

# U14/712 LOWER TERRACE



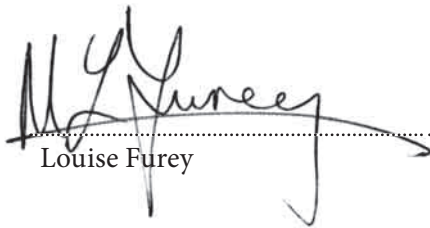
**REPORT TO  
THE NEW ZEALAND HISTORIC PLACES TRUST  
AND  
FIDUCIA LTD**

**LOUISE FUREY**


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# U14/712 LOWER TERRACE

LOUISE FUREY

This report describes the excavation of the last remaining terrace of site U14/712 on the Omokoroa Peninsula, Bay of Plenty (Figures 1 and 2). The investigation follows on from the 2004 excavation of a terrace and surrounding slope on the upper part of a spur descending from the main ridge which had a pa with the same site number. The ridge and the spur descending to the northwest at the end of the ridge were in separate land titles owned by different parties. Descending the spur were several transverse terraces. The spur was excavated under Historic Places Trust authority 2004/221 on behalf of Michael Higgins, and the pa excavation was carried out for Durham Properties under authority 2004/115. The pa investigation was carried out as part of the Lynley Park subdivision archaeological investigations.

Activity on the higher terrace of the spur was continuous with activity on the pa which was defended initially by a transverse ditch, later replaced by a long lateral ditch on the western slope. Storage pits, postholes, firescoops and shell midden were uncovered. U14/712 was identified as a terrace/midden in the New Zealand Archaeological Association site file, and had shell midden visible on the end of the ridge. The ditches were only confirmed during excavation.

The main ridge was modified and cut down in height by several metres during the preparation of the Lynley Park subdivision. Michael Higgins, the adjacent landowner, took the opportunity during this time to cut a building platform high on the spur which descended from the northwest end of the ridge, in the vicinity of what appeared to be a broad terrace (Figure 3). The earthworks took place after

1. Location of U14/712 and other recorded sites in the area.



archaeological excavation, which was carried out concurrently with the Lynley Park excavations. Significant results included finding the northern end of the lateral ditch, truncated terrace surfaces and pits, and a separate short ditch on the spur downslope of the broad terrace and at a lower level than the lateral ditch.

Material cut from the building platform in 2004 was deposited in the gully at the base of the western slope. Additional, and unauthorised, earthmoving seems to have been carried out near the toe of the spur, so that only the middle part of the spur containing a single terrace remained intact in 2007.

In 2007 the property was to be sold to Fiducia Ltd, owner of the adjacent property to the north west, and excavation of the remaining terrace on the spur took



2. Aerial photograph showing the escarpment and spur descending from the pa (right side of image).



place prior to land transfer. The archaeological investigation took place 22–26 August 2007 under the existing authority. An archaeological assessment of the property (Furey 2007) described a shallow sloping terrace, approximately 4 x 4 m, on the edge of the escarpment, with shell midden on the terrace surface and the slope above found by probing. The terrace was covered in dense long grass, inhibiting definition of the edges of the terrace. The sloping surface of the terrace



3. Photograph taken in 2004 during excavations on the upper slope. The level of the spur ditch is indicated by the lower spoil piles, and the lateral ditch level is also evident.



4. The location of the excavated terrace is shown by spoil, with the cut building platform above. Compare this photo with Figure 3, taken in 2004 during excavations on the upper terrace. The excavated terrace is visible near the base of the steep slope.

was thought to be due to erosion and downslope movement of soil masking a level occupation surface (Figure 4).

### Landscape

The Omokoroa Peninsula to the west of Tauranga is part of the fluvial terrace or plateau which extends from the base of the higher hills to the east to the margins of the Tauranga Harbour. The landform of the terrace tends to be flat to gently sloping land with steeper sided ridges trending north to north north east, ending in low coastal cliffs (escarpment) adjacent to the harbour (Briggs et al. 1996: 6). There is a narrow low-lying margin between the coastal cliff and the harbour edge. Narrow streams have cut down through the fluvial terrace.

The landscape is mantled in a number of tephra (volcanic ash) layers, the last of which was deposited approximately 800 years ago. The most relevant to this discussion are (from oldest to youngest): Hamilton Ash, chocolate brown in colour and weathered to a silty clay; Rotoehu Ash, a loose grey shower bedded sand typically between 300–500 mm deep, and the more recent yellow-brown coloured post-Rotoehu tephras of which there may be up to 10 present. The two most recent are the Taupo (ca. 1800 yrs ago) and Kaharoa (AD 1314±12; Hogg et al. 2003) tephras. Due to bioturbation and mixing of the relatively thin Holocene deposits, it is difficult to distinguish individual tephra characteristics (Briggs et al. 1996: 44). Although the underlying rock usually influences soil characteristics, in this case the deposition of tephras over all geological rock types has created similar conditions. Tephra soils are generally friable and fertile.

### Previous Excavations

A description of features uncovered on the terrace needs to be put in the context of prior archaeological work on the wider site. During the 2004 excavations for Durham Properties approximately 2580 m<sup>2</sup> of the pa were stripped of topsoil and archaeological features uncovered were mapped and excavated. Infilled kumara storage pits, small pits (bins), postholes and cooking scoops were dug into the volcanic ash and showed up as different coloured fills against the natural yellow of the ash. The majority of the occupation evidence was on the end of the ridge but a slight dip in the surface, approximately 100 m from the end of the ridge, proved on trenching to be a defensive ditch which had been deliberately infilled. There was no evidence that the base had been exposed for any length of time and subjected to natural infilling. It was interpreted as having been filled by Maori, which was confirmed when postholes and a rua kumara were uncovered dug into ditch fill near the western end of the ditch. Palisade postholes at approximately 2 m intervals were observed parallel to the inner edge of the ditch. The western end of the transverse ditch had been truncated by the digging of a lateral ditch which ran along the western slope of the ridge extending further south than the transverse ditch. The lateral ditch was associated with a long terrace, referred to as the Western Terrace, and the front scarp of the terrace may have been part of the defences by steepening the angle of the hillslope and raising the height between the base of the ditch and terrace to impede access up the western slope. Ironically, the transverse ditch was no longer functioning at this time so the palisades, believed to be associated with the transverse ditch, may have still been in use and providing a line of defence while the lateral ditch was the main form of earthwork defence.

On the end of the ridge there were numerous rectangular kumara storage pits and postholes and, to the northeast side, an extensive cooking area with firescoops and rakeout overlying infilled storage pits. Up to nine superimposed events were recorded in this area: multiple intercutting pits and postholes were dug into pit fill,



and overlying this were small firescoops (shallow scooped circular or near circular features), shell and ash rakeout. Over the main area of pits, where many were oriented the same way and apparently contemporary, there were only four episodes of superimposed activity recognized.

On the Higgins property, excavations commenced as a continuation of those carried out at Lynley Park, on a shallow but obvious terrace on the upper part of the spur. The hillslope below the terrace was also investigated. Kumara storage pits, postholes and small firescoops were found and, surprisingly, a short, shallow defensive ditch below the terrace which was not on the same contour as the lateral ditch on the main part of the pa. Eight separate events were recognised in these excavations. The shallow terrace was built over infilled and truncated pits constructed on the slope. The truncated surface suggests there had been an earlier terrace, or possibly a gentler slope descending from the flat ridgetop, into which pits were dug and then infilled, and later a level living surface with a shallow vertical back-scarp was constructed. Shallow circular scoops filled with charcoal suggest this was not a cooking area but a living surface which may have had houses or shelters. Unfortunately the full outline of any structure associated with the hearths was not obtained due to the position of the excavations and the difficulty in getting a hydraulic excavator in on the steep slope to remove the remainder of the topsoil overburden on the outside edge of the escarpment.

In total 130 storage pits were uncovered on the pa and the upper terrace. A transverse ditch, a lateral ditch and a short spur ditch were also identified. The broad pattern of layout of occupation evidence within the pa was obtained, and over 50% of the pa was intensively investigated. The report on the pa excavation is in preparation.

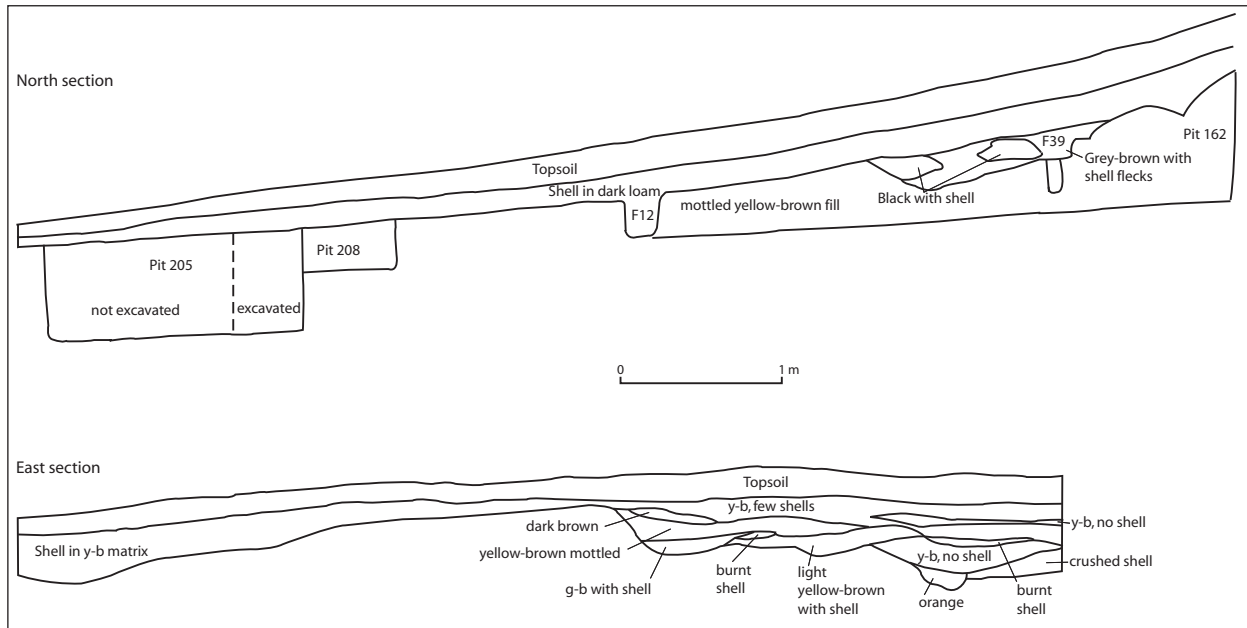
### **The Lower Terrace**

Unlike the majority of excavations carried out on the Omokoroa Peninsula and the wider Western Bay of Plenty, ploughing had not modified the surface of the Lower Terrace. There was, therefore, an opportunity to look at occupation evidence as contemporary events which appear in different layers rather than the features being reduced to a common level with a disturbed ploughed out horizon above.

Following the convention used in the 2004 excavations, grid north is to the east of magnetic north. All directions referred to will be based on grid north, and the terrace length was north-south, with the northern edge being the escarpment.

Excavation commenced with hand turving a strip 2 m wide x 8 m long, 2 m in from the edge of the escarpment. Once the stratigraphy was established a mechanical digger was used to strip the turf and topsoil off the remainder of the area and expose 12 x 8 m. The surface sloped gently with a height difference of 1080 mm over the 8 m width of the excavation. The lower (western) end of the excavation area was reasonably level with a 340 mm difference over 4.5 m. To the east of this the slope rose quite steeply – a difference in height of 740 mm over 2 m. There was no near vertical back-scarp on the uphill side as would be expected if it was a cut terrace; instead a toe of subsoil projected out into the level area, not visible in the northern section as a storage pit cut through it, and on the south-eastern side was modified by a series of superimposed firescoops. There was some indication that a bulge of subsoil at a higher level than the remainder of the terrace had been levelled off to form a narrow platform, or step, into which firescoops were dug. It is also possible that the larger occupation surface, which had the majority of features, had been modified slightly to remove slight surface irregularities in height prior to use.

Although the surface is interpreted as a natural slump feature and not a cut terrace with back-scarp, it had none the less been intensively used. Orientation of features will continue to be described using conventional terms such as 'back-



5 (above). Stratigraphic sections, north and east baulks.



6 (right). After the overlying black layer was removed, Pit 27 was exposed (going into the baulk) and pit Feature 205 is at the top of the picture.

scarp' and 'front-scarp', and 'terrace' or 'the Lower Terrace' will also be used as convenient terms.

The stratigraphy was relatively simple (Figure 5). Crushed shell in a yellow-brown coloured matrix, 80–120 mm deep, was encountered over the excavated area below the more recent topsoil and turf layer. This shell layer sealed in features including storage pits, shell-filled postholes and stakeholes cut into the underlying yellow-brown subsoil beneath it (Figure 6). The shell layer was also present in the short eastern (upslope) baulk indicating it originated higher on the spur, and the 2004 excavations higher on the slope (see above) had a similar stratigraphy with shell fragments in a yellow-brown to brown matrix overlying all features. The stratigraphy was more complicated on the southeastern side of the excavation, where superimposed firescoops produced lenses of fragmented burnt shell and charcoal, and of yellow brown subsoil, resulting from the excavating of new firescoops (Figure 7).

Several tephra layers were exposed across the level area. At the boundary of the rising subsoil and the flat area a band of white sandy Rotoehu Ash was revealed across the centre of the terrace. More commonly Rotoehu is buried under approximately 2 m of later airfall tephra (collectively the yellow-brown subsoil). Similarly the distinctive Hamilton Ash which is usually at a deeper level was present in the sides and base of shallow pits and as a small area in the centre of the excavation. The presence of these two tephra close to the surface can probably be attributed to the fact that on a hillslope they will be closer to the surface, and also a factor of the natural slump which resulted from a slide of the land surface at the interface of the two tephra layers.

The terrace had a high density of features with 300 features recorded (Figure 8). Appendix A includes dimensions and descriptions of each feature. There were 42 firescoops, 17 pits, 10 small bin pits, 214 postholes and several further miscellaneous uninterpretable features. Clustering of like features was apparent. For



7. The eastern baulk showing firescoops at the base of the black and midden layer, and also at lower levels. These scoops include Features 156 and F157.



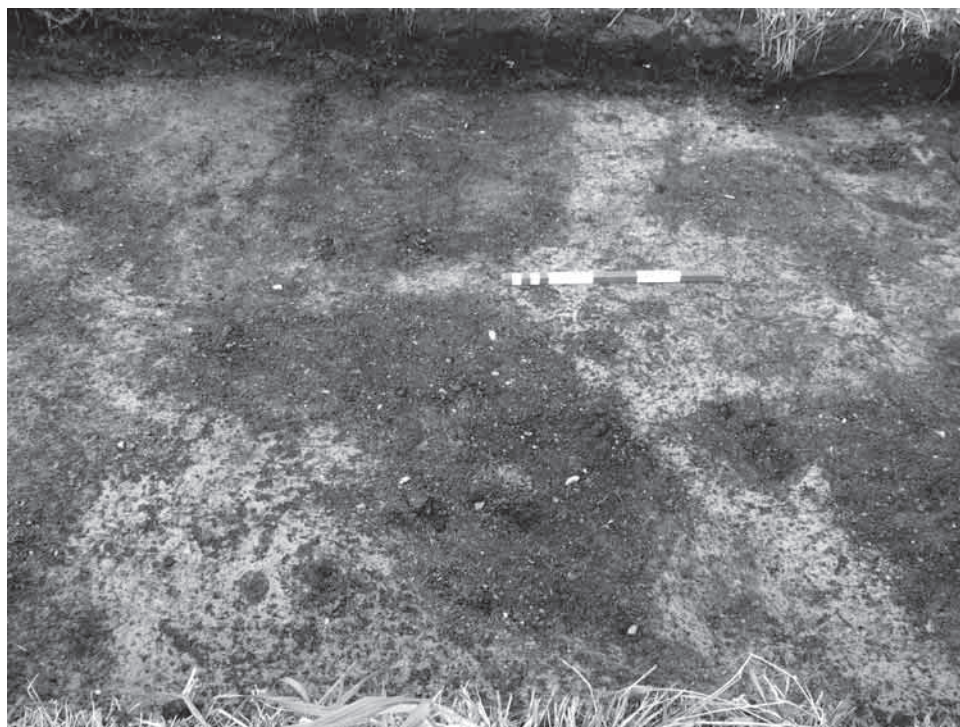




instance, the majority of the firescoops<sup>1</sup> were at the uphill side of the excavation on the narrow step of yellow-brown subsoil. These firescoops showed in plan view as shell-filled or dark circles in the yellow brown subsoil, and on excavation were shallow scoops. The pattern in this area is more concentrated than the plan indicates, as the intercutting often left only a small part of an firescoop wall intact, and the size could not be reconstructed from what remained. Elsewhere on the terrace firescoops 233, 234 and 186 were cut by storage pits, and 5, 18, 84, 108 and 109 were cut into the fill of storage pits. Firescoops were therefore dug and used on this terrace during several occupations. The majority of the scoops on the eastern (uphill) side are late, and probably from the last occupation of the terrace. Those dug into pit fill may be from the same occupation but the firescoops cut by pits are from an earlier use. Interestingly there was little residual charcoal in the scoops and very few stones.

Postholes were the most common type of feature with 214 recorded. Size varied from 700 x 500 mm to 4 x 4 mm. The smaller holes are, more correctly, termed 'stakeholes' and result from a stake being rammed into the ground. Only a few at the upper end of the size range were substantial and up to 400 mm deep; the majority were less than 200 mm diameter and 200 mm deep. Postholes were also found in the bases of storage pits and these will be discussed below. The majority of pits were however not fully excavated so the posthole pattern and roof support arrangement was not able to be determined for most pits.

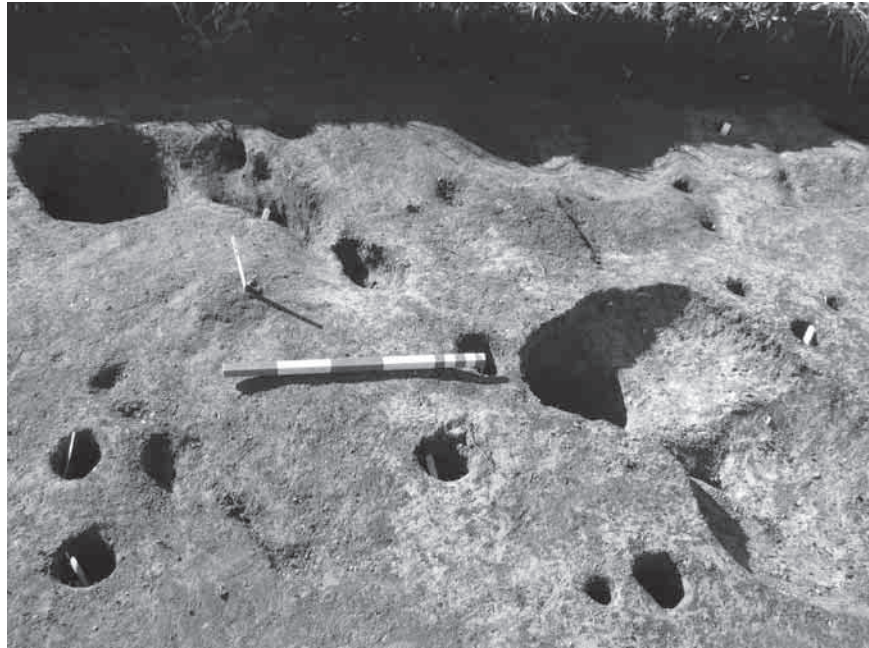
There were seven different types of fill in the postholes. Shell was found in 66% of the postholes, and a distinctive fill of crushed shell and dark loam, similar to the fill of the firescoops, was present in 47%. The dark coloured shell-filled postholes were visible when the shell midden was removed and are likely to be part of the last occupation on the terrace but the number of postholes suggests multi-



8 (opposite). U14/712  
lower terrace, all  
features.

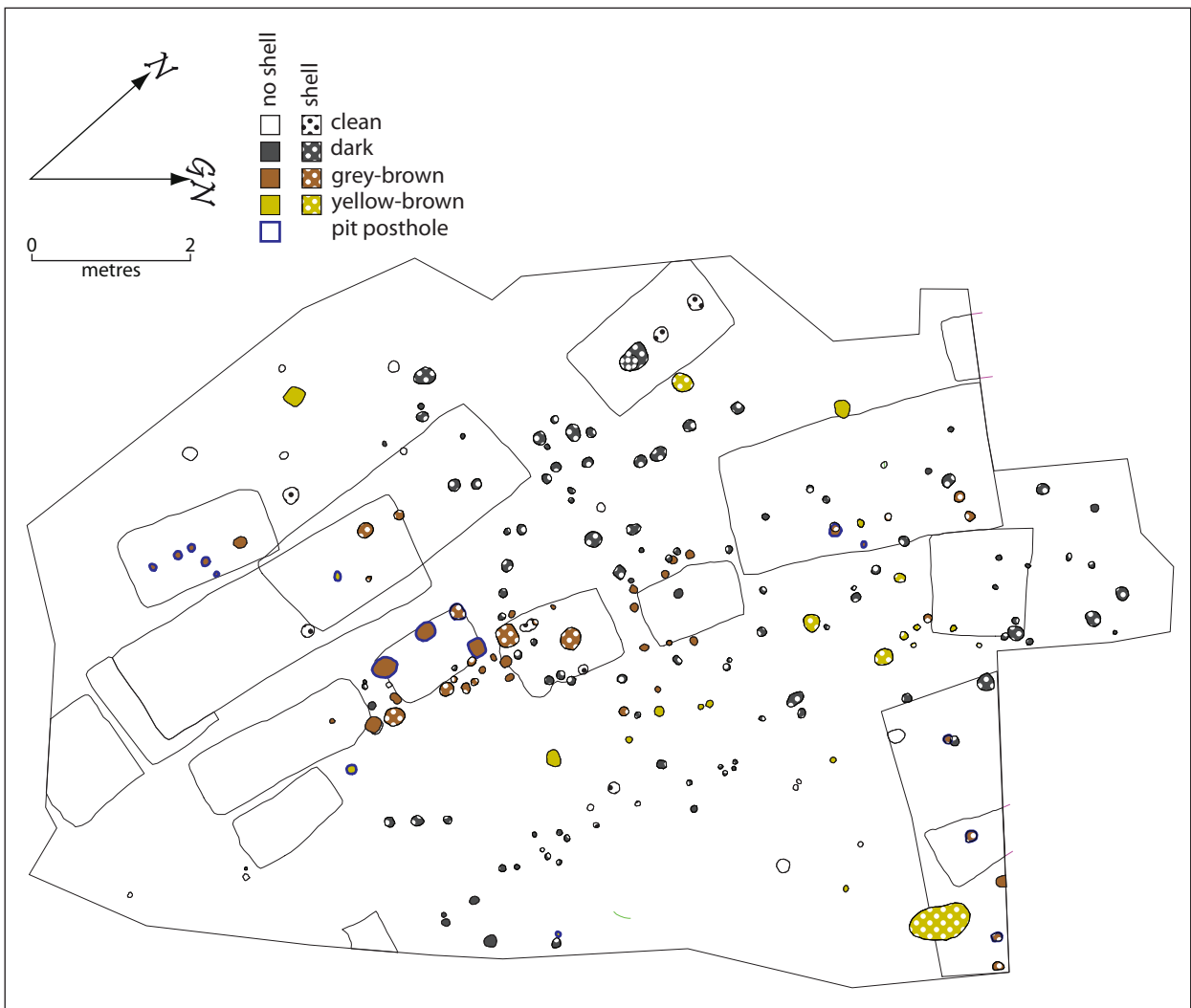
9 (left). Firescoops and  
postholes filled with  
black and shell at the  
base of the black and  
shell layer.

<sup>1</sup> Law (2008) proposed that 'earth oven' should be used to describe these features but most if not all such features on the Lower Terrace were shallow scoops that would not have been covered, hanging-type ovens, so the term 'firescoop' is preferred here.



10 (right). Features after excavation. The double firescoop on the right is F4, and the left end of the scale rests on Pit 205.

11 (below). Postholes coded according to fill type.



ple, successive, structures. There were a number of paired stakeholes, that is, small holes adjacent to one another. These possibly formed a shelter or windbreak for the firescoops to the west. Unfortunately little sense can be made of the pattern of postholes on the terrace as the digging of storage pits destroyed surfaces, except to say that they are concentrated through the middle of the terrace extending out to the escarpment edge. The low density to the south east can be accounted for by this part of the excavated area having a sloping surface. Postholes also occurred on the surface of infilled pits, and the impression is that the majority of the small postholes, and the shell filled postholes are later than the pits.

Pits can be separated on size. Bin pits are between 300 x 300 mm and 1100 x 600 mm, and are generally square or rectangular although three are round at approximately 300 mm diameter. Larger storage pits vary from 1250 x 770 mm to 4500 x 1450 mm. All the larger pits are rectangular, and are relatively narrow for their length. They are also shallow, with the deepest being 800 mm. Several different fill types were recognised. Eleven had shell fragments incorporated although the matrix colour was either yellow-brown similar to the subsoil, or a grey-brown which was presumably stained with organic material and included original topsoil. Yet other pits were difficult to distinguish from the subsoil into which they were cut and it was only a looser texture that identified that a pit was present. All pits, apart from Pit 162 in the north eastern corner, are on the same alignment. In Pit 162 there were three relatively insubstantial postholes centrally aligned in the floor of the pit. The central posthole was encountered in the pit fill 120 mm above the floor, indicating the post was still in place when the pit was filled. More unusually the height of the pit walls varied from 140 mm at the lower end to 650 mm at the upper end. The floor was relatively level but due to the substantial height difference, the lower end would have had to have been enclosed by framed walls for which there was no posthole evidence, or had a longer post at the downhill end. It's difficult to understand how this pit at the rear of the terrace could be water tight against slope wash, but perhaps on the unexcavated slope there was a drain beyond the pit edge to divert surface water. Drains have not been found before in excavations at Omokoroa, but then a pit cut into a steep slope has not been found either. A small shallow bin, Pit 161 was later cut into the infilled pit, followed by firescoops.

Storage pits consistently have near vertical walls and flat base, and aligned postholes in the floor suggest that some form of rule has been used to ensure they are a similar distance apart from walls and from each other. However occasionally a pit is excavated which is less formal in appearance. The northern end of pit 173 has an irregular floor level and no clear definition between floor and walls which slope outwards to the top of the pit (Figure 12). Two large features (228 and 229) of similar size occupy the northern one third of the pit and have bases at 120 mm below floor level. Five small stakeholes (198–202) were found in the floor of the pit and there was an irregular circular depression in the south west corner.

Pit 275 had similar sumps (276, 277) at the north end, although they were very shallow at 100 mm deep. The pit itself was only 300 mm deep, which is not unusual on this terrace – only pits 205 and 295 were more than 450 mm deep. Another unusual pit was 176, which had three relatively large postholes in the base (209–211) for the size of the pit, especially when compared with those in the floor of the larger pit 162. There were also several round bin pits (Features 233, 234, and 288). Features of this type have been encountered on other sites in the Omokoroa area.

Intercutting pits are present. The cluster of pits near the outside edge of the terrace are ordered with 295 being the latest, cutting 298 which in turn was cut into the fill of 297. Pit 172 was also cut by 295 but its relationship to either 297 or 298 is unknown. Pit 208 near the northern edge of the terrace was cut by pit 205.

A large lump of Hamilton ash (Figure 13) protruded up onto the occupation level. This ash is very compact, sticky when wet and does not drain well. In previ-





12. Pit 173 looking north with sumps 228 and 227 at the top, postholes and circular depression.



13. The terrace part way through excavation showing pit features. The large elongated dark stain running left to right above the excavated pits is the surface of infilled F297, 295 and 172. Note the protrusion of Hamilton ash which is also identified in Figure 10.



ous excavations on the ridge top pa, it was found that pit floors always stopped within the Rotoehu tephra above the Hamilton, suggesting that Hamilton ash was difficult to dig, or more likely its poor drainage qualities made it an unsuitable floor within pits. On the west side of this terrace the yellow-brown subsoil graded into grey-brown coarse sand, i.e., the later tephras graded into Rotoehu tephra. Pit 27 was visible as a dark loam cut into yellow-brown subsoil, but the walls were Rotoehu, a cream yellow coarse ash which graded with depth into a light grey brown ash on the floor. The lower 400 mm of the walls of Pit 205, and the floor, were of Hamilton Ash. The presence of Hamilton Ash so close to the surface may be a result of the slump event which formed the terrace.

### Midden analysis

Shell samples were collected from several features for analysis of species eaten. A 10 litre sample was excavated from the shell layer overlying the terrace features, to compare to proportions in the midden overlying the upper terrace excavated in 2004. The firescoop 18 was sampled, and pit 229 and posthole 195. The firescoops generally had very crushed and burnt shell contents unsuitable for midden analysis.

The midden samples were dominated by cockle (*Austrovenus stutchburyi*) with a few pipi (*Paphies australis*) (Table 1). Although both species are found in Tauranga Harbour, pipi is more susceptible to the presence of fine silt or mud, and inhabits a coarser sand bottom. It is likely the shellfish were collected near the site.

	Cockle	Pipi	Macra
Layer 2	252	26	
F229	95	2	
F195	186		
F18	25	3	4

Table 1. Shell midden analysis. Numbers represent MNI.

### Fish

A small concentration of identifiable fishbone of barracouta (*Thyrsites atun*) was found in the fill of pit 176. The fill matrix included whole shells and a small amount of charcoal. This was the only fishbone found on the site.

### Obsidian flakes

There were 10 flakes and one core recovered from the base of the shell midden overlying the natural tephra or pit fill. All pieces but for one were green in transmitted light. The remaining flake was very dense and did not transmit light – the stone was also of poor quality and had not fractured conchoidally. The flakes, with the exception of one, were small, i.e., less than 20 x 30 mm, although one had usewear such as chipping or nibbling on one side of an edge. The larger flake (#5) had a naturally sharp, thin, curved edge and minute chips removed from both sides of this edge. There were also parallel scratches at an angle to the edge on one side. The use was, however, not abrasive or persistent enough to damage the sharp edge. The core (#7), which was elongated, had bruising on both long edges of one

face showing where flakes had been removed. A small abrader, with broad smooth surfaces and concavity from constant rubbing, also had shallow scratches in more than one direction on one side indicating where something light and narrow had been dragged across one surface

### Radiocarbon age estimate

It was difficult to obtain suitable samples for radiocarbon dating. The shell in the firescoops was burnt and fragmented and therefore unsuitable, and no hearth features or contemporary midden deposits were encountered.

One charcoal sample was submitted to the Radiocarbon Dating Laboratory at University of Waikato (Table 2). Sample Wk25348 was from feature 11, firescoop, one of the last features on the site and contemporary with the cluster of firescoops on the uphill side of the terrace. It also postdated the use of pit 162, and probably other pits.

The charcoal sample was identified by Rod Wallace, Anthropology Department, University of Auckland, as manuka (*Leptospermum scoparium*), olearia (*Olearia* sp.) and akeake (*Dodonaea viscosa*). All are relatively short lived species and therefore suitable for dating.

Radiocarbon dating cannot give a precise date of occupation. A sample gives a range of radiocarbon years within which the material being dated died. Shellfish in a midden, or short-lived wood burnt to charcoal in a fireplace, are therefore proxies for the date of the occupation. The amount of  $^{14}\text{C}$  in the atmosphere or sea has changed over time, and the radiocarbon age is calibrated to historically dated material in order to obtain a calendar date. These results are presented at 68.2% and 95.4% probability levels. The time interval in calendar years does not mean that a site was occupied for that period of time; rather it means that the event being dated occurred sometime within that range of years. Variation in atmospheric  $^{14}\text{C}$  might mean there are several possible age ranges – the higher the probability, the greater the statistical chance of the event occurring within that period.

The 17th century date can be compared to a date from the excavations above the spur ditch. A fireplace had been dug on a terrace cut into filled-in storage pits. Short-lived charcoal gave a date (Wk25348) of  $365 \pm 30$  BP, or AD1470–1640 at 95.4% probability. This is not dissimilar to the date from the lower terrace which dates the last occupation on the terrace. Radiocarbon dates are pending for U14/3283 and for the occupation within the pa U14/712.

Sample	Material	Age estimate BP	Calibrated range AD	
			68.2%	95.4%
Wk 25349	Charcoal	283 ± 30	1520–1540 (1.6%)	500–1580 (15.5%)
			1620–1680 (54.9)	1620–1680 (57.5%)
			1740–1760 (9.1%)	1730–1800 (22.5%)

Table 2. Radiocarbon age estimate, Feature 11, U14/712, lower terrace.

### Discussion

The terrace, or rather the natural mostly level feature, was outside and downslope of the defensive ditch for pa U14/712. There was however little indication in the archaeology to link this terrace stratigraphically with the spur ditch above. The only common layer was the shell midden which covered the excavation areas on the slope above the ditch, and the ridgetop itself. This layer sealed in all features

and activity layers and also sealed over the infilled ditch. There was no obvious midden, or area of fire rakeout associated with the firescoops. Shell midden incorporated into the fill of pits does however suggest that there was an earlier surface containing shell midden which was dug into to form a new pit and the older pit filled in simultaneously. However the pit fill may have also come from an adjacent area. None of the pits had indications of being left open and exposed to the weather for any length of time. This is a common feature of pits in the Bay of Plenty – even the last pits used on the site were usually filled prior to leaving.

Although the radiocarbon dates for the upper 2004 excavation, and the Lower Terrace overlap, the occupation on the Lower Terrace may however not be associated with use of the pa at all. There was activity lower on the slope (destroyed but midden remained on the escarpment), and a more extensive and well defined site, U14/3282, on a knoll which might be considered the toe of the spur. Evidence of Maori occupation, with little visible on the surface, is common throughout the Omokoroa area, and a number of sites have been excavated to the east and west of this site (Furey, reports in preparation).

Interestingly the surface of the Lower Terrace was more intensively used than the majority of areas within the pa, and comparable to the level of activity on terraces encountered on U14/3283 Terrace 3 and Area C (Furey and Hudson 2008) to the west of this site.

In terms of overall layout there were few features to the west of the line of pits on the downslope side but activity went direct to the edge of the escarpment. All space was used with firescoops on sloping ground near the back-scarp and a pit also dug into the slope on the uphill side.

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## APPENDIX A FEATURE DESCRIPTIONS

D	Dark fill
GB	Grey brown fill
S	Shell fill
SD	Shell, dark fill
SGB	Shell, grey brown fill
SYB	Shell, yellow brown fill
Y	Yellow fill
YB	Yellow brown fill

Feature	Type	Length	Width	Depth	Pit	Notes	Fill
1	posthole	0.09	0.09	0.17		Dark brown shell and loam mixture. Overlain by midden. Cuts into natural.	SD
2	posthole	0.04	0.04	0.06		As for F1. Tapers to base.	SD
3	posthole	0.1	0.1	0.19		Shell and loam mix	SD
4	firescoop	0.87	0.5			3 or 4 intercutting scoops filled with shell, crushed and some burnt. Main scoop (latest?) measures .52 x .52 x.1 m Underneath northern corner was another feature (15) predating the scoop.	S
5	firescoop	0.45	0.39	0.06		Covered by 30 mm of yellow-brown fill. Filled with burnt shell, crushed charcoal. Cuts into fill layer?	S
6	posthole	0.16	0.15	0.32		Dark loam, firecracked rock, burnt shell. Cut into fill layer?	SD
7	posthole	0.06	0.06	0.08		Dark loam. Cut into fill?	D
8	posthole	0.07	0.07	0.13		Dark loam, few shell flecks. Cut into fill.?	SD
9	posthole	0.07	0.06	0.15		Adjacent to F5	
10	posthole	0.2	0.14	0.36		Black topsoil at top. Mottled yellow-brown underneath partly cut into pit fill? No shell. Wood fragments. Wider at top - at base post is .08 x .08 m. Modern?	YB
11	firescoop	0.38	0.35	0.14		charcoal, stones, shell, with dark loam visible from top of shell layer. Dug into shell	SD
12	posthole	0.17	0.2	0.34		Cut partly into pit fill. Loose fragmentary shell, partly collapsed in and void. Walls hard and easily defined. Partly undercuts baulk.	SD
13	posthole	0.11	0.11	0.16		Shell in dark loam. Cut into pit fill	SD
14	posthole	0.18	0.07	0.3		L-shaped slot posthole. Round at top. Sides firm on edge of pit fill	
15	hole	0.3	0.3	0.27		Light brown fill, broken shell, softer than walls. Under scoop F4.	SYB
16	hole	0.4	0.45	0.3		Cut into pit fill? Vertical on NW side. Sloping slightly NE side. Grey-brown loam with shell fragments. Dark shell-filled feature. Cuts 17 and pit fill.	SGB



Feature	Type	Length	Width	Depth	Pit	Notes	Fill
17	unknown					shell and grey-brown loam cut into pit fill	SGB
18	firescoop	0.75	0.8	0.22		Large, deep. Filled with burnt, crushed shell some fishbone, oven stones and charcoal. Charcoal and shell sampled for dating.	S
19	posthole	0.05	0.05	0.17		Burnt shell.	S
20	posthole	0.7	0.5	0.13		Mixed yellow-brown	YB
21	unknown	0.04	0.04	0.13		Mixed yellow-brown. Few shells.	SYB
22	firescoop	0.55	0.6	27		3 layers. Top: grey-brown with shell. Middle: burnt shell. Base: grey-brown with shell.	SGB
23	hole	0.24	0.2	0.17		Slightly undercut. Grey-brown fill.	GB
24	firescoop	0.55	0.5	0.7		Shallow. Burnt shell, oven stones, little soil, shell very crushed. Cuts corner of pit.	S
25	posthole	0.1	0.1	0.11		Shell and dark brown loam fill.	SD
26	posthole	0.1	0.1	0.15		Shell in grey-brown loam, loose, dug into fill.	SD
27	pit						
28	posthole	0.1	0.1	0.16		Shell, crushed and burnt. Cut into yellow-brown fill.	SYB
29	posthole	0.09	0.1	0.12		Shell, crushed and burnt. Cut into yellow-brown fill.	SYB
30	posthole	0.11	0.1	0.11		Shell, crushed and burnt. Cut into yellow-brown fill.	SYB
31	posthole	0.05	0.05	0.07		Shell, crushed and burnt. Cut into yellow-brown fill.	SYB
32	posthole	0.07	0.07	0.14		Shell, crushed and burnt. Cut into yellow-brown fill.	SYB
33	posthole	0.07	0.08	0.12		Shell, crushed and burnt. Cut into yellow-brown fill.	SYB
34	posthole	0.05	0.05	0.05		Shell, crushed and burnt. Cut into yellow-brown fill.	SYB
35	posthole	0.08	0.09	0.11		Shell, crushed and burnt. Cut into yellow-brown fill.	SYB
36	posthole	0.15	0.1	0.12		Shell, crushed and burnt. Cut into yellow-brown fill.	SYB
37	hole	0.65	0.4	0.25		Cuts through wall of pit. Top 140mm dark grey-brown with shell, rest grey-brown with no shell.	GB
38	hole	0.35	0.35	0.15		Cuts through wall of pit. Top 140mm was dark grey-brown with shell, below was grey-brown with no shell.	GB
39	Firescoop					On fill of pit F18. Cuts into feature fill. Same as upper layer of F37, 38.	
40	concentration of small stones		0.5	0.5		Concentration of stones 50-70mm in confined area within midden overlying features.	
41	posthole	0.2	0.2	0.38		Burnt fragmented shell and black fill over yellow-brown fill and shell mix. 2 large water rolled stones.	SYB
42	posthole	0.13	0.13	0.14		Burnt fragmented shell and black fill.	SD
43	posthole	0.05	0.05	0.15		Yellow-brown fill. No shell.	YB

Feature	Type	Length	Width	Depth	Pit	Notes	Fill
44	posthole	0.05	0.06	0.08		Shell and black fill.	SD
45	posthole	0.05	0.06	0.08			
46	posthole	0.06	0.06	0.12			
47	posthole	0.05	0.05	0.1		Shell and black fill.	SD
48	posthole	0.05	0.05	0.1		Shell and black fill.	SD
49	posthole	0.05	0.05	0.18		Shell and black fill.	SD
50	posthole	0.05	0.05	0.19		Shell and black fill.	SD
51	posthole	0.12	0.1	0.22		Shell and black fill.	SD
52	hole	0.5	0.38	0.28	205	Surface of burnt shell and black grading into more whole shells. Charcoal in yellow-brown fill. Cut into pit fill. Floor sloping. Slightly undercut on one side.	YB
53	posthole	0.6	0.6	0.11		Shell and black fill.	SD
54	posthole	0.13	0.1	0.12		Shell and black fill.	SD
55	posthole	0.2	0.25	0.4		Oval, stepped near base. Deepest part .9 x .11 m. Shell in yellow-brown	SYB
56	posthole	0.13	0.15	0.2		Shell in yellow-brown to black	SD
57	posthole	0.15	0.17	0.28		Shell in yellow-brown to black	SD
58	posthole	0.13	0.14	0.18		Shell in yellow-brown to black	SD
59	posthole	0.12	0.17	0.13		Shell in yellow-brown to black	SD
60	posthole	0.09	0.07	1.2		Shell in yellow-brown to black	SD
61	posthole	0.06	0.06	0.08		Clean yellow-brown fill.	YB
62	posthole	0.05	0.06	0.12		Clean yellow-brown fill.	YB
63	posthole	0.12	0.12	0.23		Clean yellow-brown fill.	YB
64	posthole	0.07	0.06	0.08		Clean yellow-brown fill.	YB
65	posthole	0.05	0.07	0.11		Shell in yellow-brown/black	SD
66	posthole	0.1	0.1	0.32		Shell in black fill.	SD
67	posthole	0.1	0.1	0.23		Shell fill. Cut into fill of pit.	S
68	firescoop	0.3	0.38	0.05		Shell fill.	S
69	posthole	0.07	0.09	0.28		Shell in dark brown loam. Large rock (water rolled, burnt) occupying most of the hole.	SD
70	posthole	0.06	0.05	0.14		Shell in dark loam.	SD
71	posthole	0.07	0.07	0.09		Shell in dark loam.	SD
72	posthole	0.1	0.12	0.07		Shell in dark loam. Possible posthole.	SD
73	posthole	0.06	0.1	0.08		Shell in dark loam.	SD
74	firescoop	0.34	0.33	0.13		Shell in dark loam.	SD
75	firescoop	0.5	0.7	0.2		Oval, filled with burnt shell and black fill. Dug into fill.	SD
76	firescoop	0.54	0.5	0.07		Oval, filled with burnt shell and black fill. Dug into fill.	SD
77	posthole	0.16	0.15	0.6		Modern	
78	firescoop	0.53	0.53	0.05		Burnt shell, some stones.	S
79	posthole	0.14	0.12	0.43		Burnt shell, large water rolled stone wedged into hole.	S
80	posthole	0.15	0.15	0.11		Burnt shell, small stone	S
81	posthole	0.06	0.06	0.13		Burnt shell	S
82	posthole	0.07	0.07	0.14		Burnt shell	
83	posthole					Double hole - .12 x .12 x .25 m and .08 x .08 x .17 m. Burnt shell fill.	S
84	firescoop	0.6	0.7	0.15		Squared. Lot of Amphibola cockle, stones. Base scooped but uneven.	S

Feature	Type	Length	Width	Depth	Pit	Notes	Fill
85	posthole	0.07	0.07	0.09		Shell with black fill.	SD
86	unknown	0.25	0.24	0.06		Unknown. Unevenly shaped, flat base, shell and black fill.	SD
87	posthole	0.07	0.07	0.09		Shell with black fill.	SD
88	posthole	0.09	0.09	0.22		Shell with black fill.	SD
89	posthole	0.11	0.09	0.1		Shell with black fill.	SD
90	posthole	0.07	0.07	0.16		Shell with black fill.	SD
91	posthole	0.11	0.12	0.09		Shell with black fill.	SD
92	posthole	0.13	0.15	0.2		Shell with black fill.	SD
93	posthole	0.19	0.19	0.1		Shell with black fill.	SD
94	posthole	0.05	0.05	0.1		Shell with black fill.	SD
95	posthole	0.05	0.07	0.1		Shell with black fill.	SD
96	posthole	0.12	0.12	0.19		Shell with black fill.	SD
97	posthole	0.1	0.11	0.2		Shell with black fill.	SD
98	posthole	0.05	0.05	0.09		Shell with black fill.	SD
99	posthole	0.09	0.09	0.18		Shell with black fill.	SD
100	posthole	0.2	0.15	0.16		Shell with black fill.	SD
101	posthole	0.1	0.1	0.13		Shell with black fill.	SD
102	posthole	0.1	0.1	0.1		Shell with black fill.	SD
103	posthole	0.11	0.15	0.28		Shell with black fill.	SD
104	posthole	0.06	0.06	0.11		Shell with black fill.	SD
105	posthole	0.1	0.11	0.14		Double posthole has <i>Cyclomactra ovata</i> shells in fill, not found elsewhere. Shallower - black with shell, larger - brownish with whole shells	SD
106	posthole	0.12	0.1	0.9			
107	posthole	0.07	0.07	0.12			
108	firescoop	0.5	0.5	0.13		Black and burnt on top, grey-brown with burnt shell under small firecracked rocks. Typical basin shaped.	SGB
109	firescoop	0.7	0.7	0.25		Same fill as 108 also base shaped. Steep sided.	SGB
110	hole	0.2	0.32	0.1		Shell in light grey-brown fill with mottles of subsoil. Charcoal. Dug into dark grey tephra. Sloping sides, irregular shape.	SGB
111	hole	0.25	0.27	0.19		Round. Dug into yellow-brown. Same fill as 110.	SGB
112	hole	0.33	0.32	0.17		Round. Dug into yellow-brown. Same fill as 110.	SGB
113	hole	0.3	0.3	0.18		Vertical sides, squared on 2 sides. More triangular.	
114	posthole					Has been previously numbered as 89 but is not 89.	
115	posthole	0.1	0.09	0.09		Shell with black fill.	SD
116	posthole	0.06	0.1	0.1		Grey-brown fill	GB
117	posthole	0.07	0.07	0.16		Grey-brown fill	GB
118	posthole	0.08	0.07	0.17		Grey-brown fill and shell.	SGB
119	posthole	0.14	0.08	0.1		Grey-brown fill and shell.	SGB
120	posthole	0.07	0.07	0.07		Grey-brown fill and shell.	SGB
121	posthole	0.06	0.05	0.09		Shell and black fill. In pit fill.	SD
122	posthole	0.15	0.16	0.14		Shell in grey-brown with clay pieces. Base of posthole is clay.	SGB

Feature	Type	Length	Width	Depth	Pit	Notes	Fill
123	posthole	0.08	0.11	0.115		Shell in grey-brown fill. Cuts across pit wall.	SGB
124	posthole	0.07	0.07	0.09		Grey-brown fill.	GB
125	posthole	0.05	0.05	0.06		Shell and black fill.	SD
126	posthole	0.04	0.04	0.06		Shell and black fill.	SD
127	posthole	0.09	0.09	0.15		Black fill.	D
128	posthole	0.2	0.2	0.08		Grey-brown fill.	GB
129	posthole	0.24	0.24	0.28		Grey-brown with shell.	SGB
130	posthole	0.06	0.06	0.07		Grey-brown fill.	GB
131	posthole	0.16	0.16	0.2		Shell fill. Cut into fill of pit.	S
132	posthole	0.05	0.05	0.06		Shell and black fill.	SD
133	posthole	0.07	0.07	0.09		Shell and black fill.	SD
134	posthole	0.09	0.05	0.15		Grey-brown fill.	GB
135	posthole	0.14	0.15	0.2		Shell and black fill.	SD
136	posthole	0.06	0.07	0.05		Grey-brown fill.	GB
137	posthole	0.1	0.09	0.2		Grey-brown fill.	GB
138	posthole	0.1	0.11	0.13		Black fill.	D
139	posthole	0.07	0.05	0.15		Grey-brown fill.	GB
140	posthole	0.08	0.11	0.12		Grey-brown fill.	GB
141	posthole	0.1	0.08	0.08		Grey-brown fill.	GB
142	posthole	0.06	0.06	0.08		Grey-brown fill.	GB
143	posthole	0.09	0.08	0.24		Shell and black fill.	SD
144	posthole	0.09	0.07	0.18		Shell and black fill.	SD
145	posthole	0.1	0.09	0.35		Shell and black fill.	SD
146	posthole	0.07	0.06	0.16		Shell and black fill.	SD
147	posthole	0.08	0.08	0.15		Shell and black fill.	SD
148	posthole	0.07	0.07	0.09		Shell and black fill.	SD
149	posthole	0.05	0.06	0.19		Shell and black fill.	SD
150	posthole	0.05	0.05	0.09		Shell and black fill.	SD
151	posthole	0.04	0.02	0.05		Shell and black fill.	SD
152	posthole	0.06	0.05	0.2		Shell and black fill.	SD
153	posthole	0.06	0.06	0.18		Shell and black fill.	SD
154	posthole	0.06	0.06	0.22		Shell and black fill.	SD
155	posthole	0.06	0.06	0.1		Shell and black fill.	SD
156	posthole	0.12	0.12	0.44		Shell and black fill. Still no base of posthole.	SD
157	firescoop	0.32	0.34	0.08		Shell filled. Rocks.	S
158	firescoop	0.5	0.5	0.12		Shell filled.	S
159	Firescoop	0.38	0.23	0.2		Shell and grey-brown fill.	SGB
160	posthole	0.12	?	0.27		Grey-brown fill cut from base of F38 against baulk. In section.	GB
161	pit	0.7	950			Straight sided. Darker fill within pit F162. Charcoal and shell in grey-brown fill. .08mm deep. Looks pit-like on plan but very shallow.	SGB
162	pit	>3560	1000			depth in middle .44 m. Possibly lower end truncated. Yellow brown mottled homogenous fill. Few flecks of shell. Central posthole visible in fill at 120mm off pit floor. Two other postholes (one at either end) in floor. Likely central posthole still intact as pit being backfilled. Depth one end .65 m and .14 at lower end.	SYB



Feature	Type	Length	Width	Depth	Pit	Notes	Fill
163	posthole	0.35	0.23	0.46		Double posthole? Deeper hole had remnants of post (modern?) and shell and black fill. In fill of 166. Other post.32 m deep.	SD
164	posthole	0.16	0.15	0.23		Shell (cockle) filled.	S
165	posthole	0.16	0.21	0.23		Shell (cockle) filled.	S
166	pit	1.95	1.02			Dark yellow-brown.	YB
167	unknown	0.15	0.18	0.03		Flat bottomed. Definite vertical sides filled with shell. Dug into pit 166.	SD
168	posthole	0.05	0.05	0.1		Shell filled.	S
169	posthole	0.13	0.13	0.17		Dark soil, few shell flecks.	SD
170	posthole	0.12	0.12	0.12		Dark soil, few shell flecks.	SD
171	posthole	0.05	0.05	0.13		Dark soil and shell.	SD
172	pit	4.5	1.45	0.33		Large unexcavated pit next to F173	
173	pit	1.9	0.95			See comments under F228. Base of sump is .55 from top of pit wall. Depth = .18 in SE corner. Irregular floor which was hard surface. May not be floor but compacted fill as so irregular and a dark layer possibly goes under it. Postholes of similar size visible at this 'floor' level. Circular scoopy thing in SW corner. Two large features of similar size occupy northern 1/3 of pit but are 120mm below 'floor'. To the north of the holes, the floor and wall are irregular and slope to the top of the pit.	
174	posthole	0.17	0.21	0.22		Burnt shell in grey-brown fill. Dug into pit F175. Central in floor but found 1/2 was .65m depth to base of posthole.	SGB
175	pit	1.35	0.95	0.45		Mottled yellow and brown tephra with shell fragments. Pit cut by hearth (with stones) and by another dark scoop feature. Small amount of charcoal.	SYB
176	pit	1.25	0.77			Fill of brown mottled loam, darker near the top.	D
177	posthole	0.11	0.11	0.13		Black fill and shell.	SD
178	posthole	0.1	0.1	0.37		Black fill and shell. Large pipi.	SD
179	posthole	0.1	0.1	0.27		Black fill and shell.	SD
180	posthole	0.1	0.1	0.25		Grey-brown, few shell flecks.	SD
181	posthole	0.08	0.08	0.9		Grey-brown.	GB
182	posthole	0.07	0.07	0.13		Grey-brown	GB
183	posthole	0.08	0.08	0.09		Grey-brown. With some burnt shell. In pit fill.	SGB
184	posthole	0.06	0.06	0.14		Grey-brown.	GB
185	hole	0.35	0.35	0.21		Cut by pit F175. Cuts into 186. Filled with yellow-brown mottled fill, similar to pit fill.	YB
186	Firescoop	0.7	0.3	0.1		Cut by pit F175. Cuts into 186. Filled with yellow-brown mottled fill, similar to pit fill.	YB
187	posthole	0.05	0.05			Black fill.	D
188	posthole	0.04	0.04	0.13		Grey brown fill with some shell.	SGB

Feature	Type	Length	Width	Depth	Pit	Notes	Fill
189	hole	0.2	0.2	0.17		Cut by pit F190. Grey-brown.	GB
190	pit	0.88	1.22	0.25		Fill of grey-brown soil and shell except near edges which are mottled yellow-brown mixed with grey-brown and no shell. Walls light grey-brown with coarse sand? As floor. No postholes in floor	SGB
191	posthole	0.4	0.4			Black fill and shell.	SD
192	posthole	0.22	0.22	0.45		Modern? Black at top then mixed yellow-brown.	YB
193	posthole	0.08	0.08	0.05			
194	posthole	0.09	0.09	0.09			
195	posthole	0.17	0.17	0.2		Filled with small whole cockles. Dating sample taken.	S
196	posthole	0.17	0.14	0.2			
197	posthole	0.14	0.14	0.18		Grey-brown only visible on pit floor but not part of pit structure. Cuts into large hole and into pit F173.	GB
198	posthole	0.07	0.07	0.11	173	In base of pit F173. Grey-brown fill. Related to pit.	GB
199	posthole	0.08	0.08	0.12	173	In base of pit F173. Grey-brown fill. Related to pit.	GB
200	posthole	0.08	0.08	0.1		In base of pit F173. Grey-brown fill. Not related to pit.	GB
201	posthole	0.7	0.7	1.7	173	In base of pit F173. Grey-brown fill. Related to pit.	GB
202	posthole	0.05	0.05	0.07	173	In base of pit F173. Grey-brown fill. Related to pit.	GB
203	posthole	0.14	0.14	0.2	205	Appears at .30m below depth of top of pit 205. Grey-brown fill.	GB
204	posthole	0.05	0.05	0.13	205	Appears .10 m below depth of top of pit 205. Grey-brown fill.	GB
205	pit	1.6	>2.8	0.8		Fill contains mottled yellow-brown lumps of Hamilton ash. Lower 100mm of wall cut into in situ Hamilton ash. Mixture of hard and soft fill. Cuts F208.	Y
206	posthole	0.6	0.5	1.4		Grey-brown and shell fill.	SGB
207	posthole	0.08	0.07	0.2		Grey-brown and shell fill.	SGB
208	pit	>1.35	1.15	0.22		Cut by F205. Fill bright orange-brown mottled with lighter.	YB
209	posthole	0.21	0.19	0.2	176	In floor of pit F176. Grey-brown fill.	GB
210	posthole	0.16	0.16	0.17	176	Grey-brown fill with shell. Loose. In the corner of pit 176.	SGB
211	posthole	0.19	0.15	0.13	176	Base of post in hole. Pos .05x.05m. In pit 176	GB
212	posthole	0.2	0.2	0.2	176	Grey-brown bottom of post in pit floor. Cut by pit 176.	GB
213	posthole	0.05	0.05	0.2		Rectangular in plan, pointed base. Modern stake?	
214	posthole	0.12	0.1	0.08		Grey-brown fill.	GB
215	unknown						
216	bin pit	0.5	0.79	0.11		Mottled yellow-brown fill. Sides and base light coarser ash.	YB

Feature	Type	Length	Width	Depth	Pit	Notes	Fill
217	posthole	0.1	0.09	0.28		Grey-brown with large intact Cominella shells at base.	SGB
218	posthole	0.06	0.06	0.11		Black and shell fill. (possibly recorded twice)	SD
219	posthole	0.24	0.2	0.53		Grey-brown and shell fill, charcoal. Either part of, or later than, the pit.	SGB
220	posthole	0.09	0.09	0.3		Grey-brown	GB
221	posthole	0.1	0.09	0.33	162	In floor of pit 162.	SGB
222	posthole	0.1	0.15	0.25	162	In floor of pit 162. Found 120mm above floor in fill.	SGB
223	posthole	0.09	0.11	0.24	162	In floor of pit 162.	SGB
224	posthole	0.1	0.12	0.08		In fill of pit 162 against S baulk.	SGB
225	posthole	0.12	0.16	0.5		Grey-brown and shell fill.	SGB
226	posthole	0.12	0.1	0.08		In fill of 205. Grey-brown with shell.	SGB
227	sump	0.35	0.45	0.25		Large hole/sump? in NE corner of pit 173. Round, filled with grey-brown. Posthole 197 in base.	
228	sump	0.35	0.4	0.25		Large hole/sump in NW corner of pit 173.	
229	pit					Predates pit 173. Lens of burnt shell against eastern (uphill baulk) Shows in photographs. Cut through by posthole. Possible dating? Layers: burnt shell (top); grey-brown and midden; darker brown and shell, containing lens of yellow-brown.	SGB
230	posthole	0.06	0.06	0.11		Black and shell fill.	SD
231	posthole	0.06	0.06	0.12		Grey-brown fill.	GB
232	posthole	0.08	0.08	0.13		Grey-brown fill.	GB
233	bin pit	0.33	0.23	0.1		Flat bottomed feature either part of pit 172 or cut by 172.	
234	bin pit	0.45	0.23	0.17		Half circle feature cut by pit 172. Fill - dark brown loam.	D
235	posthole	0.16	0.17	0.15		Dark black/brown and shell fill.	SGB
236	posthole	0.11	0.1	0.1		Dark black/brown and shell fill.	SGB
237	posthole	0.06	0.04	0.09		Dark black/brown and shell fill.	SGB
238	posthole	0.04	0.04	0.06		Dark black/brown	D
239	posthole	0.14	0.2	0.2		Dark yellow-brown fill. Dug into an insitu lump of Hamilton ash.	YB
240	posthole	0.08	0.08	0.18		Black and shell fill.	SD
241	firescoop	0.42	0.7	0.2		Dark yellow-brown with burnt shell and charcoal cut into level surface at upslope side of excavation. Under 229.	SD
242	posthole	0.04	0.04	0.09	241	In base of 241. Yellow-brown fill.	YB
243	posthole	0.05	0.05	0.13		Black and shell fill.	SD
244	posthole	0.05	0.05	0.06		Black and shell fill.	SD
245	posthole	0.14	0.17	0.18		Black and shell fill.	SD
246	posthole	0.1	0.1	0.1		Brown fill.	D
247	posthole	0.08	0.07	0.09		Black and shell fill.	SD
248	posthole	0.09	0.06	0.03		Black and shell fill.	SD
249	firescoop	0.7	0.7	0.18		Crushed shell, rakeout. Circular.	S
250	posthole	0.12	0.17	0.34		Black and shell fill. Square in shape.	SD
251	posthole	0.18	0.18	0.34		Black and shell fill. Round.	SD
252	posthole	0.07	0.08	0.09		Black and shell fill.	SD

Feature	Type	Length	Width	Depth	Pit	Notes	Fill
253	posthole	0.05	0.05	0.06		Black and shell fill. Cut into eastern end of pit 208.	SD
254	posthole	0.09	0.1	0.09		Black and shell fill.	SD
255	posthole	0.17	0.17	0.34		Black and shell fill.	SD
256	posthole	0.07	0.07	0.08		Black and shell fill.	SD
257	posthole	0.08	0.09	0.07		Black and shell fill.	SD
258	posthole	0.06	0.06	0.16		Black and shell fill.	SD
259	posthole	0.06	0.07	0.09		Black and shell fill.	SD
260	posthole	0.17	0.18	0.43		Brown fill.	D
261	posthole	0.12	0.13	0.14		Brown fill.	D
262	posthole	0.11	0.12	0.16		Brown fill.	D
263	posthole	0.06	0.06	0.15		Brown fill.	D
264	posthole	0.13	0.14	0.16		Cut into brown and shell slopewash layer at rear of terrace.	SD
265	posthole	0.13	0.14	0.2		Cut into brown and shell slopewash layer at rear of terrace.	SD
266	Firescoop	0.38	0.32	0.18		Brown and shell fill.	SD
267	Firescoop	0.66	0.64	0.17		Grey-brown fill with shell fragments. Cut into cream tephra at rear of terrace	SGB
268	pit	1.45	0.7	0.4		pit filled with brown tephra and shell.	SD
269	bin pit	0.46	0.35	0.14		Bin pit filled with brown tephra and shell.	SYB
270	posthole	0.11	0.11	0.1	271	Cut into 271	YB
271	Firescoop	0.43	0.35	0.17		Grey brown fill with some shell.	SGB
272	bin pit	0.8	0.55	0.1		Bin put cut by 270.	SGB
273	posthole	0.2	0.2	0.13			
274	bin pit	0.45	0.43	0.15		Grey brown fill with some shell.	SGB
275	pit	2.4	0.82	0.3		Grey brown fill with some shell. Cut by 269. Has 2 shallow sumps/bins (276, 277) at east end.	
276	sump	0.25	>0.45	0.1		cut into base of 275	
277	sump	0.4	>0.45	0.1		cut into base of 275	
278	bin pit	0.49	0.32	0.05		Cut into yellow brown natural. Shallow.	YB
279	bin pit	0.43	0.26	0.05		Cut into yellow brown natural. Shallow.	YB
280	bin pit	0.5	0.35	0.08		Cut into yellow brown natural. Shallow. Cut by 281.	YB
281	Firescoop	0.66	0.58	0.45		Cut part into yellow-brown natural, part Rotoehu. Undercut wall.	
282	Firescoop	0.42	0.5	0.36		Cut by 281, 279 and 283.	SGB
283	Firescoop	0.45	0.45	0.16		Grey brown fill plus shell.	SGB
284	posthole	0.05	0.05	0.06		Black and shell fill.	SD
285	Firescoop	0.28		0.11		Grey brown fill plus shell. Cut into Rotoehu. Cuts 268 and cut by 284.	SD
286	bin pit	0.63	1.1	0.19		Cut by 287 and 283.	
287	posthole	0.08	0.08	0.12			
288	bin pit	0.29	0.29	0.3		Round bin cut into Rotoehu. Cuts 289.	
289	bin pit	0.33	0.33	0.11		Square bin cut into Rotoehu.	
290	posthole	0.05	0.05	0.08			
291	hole	0.3	>0.17	0.3		Grey brown fill with burning on top. Dug into Rotoehu. Base of black fill with shell. First activity phase.	SD
292	pit	>1.0	>0.48	0.25		Brown fill, no shell. Cut by 266 and 293.	SGB
293	Firescoop	0.47	?	0.3		Brown fill with shell. Cuts 292.	SD



Feature	Type	Length	Width	Depth	Pit	Notes	Fill
294	unknown						
295	pit	3.9	1.6	0.75		Cuts 297. Firescoop on pit surface contains charcoal and shell fragments. Mid-yellow brown fill.	YB
296	posthole	0.11	0.08	0.23	295	Oval-square posthole in floor of 295.	YB
297	pit	1.3	1.1	>0.47		Yellow brown fill. Cut by 295.	YB
298	bin pit	0.6	0.4	0.23		Yellow brown fill mottled with charcoal. Cut into 295.	YB
299	pit	1.2	1.3	0.25		Mottled yellow brown fill with shell fragments and charcoal.	SYB
300	hole	0.3	0.25	0.2		cut into side of 299.	

# APPENDIX B RADIOCARBON DATE

## *The University of Waikato Radiocarbon Dating Laboratory*



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### *Report on Radiocarbon Age Determination for Wk- 25349*

<b>Submitter</b>	L. Furey
<b>Submitter's Code</b>	U14/712
<b>Site &amp; Location</b>	U14/712 Omokoroa, Bay of Plenty. , New Zealand
<b>Sample Material</b>	manuka, olearia, akeake
<b>Physical Pretreatment</b>	Possible contaminants were removed. Washed in ultrasonic bath.
<b>Chemical Pretreatment</b>	Sample washed in hot 10% HCl, rinsed and treated with hot 1% NaOH. The NaOH insoluble fraction was treated with hot 10% HCl, filtered, rinsed and dried.

$\delta^{13}\text{C}$	-24.7 ± 0.2	‰
$\text{D}^{14}\text{C}$	-34.6 ± 3.6	‰
$\text{F}^{14}\text{C}\%$	96.5 ± 0.4	%
<b>Result</b>	<b>283 ± 30 BP</b>	

### Comments

27/4/09

- Result is *Conventional Age or % Modern* as per Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier.
- The isotopic fractionation,  $\delta^{13}\text{C}$ , is expressed as ‰ wrt PDB.
- $\text{F}^{14}\text{C}\%$  is also known as pMC (percent modern carbon).

