

A MAORI PIT SITE, N42/114, IN PARNELL, NEW ZEALAND

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Abstract. A rescue excavation on a site, N42/114, at Parnell is described. No cultural material other than two pits and some amorphous postholes was encountered. The original state of the pits and their function are discussed, and they are considered to be for kumara storage. The economic function of the site is discussed with regard to environment, settlement pattern and seasonal movements. The site is considered to be late because of its specialised nature.

At the end of Alberon Street, Parnell, is a small reserve, owned by the Auckland City Council, and known as Alberon Park. It consists of a sharp ridge between two intermittent streams (Fig. 1). The land was acquired by the Council in 1948 and, after one attempt to subdivide it for building sites, it was cleared of rough vegetation in 1964, grassed and planted with trees. Part of the site had been bulldozed at this stage. In 1968, the City Council decided to remove the ridge. Two vague impressions on it suggesting rectangular pits, two flat areas, and a possible terrace scarp, indicated a prehistoric site. The pits were confirmed in the spring by a vigorous growth of grass. The Parks Department of the City Council was approached for permission to conduct a rescue excavation under the auspices of the Auckland War Memorial Museum, and this was organised and directed by Miss J. M. Davidson on three weekends in October 1968. The author helped with the direction and made the necessary records for this report. The interpretations and conclusions made here are the author's. Labour was supplied by members of the Auckland University Archaeological Society.

Figure 2 shows the position of the site in relation to the sea, other known prehistoric sites, and the underlying geology which determines both the best defensive situations and the agricultural potential of the derived soils. The scoria cones are the conspicuous defensive sites in the area, but one peninsula site on a breached tuff ring, and some cliff edge sites where Waitemata series sandstones and siltstone adjoin the coast, also occur. Agriculturally, the weathered tuff is the most fertile soil, although the alluvium can be fertile where well drained. Soils on the Waitemata series material are adequate, but those on the scoria cones are undeveloped and unsuitable as are some of those on the lava flows.

Site N42/114 is situated almost halfway between a fertile tuff ring with an associated cone and pa, and the sea at the former St. Georges Bay. The alluvial soils in St. Georges Bay were used for market gardens early in the European settlement of Auckland, making it likely that they were also suitable for prehistoric agriculture. The earliest descriptions of the Auckland Isthmus describe it as covered with bracken (e.g., Dumont d'Urville 1950, p. 154), the rhizome of which was an important Maori food. It would seem that the area was favourable for the Maori, and this particular site was well placed.

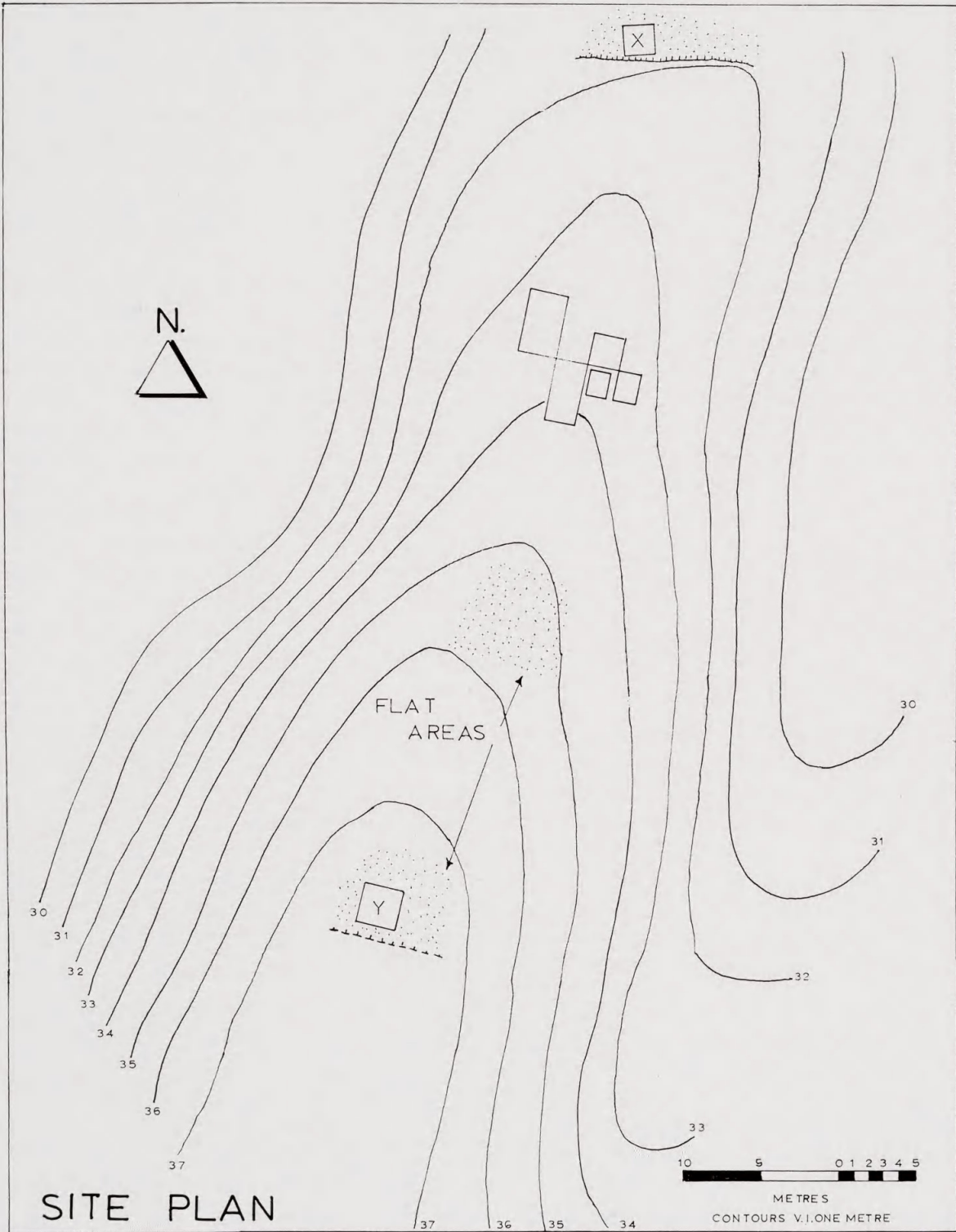


FIG. 1. N42/114 site plan, Alberon Street park, Parnell.

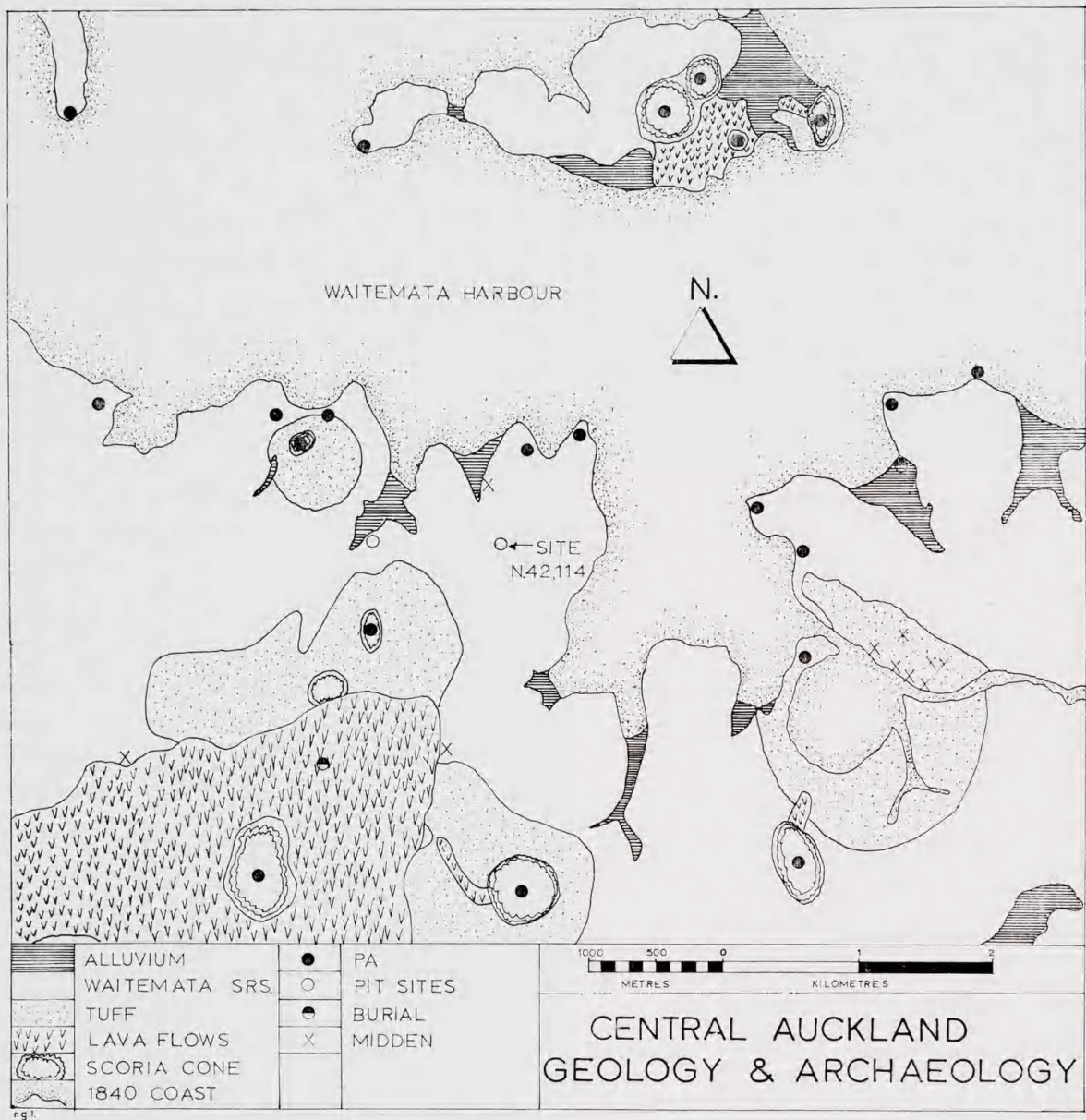


FIG. 2. Central Auckland geology and archaeology.

EXCAVATION TECHNIQUE AND DESCRIPTION

A grid (Fig. 3) was set out over the two probable pits with the intention of excavating a quadrant of each and having a control section of the fill in both directions across the pits. However, the grid was misaligned because of the vague nature of the surface evidence. The quadrants were duly excavated. The technique was to turf each area to be excavated, define each pit outline in plan by excavation with a trowel, and sink a test hole to the floor also by trowel. The remainder of the pit fill was removed by cutting back the vertical face from the test hole with a spade while watching the section exposed. The final excavation of the floor, floor features and wall was by trowel. While this technique has undesirable features, it can be justified on rescue excavation as it is fast and, on this site, the stratigraphy of the pit fill had no cultural significance.

The stratigraphy can be summarised as follows:

- Layer 1: Topsoil, rooty, organic and black, with inclusions of recent charcoal, continuous over the site.
- Layer 2: Lens of recent charcoal, probably dating from the last clearance of the site, discontinuous and in pit 1 only.
- Layer 3: Silt, organic, rooty, dark grey to dark olive, discontinuous, in pits only.
- Layer 3a: Similar to layer 3, but with inclusions of layer 5 material and more organic towards the base (fill of European rubbish pit).
- Layer 3b: Lens of charcoal in layer 3, discontinuous, and in pit 1 only, probably representing an early European clearance.
- Layer 4: "Roll-in" material, silt, clayey, mottled light grey and yellow, with charcoal and bark inclusions, discontinuous and in pits only.
- Layer 5: Natural silt, clayey, mottled yellow and light grey, with occasional fossil charcoal. This or similar layers extend 10 m or further until the parent rock is reached.

The cultural implications of this stratigraphy are trivial. The contacts between the layers were not sharp, the upper contacts in particular being worm-disturbed. The contacts between layers 4 and 5 were horizontal (i.e., the pit floor), and were well marked by texture changes and horizontal root traces. The vertical or near vertical contact at the wall was less well marked and some difficulty was encountered in establishing its position.

Floor features were also difficult to establish. The drains and some of the floor depressions were filled with a dark clayey silt which varied only slightly in colour and texture from parts of layer 5. The drain was well defined in other places, being filled with organic material. However, in places where it was not, organic fragments, apparently of bark, and charcoal flecks, helped to outline it. Some of the postholes were filled with a material of similar colour and texture, but small chocolate-coloured flecks of highly decomposed wood occurred. These flecks are probably the remnants of a post. Figure 4 shows the completed excavation from the south, with pit 1 on the left and pit 2 on the right.

Two test squares, x and y, were excavated on the flat areas. Square y was 2.5 m square, and sterile. Square x was 2 m square and, again, sterile. A thinner topsoil than was encountered elsewhere, a small pocket of commercial crushed rock and a 1947 sixpence in the topsoil, may indicate that the flat areas are quite recent. It is considered that the two test squares were sufficient samples of the flat areas to show that they are not prehistoric.

Subsequent to the completion of the excavation, a City Council contractor stripped the topsoil from the entire ridge. During this operation, the newly exposed surface was inspected for indications of other structures. No further pits were recognised, but to the south-west of the two excavated pits several postholes were encountered. This area had a marked cross-fall of about 1 in 8, but this may have been exaggerated by the bulldozing. The fill of the postholes was of two types. The first was identical to that of the pit postholes, and the second was a black organic

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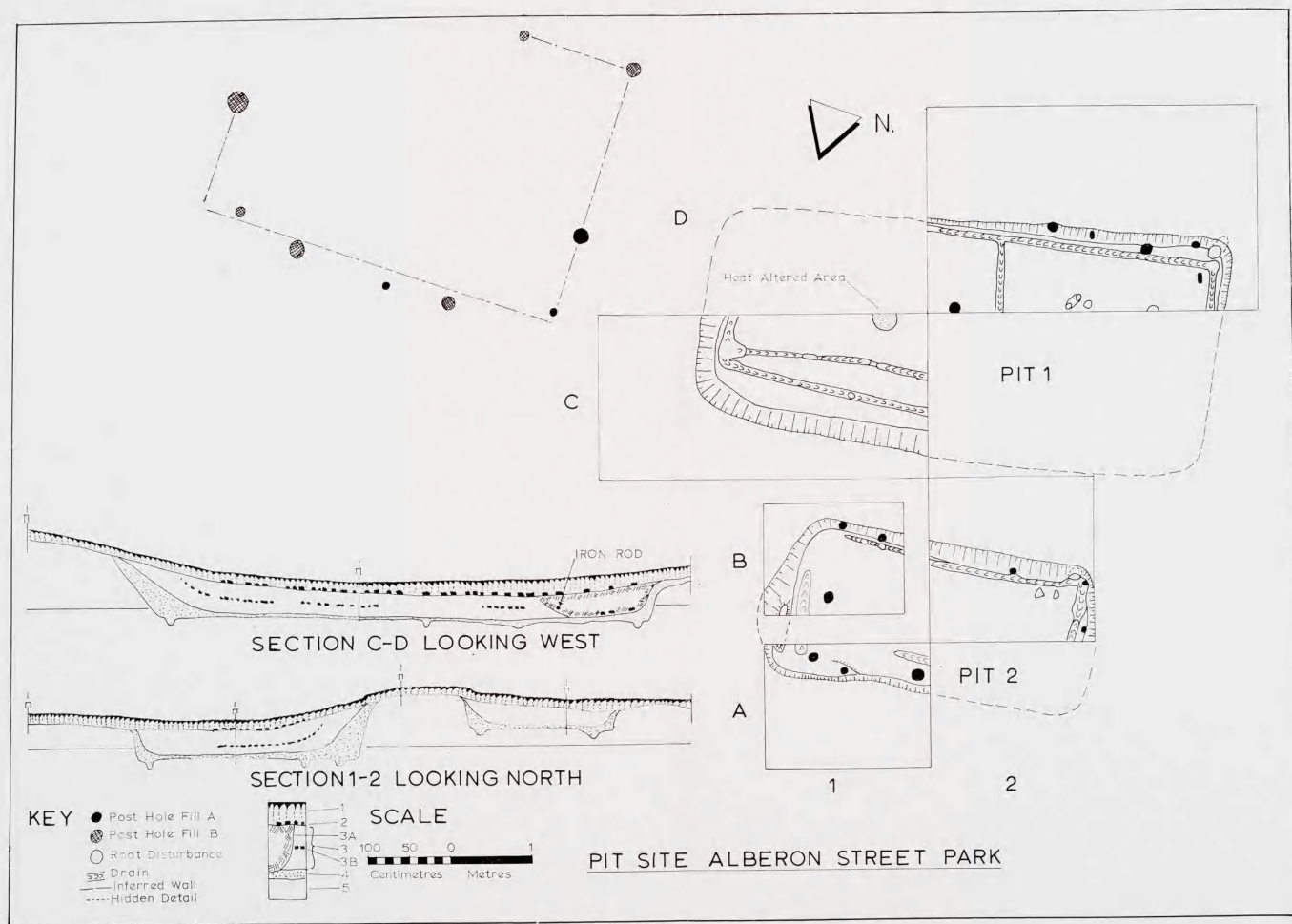


FIG. 3. Plan, principal cross-sections and key to the layers, pit site N42/114, Alberon Street Park, Parnell.



FIG. 4. The completed excavation from the south, showing pit 1 on the left and pit 2 on the right, site N42/114.

silt with inclusions of scoria up to 4 cm in diameter. This organic silt differed from the topsoil. Shallow pockets of similar material occurred in the subsoil, but these were too disturbed to record adequately. Similar sized pieces of scoria were distributed at random in the pit fills.

It is unlikely that scoria occurred naturally on the site. The nearest volcano, in the Auckland Domain, is one of the older examples (Searle, 1962, p. 200), and any ejected material on the surface would have weathered. The scoria found was in moderately fresh condition. The significance of the features encountered will be discussed in a later section.

ARTIFACTS

Two small pieces of red ochre, *kokowai*, were encountered, one on the floor of each pit. No other prehistoric material was found. In the pit fill, and in the European rubbish pit, was a collection of European material including an iron rod, a broken brick, broken blue and white glazed pottery, and hand-made and modern beer bottle fragments.

BARK FRAGMENTS

As mentioned above, some material like bark was encountered in the fill of the drains. It was often lying in cylindrically curved sheets, the curvature indicating a diameter of about 10 cm. The material was 1 mm or less in thickness. The surface showed occasional dimpling, similar to that on the bark of a semi-mature kauri tree, *Agathis australis* Salisb. In constructing a pit, posts would be made most economically

from local trees. Saplings would provide straight posts of a suitable diameter. There would be little point in removing the bark, but as this sloughed off while the posts were in position, much of it would end in the drains. The survival of it in the heavy wet clay is unremarkable.

SITE INTERPRETATION

Indications of a central row of postholes supporting a ridge pole occurred in both pits. Wall postholes were found on both sides of the shallower pit, pit 2, and along the low wall of pit 1 (Fig. 5), but none along the high wall. It is suggested that the rafters rested on the ground on this postless, high side of the pit, and on a low timber frame supported by wall posts on the low side.

There was no indication in the pit fill that an earth cover was placed over the roof. No exit drains were found for the floor drains. The sump-like feature in the north-west corner of pit 2 did not readily allow water infiltration, rather collection, but the similar feature in pit 1 in the same corner was too high and protected by a lip, preventing drain water from entering it. It may be that the impracticability of these sumps was realised before they were completed. Similar recesses have been found in the walls of many *rua* (Groube, personal communication). The drain across the north end of pit 2, and the drain furthest from the wall in the south-east quadrant of pit 1, both exhibited slotlike features rather than evenly graded bottom. They may have held slabs, but these seem structurally unnecessary unless they formed some interior division of the pit into bins. It is more likely that the undulations resulted from the use of a digging stick.

On some sites (Daniels 1965, p. 100; Golson 1961a, p. 25) pairs of pits of unequal size have been interpreted as a house and storage pit complex. There is no evidence that either or both of these pits were occupied. No midden, ovens, stone fireplaces or fire scoops, artifacts, artifact production waste products, burials, or other evidence suggesting long occupation, have been encountered. Furthermore, there are few grounds for separating the pits on their internal features, or any other grounds except size. The conclusion must be that both pits and the site generally fulfilled a highly specialised function other than long occupation. This function is most plausibly storage.

The reason for the construction of two pits rather than one large pit has several possible explanations. The pits might not be absolutely contemporary, but represent the construction of a new store, adjacent to the first, to expand storage in a subsequent season. They may represent some minor kinship division of the group which constructed them. The storage may have been divided deliberately to minimise the risk of fungus damage in the kumara crop (Ambrose 1967). The exact alignment of the pits suggests, however, that they were contemporary.

If both stores were filled at the one time, an estimate of the quantity of food stored, and its food value in person days, is possible. Briefly, this can be done by computing the volume of the pit to ground level, allowing for non-used volume, converting this volume to a mass of kumara using known densities, allowing for some losses and seed storage, converting this mass to a calorific value, and dividing



FIG. 5. The north-west quadrant of pit 1 viewed from the south, showing floor drains, wall postholes, the corner excavation, root disturbance to the floor, and a pipe in the fill of the European rubbish pit protruding from the baulk, site N42/114.

the total by a figure for the average daily calorie requirement of a statistical mean person. The process is inevitably imprecise. A figure of 130 ± 65 person days per cubic metre of pit volume has been calculated as a reasonable estimate. The derivation of this mean and standard deviation will be published elsewhere. The volume of the pits is 13.7 m^3 , storing 1780 ± 890 person days of food. The period between the growing seasons of kumara is about 7 months. If the store was consumed over this period, it would provide for a group in the range of 4 to 13 people. It should be noted that a total diet of kumara is not a balanced diet and other ingredients are required.

The fact that the site was not occupied suggests either that other food sources were used and attracted settlement elsewhere, or that defensive and social considerations demanded the presence of the owners elsewhere.

The postholes to the south-west of the pits suggest an enclosed rectangular area aligned with the pits. It is tempting to interpret this as a house, but the marked slope across the area, the lack of completeness of the pattern, and the absence of a fireplace or midden evidence, weigh against this suggestion. The disturbance by the bulldozer may, however, account for the lack of all but the last piece of evidence. If it was a house, it was possibly only a temporary shelter, used briefly at harvest or during the construction of the pits, which might account for its irregular form. Other possible interpretations are a *whata*, a stage for storing or drying food, which was used principally for fern root (Best 1916, p. 103), or some sort of enclosure, possibly surrounding a kumara propagation bed. This latter explanation might account for the scoria, as it was Maori practice to use similar material as a soil additive. None of these suggestions carries any great conviction, and the interpretation of this structure may be possible only after more comparative material is available. By its alignment, it is thought to be contemporary with the pits.

GENERAL DISCUSSION OF CLASSIC MAORI FIELD EVIDENCE IN THE AUCKLAND ISTHMUS

Surveys performed in the last 10 years in the Auckland district have shown a marked disparity in the nature of the known sites on the Auckland Isthmus. A suitable area for comparison is Motutapu Island, some 19 km from Alberon Park. No European housing development has taken place on the island, and a high percentage of prehistoric sites survives. With 74 sites recorded, including 16 middens, the ratio of defended to undefended sites (pits, terraces, and combination pits and terraces) is 1 to 2.5, and the density of undefended sites is 2.7 per km^2 . On the Auckland Isthmus, in the area covered by Fig. 2, this ratio is 1 to 0.09, and the undefended site density is 0.06 per km^2 .

The lack of undefended sites on the isthmus can be attributed to selective site destruction, as the defended sites are principally volcanic cones that have survived, at least in part, or sufficiently long to come to the attention of archaeologists before destruction. Because surviving undefended sites are now so rare, the excavation of the pits at Alberon Park was considered of high importance.

Studies of historical material have suggested that the late Classic Maori settlement pattern was dispersed hamlets with fortified retreats rather than inhabited fortifications (Groube 1964) and, further, that agriculture may not have provided a staple food supply (K. Shawcross 1967a, p. 345). If so, concentration of permanent settlement on suitable gardening soils would be unlikely. Historical evidence from the Bay of Islands (K. Shawcross 1967b, p. 221) and archaeologically recovered faunal evidence from Galatea Bay near Auckland (F. W. Shawcross 1967, p. 128) suggest seasonal movements of population, which is not consistent with permanent occupation of a pa. Although it has been suggested that the occupation of large pa of the isthmus may all be early (Groube 1967, p. 19), and some of the evidence suggests that the initial occupation was early (Golson 1961b, p. 51), the author believes that a large late occupation is not ruled out. Full exploitation of the high fishing, shellfish gathering and garden potential in the area may have resulted in the persistence of social groups, at least for defence, larger than those encountered in the rest of New Zealand, simply because the available defensive sites were suitable only for large nucleated pa where the usual breakdown into units (Buist 1965, p. 77), possibly with some social significance, was impossible. The social instability of this organisation in the face of intensive warfare in the 18th century may have resulted in the depopulation of the isthmus immediately prior to European settlement (Fowlds 1967, p. 9).

Undefended pit or pit and terrace sites are commonly considered to indicate the location of the hamlets suggested above. They would represent the maximum dispersal of the minimum kin groups. If this is so then, because of their kumara storage function, the hamlets must have been used from March onwards after harvesting, until the stored crop was consumed, and then again during November when the seed tubers were planted.

In the seasonal hypothesis outlined above, it is suggested that the summer, between planting and harvest, was spent fishing and shellfishing, some of the produce being dried for storage (F. W. Shawcross 1967, p. 114). The period before planting would be the preferred time for gathering fern root.

Rectangular pits, with a row of postholes and wall drains, are a type of very frequent occurrence, found over a large area of New Zealand. Functionally, they are most convincingly storage shelters for kumara. The other explanation, that of pit houses, has aroused some controversy, and has several inconsistencies (Law 1969a; Groube 1964; 1965, p. 80). Typologically, pits still await a major study and, regrettably, even description. With only one other Auckland provincial pit site fully published (Kauri Point undefended site—Green 1963), compiling any comparative data on pits will involve considerable further effort. Consequently, no comparison with other sites will be attempted at this stage.

Without wishing to define any types, the two pits excavated on this site can be compared with pits on other sites by their dimensions, posthole and drainage pattern, and the presence or absence of other internal features. It has been suggested that the presence of drains is unreliable as they were not needed in permeable soil types. Similarly in heavy intractable soils such as this site, pits may not have been excavated to the depths which have been found on the scoria cones where the soil is more easily excavated.

In a study of a pa site in South Auckland which had many pits (Law 1969b), the pits showed wide size variation, apparently related to the size of the group constructing them. Because of this, it was suggested that pit size may be a difficult feature to use typologically.

CONCLUSIONS

The site seems to have been the storage area of a fairly small group. It is certainly not a dispersed hamlet or a seasonal dwelling site for any period longer than the harvest. The dwelling site, at the time of storage of the crop, was either in a pa or in a hamlet close by, probably close to other food resources, most likely on the beach. This implies that three distinct sorts of site existed on the Auckland Isthmus, all possibly in use at crop harvest—pa, storage sites at the agricultural areas, and coastal exploitation sites. Combinations of two or more of these in one place are of course possible, and probably these would be the most favoured sites. For this reason it is dangerous to argue that all pa were not permanently inhabited as some were in zones favourable for several kinds of exploitation. Similarly it is dangerous to assume that all pit sites were inhabited, as some (such as this site) were highly specialised storage sites useful only for one form of exploitation in a zone.

This suggests that evidence of seasonal movements in prehistory, particularly in the Classic Maori period, may be relevant only to a small area, and that the dimensions of economic zones may be extremely limited, even down to a distance which can be covered on foot in a few hours.

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