

# THE MILL ROAD SITE, WHITIANGA



**REPORT TO  
THE NEW ZEALAND HISTORIC PLACES TRUST,  
JOHN AND CHERYL HOWSE  
AND  
PAUL AND DIANNE WHITE**

**HPA AUTHORITIES  
2011/159 & 2011/160**

**JADEN HARRIS AND MATTHEW CAMPBELL**

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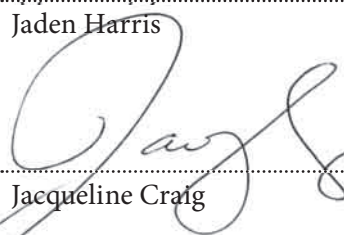
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JOHN AND CHERYL HOWSE  
AND  
PAUL AND DIANNE WHITE**

Prepared by:



Jaden Harris

Reviewed by:



Jacqueline Craig

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# THE MILL ROAD SITE, WHITIANGA

JADEN HARRIS AND MATTHEW CAMPBELL

The Mill Road site, recorded as T11/997 in the New Zealand Archaeological Association site recording scheme, was first recorded following an archaeological assessment in May 2006 undertaken on three lots on the corner of Mill Road and the Esplanade, Whitianga (Lots 7, 8 and Part Lot 38 DPS 23068) prior to the development of an apartment block (Campbell 2006). A series of test pits revealed up to 280 mm of dense pipi midden in a matrix of charcoal stained black soil. Authority 2007/299 was subsequently granted by the New Zealand Historic Places Trust under section 14 of the Historic Places Act 1993 to destroy, damage or modify site T11/997.

The proposed development did not proceed and the three lots were sold to private individuals, all of whom intend to build on them. Lot 38 was subdivided into Lots 1 and 2 DP 425923 (Figure 1).

At 19 Mill Road, Lot 1 DP 425923, the owners did not apply for an authority from the New Zealand Historic Places Trust prior to works commencing, resulting in damage to the recorded site. A damage assessment was undertaken by Matthew Campbell on 23 August 2010 (Campbell 2010). Works to install the house foundations had resulted in some modification to the site along the north and west sides of the house. The excavations for the piles were generally 450 x 450 mm, but between the grid of foundations the site remains intact. Much of the site beneath the house was already destroyed by the previous house, with clean beach sand and shell deposited in this area, whether during the first house construction or after its demolition cannot be determined. Beneath the garage floor slab the site is entirely destroyed. This is over an area of about 9 x 8 m.

An authority was applied for from New Zealand Historic Places Trust prior to work proceeding further and a limited archaeological investigation of works to install utilities and a water tank was undertaken by Stuart Hawkins and Arden Cruickshank on 2 February 2011 under authority 2011/159 issued by the New Zealand Historic Places Trust under section 14 of the Historic Places Act 1993.

At 17 Mill Road, Lot 2 DP 425923, a full archaeological investigation was undertaken from 5–8 April 2011. The investigation was carried out under authority 2011/160 by Jaden Harris and Stuart Hawkins.

The results of the two investigations are reported together as features relating to site T11/997 continue across both properties. The original extent of the site is not known as adjoining properties have already been developed, destroying or modifying unknown portions of the site.

## Archaeological background

There are several recorded archaeological sites in this area, and Whitianga has a rich pre-European and historic archaeological record in general, though few sites are recorded in the town itself (Figure 1). The Mill Road site is close to the 19th century kauri mill which has almost certainly damaged and destroyed evidence of pre-European archaeology over several town blocks (Sewell 2005). Sewell's investigations at 8 the Esplanade found evidence of activities associated with the mill, along with a remnant pre-European midden and five stone flakes in a disturbed context (Sewell 2005).

Gumbley (2004) carried out a test-pitting survey at 15–17 The Esplanade (Lots 10–12 DPS 23068, immediately to the south east of Lots 7 and 8 along the



1. Whitianga showing location of the Mill Road site and recorded archaeological sites in the general area.

Esplanade). He found no evidence of intact archaeological deposits although the site might be expected to extend this far.

Campbell and Gumbley (2004), at site T11/927 at 84 Albert Street, investigated a remnant Maori midden disturbed by 19th and 20th century European activities. They obtained two radiocarbon dates from the midden: one at 1460–1620<sup>1</sup> is in the middle part of the pre-European period; the other at 1660–1840 later in the pre-European period.

More recent work at the Pacific Estates Subdivision, located off the northern extension of Cook Drive and bordering the Taputapuatea Stream, has produced results from site T11/914 of more substantial early pre-European occupation (CFG Heritage report in preparation). Two large stone lined hangi pits were recorded along with a stone working floor, where adzes and tools in obsidian and chert were being manufactured and reworked. Three radiocarbon dates were obtained: two, 1330–1520 and 1310–1490, are early in the sequence; while the other, 1550–1760, is later, indicating occupation from around the mid-14th century.

There has been comparatively little archaeological investigation carried out in Whitianga, but given that some of the earliest and richest sites in New Zealand are found on the Coromandel Peninsula (Port Jackson S09/53, Foster 1983; Cross Creek / Sarah's Gully T10/399, Sewell 1984; Hahei Beach T11/242, Nichol 1986; Hot Water Beach T11/115, Leahy 1974; Tairu T11/62, Smart and Green 1962; Whiritoa T12/497, Crosby 1977; Whangamata T12/1044, Gumbley 2005), there would seem

<sup>1</sup> dates in this section are reported as calibrated AD at 95% confidence interval.

to be every likelihood that Mercury Bay has been occupied more or less continually since the first human arrivals around the late 13th century AD.

### **Methodology**

#### *19 Mill Road (Lot 1 DP 425923)*

Construction on the house at 19 Mill Road was already well advanced, so the area that was able to be investigated was limited to trenches for utility services and a small area at the back of the house where a water tank was to be installed. Features were excavated by hand and notes and sketch maps made. All artefactual material was retained and bulk samples of fill taken from other features.

#### *17 Mill Road (Lot 2 DP 425923)*

Investigations were confined to the footprint of the house and garage and covered an area approximately 20 x 8 m. Topsoil and overburden was stripped off with the aid of a hydraulic excavator under archaeological supervision. The area was then cleaned down by hand to define features. Disturbance from numerous historic and modern services was apparent over much of the front half and down the east side of the property, but intact archaeology was present in between and along the west side of the excavation. Archaeological features were excavated by hand and mapped on the site plan, recorded by digital photography and notes made in the site fieldbook on the fill, type, inclusions and dimensions for each feature. All artefacts found were collected and the location recorded on the site plan and samples of midden and charcoal taken from oven and pit features.

### **Results**

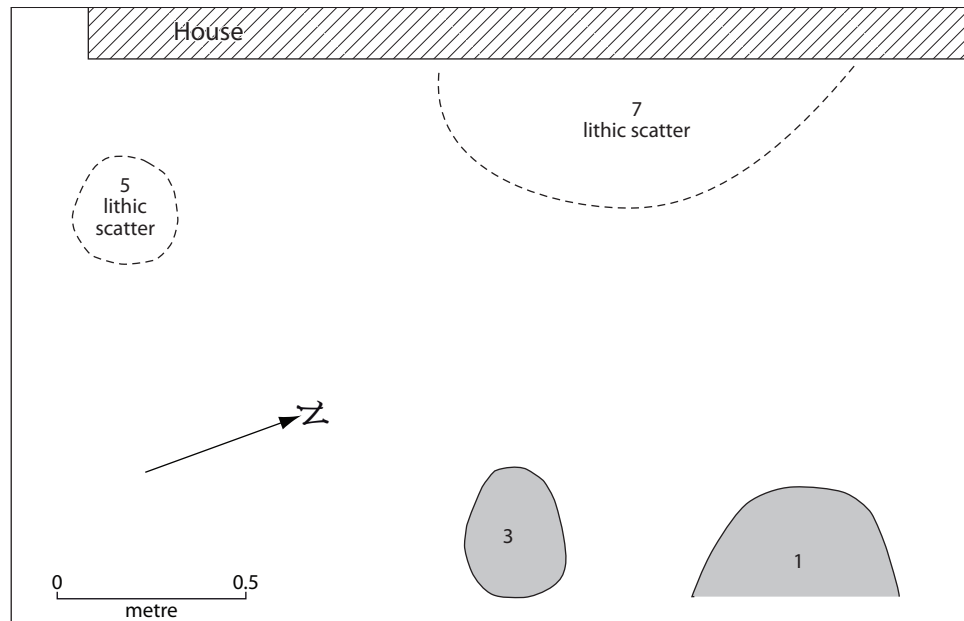
The two excavations are described separately here but are combined in the analysis sections that follow for the site as a whole. For the purposes of discussion site north is taken as running perpendicular to and towards Mill Road for both properties.

#### *19 Mill Road*

Although site T11/997 had suffered damage from a previous house and some further damage from the present development, a few archaeological features remained intact. At the front of the house, fronting on to Mill Road, in situ midden had been exposed in the driveway. A sample of the midden was taken but was not investigated further. Along the east side of the house (facing Esplanade Road) midden was exposed in a service trench. The profile of the trench showed 250 mm of turf and topsoil, with a 100 mm layer of midden below this sitting on clean beach shell and sand. On the west side of the house a trench revealed only natural beach shell and sand beneath the turf and topsoil.

At the back of the house in the south west corner where a water tank was to be installed several archaeological features were revealed in an area approximately 2 x 1.5 m (Figure 2). Postholes, ovens and a lithic scatter were visible but on investigation some of these features proved to be modern. The best preserved oven scoop was Feature 1, which ran into the baulk on the south side of the excavation, and measured 500 mm in diameter. One other oven was present (Feature 3) but had a depth of just 30 mm and had clearly been truncated by historic activity. Of the four postholes investigated three had modern or historic material in their fill, including nails and plastics.

2. Plan of archaeological features at 19 Mill Road.



Feature 7 was a scatter of lithics over an area approximately 1000 x 500 mm. The lithics were mainly basalt (168) with four pieces of obsidian and are discussed in more detail below. The flakes were sitting on a clean sandy surface.

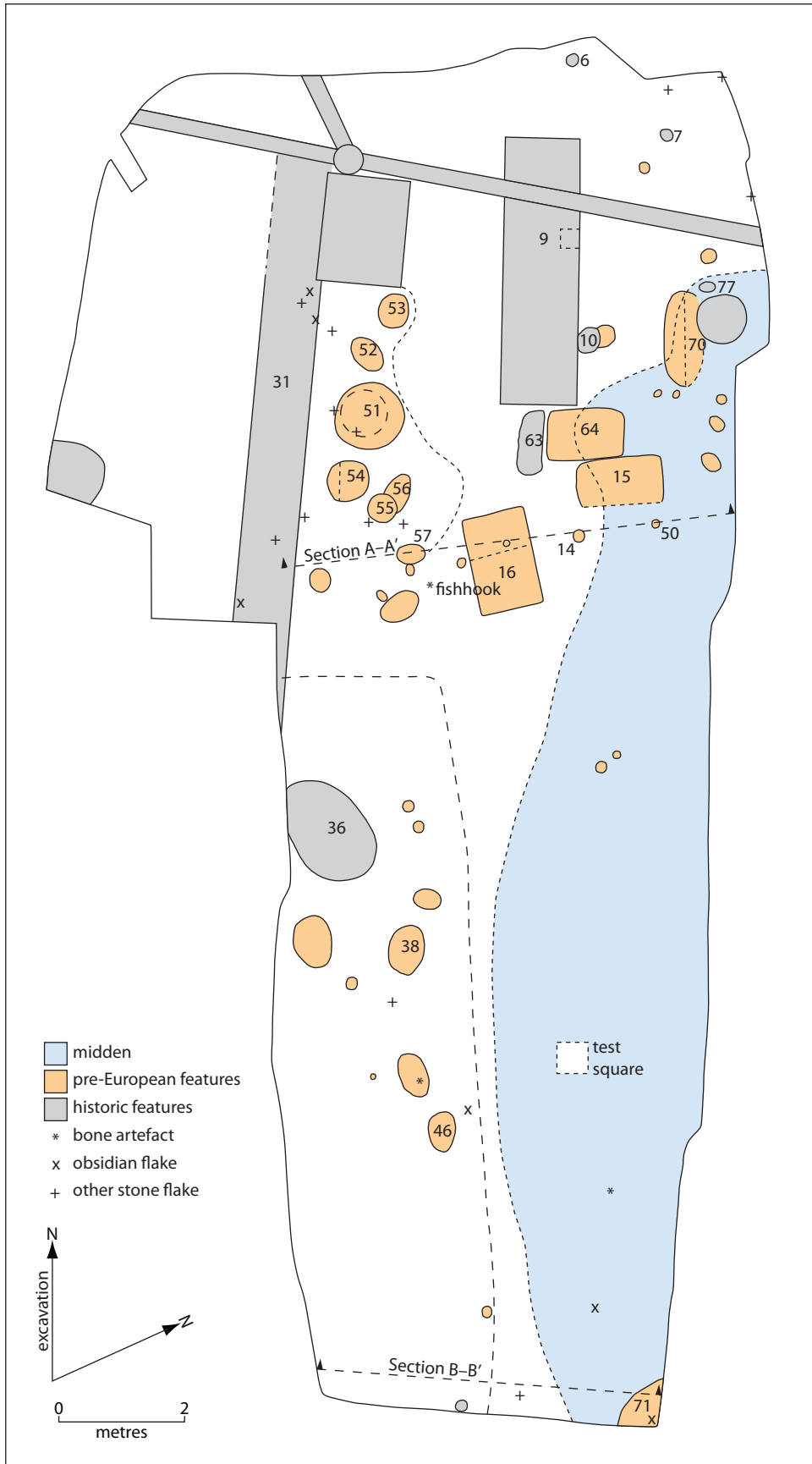
### 17 Mill Road

At 17 Mill Road a much greater area was able to be investigated, which allowed for the nature of the disturbance to the site and the question of what remained intact to be examined in greater detail. The construction plan for the property was for a house at the front of the section, with a garage behind and a driveway access down the western side. A sewer main is located on the eastern side of the property and effectively formed the boundary of the investigation area.

After topsoil had been cleared from the area several features were apparent. Along the east side of the site was a large patch of shell midden and on the other side another patch of what appeared to be natural beach shell. After initial cleaning down of the site it was realised that this beach shell was a more recent fill and so a large strip was further cleared down with the digger along the west side of the area, leaving a wide baulk in the centre of the site. The relationship of the beach shell to the archaeology and stratigraphy is discussed further below.

At the front (north) of the area a modern PVC sewer pipe was present, along with another service trench and other obviously modern or historic features. Between the sewer pipe and the trench was a rectangular sump, which was lined with sheets of flat tin and filled with large rocks. No pre-European features were found west of the sewer pipe or this other service trench. Feature 1 was an historic rubbish pit containing glass and other items dating from the 1930s to the early 1940s.

In the north east corner of the area the removal of the turf and topsoil revealed clean beach sand. Sitting on this surface were eight flakes of basalt but few other features. A few postholes were present but of these Feature 6 contained crown-seal bottle tops and Feature 7 contained dark modern looking topsoil mixed with shell. Intersected by the PVC sewer pipe was a shallow modern trench, Feature 9. The purpose of the trench is not known but a test pit revealed it to be just 360 mm deep. A flake of obsidian and one of basalt were found in the fill of the test pit suggest-



3. Plan of archaeological features at 17 Mill Road. Features mentioned in the text are labelled.





4. General view of the excavation area looking towards Mill Road.



5. The northeast corner of the excavation showing the clean beach sand surface with basalt flakes sitting on this in the foreground and along the baulk to the left. Scale = 1 m)

ing that the trench may have cut through archaeological features. Several other modern features were present in this part of the site, including postholes (Features 10 and 77), a pit (Feature 63), and a modern hangi (Feature 13). The postholes and the pit contained material such as sawn cow bone in their fill and also appeared to be spade dug. The hangi was roughly circular and filled with large fire blackened rocks, but these were of a different type to those found in the pre-European ovens. Nails and 20th century bottle glass were also found in association with the rocks and in the surrounding fill.

### *The midden*

The midden extended for most of the length of the eastern side of the property and from the edge of the excavation was up to 3.5 m in width. The surface of the midden exhibited a very black sandy matrix and contained mainly pipi shell with fragments of fire cracked rock. However fragments of sawn beef and sheep bone were also present and so, while it was pre-European in origin, it had clearly been disturbed by historic activity. An obsidian flake was recovered from the surface of the midden, which was probably of pre-European origin, while dog and bird bone could be either pre-European or modern.

Excavation of a small trench across the midden and a 500 x 500 mm square test pit (Figure 3) revealed that the midden was up to 300 mm deep, but was quite mixed throughout. A sample of the midden from the test pit was retained and then the midden progressively removed by spade to reveal any possible features underneath. No features, such as ovens, were noted as being cut from within the midden. Several features were identified that were capped by the midden including postholes and small pits; so while the midden relates to pre-European occupation, the degree of disturbance means it isn't clear if it was related to the features below it or was from a later date.



6. Test pit dug in the midden. Scale = 0.5 m.

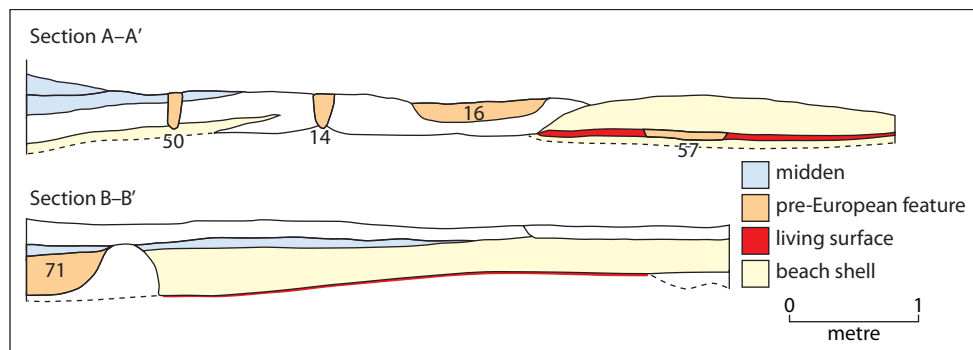
### Pre-European features

A number of intact pre-European features were found capped under a deep layer of natural beach shell and under the midden. A wide baulk was initially kept between the northern and southern half of the excavation area so as to more closely examine the relationship of these features to the overlying fill layers. In the southern half, under the beach shell, were a series of cooking features cut into a dark grey sandy occupation surface (Feature 33). To the east of these a series of small pits and other features on the edge of the midden were cut into clean beach sand.

The cooking features were noticeably lower than the features to the east and this was interpreted as representing a former dune environment, where the features along the west side of the investigation area are in the swale of the dune and those to the east on the side or crest of the dune. This relationship can clearly be seen in Figure 7 in Section A–A' which shows the occupation surface buried by the natural beach shell, and the pit (Feature 16) and postholes to the east cut into natural beach sand, or the base of the midden, at a much higher level. The beach shell overlying the ovens was up to 400 mm deep and was completely sterile, suggesting that it may have infilled the swale by natural means.

Once the occupation surface began to be excavated, a series of oven features was revealed. At least five ovens were identified, with a further three exposed when the baulk was removed, and more were located in the southern half of the trench.

7. Section drawings through the excavation at 17 Mill Road. See Figure 3 for locations.



8. The northern half of the lower occupation layer (Feature 33) exposed, note the sterile beach shell in the baulk. Scales = 1 m.



9. Trench across the occupation surface by the baulk showing the relationship of the clean overlying fill to the occupation layer. Scales = 0.5 and 1 m.



10. Ovens exposed once the occupation surface had been removed in the northern half of the excavation, looking towards Mill Road. Scales = 1 m.

The occupation layer was very thin (less than 50 mm) and comprised a grey sandy matrix containing charcoal, shell, stone flakes and fish bone. When the overlying clean beach shell was removed from this surface an oven was visible (Feature 51). The other ovens were not found until the grey layer had been cleaned back. Feature 51 was the largest oven, measuring 1100 mm in diameter x 280 mm deep. The sand at the edges of the cut was fire reddened and at the base of the oven was a black greasy layer of charcoal stained sand. Oven stones, fish bone, a chert drill point and stone flakes were found in the fill. Immediately behind this was another scoop (Feature 52) which contained much cleaner fill and measured 650 x 500 mm x 70 mm deep. At the back of the area Feature 53 was a circular scoop 500 mm in

11. Ovens after excavation looking northwest (towards Mill Road), with Feature 55 in the foreground, Feature 54 to the left and Feature 51 in the background. Scales = 0.5 and 1 m.



12. View looking south after the baulk has been removed showing the grey occupation surface continuing. Scales = 1 m.



diameter x 140 mm deep. Like Feature 51 the sand was reddened around the edges indicating in situ burning and there was a black greasy layer at the base. At the front of the area Feature 54 showed similar characteristics and measured 570 x 530 mm x 120 mm deep. Feature 55 was slightly different in that all of the oven stones were still in place and there was an associated area of rake out or burning just to the side (Feature 56). The oven stones must have been imported into the site as they are not the local ignimbrite, which is generally is not suitable for use as oven stones. However, other volcanic rocks occur widely in the Coromandel and cobbles would have been readily available in nearby streams and rivers.



13. Feature 16 excavated in half section, note the large imported rocks in the fill. Scales = 1 and 0.5 m.



14. Feature 16 exposed in section once the trench for Section One had been excavated. Scale = 1 m.

After Section A–A' had been drawn, the baulk to the south of these features was removed and the grey occupation layer was seen to continue. Cut into this area were three further oven scoops, two of which only showed as areas of localised burning, and two postholes. These features were mapped but not excavated. Also found in the occupation layer under the baulk was part of a one-piece bone fish-hook.

On the slightly higher ground to the east a different range of features were recorded. After the midden had initially been cleaned down a few postholes and

15. Trench for Section One through the midden showing a posthole in section (Feature 50) which has been cut down from the base of the midden. Scales = 1 and 0.5 m.



16. The east end of the trench for Section One showing the midden in section. Scale = 0.5 m.



at least two pits were apparent, but it was not until the midden was removed that the form of some of the pits became clear. One clear pit that was outside the area of the midden was Feature 16. The pit was rectangular in shape and measured 1800 x 1050 mm x 180 mm deep. Only the north end of the pit was excavated and the fill contained grey sand mixed with shell midden. Also included in the fill were two large rocks which must have been deliberately brought to the site from elsewhere. A posthole was cut into the base of the pit, the fill of which consisted of dark brown sand. Another posthole just to the west of the pit was not excavated.

Two other similar pits were revealed beneath the midden to the east (Features 15 and 64). Both were only partly excavated and were filled with brown sand mixed with shell midden, Feature 64 measured 1100 x 900 mm x 150 mm deep. Whether the pits were only ever shallow features or have been truncated by later activity is not clear. Along the eastern edge of the excavation were several postholes capped by the midden. All contained either grey or dark brown sand mixed with shell and oven stone fragments. All of these pits and postholes had been cut into the natural sand below the midden.

The only possible cooking feature in this area, Feature 70, was located underneath the midden and had been disturbed by the modern hangi pit being partly dug into it. The feature was only partly excavated but contained mixed grey and dark brown sand and had large fire cracked rocks at the base. The excavated side measured at least 1200 mm in width and suggests an oven similar in size to Feature 51, although from the small portion excavated the original shape and size of the feature was not clear.

The remainder of the midden was not completely removed but few other features were found. Between the pits and the test square there were two small postholes. In the very south east corner of the excavation area one further feature was found when a trench was dug through the midden for Section B-B' (Feature 71). Only the corner of the feature was exposed but it appeared to be circular and filled with sand and shell midden. One fragment of obsidian was recovered on the surface.

In the southern half of the excavation area the main focus was on the features exposed beneath the beach shell layer. These features were cut into clean beach sand and were at the same level as the ovens cut into the base of the grey occupation layer in the northern half of the excavation area. When the baulk was removed it could be seen that the occupation surface identified in the northern area was essentially continuous across the site, but that there was less cooking activity in the southern part and the sand was much cleaner. While the sandy occupation layer had been up to 50–60 mm in thickness in the northern half, in the southern end of the site it was generally less than 30 mm thick.

Features were also much shallower and less well-defined than in the northern half of the excavation. The best preserved oven scoop, Feature 46, measured 600 x 500 mm x just 30 mm deep. However, the ovens did contain charcoal, fish bone, and oven stone, and showed signs of in situ burning on the bases and around the edges. Artefacts were also found on the surface around the features including a piece of worked bone and an obsidian flake.

The largest feature in this area, Feature 36, was a pit measuring 1300 mm wide x 330 mm deep, but is most likely historic. The pit ran into the baulk on the west side of the excavation and so the original length is not known. The fill contained brown sand and sandy topsoil mixed with shell, but also a piece of wood and a nail. The beach shell overlying the pit had been removed by digger so it was not possible to check whether it had been cut in from a higher level.



## Material Culture

Artefacts consisted mainly of basalt flakes with just a few formal artefacts recovered.

### *Basalt adze*

The bevel fragment of an adze was collected from the spoil heap on 17 Mill Road after the site had initially been stripped back by the digger. The fragment is of a dark grey fine grained stone which is probably Tahanga basalt and has remnant flake scars, which have been partially ground out. The fragment has maximum dimensions of 34 mm long x 35 mm wide x 29 mm thick. The bevel has been ground to a narrow cutting edge 15 mm wide and the section of the fragment is triangular. It is probably a remnant of a 'hogback' adze, an early period adze form. The fragment also has residue on it from where oysters have been attached, suggesting that it has been in the harbour and later picked up and dropped on the property at 17 Mill Road. It may not relate to the pre-European occupation of the site.

### *Worked bone*

A broken one-piece fishhook was recovered from the occupation surface beneath the baulk. The hook is made of bone and has maximum dimensions of 50 x 22 mm x 8 mm thick. Only the shank and most of the bend were present. The style of the hook is similar to ones recovered from the Cabana Lodge excavation in Whangamata, site T12/3. Site T12/3 is believed to date to the early period of Maori occupation.

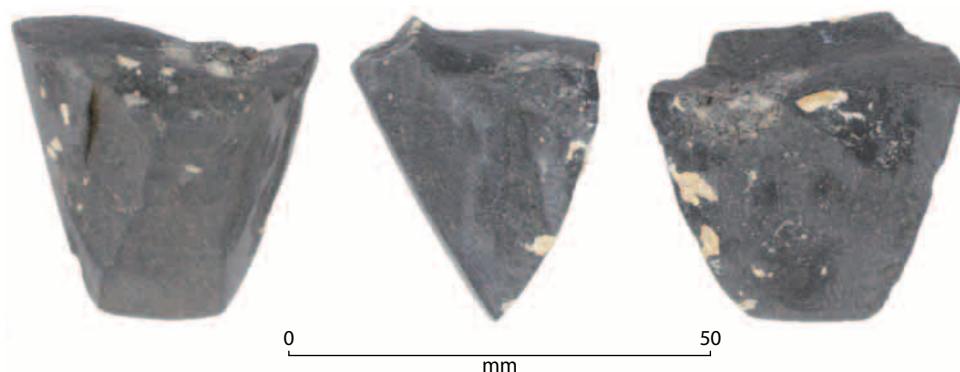
One other fragment of worked bone was found in the southern half of the occupation area. The fragment measures 61 x 18 mm x 7 mm thick and has clearly been cut or shaped along the edges. Two other fragments of possibly worked bone were found in the fill of Feature 51 and in the northern half of the occupation surface.

### *Basalt*

Two hundred and four basalt flakes were collected. All of the flakes were examined and all appear to be waste material. None of the edges showed any signs of usewear or polish, but the fragments had clearly been worked by flaking. The most well known source of basalt is Tahanga, but similar quality basalt occurs across the Kuaotunu Peninsula.

The greatest concentration of basalt flakes was from Feature 7 at 19 Mill Road, where 168 flakes were found scattered over an area of about 1000 x 500 mm. These flakes are medium to dark grey in colour and some have traces of cortical surfaces, indicating that small boulders or prepared blocks of stone were being worked, rather than being the result of broken or damaged adzes being reworked. When fresh, basalt is typically a medium dark to dark grey colour, while weathered surfaces vary from light grey to medium grey and generally show a fine pitting due to preferential weathering of certain mineral grains (Moore 1975). The most likely use for basalt is in the manufacture of adzes, but no preforms or adze fragments were found in association with the flakes. The size of flakes ranges from relatively large pieces with maximum dimensions of 80 mm down to very small flakes. The presence of a range of sizes indicates that the flakes were most likely worked in or near to the location where they were found.

At 17 Mill Road no great concentrations of basalt flakes were found, but they did occur across the site. Flakes were recovered from the lower occupation layer



17 (above). Adze fragment.

18 (left). Bone fishhook.

19 (below). Worked bone fragment.

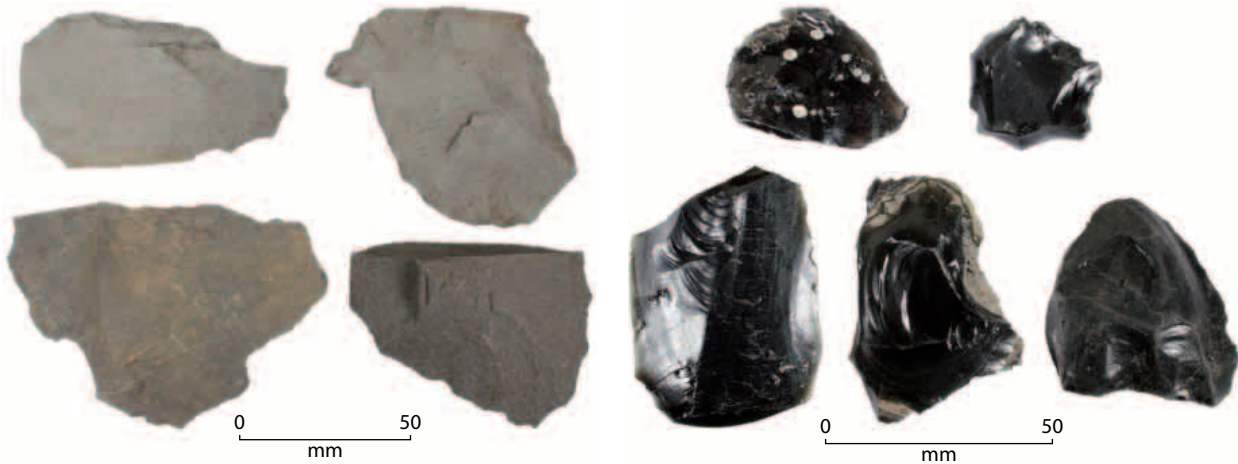


and from the fill of excavated features. No basalt flakes were found in the upper midden layer.

### *Obsidian*

Fourteen pieces of obsidian were recovered, all but three of which show clear signs of use. Four of the pieces were found among the lithic scatter on 19 Mill Road and the remainder from features and surfaces across 17 Mill Road. Seven of the pieces are green in colour and most likely come from Mayor Island, while the other seven are in varying shades of grey. Grey coloured obsidian is available from multiple sources around the Coromandel, including from nearby Cook's Beach. Some of the grey pieces have multiple spherulite inclusions, which is characteristic of the Cook's Beach and other Coromandel material (Moore 1988). A large number of flakes of obsidian exhibiting similar characteristics were recovered from the Pacific Estates Subdivision development, site T11/914 (CFG Heritage report in preparation).

Usewear damage indicates a variety of activities from heavy scraping to light cutting. It should also be noted that not all activities will leave usewear on the edges. The maximum length of flakes range from 13–48 mm.



20 (left). Selection of  
basalt flakes.

Chert

21 (right). Selection of  
obsidian flakes.

The only identified item of chert was a small drill point tool found in the fill of Feature 51. The chert is white or light grey in colour and has a maximum length of 29 mm and maximum width of 17 mm.

#### Faunal analysis

The main faunal material recovered from the 17 Mill Road part of the site was fish bone, with just a few small pieces of other animal bone. No faunal material was recovered from 19 Mill Road. From 17 Mill Road a few fragments of fish and other bone were present in the midden, but the majority came from the lower occupation surface and features cut into it.

#### Fish

Standard fishbone analysis follows the method outlined by Leach (1986, 1997) where the five main mouth bones – dentary, articular, quadrate, maxilla and premaxilla – are identified to the lowest possible taxonomic level (usually species) and NISP (Number of Identified Specimens) and MNI (Minimum Number of Individuals) are calculated on these identifications. Only one species were identified following the standard method: snapper (*Pagrus auratus*). For the entire site the snapper MNI, based on the right premaxilla, was six and a total of 16 mouth bones were identified.

Recently several researchers working in New Zealand and the Pacific have widened the number of bones that are counted (e.g., Campbell 2005; Vogel 2005; Walter 1998; Weisler et al 2010). They found that with an expanded range of elements taxa not identified by the standard method could now be identified, and that some of these taxa were actually quite common in the assemblage; and that the relative abundances of taxa changed as more elements were identified.

Because it was evident that the Mill Road assemblage was dominated by a single species, snapper, and because the comparative collection was set up to enable it, it was decided to identify an extended range of elements. There is no new standard set, but the extra bones chosen for analysis were: the paired sub-cranial elements palatine, hyomandibular, ceratohyal, epihyal, opercular, preopercular, cleithrum, scapula, supracleithrum and posttemporal; and the unpaired cranial elements vomer, parasphenoid and basioccipital. Identifications were made using the com-

	Snapper	Kingfish	Fish sp.
Dentary	10		
Articular	3		
Quadrate	2		
Maxilla	1		
Premaxilla	10		
Palatine	2		
Hyomandibular	4		
Preopercular	2		
Supracleithrum	2		
Scapula	2		
Posttemporal	1		
Epihyal	2		
Ceratohyal	2		
Vomer	1		
Otolith	3		
Atlas	1		
Caudal vertebra	2	1	
Thoracic vertebra	1		
Vertebra			1

Table 1. Counts of all elements identified, including vertebrae. Numerous dorsal and fin spines, highly fragmented elements and elements not in the extended set were also present in the assemblage.

parative collection at CFG Heritage Ltd. Several of these elements were not present in the assemblage (Table 1), though they would be expected to survive as they are fairly robust.

Only six vertebrae were recovered, which is clearly far too few for an MNI of six. The snapper in our reference collection each have 24 vertebrae so we would expect 144 vertebrae to be present from six fish. Again, as the assemblage was dominated by one species and the comparative collection allowed it, vertebrae were identified for Mill Road. The vertebral column is made up of an atlas; thoracic vertebrae where the haemal arch, ventral to the centrum, is not formed; caudal vertebrae where the haemal arch is closed; and the urostyle, the modified last vertebra. Four snapper vertebrae were identified, along with one kingfish (*Seriola lalandi*) vertebra and one unidentified vertebra (Table 1).

The extended set of elements, discounting vertebrae, contains 33 bones (counting lefts and rights of paired bones), so that the ratio of elements to vertebrae is 33:24. Forty-four elements were identified as snapper in the assemblage but only four vertebrae. The difference between the observed and expected ratios was tested using the chi-square test and was highly significant ( $\chi^2 = 22.458$ ,  $p = >0.001$ ). This result indicates that snapper bodies were being separated from the heads, with only head bones remaining on site. This may have taken place off site, for instance, snapper may have been filleted on the beach, but it seems more likely that snapper bodies were being processed and preserved for later consumption.

#### Other bone

A dog pelvis, mandible and a rib were found in the disturbed midden and it is not certain that they relate to the pre-European occupation. A broken dog maxilla was

found in the occupation surface. Four broken bird long-bone shafts were found in Feature 38. These were too broken to be identified to species level but are from a bird the size of a small gull. From Feature 31 three small flakes of heavy bone, probably moa bone, were recovered. These are probably industrial waste but may originally have been food remains.

### Charcoal analysis

Two samples of charcoal from ovens (Features 51 and 54) were submitted to Rod Wallace, Anthropology Department, University of Auckland, for analysis. In both samples kahikatea (*Dacrycarpus dacrydioides*) charcoal accounted for 99% of the sample by weight, with a very small quantities of mingimingi (*Leucopogon fasciculatus*) and akeake (*Dodonaea viscosa*). The predominance of kahikatea suggests that this material was being collected from primary forest, and that the natural forest cover had not yet been removed by human activity.

### Chronology

A sample of mingimingi from Feature 51 was submitted to the University of Waikato Radiocarbon Dating Laboratory for AMS dating. This returned a result of cal AD 1305–1409 at 95% confidence interval. While not quite as early as the very earliest dates of Polynesian settlement in New Zealand, it is still the earliest date known from any site in Whitianga, and with the charcoal evidence of undisturbed primary forest, indicates that the Mill Road site may represent the earliest settlement in Mercury Bay.

### Discussion

Only a small portion of the site remains undisturbed and it is impossible to know how extensive the site originally was. Even so, valuable information has been obtained from the archaeological investigations regarding the early settlement of Mercury bay. The evidence of fish preservation and the very early date indicate that the site may have been a fishing camp, with fish being taken off site for later consumption. Snapper spawn in early spring and summer, generally in large bays, but may be taken at any time of the year (Paul 2000: 96). It seems likely that the Mill Road site was occupied in summer and fish were being preserved for winter. Numerous basalt flakes indicate that fishing was not the only activity, and adzes were probably also being made.

The east coast of the Coromandel Peninsula contains a high concentration of surviving early period sites (Smart and Green 1962; Leahy 1974; Crosby 1977; Foster 1983; Sewell 1984; Nichol 1986; Gumbley 2005) and it is not surprising that one should be found in Whitianga, which has a sheltered harbour and rich sea-food resources, although agricultural land is limited. The Mill Road excavations, although fairly small in scope and on a disturbed site, have added significant data to our understanding of the first Polynesian settlement of Aotearoa.

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