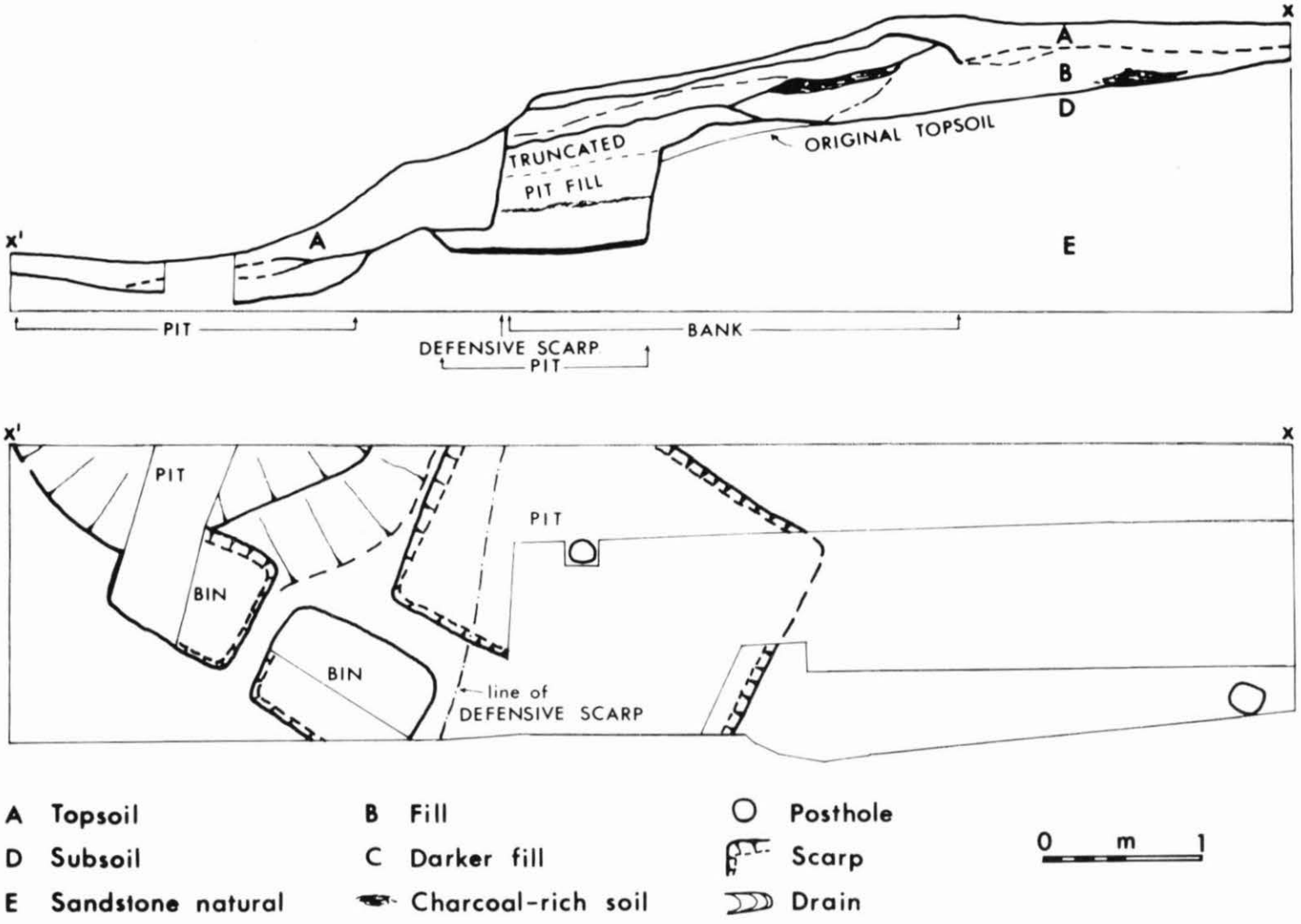


Figure 36. N33/243 Trench 1

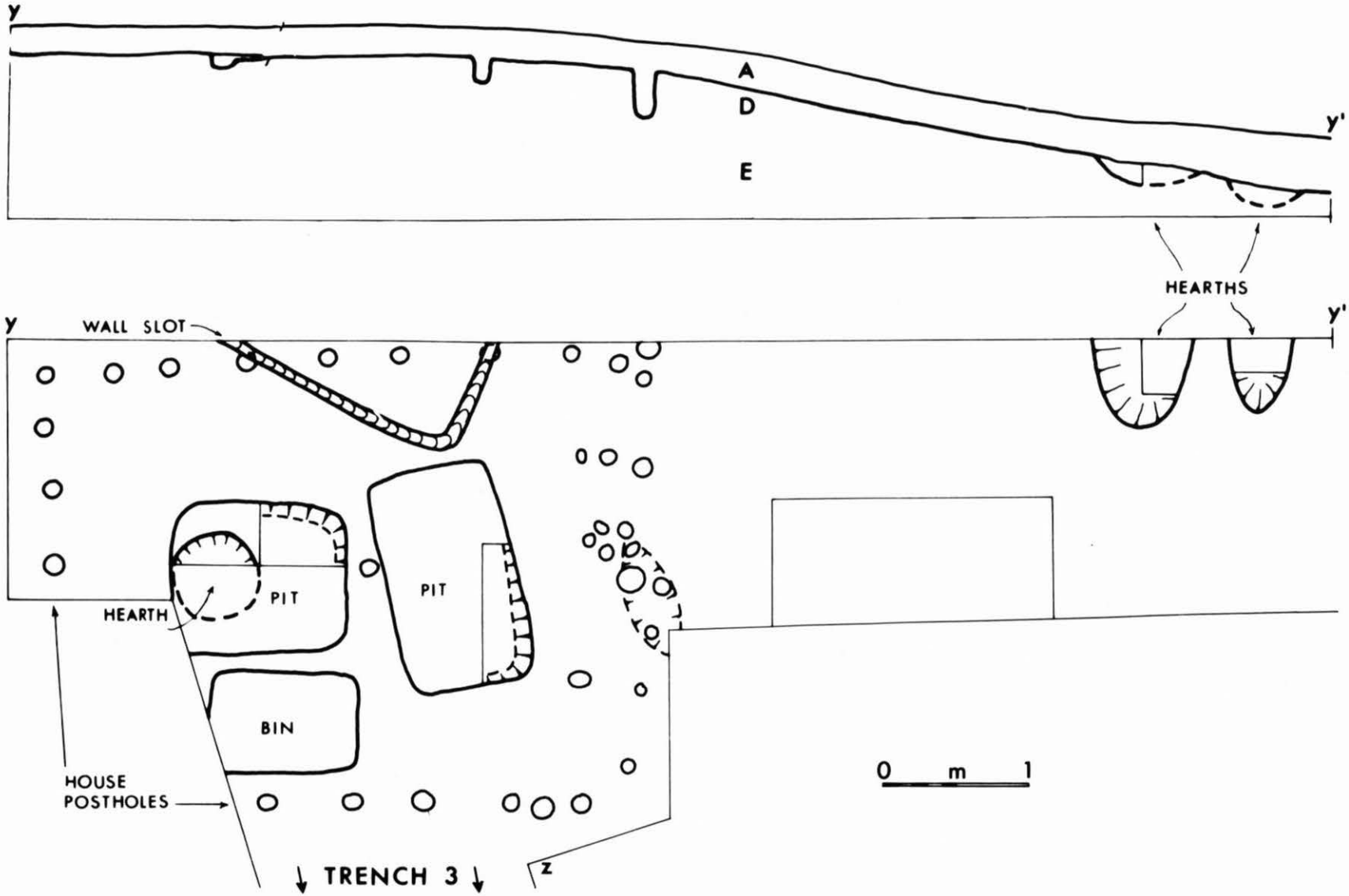


Figure 37. N33/243 Trench 2

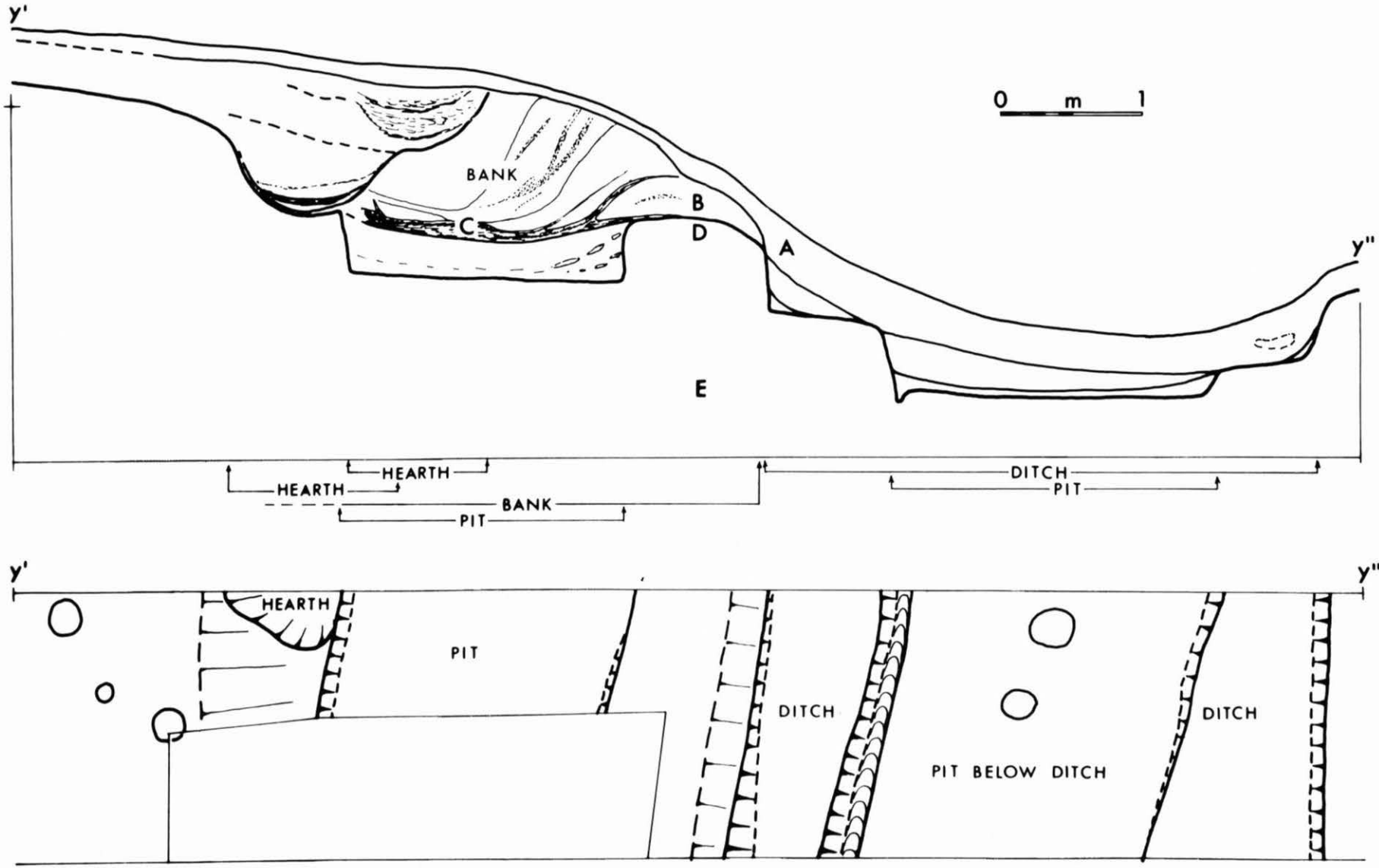


Figure 38. N33/243 Trench 2 continued

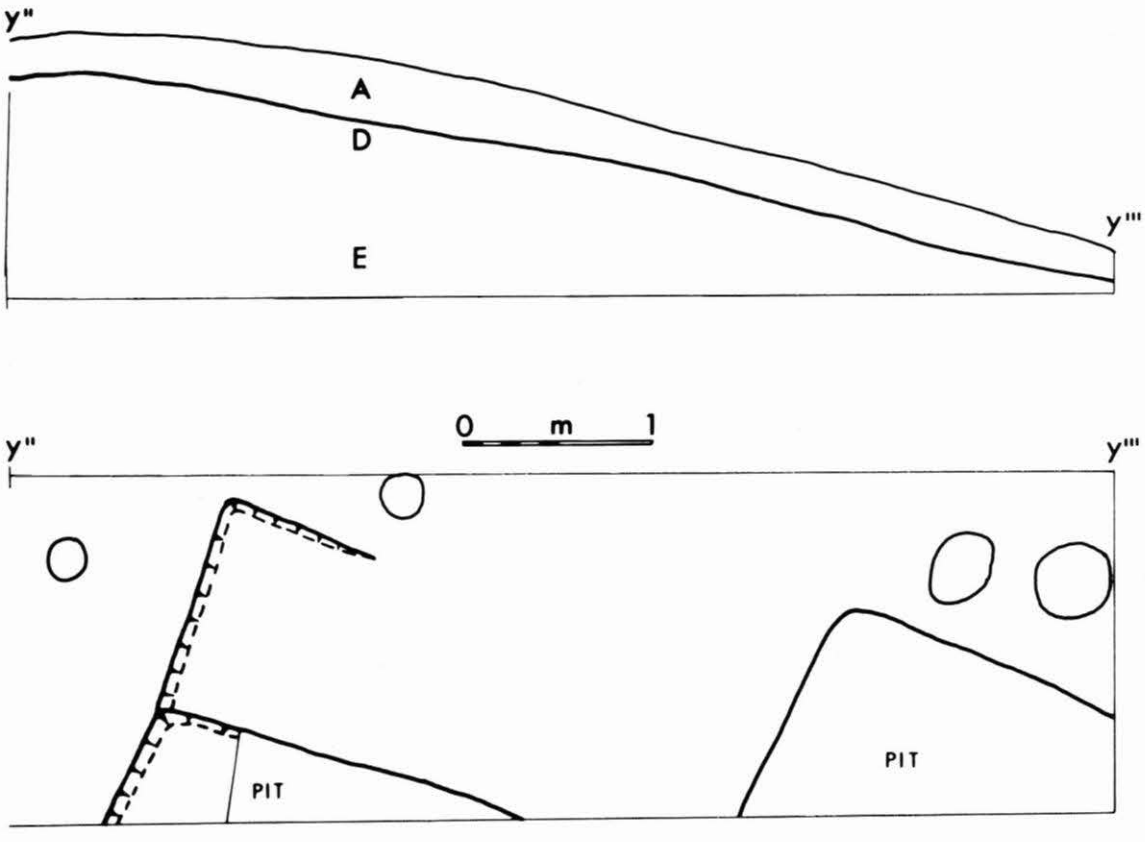


Figure 39. N33/243 Trench 2 continued

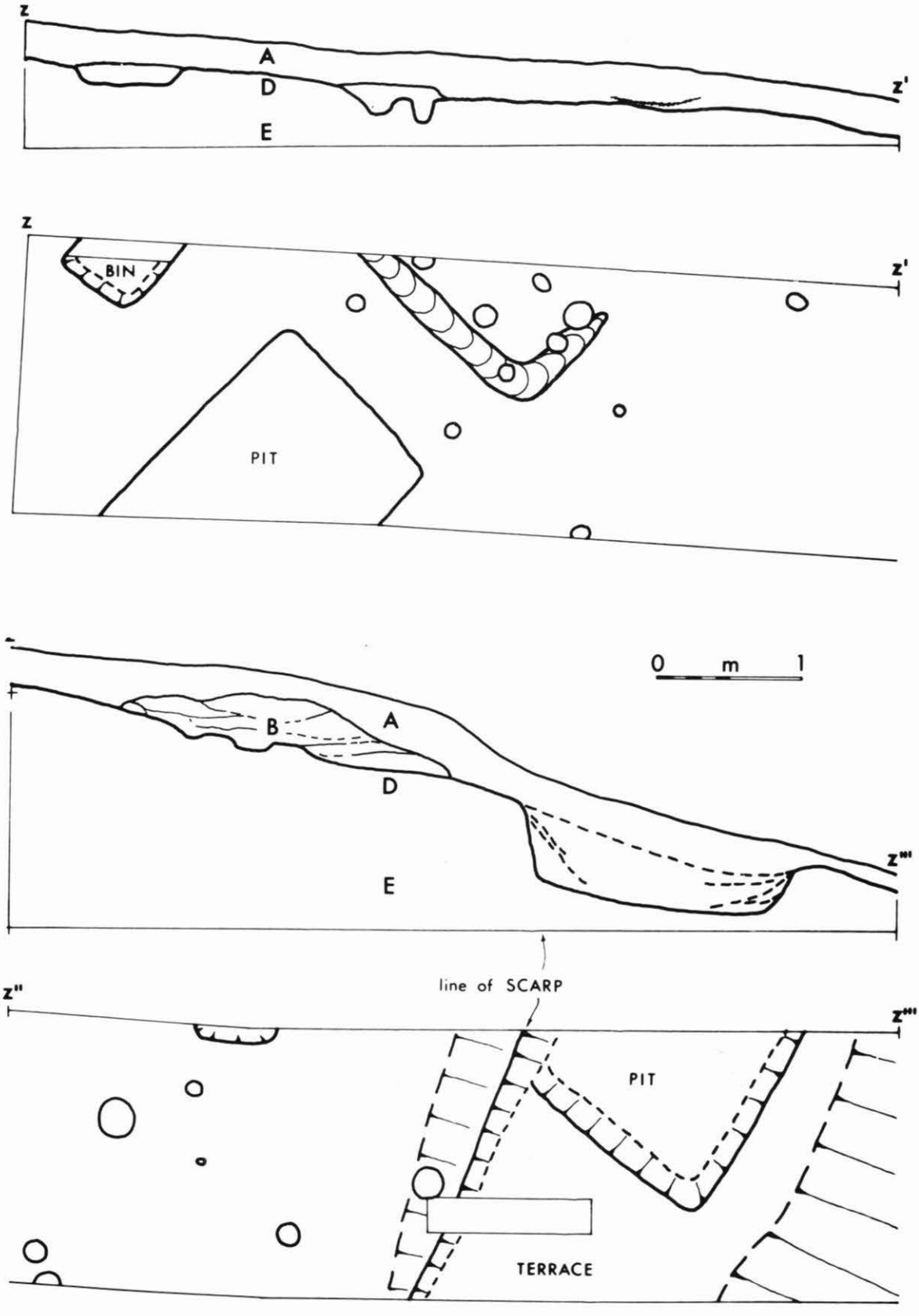
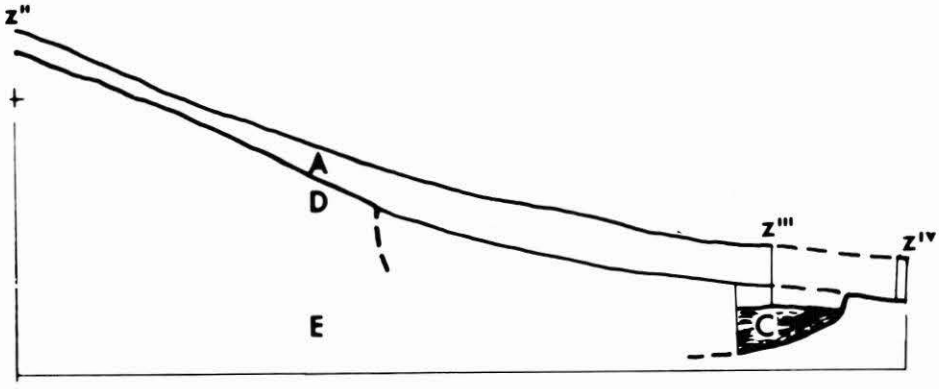


Figure 40. N33/243 Trench 3



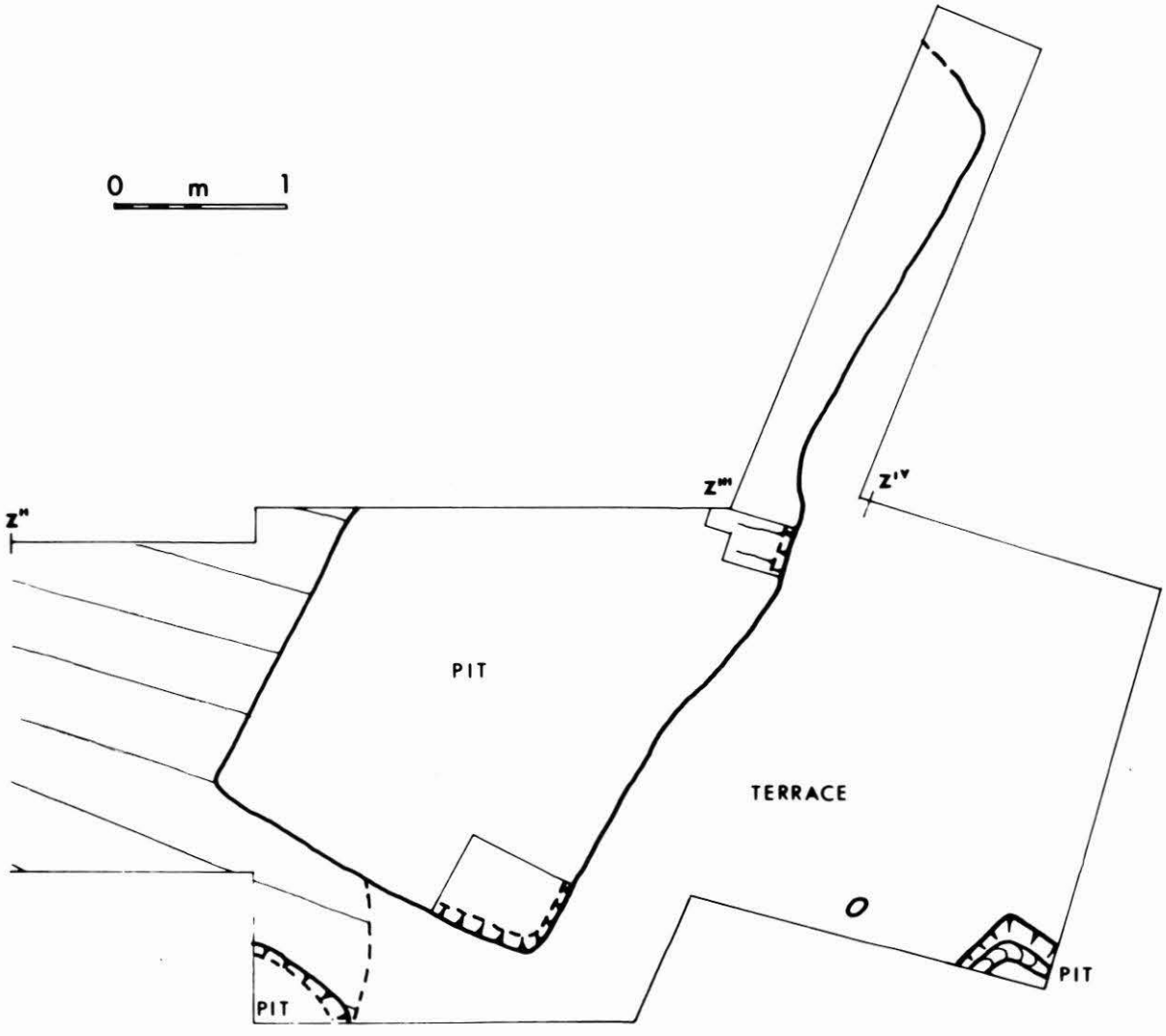


Figure 41. N33/243 Trench 3 continued

towards the top of the trench near the house, on the same alignment as a pit and a bin was an enigmatic structure consisting of the corner of a wall slot or drain containing a number of postholes and all filled with the same charcoal-rich soil. In this drain was found a broken quadrangular-sectioned adze identified by P. Moore as of metasomatised argillite from a Nelson-D'Urville Island source. Figure 41 shows pits on the lower terrace at the bottom of the trench.

Incorporating the evidence of radiocarbon dates, which will be considered in greater detail below, it seems that in approximately the fifteenth century, this was a small pit and terrace site, possibly with a house on top. At a later date, which falls just inside the range of modern (<250 BP), a scarp was cut and a defensive bank raised above it. This was apparently not of uniform height all round. A shallow ditch was dug below the bank for added protection against the easiest line of approach from the south. There is no evidence for a palisade, even though the line of defence was crossed on three two-metre wide fronts. Following an earlier period of storage and possibly occupation on the top platform, a house was built there. It is quite likely that this happened at the same time as the bank was built but this cannot be demonstrated stratigraphically.

Wharepapa Pā (N33/238)

This site is a small transverse ditch pā illustrated in Figure 20 above. It is approximately half a kilometre inland from Waikere Creek Pā (N33/243) on a hill 345 ft a.s.l. with commanding views back towards the Waikere Creek estuary and inland towards the lakes.

Topsoil was removed with a traxcavator and a long trench was dug through the defences at the eastern end of the pā and then at right angles out through the lateral defences on the northern side. Another separate trench opposite was dug across the lateral defences to the south (Fig. 42). The trench A - A' at the eastern end was carried out some 5 metres beyond the ditch where it encountered an alignment of postholes running to the edge of the hill. The possibility exists that this was part of an outer fence, beyond the visible earthworks, which crossed the line of approach along the ridge towards the pā.

The section through the transverse ditch and bank is shown in Figure 43. The stratigraphy consists of soft sandstone natural (Layer E), a weathered sandy subsoil (D), layers of sand fill (B), darker fill (C) and a developed topsoil (A). The section shows a scarp cut into the sandstone. Above this, bands of material probably derived from spoil from the ditch were raised as an inner bank (Layer F). The top of this bank subsequently lost height through erosion. The bottom of the transverse ditch was shallowest where it is drawn. It was not flat bottomed, but instead followed the curve across the ridge. At the top of the scarp were two concentric lines of palisades (Fig. 42).

A similar defensive structure was found on the northern side of the pā (Fig. 44, B - B'). There was a raised bank, a scarp and below this a tiny ditch less than 1.5 m wide and an outer bank (without palisade) barely 50 cm high. This was unexpected in that the surface evidence suggested no more than a lateral terrace. In the C - C' trench opposite, there was only a terrace, whose construction had the effect of steepening the scarp. Thus the two opposite lateral defences of this pā, while apparently the same from the surface, were sufficiently different to fall into different classes of pā form. The suggestion that the top of the scarp had been eroded was confirmed by the inner line of palisade

Plate 9. Running the fluxgate gradiometer over the profiles of Wharepapa Pā (N33/238)

Plate 10. Removing topsoil at Wharepapa Pā (N33/238)

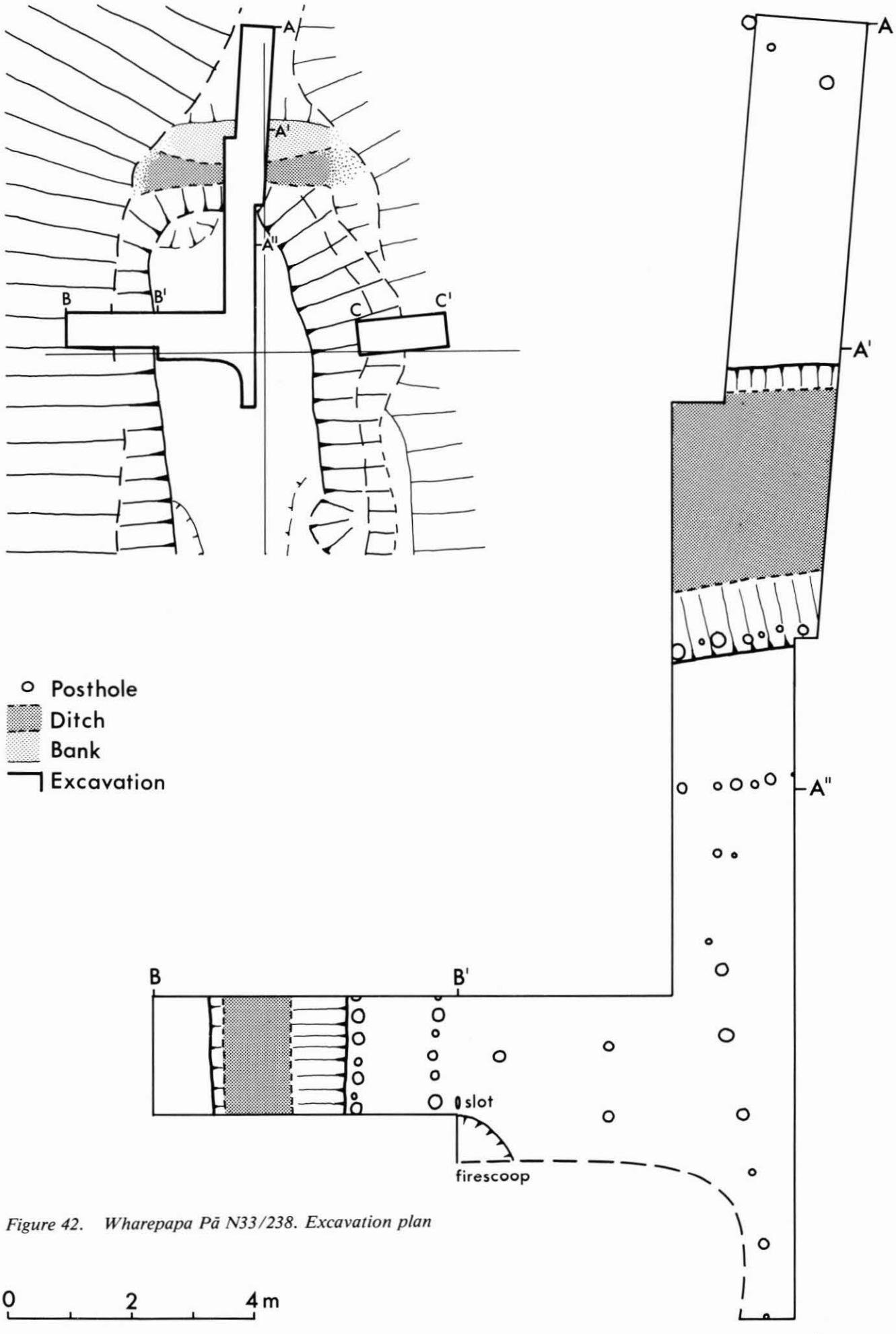


Figure 42. Wharepapa Pā N33/238. Excavation plan

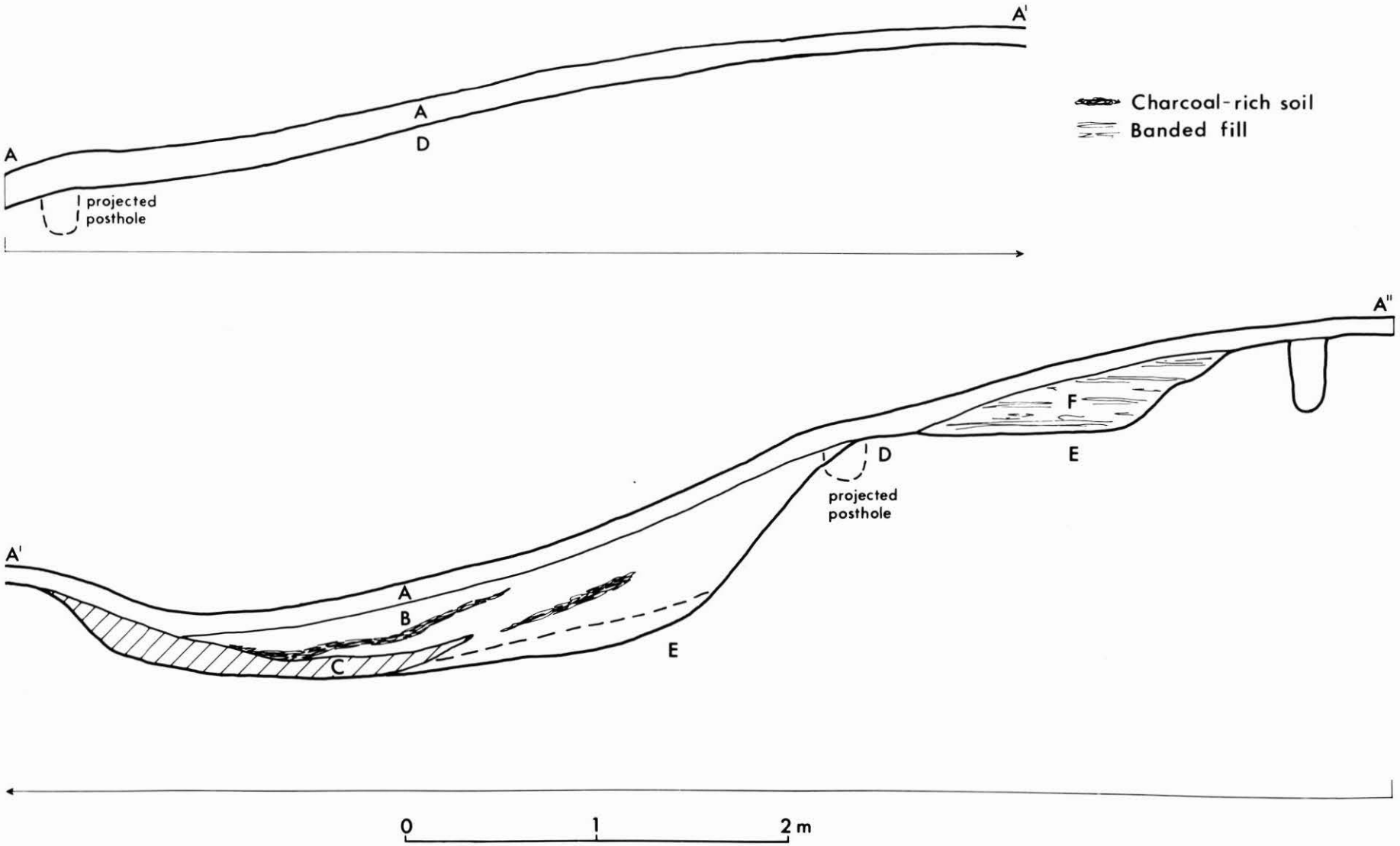


Figure 43. N33/238 Section through ditch and bank

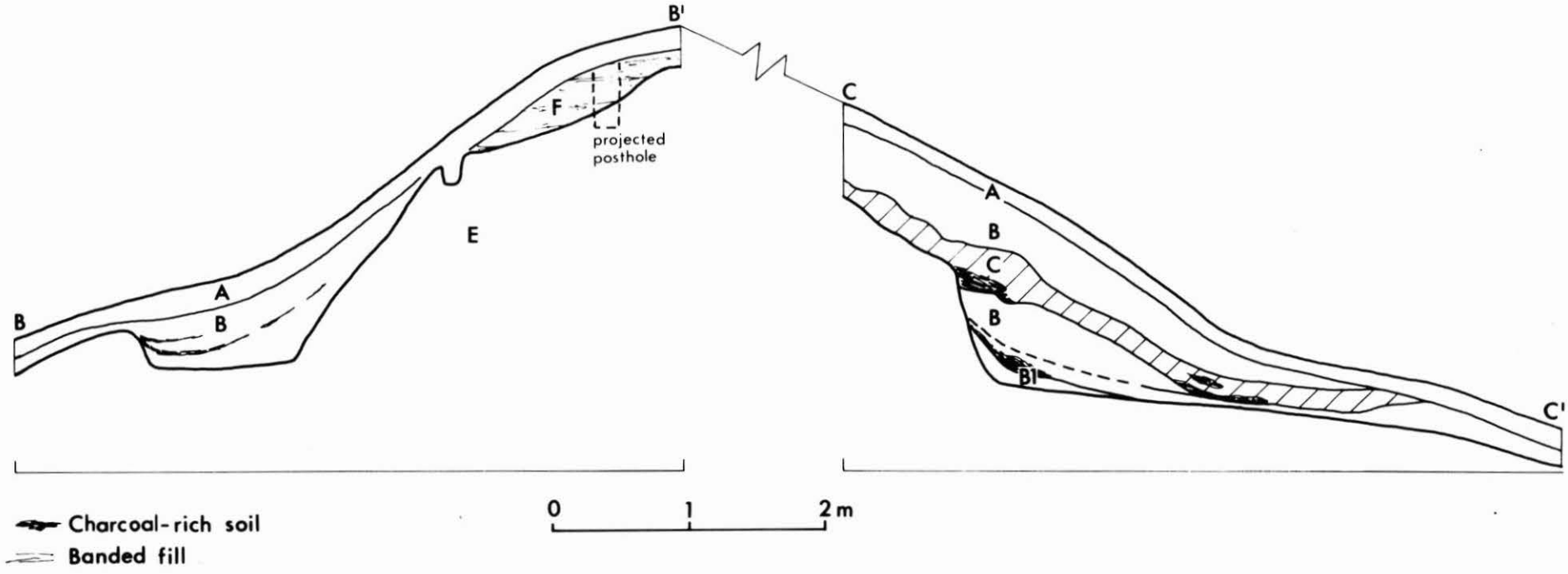


Figure 44. N33/238 Lateral defences

Plate 11. Excavations at Wharepapa Pā (N33/238)

Plate 12. The lateral defences of the north side of Wharepapa Pā (N33/238)

postholes being much deeper, but generally no wider, than the outer line. The stratigraphic evidence suggests that these lines very probably stood at the same time.

In fact, there is only evidence of one quite insubstantial period of occupation at Wharepapa Pā. An interior line of postholes seen in Figure 42 is evidence for some internal structure, but in general the inside of this site was very clean. There was no midden, no pits and just one firescoop found in the excavated area. However, immediately adjacent to the site, on the hilltop at a slightly lower level, is an extensive flat area which could have been the scene of domestic activity, the pā being reserved mainly for refuge. *Papa* can mean earth floor or site of a native house (Williams 1971), so it is no great stretch of the imagination to suggest there were some in the vicinity, either inside or outside the pā. No date is available for Wharepapa at present.

Collection of radiocarbon samples

In all 12 pā were dated. Samples were taken from a range of stratigraphic situations. N33/243 had two dated samples as described. NZ 6550 came from a lens at the top of a pit fill, lying below a defensive bank, while NZ 6584 was from a fireplace which immediately followed the building of the bank (Fig. 38).

Two sites were dated from samples taken from cleaned cliff sections. At Tauhara (N33/227) the back of the second-to-top terrace was cut into the sandstone natural, while the front was built up of spoil which included seams of shellfish and especially cockle. While originally this was food debris, it was laid here as a deliberate fill. The sample was taken from near the bottom of the fill and pre-dates terrace construction. At Tawhiri Pā (N33/246) the sample was collected from a comparable location in the cliff face from below the terrace on the north side.

Several samples were taken from test pits associated with cleaned eroded sections of the defences of the inland pā. Plate 3 shows the eroded banks of N33/245 and Plate 4 is a close-up of a typically eroded bank prior to excavation. Visible at the bottom of the section is the sandstone natural, followed by a weathered subsoil and the buried topsoil. Above this is a zone which corresponds with the clearance and initial occupation of the site. There is usually quite a lot of charcoal and occasional discrete occurrences of shell. In some sites, this zone appears more as an inverted topsoil than as one of interference and occupation. Above this is the material used to build the bank. Generally it occurs as distinguishable bands of sand containing lumps of the sandstone natural derived from digging the ditch below. In Pouto it is normal to find evidence for a single episode of bank construction. Rarely, there are signs of topsoil formation within the build-up and the later construction of, say, a raised portion of inner bank. Samples collected from N33/244, N33/245 and N33/248 came from below the banks. The samples from N33/206 and N33/219 come from layers within the bank fill. As such, all of these dates are thought to be contemporary with, or to pre-date the fortifications of these sites. Had these sites been area-excavated there would have been an improved chance of discovering earlier episodes of undefended occupation. However, the stratigraphic control of the time they were defended is better and is considered reasonable for sampling of this kind.

N33/252 was dated from a lens of shell that occurred at the very bottom of the ditch fill (Fig. 45). Thus it dates after the construction of the defences but can be no later than the time when the ditch was

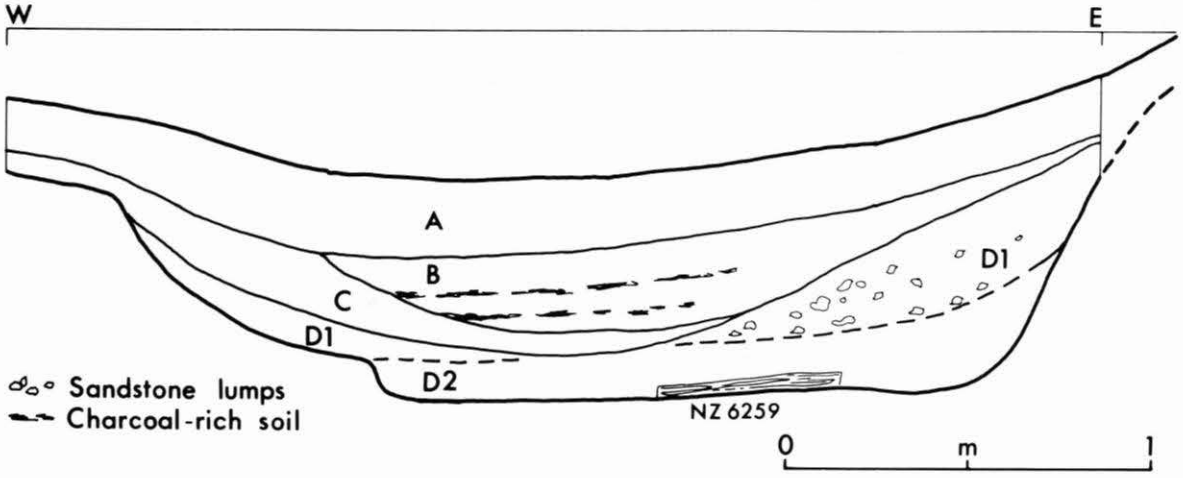


Figure 45. N33/252 stratigraphy (A) sandy topsoil (B) yellow sand with seams of charcoal (C) grey sand fill (D1) soft yellow sand with lumps of sandstone natural (D2) soft yellow sand

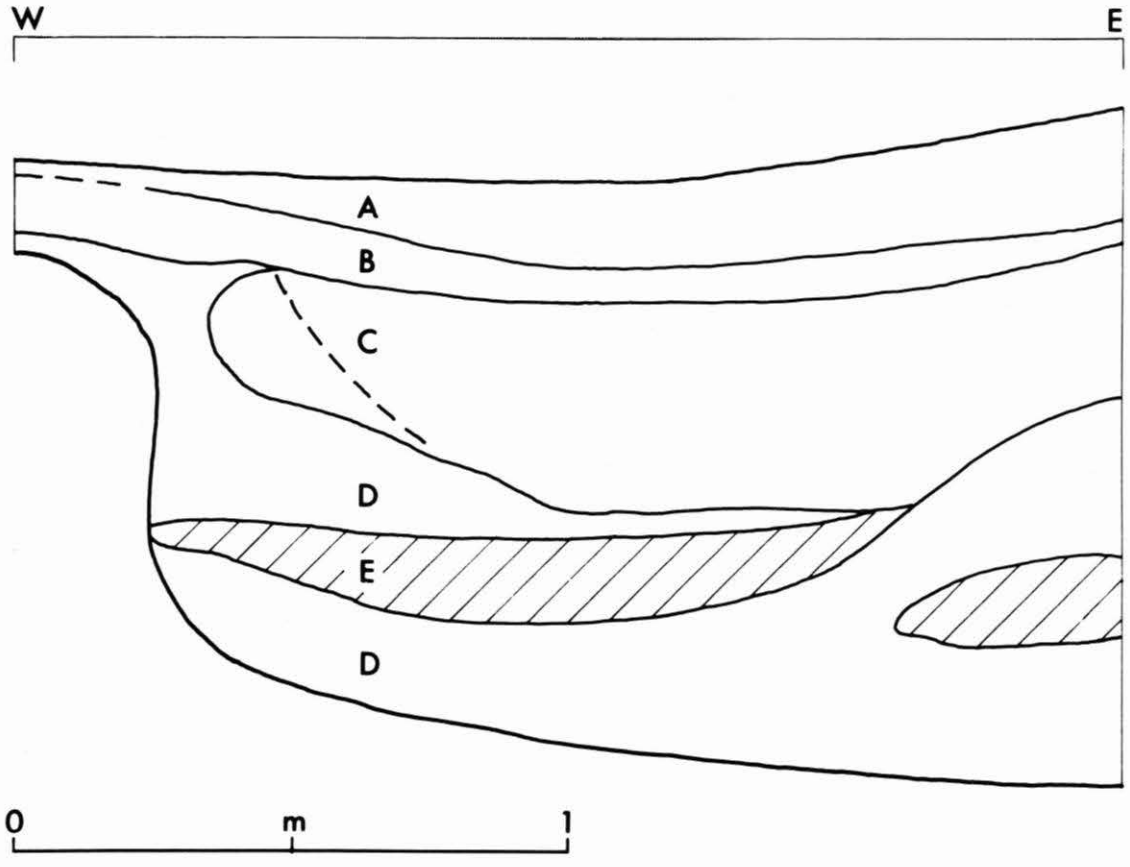


Figure 46. N33/264 stratigraphy (A) windblown sand (B) topsoil (C) grey sand with some charcoal (D) yellow sand from eroded bank (E) grey sand with charcoal lenses

allowed to fill. In the sandy and windy environment of Pouto, this would be very rapid.

Three sites were dated from occupation layers in close assocation with the defences, but stratigraphically following their construction. In each case only one episode of occupation could be detected locally and no evidence for any time lag between pā construction and occupation. N33/566 was dated from a lens of shell eroding from within the upper bank. As described N33/567 was largely built of material quarried elsewhere and carried in; its sample came from the eroding top of its rather undifferentiated fill. N33/253 is dated from shell from a fireplace which post-dates the building of the northern terrace, but relates to the single period of occupation there. These three samples are less secure than those above.

DATING

Single radiocarbon dates are available from 12 pā. Another result relates to one of the same sites (N33/243) prior to its being fortified. Many of the dates are less than 250 BP but their calculated ages (old $T\frac{1}{2}$=5568 years) are shown in order in Table 1. This will be of use in the discussion that follows and, in the case of the shell dates which are less affected by fossil fuels, there is some justification for it (G. Law pers. comm.).

Inspection of the table shows that 10 of the 13 dates are less than 250 BP and statistically they cannot be distinguished. A better case can be made that N33/227 and N33/243 (undefended) are older than many of the others insofar as the age differences exceed twice the standard errors. Yet the presumption is that the relative age order is a likely one and, indeed, there is independent evidence to support this.

1. The apparently youngest site - N33/248 - was in use during Nga Puhi raids around 1820.
2. N33/244 has surviving timber in some postholes.
3. Tauhara (N33/227) has produced the oldest date for a pā. It is also known in tradition as the oldest of these sites. However, it too was attacked and fell in the early nineteenth century conflicts. (Polack 1838:201-5).
4. The age for the undefended period of N33/243 is earlier than for the stratigraphically later defended one.

Figure 47 plots the ages with their errors, however, in the absence of secular correction, and for other reasons too, the calendrical dates in the margin can apply in only the most general way.

The general conclusion that is taken from this evidence is that a few pā were probably built in Pouto some 300-500 years ago. Undefended sites existed then and earlier. However, most of the pā were built late in the pre-European period. It is independently known that at least a few were used until the early 1820s when Pouto was abandoned by most of its surviving population.

While it is not possible to separate most of these pā in age, that is not the same as saying they were actually contemporary. Nevertheless there is a distinct possibility that many of the pā of Pouto were both contemporary and late. This suggestion will be reviewed in terms of the spacing characteristics of sites below.

TABLE I

Radiocarbon Results
(old half life and appropriate standard)

Site No.	Sample No.	Material	% Modern	Reported Age BP	Calculated Age BP
N33/248	NZ 6258	*Chione* sp.	98.8 ± 0.7	<250	97 ± 57
244	NZ 6512	Charcoal	98.7 ± 0.6	<250	105 ± 49
219	NZ 6551	Charcoal	97.9 ± 0.4	<250	170 ± 33
253	NZ 6280	*Chione* sp.	97.7 ± 0.7	<250	187 ± 57
252	NZ 6259	*Paphies subtriangulata*	97.5 ± 0.7	<250	203 ± 58
246	NZ 6257	*Chione* sp.	97.5 ± 0.7	<250	203 ± 58
566	NZ 6218	*Paphies subtriangulata*	97.3 ± 0.7	<250	220 ± 58
243	NZ 6584	Charcoal	97.2 ± 0.6	<250	228 ± 50
206	NZ 6242	*Chione* sp.	97.1 ± 0.6	<250	236 ± 50
567	NZ 6217	*Chione* sp.	97.0 ± 0.7	<250	245 ± 58
245	NZ 6256	*Paphies subtriangulata*	96.3 ± 0.7	306 ± 58	303 ± 58
227	NZ 6243	*Paphies subtriangulata*	95.1 ± 0.7	402 ± 58	404 ± 59
243	NZ 6550	Charcoal	94.5 ± 0.4	456 ± 30	454 ± 34

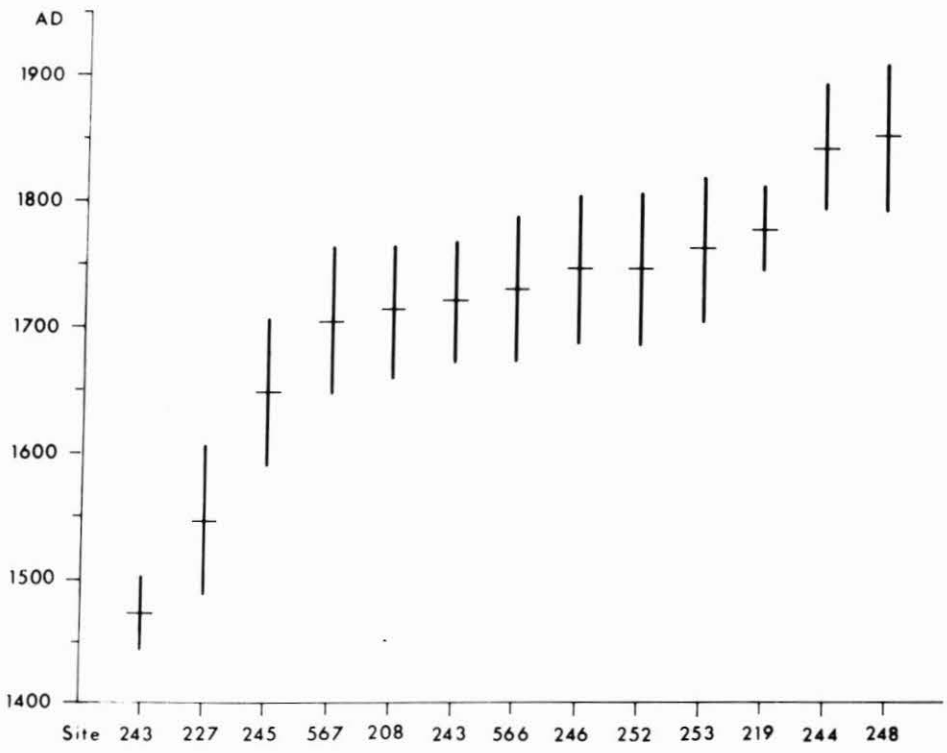


Figure 47. C^{14} dates and tentative timescale

Figure 48 is a SYMAP plot which fits a first-order trend surface of the radiocarbon ages to the study area produced in collaboration with S. Black of The University of Auckland. The location of pā is shown by a number corresponding to their class according to the Groube typology. (Site numbers can be obtained from Figure 12). Lakes and estuaries are left blank. The earlier of the two dates from N33/243 was used and the shading indicates one slope whose highest values for age are in the north.

Figure 49 plots the residuals of the trend surface and, as such, is a good deal more informative. Inspection of the figure supports a number of suggestions.

1. Early settlement is visible on both Tauhara and Waikere creeks.
2. Another quite early location appears in the southwest beside Lake Kanono.
3. Unusually young pā are suggested for both the northeast and southeast harbour coasts. While this cannot be established statistically from the dating evidence, independent reasons will be given that this was so.
4. With these exceptions, most of the surface is of much the same late age.

Figure 50 is a contour map which plots an optimal interpolation of the radiocarbon dates across the study area. In this case, the younger of the ages for N33/243 is given, so only one very early region is evident on Tauhara Creek. The results are otherwise similar to the analysis above, namely that (1) a second oldish patch occurs inland at Lake Kanono, (2) very young pā occur on the harbour both north and south of Tauhara, and (3) the rest of the area is similar and fairly young.

Approximately one kilometre north of Waikere Creek on the southeastern point of Okaro Creek (Fig. 12), a now-eroded pā called Pare-o-Tonga was located in a similar place to those on Tauhara and Waikere creeks to the south. In tradition, this pā is known to be of comparably early age to Tauhara Pā - N33/227 - (Smith 1897:65) and confirms the notion that there was a focus of early fortified settlement on the estuaries where all of the resources of subsistence and communication were most concentrated. The earliest radiocarbon date for an undefended site was similarly on Waikere Creek, however surface finds of a few Archaic artifacts just inland from Lake Humuhumu indicate some transitory settlement there too, which will be considered below.

IMPLICATIONS OF THE DATING

In spite of the extremes it would seem that most of the pā of Pouto could be much the same age. It follows that there is no evidence of any clear chronological trend in pā morphology. For instance ring ditch forms generally would seem to be as early as terrace or transverse ditch forms. With the exception that the few oldest pā may have been located on estuaries and the possibility that the two youngest pā may have been on the harbour coast, there is no sequential trend in pā size, complexity, situation, elevation or location coastal or inland. While one could point to the early Tauhara (N33/227) being a terrace pā at a low elevation at the mouth of an estuary, the site which produced the next earliest date (N33/245) is a large, low lying, multiple ring ditch pā on an inland lake. In Pouto, although not necessarily elsewhere, the data have not

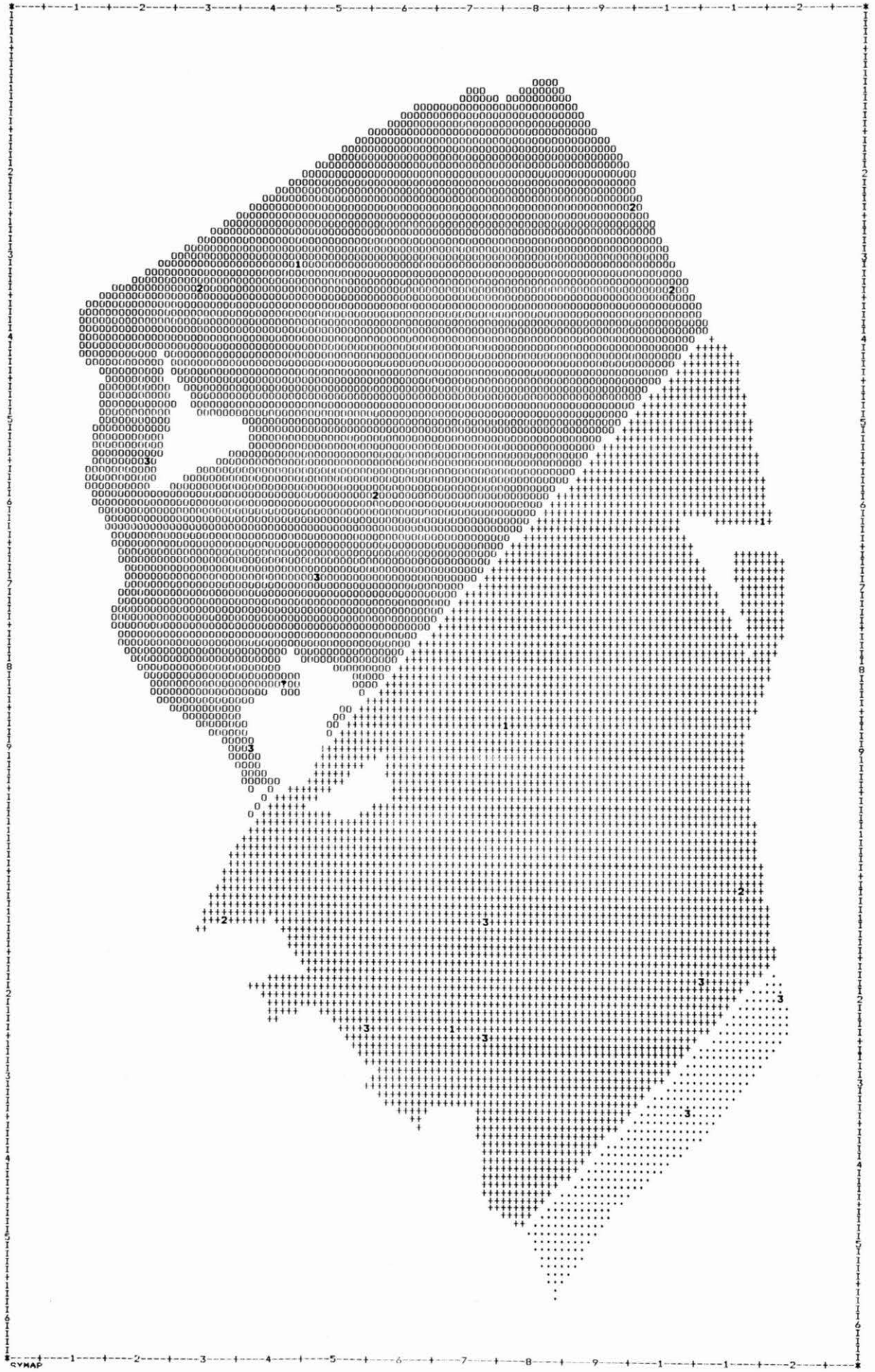


Figure 48. First-order trend surface of C^{14} dates

Figure 49. Residuals of first-order trend surface of C^{14} dates

Figure 50. Contour map of C^{14} dates

supported any systematic evolutionary pattern. Nor is there evidence of occupations by different tribal groups characterised by distinctive styles of pā.

Just as the rank order of Pouto sites was far from what might have been predicted, their ages were compressed into a narrower time range too. There is an implication here for what Groube (1970:134) described as the "quantitative dilemma of the New Zealand fortification problem". As Davidson (1984) notes there is a general belief that there were too many forts in New Zealand for more than a smallish proportion to be occupied at once. While there were undoubtedly many good social and other reasons why pā were abandoned, the results here suggest we might revise the opinion above. In the Pouto study area pā are dense; there is approximately one per square kilometre. Many of them are small or medium-sized, but not all. The radiocarbon dates offer the clear possibility that a majority of them were occupied at once and this is a question that will be taken up in a spatial study below.

An orthodox model would have predicted some kind of increase in the number of pā through time, that new ones were built, others abandoned and probably only a minority were in use at once. The suggestion here is that there may have been just a few to begin with but at some point they filled in thickly and quickly although not in a tidily predictable morphological order. This may have happened as the settlement system passed through some kind of threshold and this suggestion will be considered below. If pā are density dependent, the existence of many is surely a reason for building more.

THE VEXED QUESTION OF TAXONOMY

Although this report is concerned mainly with the spatial inter-relationships of pā some typological issues arise. Our current view of types is substantially what Groube (1964, 1970) put forward 20 years ago. His three morphological classes still stand and not very much has been added to ideas about function (Irwin 1982). That the model has worn well confirms it is a good one. However, failure to improve it may be partly due also to the intractability of the data.

Until now, pā have been classified at a nominal scale the criteria being topographical, functional and morphological, these tending to be applied singly rather than in combination. Groube used morphology (defensive device) but pointed out other possible criteria. It has been easy, in speculating on the origin of pā, for a nominal scale to slip into an ordinal one; the order in this case being time. However, it is recognised that the "enormous range of forms...defeats any easy approach to systematic classification" (Groube 1970:142). It may now be time for measurement and classification to proceed to higher scales. We probably need more types based on a greater number of variables of different kinds.

In this study, the forms of fort have been found to overlap. Firstly, there is no new information on evolutionary chronology except to show that different forms were probably contemporary. This leaves open the possibility that they were invented elsewhere in some order, but they did not drop out on cue. It has been suggested by Fox (1976:18,21) that different forms of defence reflect different modes of attack. If that was the case then they too were contemporary.

In other respects the conventional forms do not stand apart either. Figure 51 is a triplot of 15 Pouto pā showing the proportion of their areas taken up by internal scarp, flat areas or defences. Of the three, area of inner scarp is the least important variable. Along the flat

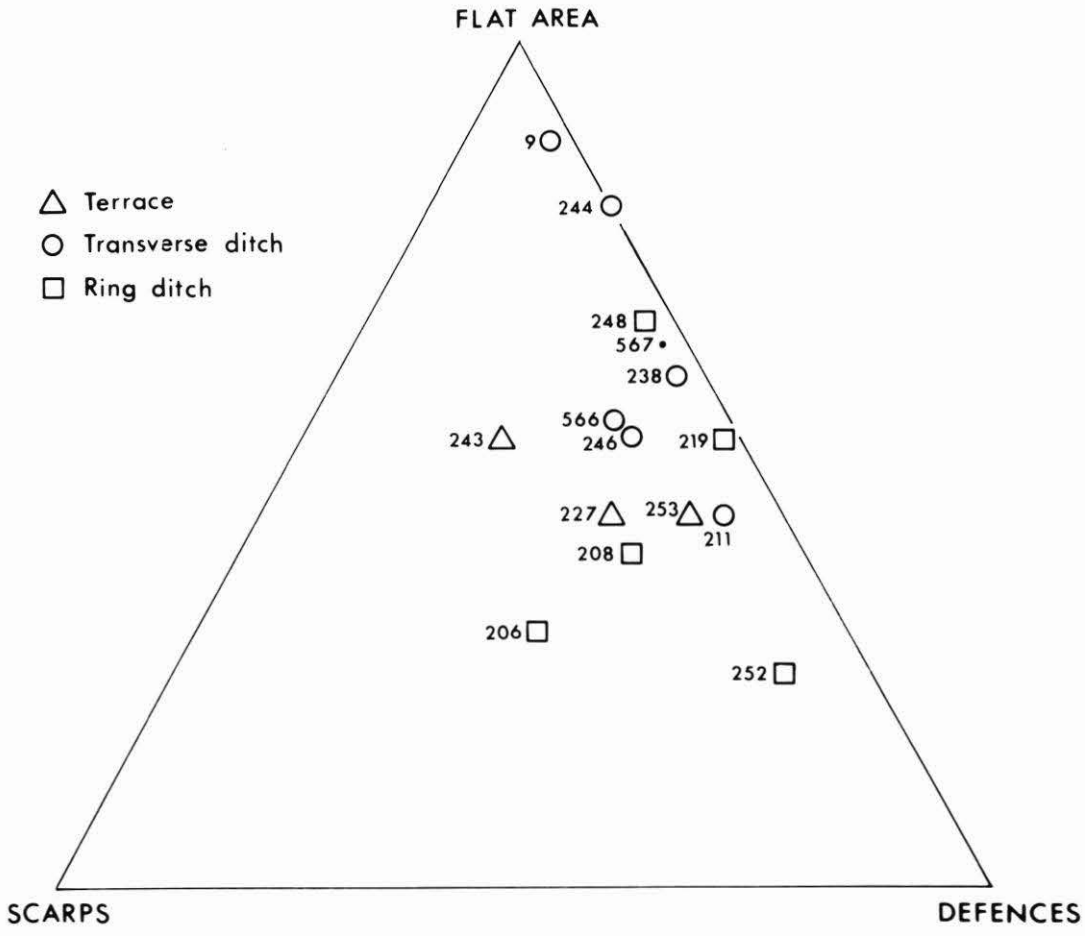


Figure 51. Triplot of pā areas

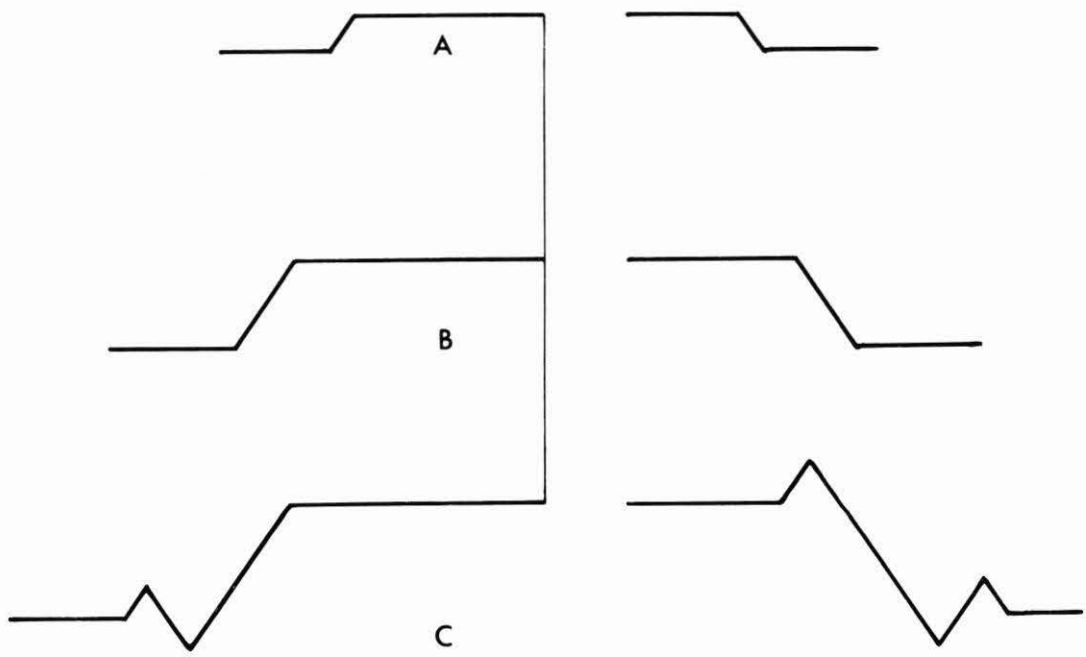


Figure 52. Schematic site sections

area/defences axis, transverse ditch sites fall closer to the former and ring ditch towards the latter. The three terrace examples fall approximately where the other two classes overlap. This kind of approach is an alternative to using defensive device as the criterion and has implications for internal site organisation and function (Law and Green 1972).

There is considerable typological ambiguity for the site recorder on the ground. For example, in Pouto some transverse ditch and ring ditch forms can be very alike. They occur in similar situations. They are both generally rectangular in form and have raised interior platforms. In the transverse ditch case, there are lateral terraces which serve to enhance the steepness of the scarp. This is precisely the effect of the lateral ditch in the ring ditch case also, but this also has the effect of making the scarp longer (deeper) and provides the additional obstacle of an exterior bank. Two of the Pouto sites - Wharepapa N33/238 (Fig.20) and N33/566 (Fig. 18) actually had a lateral terrace on one side and a lateral ditch and bank on the other. Two types in the one site! Moreover, one could not tell this from the surface. Numerous sites on both Kaipara heads are of this form where a ditch at the foot of a scarp will change to a terrace from time to time around the perimeter and not necessarily where a site's ends meet its sides.

The difference between other forms of site that can be placed in mutually-exclusive categories is often very subtle too. In Figure 52 the undefended terrace site A is distinguished only by the height of the scarp from the terrace pā B and by the site recorder's interpretation of it. Similarly, B, which could be either a terrace pā or a section showing the lateral defences of a transverse ditch one, is essentially similar to C, which has a ditch and bank at the foot of the scarp in the place of the terrace. Needless to say, these examples are abstracted from a great range of variation. Clearly part of the problem of classification is semantic. Some forms of so-called terrace pā, like N33/243 (Fig. 14), could equally be called "ring scarp" or "ring scarp and terrace". A ring ditch may sometimes be simultaneously a "ring inner bank, ring scarp, ring ditch and ring outer bank". Our terminology consists of an inconsistent shorthand which is misleading.

Pā of the same form can occur in different situations and it is generally held that the ring ditch is the most flexible. Conversely pā of different forms can occur in identical situations. Occasionally, the difference in form may be due simply to difference in size. One example of this from Pouto is the case of sites N33/238 (Fig. 20) and N33/253 (Fig. 17). Both sites were on hilltops. The pā themselves were on low ridges along one side of the hilltop, with a slightly lower but larger undefended area beside it. N33/253, a scarp and terrace pā ran the whole length of the ridge unlike N33/238 which did not and evidently required transverse ditches across it. Groube's (1970:143) remark that the only style of fortification "not wholly dependent on the topographic environment" was the Class 3 was too sweeping.

The study of pā form and function is in great need of revision. There are better tools now with which to do it.

Plate 13. Looking east at N33/211

Plate 14. Looking west at N33/211 (with N33/208 on the hill behind)

Plate 15. The transverse ditch and bank at N33/244

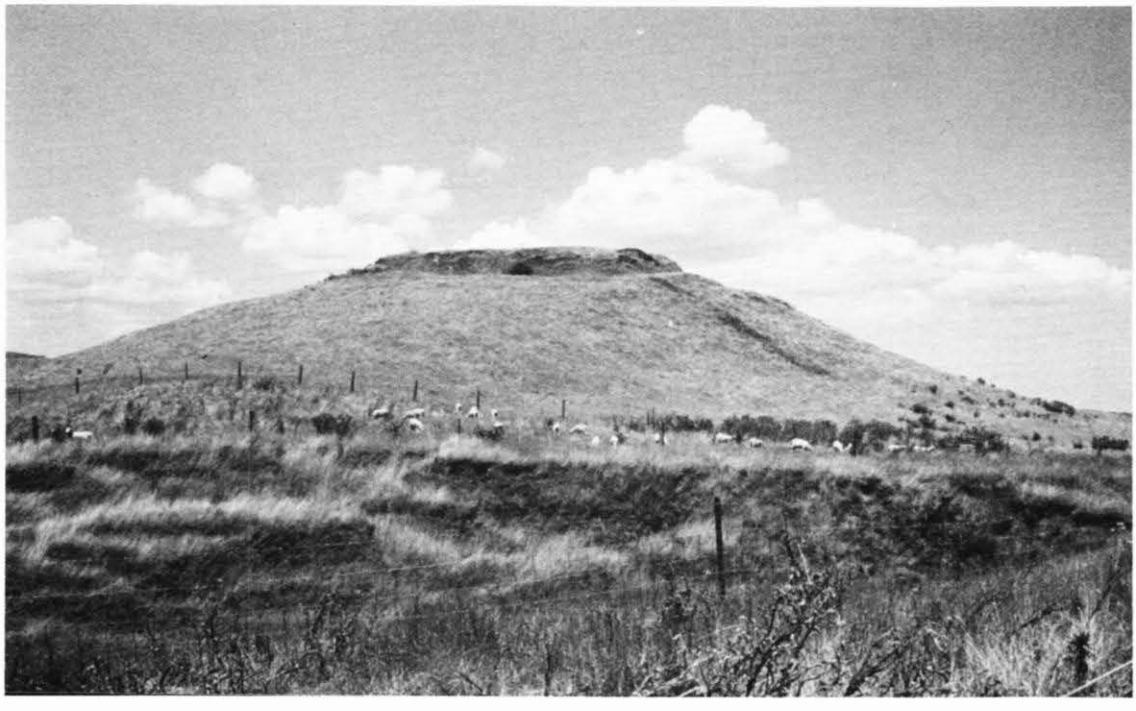


Plate 16. The eastern end of the hilltop ring ditch pā (N33/208)

5 THE SETTLEMENT PATTERN OF POUTO

The distribution of recorded archaeological sites was shown in Figures 12 and 13. In this chapter they will be considered in two groups the first of which includes the sites in the farmland on the eastern side of Pouto south of Okaro Creek. This region is further subdivided into the area south of a line between Waikere Creek and Lake Humuhumu, which constitutes the study area, and the part of Pouto north of the line where no archaeological work has been done since the surveys of 1971. The second major group of sites is in the shifting sands in the centre of the peninsula (Fig. 13). Because this landform is problematical, its group will be considered separately below. The apparent distinction between groups is that the first was on a defended horticultural landscape between the lakes and the harbour, while the second appears to consist of various kinds of midden in sand-hills.

TABLE 2

Frequency of sites

	Study Area	Okaro Creek	Total
Pā	20	8	28
Pits			
20-50	3	2	5
10-19	11	2	13
1-9	19	10	29
Pits and terraces			
20-50		1	1
10-19	3		3
1-9	5	2	7
Pits and midden			
1-9	1	1	2
Terraces	1	1	2
Middens	5	3	8
Drains	4		4
Undefended total	52	22	74

In the eastern group, undefended sites are under less archaeological control than defended ones. They are known almost exclusively from surface evidence, but can be expected to cover a wider time range than most of the pa. The fifteenth century date for the undefended phase of site N33/243 - then a pit and terrace site - suggests they were present from at least that time. The details of the recorded sites are shown in Table 2. Pit sites and pit and terrace sites have been separated into size classes according to the number of surface features. Among the undefended sites, it can be seen that terraces almost never occur without pits. In the study area one pit site is recorded with midden. There are four sites with agricultural drains. This was a region known for its gardens. It carries a horticultural land-use classification today. Evidently this easy rolling country of light sandy loams did not require the gardening structures conspicuous in other landscapes. In the study

area, there are only five middens. They have low visibility under grass and are certain to be underrepresented. Erosion on the harbour coast may be an additional reason for this absence.

SITES AND SOILS

The distribution of sites and soils is shown in Figure 13. Inspection of Table 3 shows that the majority of sites in the study area lay on Redhill soil, although as a group, middens appear to be least influenced by soil type. If the location of sites was indifferent to soil type one might expect sites to occur in much the same proportions as the soils. This proposition is examined in Figure 53 for the study area, swamp and lake excluded.

TABLE 3

Sites and soils

	Study area					Okaro Creek				
	Organic	Tangitiki	Whananaki	Redhill	Total	Organic	Tangitiki	Whananaki	Redhill	Total
Pā										
Terrace		1		3	4				1	1
Transverse ditch		2		4	6		1		1	2
Ring ditch				9	9					
Unclassified				1	1		2		3	5
Total		3		17	20		3		5	8
Pits										
20-50				3	3				2	2
10-19		1		10	11				2	2
1-9		2		17	19				10	10
Pits and terraces										
20-50							1			1
10-19				3	3					
1-9				5	5		1		1	2
Pits and middens										
1-9				1	1				1	1
Terraces		1			1				1	1
Middens		2	1	2	5		2		1	3
Drains				4	4					
Undefended total		6	1	45	52		4		18	22

Values for X^2 show no significant differences between soils and pā ($X^2=.46$) or between soils and all undefended sites ($X^2=2.95$). In the case of pits there is a significant difference but only at the .05 level ($X^2=5.4$).

	Soils		Pā		Pits		Total undefended	
	km^2	%	n	%	n	%	n	%
Tangitiki	3.27	18.1	3	15	3	9.1	6	11.5
Whananaki	.27	1.5					1	1.9
Redhill	14.53	80.4	17	85	30	90.9	45	86.5
	18.07	100.0	20	100.0	33	100.0	52	99.9

Figure 53 Sites and soils

This conclusion is somewhat artificial in that the shifting dunes are not included as a soil type. Moreover, the environment of both Pouto and the South Kaipara Head is rather different from parts of the peninsula lying respectively further north and south of them. As can be seen in Figure 2 above, in the area between Otakanini and Shelly Beach, to the east of the dunes on the Tasman coast are lineal bands of Pinaki soil, Redhill and then the leached Tangitiki, Kaipara and Houhora soils by the harbour. Pouto differs in that the Tangitiki runs out as the Redhill broadens to reach the harbour, and there is a line of fresh-water lakes on its inner margin. The Pinaki is absent, quite possibly having been engulfed by the shifting sands. North of Pouto, conditions are different again. In a sample of the area shown in Figure 2, a value for X^2 of 15.43 with 3 d.f., showed an association of pā with the Redhill as opposed to the other soils present (beyond the .01 level).

SITES AND ELEVATION

TABLE 4

Sites and elevation

	Study area					Okaro Creek					
	0-100	100-200	200-300	300-400	total	0-100	100-200	200-300	300-400	400-500	total
Pā Terrace		3		1	4					1	1
Transverse ditch		2	2	1	5		1			1	2
Ring ditch	1	2	5	1	9						
Unclassified	1	1			2			2	1	2	5
Total	2	8	7	3	20		1	2	1	4	8
Pits											
20-50		3			3		1			1	2
10-19	1	5	5		11			1	1		2
1-9	1	6	10	2	19		1		5	4	10
Pits and terraces											
20-50									1		1
10-19		2	1		3						
1-9		3	2		5	1	1				2
Pits and midden											
1-9	1				1			1			1
Terraces		1			1			1			1
Middens	1	4			5	2				1	3
Drains		1	3		4						
Undefended total	4	25	21	2	52	3	3	3	7	6	22

The distribution of sites by elevation is shown in Figure 12 and Table 4. Figure 54 compares the areas and proportions of land excluding swamp in each zone of elevation with the comparable distribution of sites in the study area.

Elevation (in feet)	Land		Pā		Pits		Total undefended	
	km²	%	n	%	n	%	n	%
0-100	3.91	23.1	2	10	2	6.1	4	7.7
100-200	5.79	34.3	8	40	14	42.4	25	48.1
200-300	6.84	40.5	7	35	15	45.5	21	40.4
300-400	.35	2.1	3	15	2	6.1	2	3.8
	16.89	100.0	20	100.0	33	100.1	52	100.0

Figure 54 Sites and elevation

Inspection of Figure 54 suggests that pā occur in roughly the same proportions as does land area within each of the elevation zones. The greatest departure from this is that some 13% fewer pā than expected occur in the 0-100 ft zone and the same percentage extra in the 300-400 ft zone. This is sufficient for the two to be different at the .001 level; X^2=17.65 with 3 d.f. However, excluding the three highest pā there is no significant difference. Thus, for the majority of forts in Pouto, there was no marked tendency for them to select for higher ground. It would seem that their location was effected more by relief than elevation. The former provided defensibility, the latter was relatively unimportant in most cases.

The impression that pits were similarly distributed to the proportions of land in each elevation zone is confirmed by a low value for X^2. Further, the distributions of pits and pā were also found not to be significantly different. On the other hand, there is a difference between land area and all undefended sites as a group; X^2= 17.18 with 3 d.f. The question arises of the possible interaction of the variables of soil type and elevation. The elevation exercise was repeated for only those sites on the Redhill soil and substantially the same result was obtained.

PATTERNS OF CLUSTERING AND DISPERSAL

The spatial arrangement of the Pouto sites was measured by a nearest-neighbour index. Values for the one used range from a theoretical low of zero, when all settlements are concentrated at a single point, to a maximal value of 2.15 when settlements are most regularly dispersed. Values for randomly generated points should hover around 1.0 (Haggett 1972:280).

The value obtained for pā was 1.77 which indicates that they tend to be regularly distributed. However, there is still an element of randomness to their dispersal. By contrast the value for all undefended sites was 0.64 which indicates that their distribution is on the clustered side of random. When both defended and undefended sites were combined their difference was hidden by a random score of 0.86. Further, when this analysis was repeated for only those sites in the Redhill zone, the pattern of results was the same but the actual values were a little weaker (closer to random). The coherence of the result for pā can be taken as confirmation that a large number of them were contemporary.

RELATIONSHIP OF SITES TO LAKE AND HARBOUR

Some of this apparent randomness in spacing can be explained in terms of how sites related to water. Figure 55 shows the distribution of sites expressed as a percentage of their distance from both fresh water (lake or pond) and the harbour coast. This shows the attraction both places have for sites. Pā are found in both, but somewhat more often near the lakes. Undefended sites are mostly near fresh water although a few are nearer the harbour coast. However, what is most striking is that as sites are drawn to one area or the other there is a diminished number in the middle. This factor accounts for some of the visible gaps in the site distribution (Fig. 13). The soils in the hinterland between the coast and lakes are of the same quality as any other. There is no suggestion that they were less often used, but evidently they were less often lived on. There is the further possibility that some gaps may also coincide with sociopolitical boundaries. The mean values for distance to water are shown in Table 5.

TABLE 5

Distance to water in km

		Fresh water			Harbour		
		n	range	$\bar{x}$	n	range	$\bar{x}$
Pā		20	.03-1.61	.49	20	.06-3.05	1.16
Pits	20-50	3	.06-1.27	.51	3	.19-2.92	1.29
	10-19	11	.03-1.14	.40	11	.11-2.47	1.36
	1-9	19	.03-.72	.28	19	.17-2.67	1.58
Pits and terraces	10-19	3	.06-.11	.08	3	1.75-2.94	2.17
	1-9	5	.06-.5	.20	5	.69-1.83	1.30
Pits and midden		1	.08		1	.97	
Terraces		1	.50		1	.17	
Middens		5	.03-.17	.11	5	.03-2.0	1.23
Drains		4	.03-1.25	.75	4	.28-2.61	1.56

The figures suggest the following pattern.

1. Proximity to fresh water was more often important than proximity to the harbour.

2 The smaller pit sites are rather closer to fresh water than both the larger ones and pā. However, Figure 56 suggests that the distribution of all pits is similar to that of pā.

3. Among the pā mean distance to fresh water was half kilometre, although distances were variable (s.d. = .45 km). Half of the sites were less than .25 km. Only six sites of 20 were over .5 km and just three of those over 1 km. Pouto Pā, the most distant site, was unusual in other ways that will be discussed below.

DISTANCE TO THE NEAREST PĀ

Mean distances to the nearest pā are shown in Table 6.

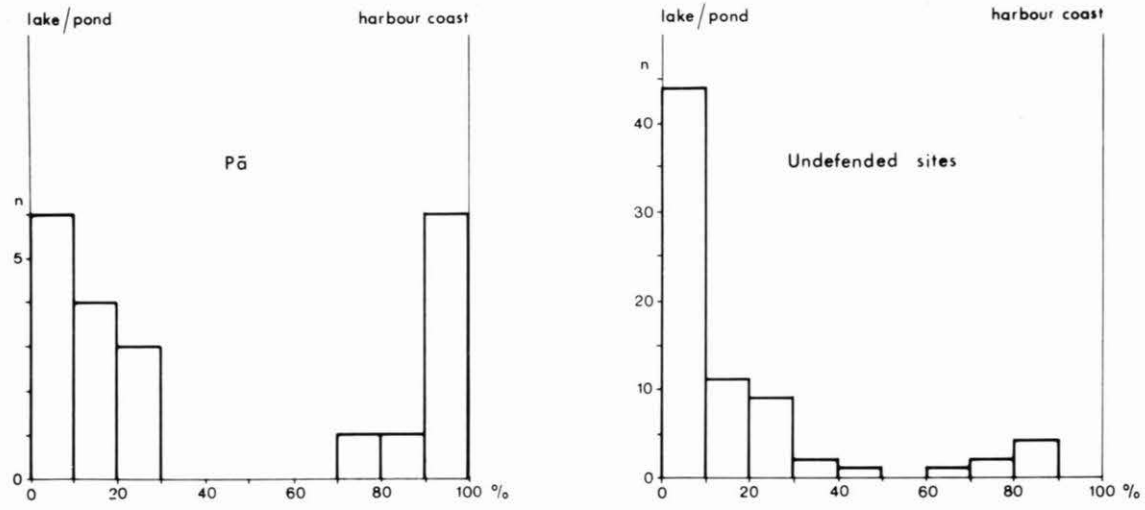


Figure 55. Distribution of sites as a percentage of their distance from fresh water and the harbour coast

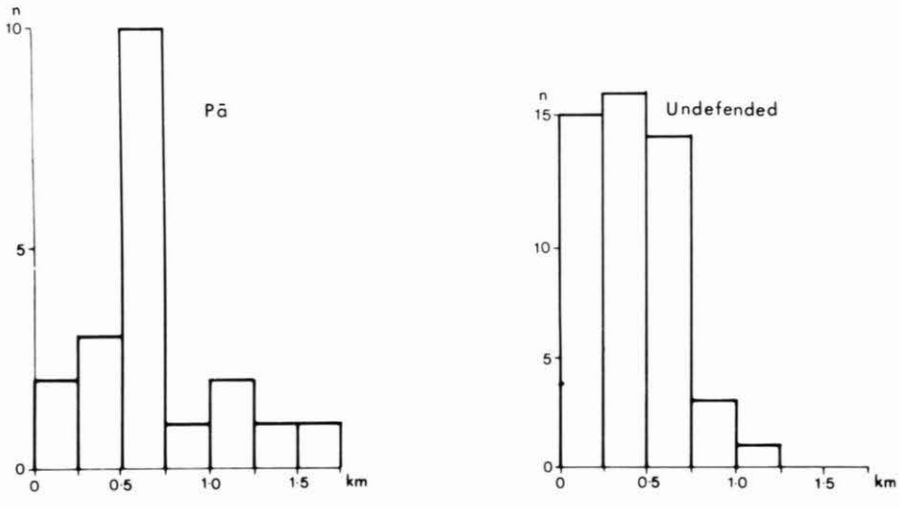


Figure 56. Distance to fresh water in km

TABLE 6

Distance to the nearest pā in km

		n	range	$\bar{x}$
Pā		20	.44-1.36	.69
Pits	20-50	3	.22-.50	.35
	10-19	11	.16-.75	.53
	1-9	19	.14-1.00	.44
Pits and terraces	10-19	3	.19-.69	.40
	1-9	5	.19-.69	.42
Pits and midden		1	.39	
Terraces		1	.44	
Middens		5	.14-.47	.31
Drains		4	.36-.83	.62

The figures suggest a number of observations.

1. Most sites are close to the nearest pā. The mean distances of various undefended sites from them is between quarter and half a kilometre except for drains at .62 km.

2. There is an exception to the pattern, as suggested, in the case of the pā near the harbour. This implies a different balance of functions for these. Plausibly, all could be more concerned with harbour resources. The siting of some on the Tangitiki soil implies less concern for gardening. However, as will be suggested below, the siting of the youngest of the harbour pā was due to an increasing need to provide regional defence for Pouto.

3. On average, the most distant sites from pā are pā. This conclusion is not unexpected because the nearest-neighbour index found them to be generally dispersed, while undefended sites were generally clustered, even though these tendencies were somewhat distorted by the influence of other variables as described. Figure 57 compares defended and undefended sites in terms of their distances to the former. Applying the Median Test and assessing the probability by X^2 (Siegel 1956:111-15) the median distances were found to be different; X^2 =8.08 with 1 d.f. (exceeds .005 level).

4. The largest undefended sites are found at no great distance from pā and are therefore unlike pā in that respect. In other words there is no suggestion that the two kinds of site were functionally equivalent. Indeed the distribution of these large undefended sites (Fig. 13) suggests more dense populations in some places, for example near Rangitane Pā (N32/9) and Pouto Pā (N33/248). It will be suggested that these were defensive aggregations during political crises in very late times.

DISTANCE TO THE NEAREST SITE

Mean distances to the nearest site are shown in Table 7.

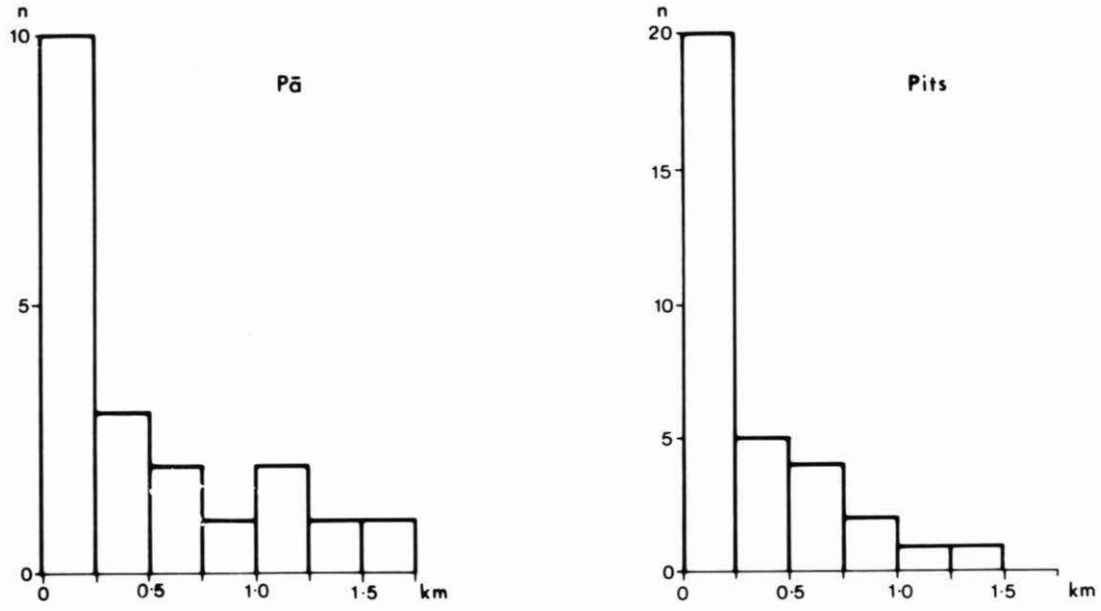


Figure 57. Distance to the nearest pā in km

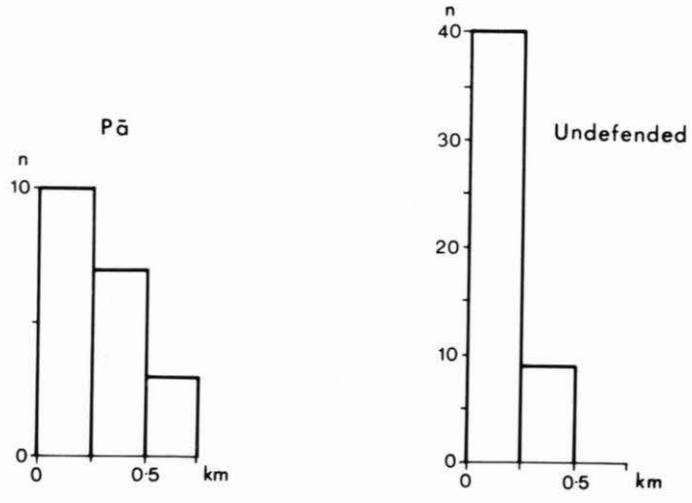


Figure 58. Distance to the nearest site in km

TABLE 7

Distance to the nearest site in km

		n	range	$\bar{x}$
Pā		20	.14-.64	.32
Pits	20-50	3	.17-.22	.20
	10-19	11	.08-.44	.21
	1-9	19	.08-.47	.19
Pits and terraces	10-19	3	.17-.19	.18
	1-9	5	.14-.33	.22
Pits and middens		1	.19	
Terraces		1	.28	
Middens		5	.11-.47	.28
Drains		4	.03-.17	.08

The figures support the following suggestions.

1. All sites are very close to their nearest neighbour. No undefended site is more than half a kilometre from the nearest site while mean intersite distance is approximately 200 m.

2. Most kinds of undefended site are alike in this respect except agricultural drains which are especially close to the next feature, which is always a pit site.

3. On average, pā are the most distant sites from other sites, but even then, only three are over half a kilometre away. However, a comparison of the median distance of pā and all undefended sites, from their closest neighbour showed no significant difference; X^2=.47, with 1 d.f. The respective distributions are shown in Figure 58.

4. Only rarely is the nearest site to any pā site another pā which, again, conforms to expectations.

DETAILS OF PIT DISTRIBUTION

Figure 59 is a SYMAP contour map of the number of pits recorded on pā in the study area. Details of the contour ranges and site frequencies are shown in Table 8. On the map the location of pā is shown by a number corresponding to their class in the Groube typology. The location of undefended pit sites is shown by the symbol "P", but no data values have been given to these points. A number of observations can be made.

1. There are few pits to be found on the coastal pā on the leached Tangitiki soil in the northeast of the study area. This supports the suggestion above that they were rather different in function.

2. There is a zone of some pit density further south on the harbour coast which is to be expected as the relevant pā are located on Redhill soil. However, what is not clear from the figure is that the pits responsible for this cluster are all on sites N33/246 and N33/247. There are none visible on N33/242 and N33/248. The last of these, Pouto Pā, has been found anomalous in other ways. It produced the youngest C^{14} date and will be associated with the regional defence of Pouto in late prehistoric and early contact times.

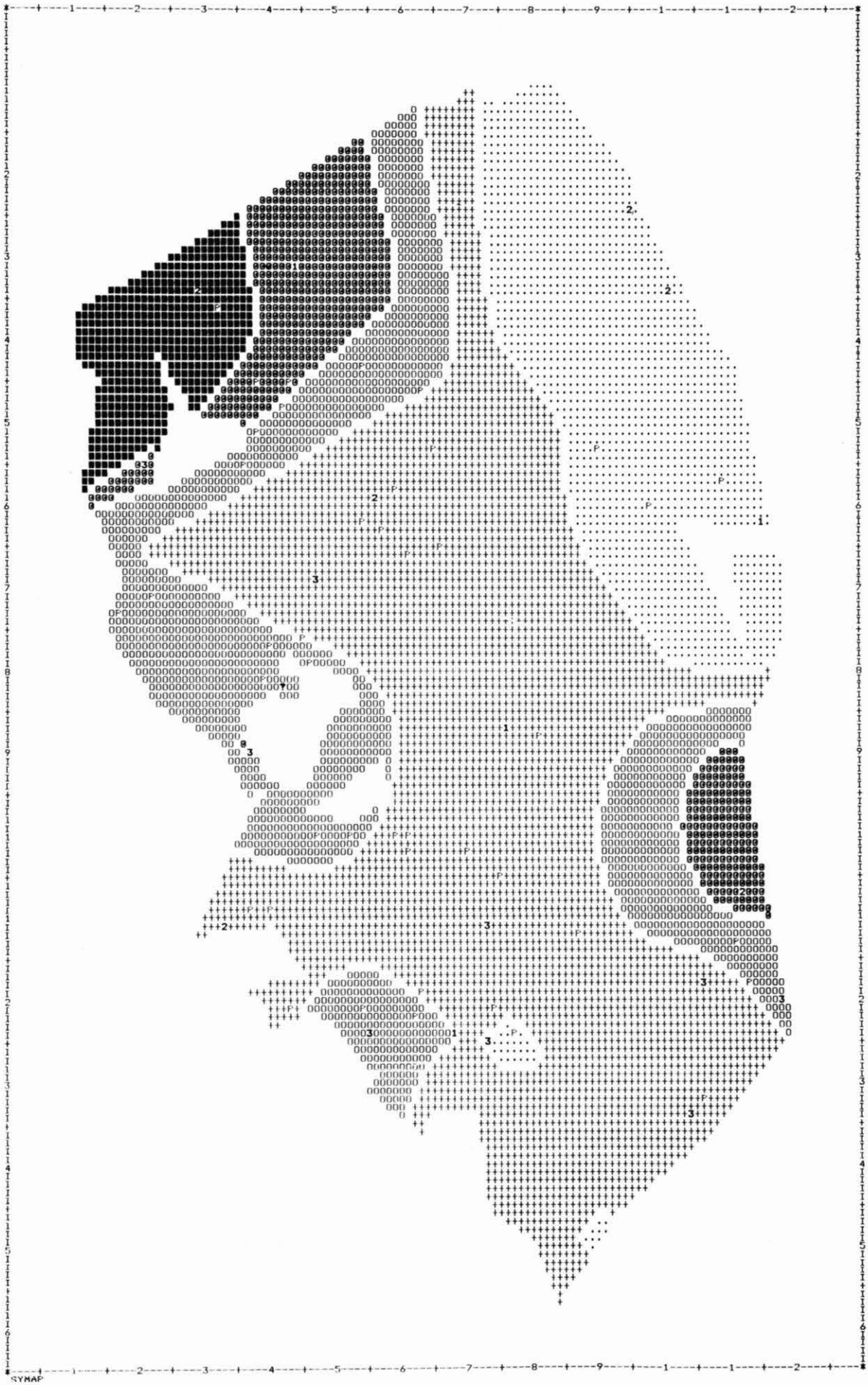


Figure 59. SYMAP contour map of the distribution of pits on pā

3. Higher values are again found where sites are close to the lakes at the inner margin of Redhill loam, and especially so in the north above Waikere Creek.

4. Elsewhere in the agricultural hinterland values are rather low, which is partly to do with the location of pā as well as the number of surface pits on them.

Figure 60 is a contour map of the number of surface pits recorded at both defended and undefended sites which number 56 in all. The same conventions are used. Table 9 shows that the value ranges of each contouring level are the same, but that the frequency of pit sites decreases from 34 in the lowest level to two in the highest. Inspection of the figure shows four zones of greater density including two peaks, one inland one coastal, in the south of the study area. It is clear from the wider site distribution shown in Figure 13, that had the Okaro Creek area been included in this map there would have been another peak in the vicinity of Rangitane Pā (N32/9).

Figure 61 is a re-run of the same information as in Figure 60. Table 10 shows that the value ranges of the contour levels have been altered to spread the frequency of pit sites more evenly between them. The map shows a finer-grained pattern of pit distribution. In general it confirms conclusions reached already in this chapter while adding to the detailed knowledge of the distribution of surface pits.

SITES IN THE SHIFTING SAND HILLS

Some 48 sites have been found in the shifting dunes during surveys carried out by Coster and Johnston (1976,1980) for the N.Z. Forest Service. Prior to human interference this area would have been a fragile environment of sand under forest and scrub. The prevailing theory is that fires in pre-European times were responsible for instability leading to the dune formation. Currently there is uncertainty as to the time of the fires, the precise nature of the former landscape and the function of the archaeological sites found there.

The sites recorded in the dunes include three common types

midden
midden/working floor
midden/findspot.

Rare types include

midden/working floor/pit
midden/burial
midden/oven
oven
oven/findspot
oven/working floor
cooking area
occupation area
burial
findspot.

Inspection of the site record forms suggests that the 48 sites in the dunes and the six sites with midden in the farmland can be collapsed into fewer categories (Fig. 62).

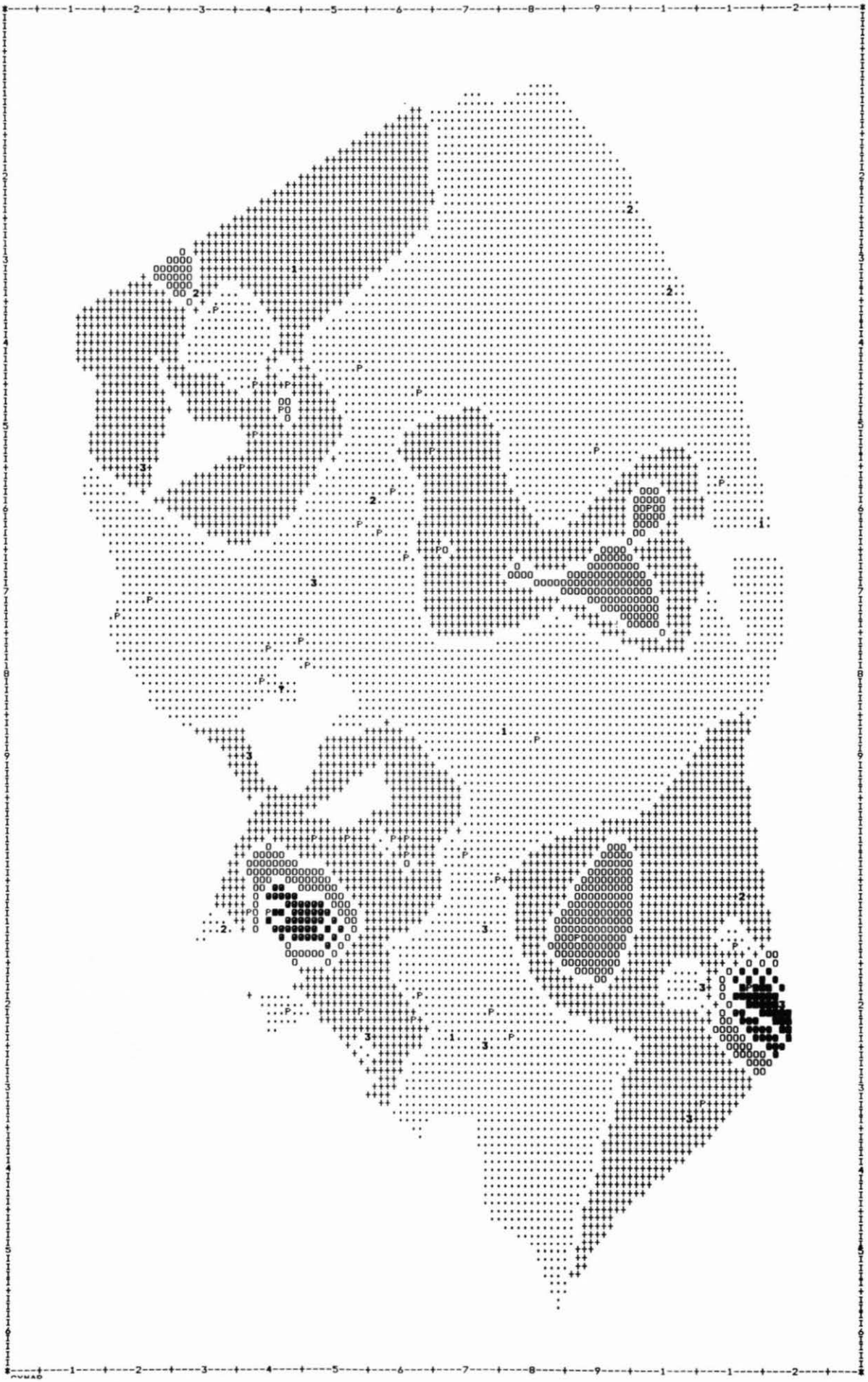


Figure 60. SYMAP contour map of pit distribution

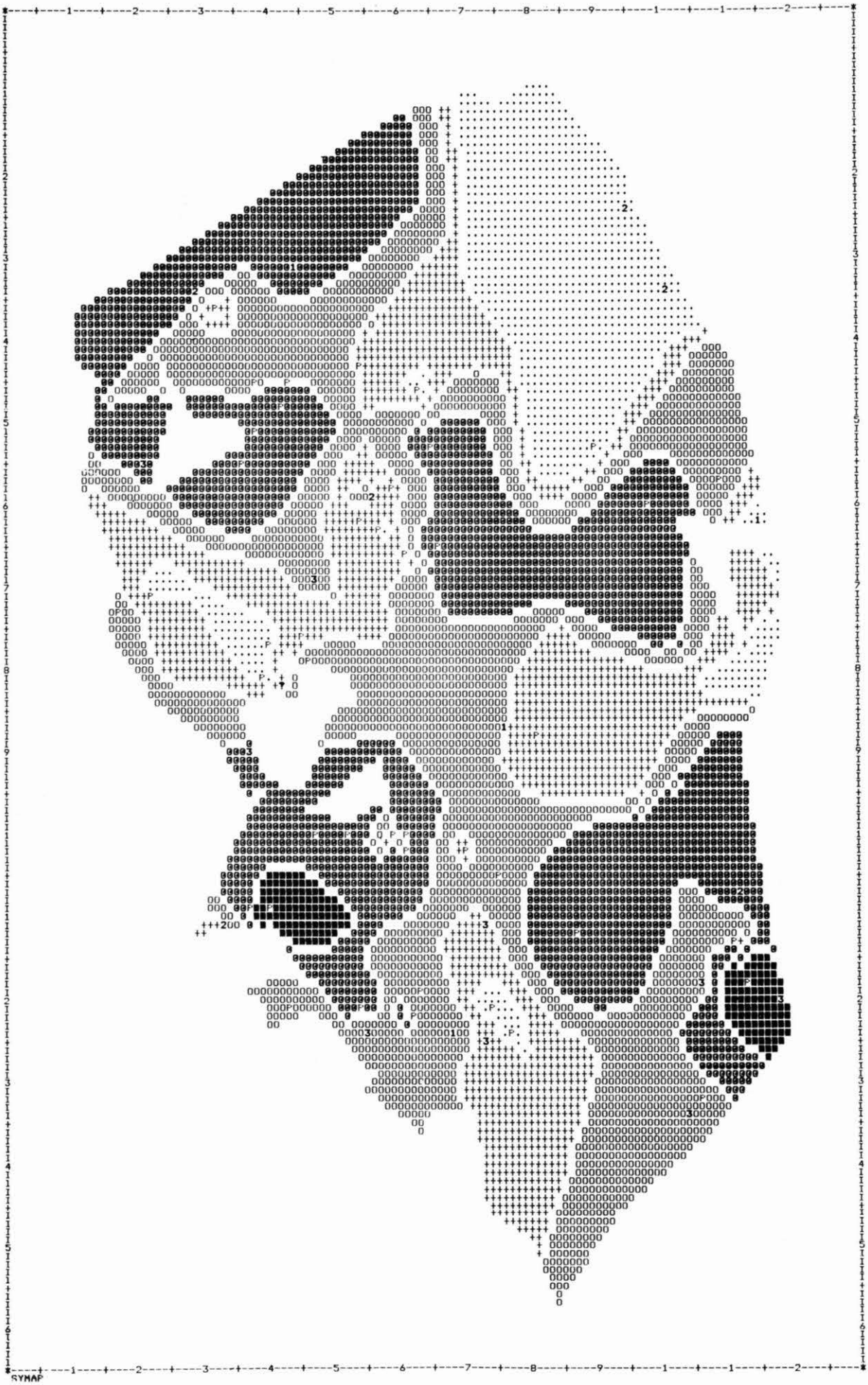


Figure 61. SYMAP contour map of pit distribution

MAP AREA N33

CONTOURING ON NUMBER OF PITS

DATA VALUE EXTREMES ARE 1.00 16.00

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
('MAXIMUM' INCLUDED IN HIGHEST LEVEL ONLY)

	1	2	3	4	5
MINIMUM	1.00	4.00	7.00	10.00	13.00
MAXIMUM	4.00	7.00	10.00	13.00	16.00

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

1	2	3	4	5
20.00	20.00	20.00	20.00	20.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVEL	1	2	3	4	5
SYMBOLS	. 1 + 2 0 3 @ 4 ■ 5				
FREQ.	2	7	2	3	1

Table 8. Details of contour map shown in Figure 59

MAP AREA N33

CONTOURING ON NUMBER OF PITS

DATA VALUE EXTREMES ARE 1.00 36.00

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
('MAXIMUM' INCLUDED IN HIGHEST LEVEL ONLY)

	1	2	3	4	5
MINIMUM	1.00	8.00	15.00	22.00	29.00
MAXIMUM	8.00	15.00	22.00	29.00	36.00

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

1	2	3	4	5
20.00	20.00	20.00	20.00	20.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVEL	1	2	3	4	5
SYMBOLS	. 1 + 2 0 3 @ 4 ■ 5				
FREQ.	34	16	6	0	2

Table 9. Details of contour map shown in Figure 60.

MAP AREA N33

CONTOURING ON NUMBER OF PITS

DATA VALUE EXTREMES ARE 1.00 36.00

ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
('MAXIMUM' INCLUDED IN HIGHEST LEVEL ONLY)

	1	2	3	4	5
MINIMUM	1.00	3.19	5.38	9.75	18.50
MAXIMUM	3.19	5.38	9.75	18.50	36.00

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL

1	2	3	4	5
6.25	6.25	12.50	25.00	50.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVEL	1	2	3	4	5
SYMBOLS	. 1 + 2 0 3 @ 4 ■ 5				
FREQ.	13	10	15	18	2

Table 10. Details of contour map shown in Figure 61

Site group	n	Components				
		shell	cooking stone	flakes	bone	burial
1	24	21 88%	19 79%		5 21%	1 4%
2	21	18 86%	20 95%	21 100%	6 29%	3 14%
3	3		3 100%			
4	6		6 100%	6 100%		

Figure 62 Collapsed categories of site

Group 1 comprises sites in which most have shell midden and cooking stones (but all have one or the other), approximately 20% have bone and one has a burial. Group 2 is essentially the same except that all sites have flakes; burials remain rare at 14%. Groups 3 and 4 are probably subtypes respectively of Groups 1 and 2 but all lack shell which may be attributed to the fact that they are all particularly small, sparse or scattered. Given the largely blown-out and disturbed nature of most of these sites(not all), a finer classification might be hard to support. Superficially, any of these sites could justify the label of midden. However, there was more variation than this. Moreover there is the problem of how much former agricultural land may have been engulfed by the shifting dunes as loose sand was blown inland by the prevailing wind. Any former pit and terrace site in Pinaki sand or Redhill sandy loam, once destroyed by erosion, might display the same evidence as these "middens".

The distribution of sites in the shifting sandhills is shown in Figure 13. They can be divided into three; a string of sites along the edge of the present farmland which of course was prehistoric garden land, another group in the northwest and a third in the southwest. It is clear too that the central core of the raw sand is empty of sites and, geologically, it is not very likely that there ever were many there. In the central dunes, the current presence of swamps, seams of peat, exposed pans and remnants of consolidated land surfaces all provide a chance for sites to occur should many exist. The simple explanation for the site distribution is that the central area was the first to be fired and destroyed before there had been any substantial occupation there. Subsequently, sites were established around this area until the land surfaces they were on were also overtaken by erosion.

The southwestern sites

There are 24 sites near the western boundary of the shifting dunes on the upper edge of the Pleistocene coastal escarpment, looking down on an expanse of swamp, lake, scrub, stabilised sand and dunes. Beyond are the excellent fishing waters of the Kaipara mouth(Fig. 13). Coster and Johnston's (1980) work suggests these sites were a uniform group whose major activities were fishing and shellfishing although eels and fowl would have been available too. Nearly all of the sites have shell except where its absence is attributed to erosion. Six sites displayed harbour species, but the predominant ones were tuatua and toheroa from the open coast. Snapper bone was abundant too. Oven

stones were present in varying quantities. Some 60% of the sites contained flakes of obsidian or chert. These sites are interpreted as temporary camps contemporary with those of the agricultural landscape of Pouto. Oral testimony says there were similar sites in the area earlier this century.

It is thought that the ground surface was stable at the time of prehistoric occupation and there are remnants of loosely-consolidated brown sandy soil. In the absence of a developed subsoil, this description tallies with the Pinaki sand which elsewhere on the Kaipara sand barriers occupies the same relative position to the west of the Redhill loam as do these sandhills of Pouto.

The northwestern sites

Seven sites form an isolated group also underlain by soft sand soils. With one exception, all are shell middens with both open coast and harbour species present. Fishbone is uncommon. These again are designated as small transient camps.

The eastern sites

In general these are seen as transitory living sites rather than wrecked agricultural ones (J. Coster pers. comm. 1984). Most have little material, although cooking stones are common and shell is found on all but three sites. Open coast species predominate on over 50% of them in spite of these sites lying closer to the harbour. However, nearly 90% of sites show use of both coasts. Nearly 50% contain fishbone (mostly snapper) but never in large quantities. Flakes were found at some 50% but only in quantities suggestive of day to day requirements.

It is here that sand has encroached on the lakes and has probably overtaken some former gardening land, however, Coster (1980) has noted that between 1938 and 1960 the eastward drift of sand was actually very slight. The soils evidence, such as it is, suggests many of these sites formerly lay on Pinaki sand, except for those south of Lake Kanono, which may have been on the Redhill. Pinaki sand could be gardened, but could not sustain gardening, without erosion. At N32/1 the northernmost but one of this eastern string of sites (Fig. 13) the remnants of three kumara storage pits suggest that this may indeed have happened.

A tentative reconstruction of events is that the core of the sandhills formed after early burning. Eight adzes, described as mostly of Archaic type, were found at sites just inland of Lake Humuhumu. These may indicate the timing of the early fires. The bulk of the sites around the edges of the shifting sand belong to later times probably contemporary with the sites to the east. The possibility exists that if part of this land was once gardened, if only briefly, its loss may have led to increased demographic pressure on the land to the east.

6 PĀ AND POLITY

To begin with, there were only a few pā in Pouto, and evidently these continued to be used as late as any. However, most of them were built in quick succession in late prehistoric times. Their distribution was dispersed and many were contemporary. On this basis, one can investigate the spatial and social interrelationships between them.

THE RANK-SIZE RULE

Settlement systems normally contain comparatively few large settlements and a much greater number of increasingly smaller ones. A rank-size distribution is one way of viewing such a size-frequency pattern. The rank-size rule "consists of the empirical observation that rank-size distributions from many different settlement systems have the same basic form, specifically that a settlement of rank r in the descending array of settlement sizes has a size equal to $\frac{1}{r}$ of the size of the largest settlement in the system" (Johnson 1981:145). This ideal relationship between settlement size and rank is log-normal and forms a straight line when the values for size and rank are plotted on double logarithmic graph paper (Fig. 63). There has been considerable debate over the explanation for the distribution, but it is generally taken as an indication of high system integration.

There are well-known deviations from the model (Johnson 1981). Convex distributions occur when the largest settlements are smaller than would be predicted by the others, as when more or less independent polities occur in the one distribution together (Fig. 63). Among the more striking historical examples are England's American colonies about 1750 and the vast empire of India about 1850, both with poor transport systems and not very unified. However, as these states underwent economic and political unification, the rank-size curves passed from convex to log-normal, which represents a change from low to high system integration.

By contrast a primate distribution is one where the largest settlement is larger than would be predicted in terms of the others. One cause of this is when the largest place is simultaneously part of a second system in which only it operates. For example, within a colony one site may have greater access to the external power than the others, or conversely, within the mother country, one place might monopolise external administrative and mercantile power. Around 1800 the distribution of Great Britain was markedly primate but has changed with the loss of her Empire. While the scale of these examples is far from the case in hand, there are many other smaller ones which are not restricted to market based societies or to historic periods.

The rank-size distribution of the pā of Pouto shown in Fig. 64 is of a form that has been described as dendritic by Paynter (1980) or as primo-convex by Johnson (1981). The core is primate while the periphery is convex. The implication is that the lower order settlements are poorly integrated with one another except through the primate. Further, there is reason to believe that the Pouto distribution was at first convex and then became primo-convex. My interpretation of the evidence is that at some point late in the prehistory of Pouto, the settlement system passed through some kind of stress threshold which resulted in a spate of pā building. Apart from the three largest sites, the rank-size

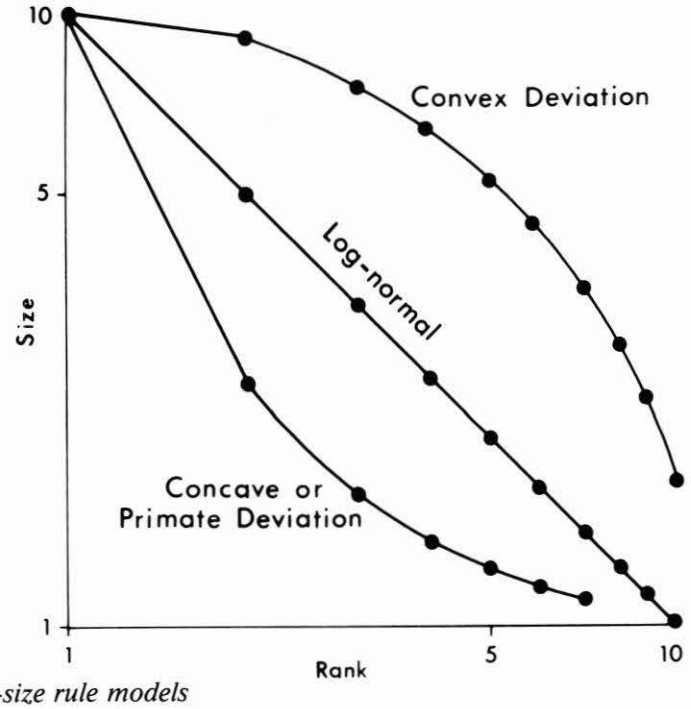


Figure 63. Rank-size rule models

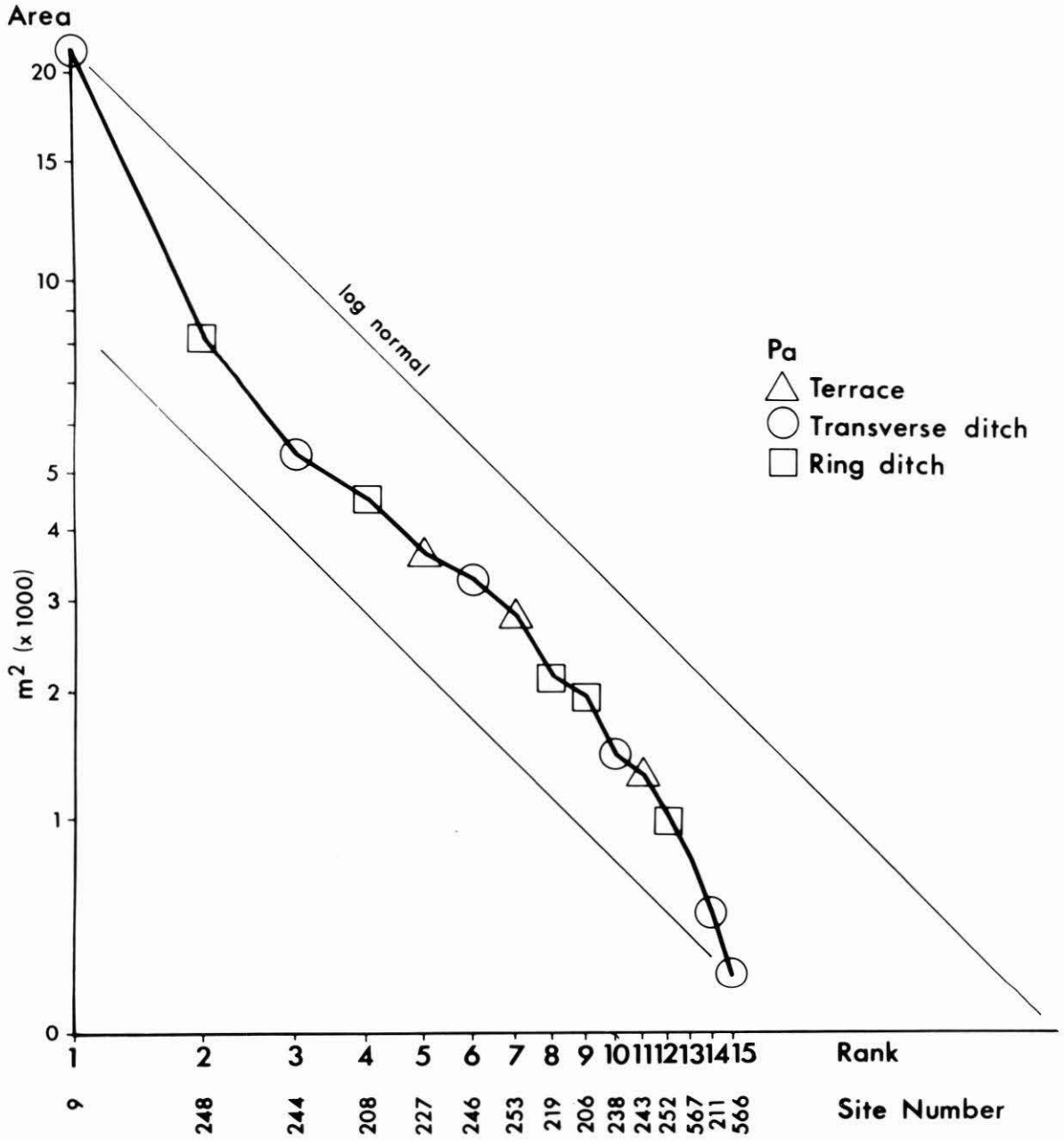


Figure 64. The rank-size distribution of Pouto pā

distribution is a convex one. According to Johnson (1981), and the historical models, they were a set of roughly equivalent and independent units in a system which was not particularly integrated. This is quite in line with ethnographic expectations. Many of the pā were not large and were associated with land-owning and labour units possibly at the whānau level. At times in the year they may have been substantial residential groups as well. Thus, most of the pā could be said to be related to the internal affairs of Pouto and were defended mainly against one another.The archaeological evidence implies variable and changing patterns of kinship, alliance, stress and skirmishing between these groups who, as neighbours, had much in common and most to fight over. This was within a settlement system that increasingly was experiencing internal pressure.

However, the three largest sites at the primate end of the scale show the contrary evidence of a high level of regional integration. These sites existed at the margins of Pouto and most probably were more to do with external than internal relations. The implication is that the settlement system was undergoing some profound change. Pouto means "cut off" for reasons that are very clear geographically. The massive Rangitane Pā (N32/9)was very strategically placed for the regional defence of Pouto from landward attack down the peninsula (Fig. 12). Just as Rangitane protected the neck, Pouto Pā (N33/248) protected the head and the third large site (N33/244) faced the inner harbour. The latter two pā produced the youngest C^{14} dates and additional reasons have been given for attributing them with a late age. Furthermore, these three sites have been shown to be anomalous in other ways. Rangitane (N32/9) and N33/244 are among the very few pā found on the less preferred Tangitiki soil. Pouto Pā (N33/248) is the one most distant from fresh water. Neither this pā nor N33/244 exhibit any surface pits. The relationship of all three to undefended sites is atypical. Rangitane is undated but the prediction here is that, however old it was, it became more important at this time. The size of this primate site suggests its simultaneous role in more than one system.

The inferred sequence is that the settlement system of Pouto intensified, perhaps by internal growth and change, and the density of pā there is a measure of internal circumstances. Subsequently, this favoured landscape and its inhabitants came under increasing pressure from groups outside. The evidence is of a transformation of settlement with this wider political attention. As the level of integration increased there is the first appearance of a response that we might tentatively ascribe to a tribal level of activity. The implication is that greater hierarchical organisation was involved.

By late pre-European times the question of external attack is implicit in the settlement pattern. Presumably this was a forerunner of the Nga Puhi raids of the early nineteenth century. The suggestion that the Pouto response to the threat of conquest was an indigenous one, may be implied by the comprehensiveness of their defeat in the early 1820s. The mismatch between traditional and introduced military technologies was made dramatically clear.

RELATIVE CENTRALITY IN THE SETTLEMENT SYSTEM

Rank can be measured on more than one scale. My belief so far is that more than one principle of settlement was in operation. Different measures may bring out different aspects of the situation. Connectivity analysis is a way of comparing the relative centrality of interacting

sites. This is quite a different thing to the hierarchical relationships of central place theory. The short-path connectivity method used here simply compares sites in terms of how easily people and goods can move among them. Some sites can be seen to be central, others more peripheral (Irwin 1983). Figure 65 is a network that links sites up to 2 km apart, distinguishing those which are under 1 km from those that exceed it. Links of this length leave many of the pā of Pouto unconnected including those on the harbour in the northeast and all of the far northwestern group in the vicinity of Rangitane. Site numbers and their rank order of centrality are shown in the network.

Figure 66 is a network that links all the pā of Pouto with the exception that sites N32/32 and N33/217 were omitted due to uncertainty about their status while the adjacent sites N33/252 and 253 were generalised as a single point as were Rangitane (N32/9) and its neighbours N32/15, 26 and 31. The site in the northeast marked D is the now-destroyed site of Pare-o-Tonga. In this analysis all sites have been joined to their first, second and third nearest neighbours it being assumed that, in general, sites would interact more often with those nearest to them. Fourth-order links were needed to connect the Rangitane group. Links were weighted according to order (the higher the order the greater the weighting) to allow for the effect of distance on communications. No account was taken of the actual length of links but, in fact, all are less than 1.5 km except for seven links approximately 2.5 km long that were needed to connect sites 32A, 50, D, 244 and 227 as shown.

Of these two networks,one is weighted, the other unweighted. One is based on intersite distance, the other on links between neighbours of ascending order. Both are arbitrary in their rules but have the redeeming feature of treating all sites alike. They are based on the commonsense assumption that sites close together will interact more easily than sites further apart. The conclusions of both are broadly similar. It is clear that parts of the agricultural hinterland of Pouto have high values for centrality whereas sites that were ranked the highest in the rank-size rule are now peripheral. This may be taken as confirmation of the dual internal and external elements of social and political relations peculiar to Pouto. Further, one can expect the relative importance of each to have altered with changing circumstances through time.

There is interchangeability between what constitute core and periphery. At times when the social groups of Pouto were able to carry on among themselves, the core area was the agricultural hinterland. At times when outside events were felt the centre of affairs may have shifted towards the pā whose function was more related to regional defence. In fact it is only at such times that any grouping possibly equivalent in scale to a tribe becomes distinguishable in the archaeological record. To continue with the core/periphery distinction, in the early European period Pouto as a whole was peripheral to the northern heartland of Nga Puhi, which in turn lay at the fringe of influence of a European colonial power within a world system of interaction (Wallerstein 1974).

THE RELATIVE INFLUENCE OF SITES

Renfrew and Level (1979:146) argue that the "effective polity, the highest order social unit, may be identified by the scale and distribution of central places" an approach which they say has little in common with central place theory and makes no assumptions about "economic man". They assume there is some correlation between the size or scale of a centre (however measured) and the area of the polity over which it has control.

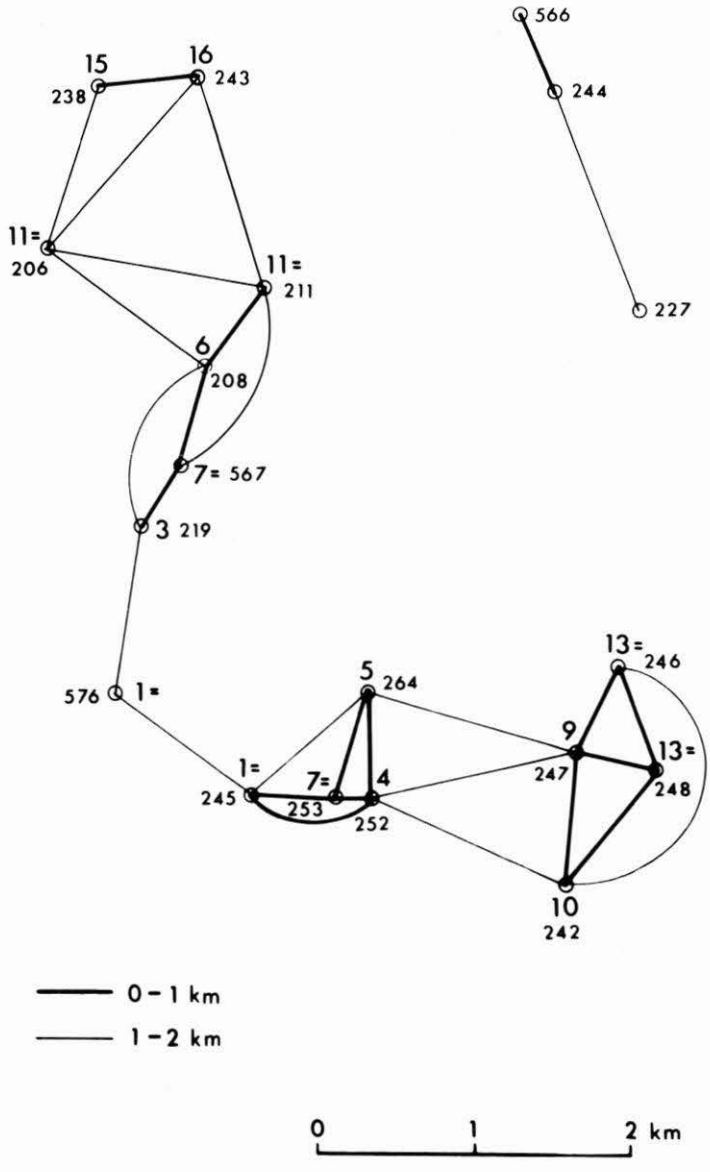


Figure 65. Short-path connectivity network (by distance)

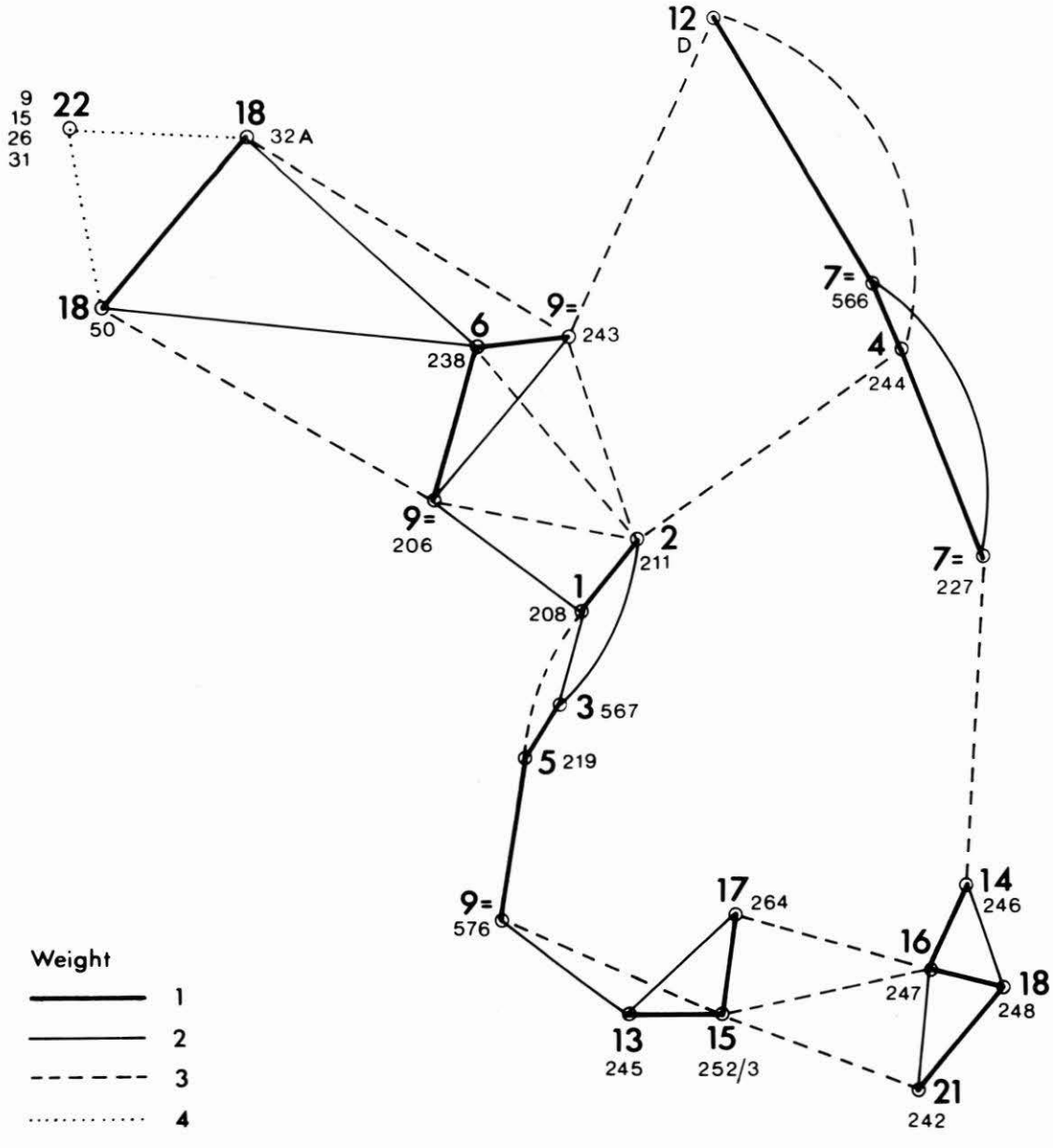


Figure 66. Short-path connectivity network (by nearest neighbours)

A longstanding method in archaeology is to allocate each piece of land to the jurisdiction of the settlement nearest to it. The polygons shown in Figure 67 have been mapped by the proximal option of the SYMAP program. However, this ignores the relative dominance of sites and any hierarchical arrangement between them. Polygons are based on area and these would need to be weighted to take account of the relative size of centre. An alternative approach taken by Renfrew and Level (1979:149-51) is to see dominance in terms of size and distance. The size of a site affects the distance over which its influence is felt. A smaller settlement can remain autonomous from a larger if sufficiently far away.

This approach is explored in Figure 68. Superimposed over regular Theissen polygons are circles with centres on sites N33/238, 208, 253 and 248. The radius taken was half the mean distance between them. The first three sites were selected because they are the highest in the study area. They command the interior. It was concluded above that relief was an important variable affecting the location of forts whereas elevation *per se* was not. Now we are presented with the possibility that elevation may have been a factor that distinguished the more important ones from the rest. Pouto Pā (N33/248) was included because it was the largest site on this map and this supplies another variable. These four sites might have been randomly spread on the map but they are not. The implication of Figure 68 is that, while the polygons might equate in a very general way with the gardening territories of individual pā, the superimposed circles may be distinguishing wider areas of influence of a small number of more dominant ones.

Before pursuing this argument two unrelated observations can be made from Figure 68.(1) N33/217 was classified as a pit and terrace site without artifical defences, but in a naturally defensible location. Here it can be seen to behave distributionally like a pā. (2) Sites N33/252 and 253 are so close together as to suggest either that they were not contemporary, or if they were, then they were functionally complementary.

Figure 69 continues the search for influential pā in a more systematic way. Site area and elevation, in association, are used as an index of dominance. Briefly, the distance of each site was measured along the diagonal from lower left to upper right of the graph, and these were then expressed as a percentage of the distance to the site with the highest combined value. While the method is arbitrary, it treats all sites alike and provides a relative measure for each. In Figure 70 these values are converted to radii which are drawn around certain sites. (No area data was available for sites 32 and 'P', hence their dashed circles whose radii are based on elevation alone). Sites were circled if they stood alone. In other words any site which falls within range of another is regarded as subordinate to it and does not qualify for its own circle of influence. Thus distance is the key point of influence and area is incidental to it.

It would be possible to weight the distance of influence in various ways. For example it could be made so short that every site could constitute its own polity (probably true at times), or at the other extreme, all sites could be made to fall under the umbrella of Rangitane (N32/9). However, the distance weighting shown in Figure 70 is a very natural one. It should be remembered that the circled sites were selected independently of their spacing characteristics and, once plotted, there could have been much overlapping and many gaps. As it happens they make coherent distributional sense. Within each of the circles of so-called influence, other sites are to be found. We now have evidence for several middle-order sites of influence. Given the low levels of integration

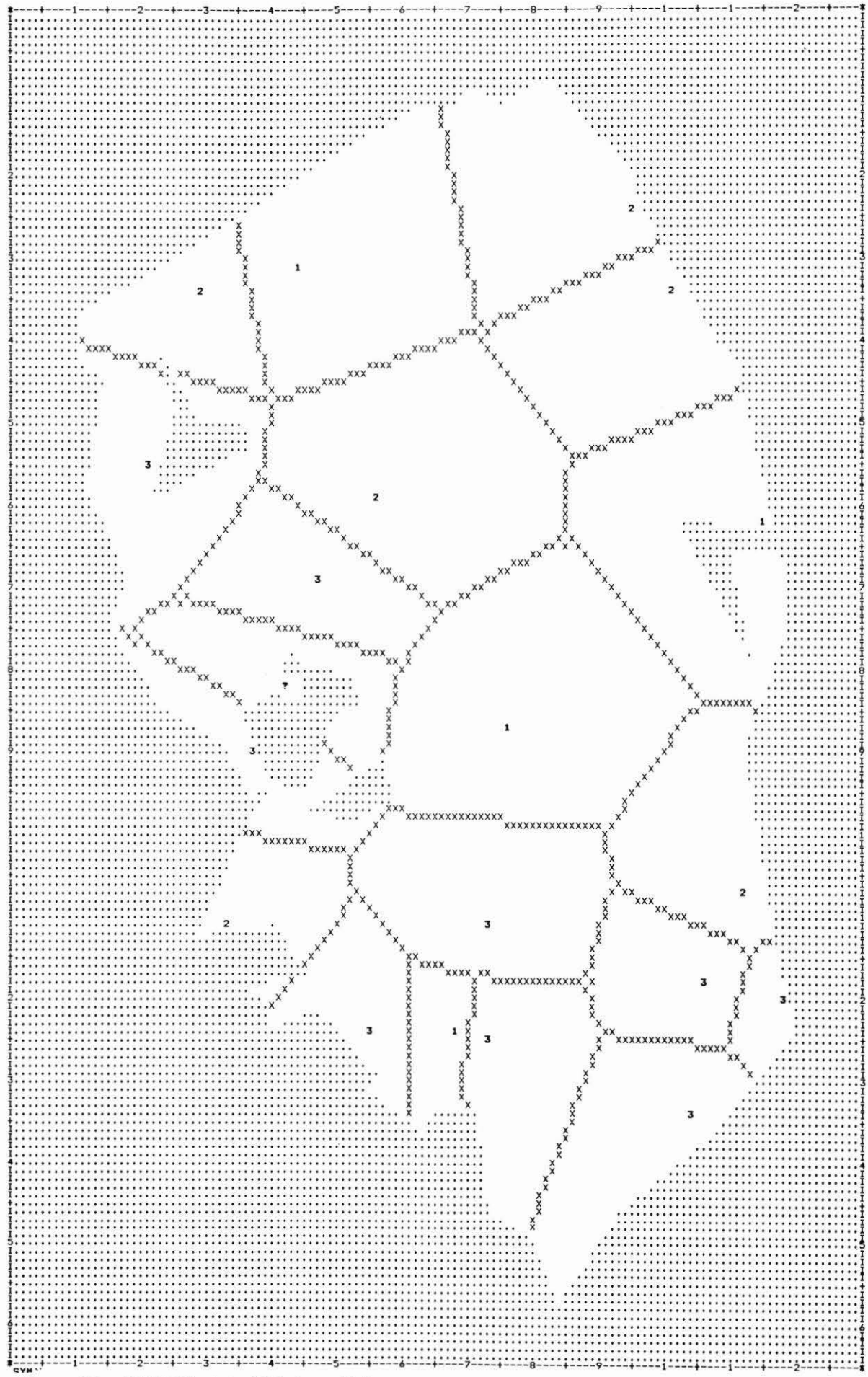


Figure 67. SYMAP plot of Theissen Polygons

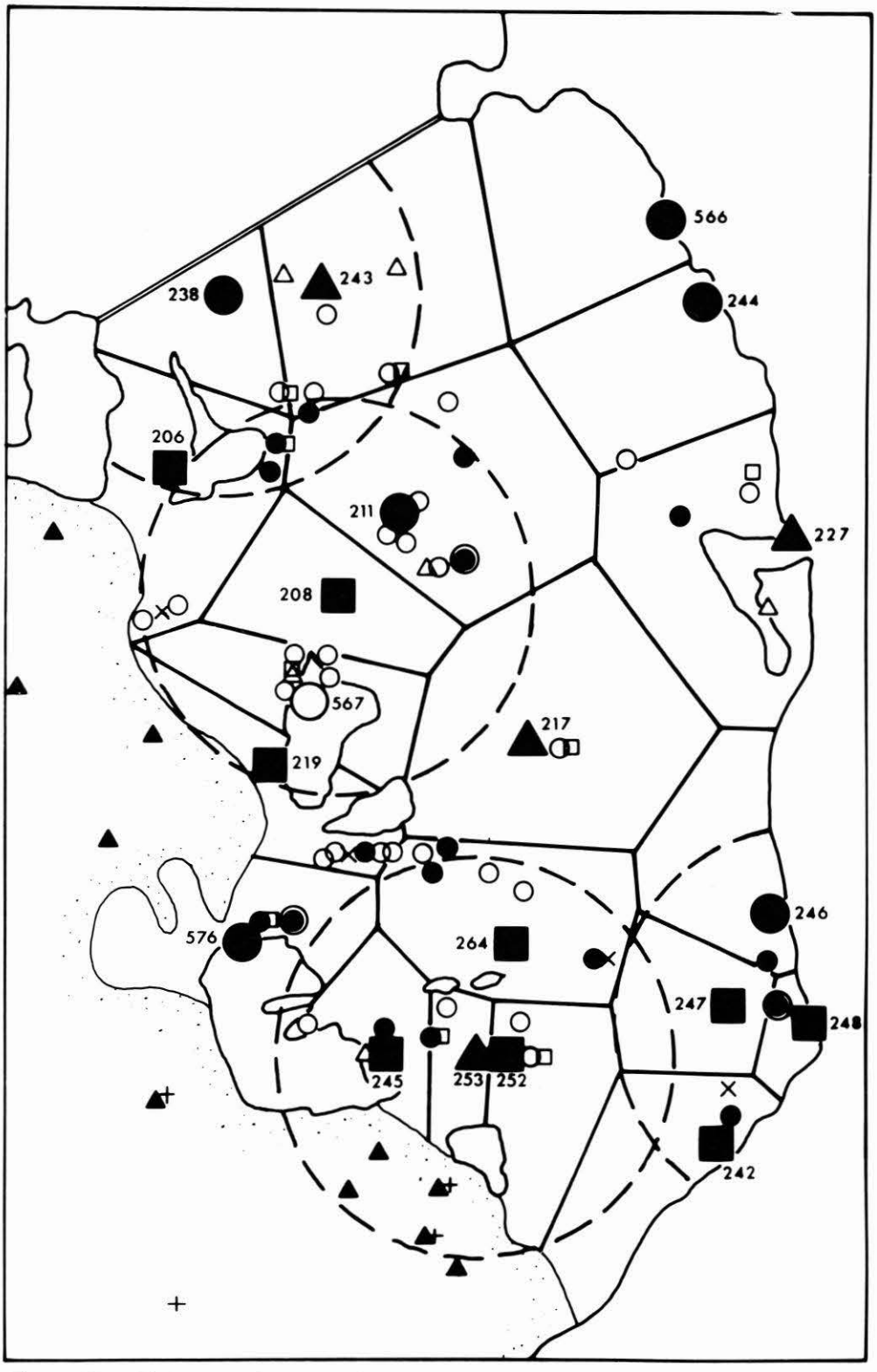


Figure 68. Theissen polygons and possible sites of influence

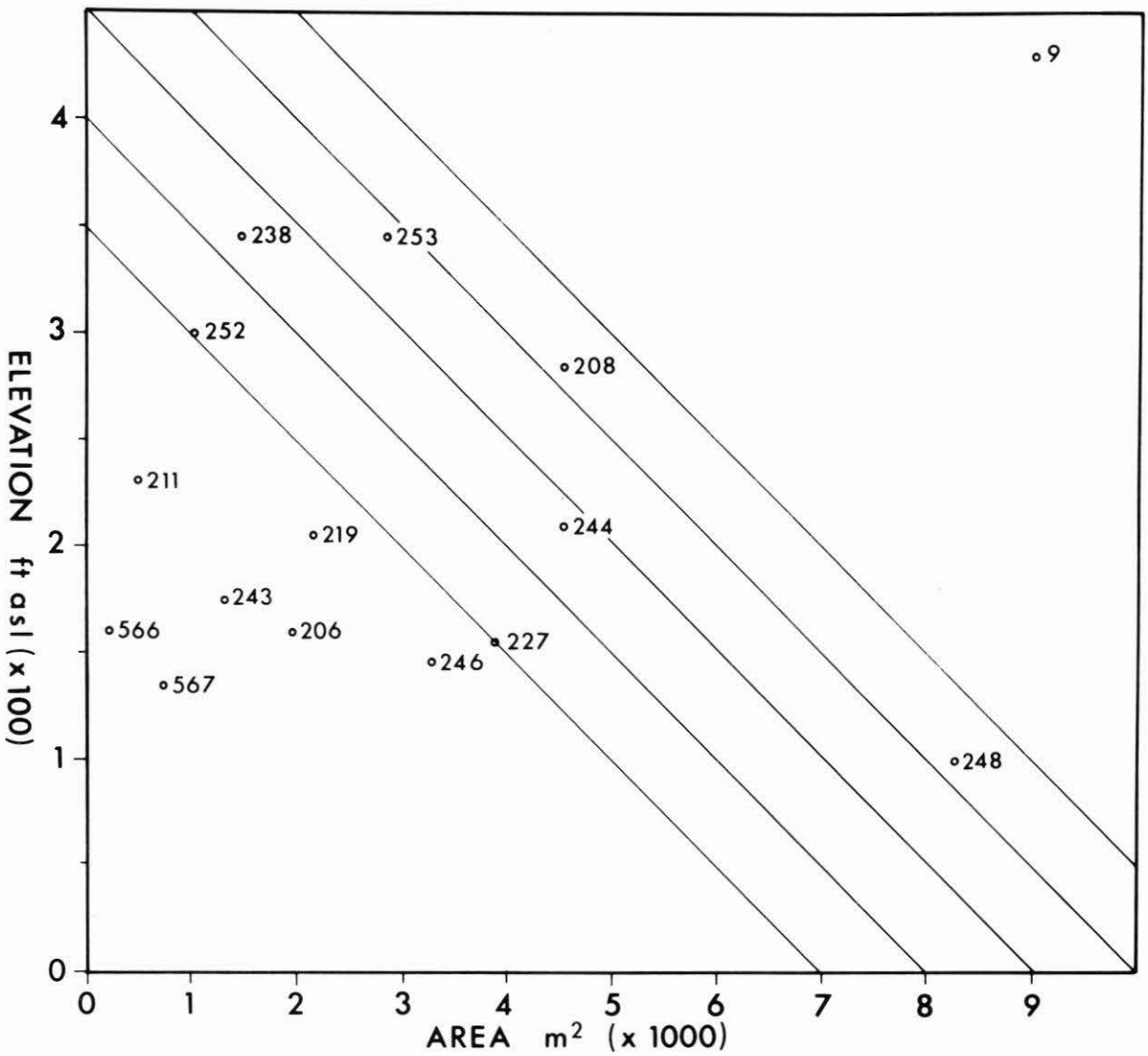


Figure 69. The relative influence of pā

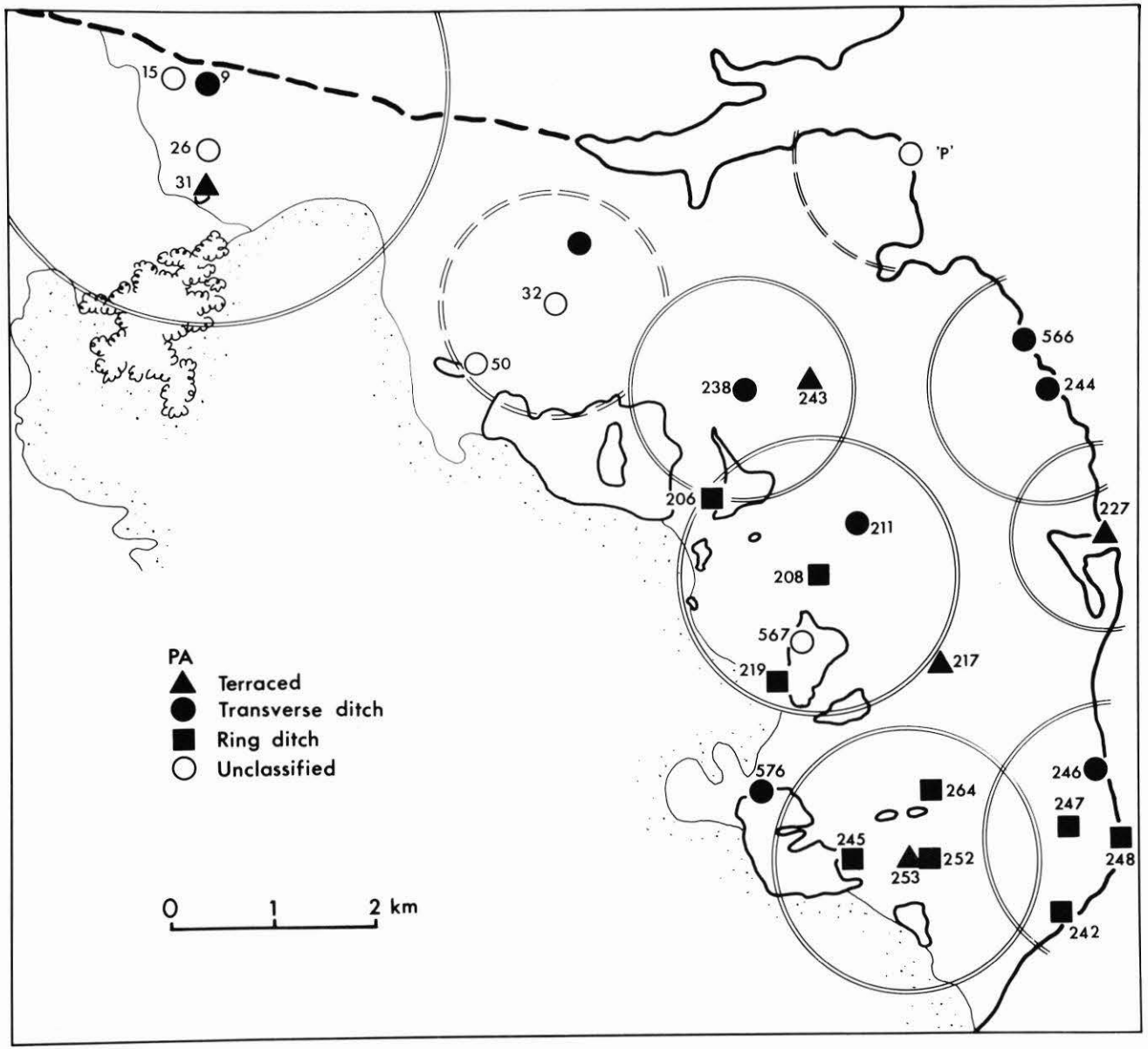


Figure 70. Pā and their fields of influence

suggested by the convex part of the rank-size curve above, these might best be regarded as the first among equals rather than as absolutely dominant in their domains.

SOCIAL GROUPS AND SOCIAL RELATIONS

The archaeological evidence shows elements of segmentation and hierarchy. Three broad levels are suggested. Firstly, individual pā appear to be associated with largely independent social groups. Nevertheless there were also loosely integrated groups of such units within which one site might be acknowledged as the most influential in certain contexts. Finally, all of the sites of Pouto could constitute a group from time to time. The evidence suggests the impetus for this high-level grouping usually came from outside even if there was the internal organisational capacity for this to happen.

Turning to the ethnography, one could instantly relate these three levels to iwi, hapū and whānau. This may be the case. However, the essence of the archaeological evidence is that there were no discrete pre-European social building blocks to be found. Instead, they varied in a more continuous fashion both in scale and size. Social relations were very fluid. Centres of activity and influence ebbed and flowed. Loose groups of different size coalesced and dissolved. These movements can be identified in particular with war and peace, but they can be expected to have happened for other reasons. The very large undefended sites in the vicinity of Rangitane and Pouto pā suggest there were defensive aggregations of the population there in times of political crisis. Generally, social relations were flexible and mobile, but took place within the firmer context of subsistence and settlement stability. The archaeological expression of Maori society seems more varied and ephemeral than some of the orthodox ethnographic accounts suggest.

Traditional evidence

The pattern to be seen in the archaeological past accords better perhaps with the more complicated situation suggested by Land Court Records. Traditions mention several named groups who were associated with the North Kaipara before the so-called Awa period. Moreover, a number of groups may have had dealings with Pouto as early as the first pā were built. For example, the Ngati Whatua are associated with Tauhara (the pā with the oldest C^{14} date of 402±58 years ago), possibly in the early 1600s, and in the same general time range there was a reported Nga Puhi raid on Pare-o-Tonga Pā located nearby on Okaro Creek (Smith 1897:65). There are various well-known accounts of episodes of fighting and tribal movement in the Kaipara region probably through the 1600s and 1700s. Yet it would seem that social affiliations were multiple and territories could be occupied by different groups who were both distinct from one another and related to one another, at the same time. They were able to coexist until the outbreak of trouble between themselves or with outsiders. Late in prehistory and on into early European times when political tension increased between the Kaipara region and Nga Puhi, Pouto was occupied by the Uri-o-hau, a branch of the Ngati Whatua. In some of the testimony at the Land Court re-hearing of July 4, 1878, Uri-o-hau were spoken of almost as if they were a tribe (Toft n.d.). Certainly, this was the kind of regional level of response to outside pressure implied archaeologically. One of their principal named pā was Rangitane. Many were killed when Tauhara fell (Polack 1838:201-5).

Chieftainship

As time went by the pace of events in Pouto was quickening. This raises the question of chieftainship if only in that whoever was making political decisions, evidently there were more to be made. Clearly there is a relationship between central places and central (high-ranking) people. One needs to rank interacting sites in order to predict where the more important people might be. Moreoever, just as the focus of events shifted between sites, one can expect chieftainship to have been a socially and spatially fluid phenomenon also. Therefore it would be unrealistic to investigate the problem even in such a large and obvious site as Rangitane. While it might be reasonable to expect that chiefs were in residence sometimes, and while it might be possible to discover something of their circumstances, one would really need to see the site in terms of the wider regional system to identify the pattern of political relations (Irwin 1983).

7 WIDER IMPLICATIONS

It is hard to know what happened in the past and even more difficult to discover the causes and effects of such things. In spite of this, a number of general ideas about pā can be reviewed in consideration of the case of Pouto. Firstly, both the spacing and the dating of Pouto pā suggests that more of them were contemporary than might have been expected from their varied forms. There is an implication here for their function. Davidson has recently said (1984:185) that we should not overestimate the community and prestige aspects of pā over the defensive one. The density of Pouto pā is suggestive of stress and supports this conventional view.

Perhaps the most surprising result is the lateness of the settlement system of Pouto and this may not be the only instance. For example, in the Tauranga region, while a few of the dated pā are of some antiquity, most are late (B. McFadgen pers. comm.). This raises questions for theories of the origin and spread of fortifications. One difficulty is with the timing. Groube (1970)envisaged a large population by the fourteenth century, a spate of pā building into the fifteenth and a steadier rate of increase afterwards. Davidson suggests the efflorescence may have been slightly later and her review of the evidence suggests pā were built in several parts of the country by the fifteenth and sixteenth centuries (1984:192,3).

In its simplest terms, the standard model for the origins of pā is a subsistence/demography one. Population grew in some places or place which ultimately led to increasing warfare and fortification. Some authorities say migration flowed outward from the pressure points (e.g. Groube 1970). The argument is quite compelling, but we are no closer to documenting the process than 10 or even 20 years ago. Some writers plausibly have related growth to the subsistence conditions of the optimal "north" although, in fact, several parts of the North Island could be contenders. Moreover, one could argue equally that the pressure of numbers was also felt in the marginal "south".

We are now confronted with the possibility that a majority of forts in some settlement patterns may be very late. On the face of it, there is no reason why Pouto with its favoured environment, easy communications and the presence of surface Archaic artifacts, should have lagged behind other areas, although evidently it may have done so.

In the realms of pure conjecture, we could extend the process of change by including more steps. For example, one could argue that as early agriculturally-based populations grew in size, they expanded easily into new territory. Good soils were not a particular consideration as most of the required nutrients for swiddening were in the standing vegetation and this was not difficult to clear (McGlone 1983). Stress was not felt until re-use of the poorer land presented difficulties. Such land was abandoned for gardening, and in the better areas, there followed a process of "intensification by contraction" (Champion 1982). The major fort-building occurred with this stage, although probably at different times in different regions. Thus, one can reverse the direction of the model; episodes of rapid fortification did not occur with the expansion into new areas, but with the subsequent concentration in the more sustainable ones.

As one instance, the pressure inferred for the Pouto settlement system could have grown as it contracted. As suggested, the eastern

strip of what is now shifting sand (Fig. 13) may have been gardened and then abandoned as the semi-consolidated Holocene sand became unstable. That would have altered the balance between population and resources. Alternatively, some pressure could have been exerted from the part of the peninsula north of Pouto where good gardening soils are much more restricted. Whatever the circumstances, there is no need to postulate a sudden growth in population to parallel the phase of rapid pā building. All that was needed was for it to grow to the point where both the social and ecological elements of the settlement system became unstable. Then, quite quickly, the system passed to a new state. Something like a catastrophe theory model would fit the facts if not the social context. Quite possibly, similar events were happening in other places and effecting the relations between them. This would account for the apparent increase in the volume and tempo of external conflict.

In a number of other cases an actual decline in resources has been suggested and subsequently contested. A recent example is the argument that some garden land was invaded by bracken fern and the difficulty of clearance made it unsuitable for further cultivation (Leach 1980), however, McGlone (1983) disagrees. At present, it is not clear to what extent, or how directly fortifications derive from ecological changes. At the opposite extreme, of course, is the possibility that many pā were built simply according to the independent choices of local groups.

Davidson (1984:223-4) has recently adopted a three-part sequence for New Zealand prehistory. Her "Traditional Period" lasted from 1500 to 1769 AD. Of this she notes that by 1500 AD "most of the characteristics of eighteenth century Maori culture and society were already present. This does not mean that change ceased, although the rate of change may have been slower". The archaeological evidence for Pouto supports this insofar as it has detected no change in the style or the material components of the culture during that time. However, within that context of continuity there was a radical social transformation.

Trading and raiding are both forms of interaction. Evidently there was a shift in the balance between them. The intensity of intertribal warfare of the early nineteenth century had its beginnings further back in pre-European times, notwithstanding the impact of muskets. As Davidson says (1984:181) the "threat of warfare permeated all aspects of Maori life in the late eighteenth century". Whether it did so as persistently a hundred years beforehand, is unlikely. It is fortunate that Davidson has not allowed the Classic period to stand because, if so, one might have been tempted to invoke a "post-Classic" (and that would have been a most unsuitable concept to introduce here). At all events, one can discriminate within the late period of prehistory.

Just as one cannot show what caused the changes implicit in the settlement evidence, their effects are also unknown. However, certain possibilities arise. As sites became more ranked, perhaps associated people did as well. In some overseas archaeology, both population pressure and trade are presently seen as prime movers in the increase of social stratification (e.g. Renfrew and Shennan 1982). There is a suggestion that people who controlled local subsistence production also came to control long-distance trade in valuables and the prestige goods which symbolised rank. Such items were of restricted distribution and were commonly taken out of circulation by burial. In New Zealand we have no evidence for the late emergence of chiefly elites in the form of increasing rank and richness of grave goods. However, in some settlement systems there was probably a need for increased internal organisation to produce more food together with increasing external competition for control of the resources. Alternatively, there could have been cases

where demographic pressure led to internal disorganisation which found its most legitimate expression in expansionism. While the Pouto case displays growing integration others might reveal disintegration. Whatever the precise circumstances there may have been a change in chieftainship in late prehistory, in parallel with the efflorescence in pā building and the intense political activity it implies.

With this possibility in mind, it would be of interest to reconsider the evidence from around the prehistoric/historic boundary. In the last 20 years much work has been devoted to the question of which cultural items were indigenous and which were triggered by the changing conditions of European contact (Groube 1964, 1967; Salmond n.d.). The suggestion here is that changes in political structures and possibly more stratified circumstances began prehistorically and continued into European times. This could have been accompanied by symbols of enhanced status. Appropriate items which come to mind include an increase in house size, in the amount of carving and in the abundance of valuables such as nephrite hei tiki. These are just a few of the possible items whose histories conceivably could be slightly longer and somewhat different to what is currently proposed.

This study has looked at the pā of Pouto in a broad spatial context and has then said something about how one settlement system developed through time. Some inferences have arisen for general problems in New Zealand prehistory, but these cannot be evaluated until comparable data are available from elsewhere. One suggestion is that the pattern of social relations and groupings in late prehistoric times was very variable and dynamic. The results have also pointed to the need for more precise analysis of both the form and function of pā. The kind of evidence used in this study has led to a concentration on the external relations of pā to the neglect of internal ones. However, even within this narrow view which focusses on abstract concerns like resources, population, site distribution and territory, to the owners of these pā it was probably more a question of the gaining, loss and maintenance of mana.

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