

**Archaeological investigation and monitoring of  
vegetation clearance and sand capping of T12/1035,  
Moanaanuanu Estuary, Beach Road, Whangamata**

**report to  
the New Zealand Historic Places Trust  
and  
the Whangamata Marina Society**

**Andrew Hoffmann**

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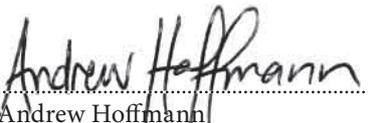
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Prepared by:

  
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Reviewed by:

  
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Matthew Campbell

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# Archaeological investigation and monitoring of vegetation clearance and sand capping of T12/1035, Moanaanuanu Estuary, Beach Road, Whangamata

Andrew Hoffmann

A limited investigation of T12/1035 was undertaken on the 5–6 January 2009 under authority 2009/59 issued by the New Zealand Historic Places Trust under Section 14 of the Historic Places Act 1993. The investigation took place at the onset of vegetation clearance activities across the site as required for the Whangamata Marina development works. The vegetation clearance work and subsequent capping of the middens comprising T12/1035 was undertaken by HEB constructions. HEB's work program is designed in two phases. The first phase applies only to the southern portion of the sand spit where T12/1035 is located and this area was cleared on 16 January. Mosen (1999: figure 5) identified three middens at T12/1035. Two of these (Mosen's Middens 2 and 3) are located within the Phase 1 area (Figure 1). The second phase of work will commence at an unconfirmed later date. The Phase 1 work was monitored by the author

to ensure the work followed protocols outlined in the archaeological site management plan (addendum to HPT authority 2009/59, 12 November 2008).

## Monitoring and compliance with management plan

All aspects of HEB's vegetation clearance and sand capping works were undertaken in conformity with the agreed site management plan. The midden areas were marked out clearly on the ground and care was taken with all clearance work. Small to medium size vegetation was cut down to ground level using hand tools and was removed by machine rake, with tracks positioned on a protective layer of sand fill where necessary. The topsoil across the spit was not disturbed and Middens 2 and 3 remain as intact, apart from archaeological testing (see below). The middens have now been covered and are protected by an approximately



Figure 1. Location of T12/1035 middens referred to in the text showing approximate division line between the Phase 1 and 2 activity areas.

1 m thick deposit of harbour dredgings. A suitable landscape will be developed on this surface to accommodate the proposed moko skink habitat.

## Results

Prior to the clearance and capping works single test trenches were excavated across Middens 2 and 3 at locations where relatively dense accumulations of shell were detected by probing. The trenches were excavated by spade.

### Midden 2

The investigation trench (E 2764777 N 6440756 ± 5m, NZ map grid) was approximately 0.5m x 2m long and was excavated down to the sterile underlying sand (layer 2). The cultural layer (Layer 1) was 220 mm thick, was of dark grey to black charcoal stained sand. The shell deposit was patchy but particularly concentrated in the middle of the trench. This portion of the deposit was sampled. The depth of Layer 1 had been disturbed by tree roots. No features were identified. The amount of shell present was unlikely to have been more than one to two layers of shell thick prior to the intrusion of roots. Several fire cracked cooking stones were recovered from Layer 1 indicating cooking activities and accounting for the charcoal staining of the Layer 1 sand.

A piece from a split obsidian pebble, measuring 50 x 42 x 17 mm, was found in Midden 2, Layer 1. The curved outer surface was water-rolled and striated. The obsidian was black in reflected light and grey in transmitted light with small spherulites, and displayed good conchoidal fracturing qualities. These characteristics identify it as being from the local Whangamata source, which is found as small cobbles on the eastern side of the harbour (Moore 1999).

Layer 2 was of light greyish yellow sand with high concentrations of natural cockleshells throughout. A single small pebble of obsidian was also recovered from this layer. This pebble is not considered to be of cultural as it was recovered from well within the natural cockleshell deposit and was not of a size suitable for flaking, nor showed any evidence of having been worked.

### Midden 3

The investigation trench (E 2764848 N 6440823 ± 25m, NZ map grid) was approximately 0.5m x 2m long and was excavated down to the sterile underlying sand (layer

2). The cultural layer (Layer 1) was up to 350 mm thick of dark grey to black charcoal stained sand and several more fire cracked cooking stones were recovered from Layer 1. The shell deposit within the trench was more substantial being piled several layers thick and spanning up to the full depth of Layer 1. No features were identified. A portion of the thickest deposit was sampled. Layer 2 was of light greyish yellow sand with high concentrations of natural cockleshells throughout

### Midden analysis

A single 10 litre bulk midden sample was taken from each trench. The samples were wet sieved, dried and sorted and weighed by species (Table 1). Species identifications were taken from Morley 2004.

Species	Midden 2	Midden 3
cockle ( <i>Austrovenus stutchburyi</i> )	56	96
pipi ( <i>Paphies australis</i> )	281	401
tuatua ( <i>Paphies subtriangulata</i> )	4	
horn shell ( <i>Zeacumantua lutulentus</i> )	1	
whelk ( <i>Cominella</i> sp.)	2	
mudsnail ( <i>Turbo smaragdus</i> )		1

Table 1. Midden results.

The middens are dominated by cockle and pipi with other species occurring in only very small numbers. These latter can be considered a bycatch. All these species are harbour/estuarine species with the exception of tuatua, which is an open beach species. It seems probable that these shells may be from dead individuals washed into the harbour. The middens are indistinguishable by context. No fish bone was recovered.

### Chronology

A selection of pipi was retained from each sample for radiocarbon dating. The results are given in Table 2.

The results give two quite different ages for the middens. Although T12/240 has not been dated the presence of flaked obsidian, chert and basalt in the intertidal zone indicates that a site of relatively early age has been eroded. The date from Midden 2 reinforces that there was an occu-

sample	lab number	CRA BP	δ <sup>13</sup> C	cal AD 68%	cal AD 95%
Midden 2	Wk 25357	839 ± 27	1.7 ± 0.2	1435–1520	1390–1620
Midden 3	Wk 25356	610 ± 31	1.3 ± 0.2	1630–1810	1530–1850

Table 2. Radiocarbon results.

pation in the mid to late 15th century, perhaps only 150 years or so after New Zealand was settled, but it is later than the occupation of the Cabana Lodge site closer to the wharf. The lack of overlap in the age ranges of the who dates makes it unlikely that they were laid down close to the same time.

### **T12/240**

It should be noted that the proposed skink habitat extension area formally planned to cover site T12/240 will no longer occur in this area (Mick Kelly, Whangamata Marina Society, pers. comm. 6 January 2009). In view of this the proposed monitoring and capping works for T12/240 are no longer applicable as the site will not be obscured from future research. Importantly, however, the remaining component of the archaeological site monitoring plan for works in the vicinity of T12/240 relate to the establishment of the seawall along the margin of that site.

### **References**

- Moore, P. 1999. Whangamata obsidian, Coromandel Peninsula. *Archaeology in New Zealand*, 42(4): 289–294.
- Morley, M. 2004. *A Photographic Guide to Seashells of New Zealand*. New Holland, Auckland.
- Mosen, J. 1999. An archaeological assessment of the Proposed Marina Site and T12/240. Unpublished Bioreseraches report to the Whangamata Marina Society.

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**Report on Radiocarbon Age Determination for Wk- 25356**

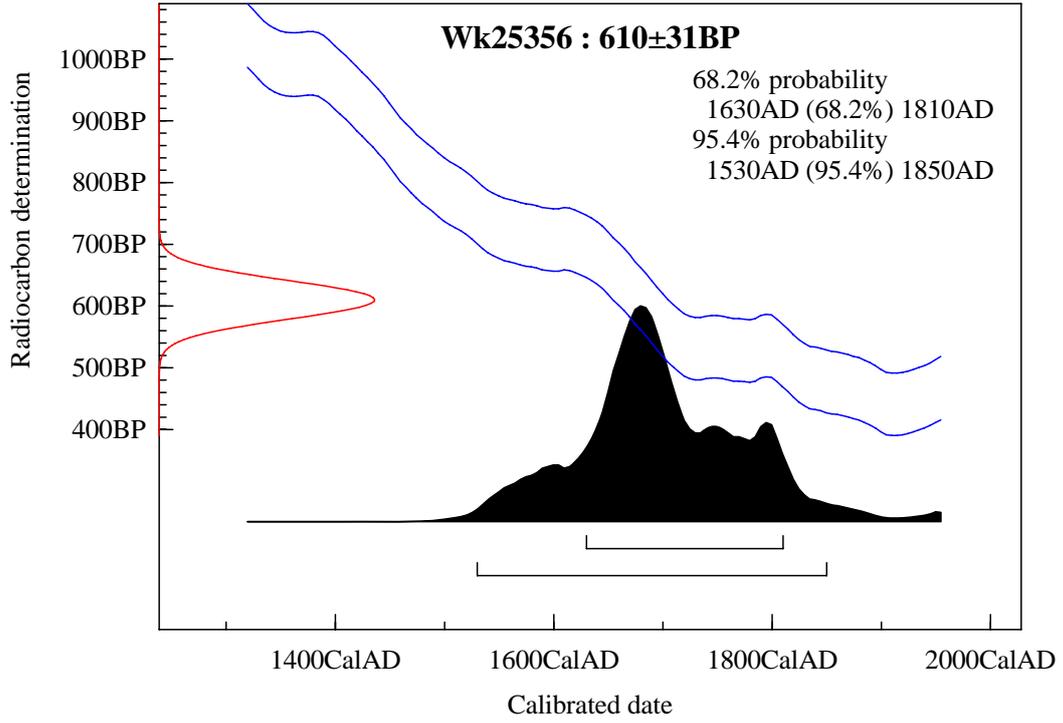
**Submitter** L. Furey  
**Submitter's Code** T12/1035 - 2  
**Site & Location** T10/1035 Whangamata Coromandel Peninsula , New Zealand  
**Sample Material** Pipi shells  
**Physical Pretreatment** Surfaces cleaned. Washed in an ultrasonic bath. Tested for recrystallization: aragonite.  
**Chemical Pretreatment** Sample acid washed using 2 M dil. HCl for 200 seconds, rinsed and dried.

$\delta^{13}\text{C}$	1.3 $\pm$ 0.2	‰
D <sup>14</sup> C	-73.1 $\pm$ 3.5	‰
F <sup>14</sup> C%	92.7 $\pm$ 0.4	%
<b>Result</b>	<b>610 <math>\pm</math> 31 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.
- F<sup>14</sup>C% is also known as pMC (percent modern carbon).



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**Report on Radiocarbon Age Determination for Wk- 25357**

**Submitter** L. Furey  
**Submitter's Code** T12/1035 - 1  
**Site & Location** T10/1035 Whangamata Coromandel Peninsula , New Zealand  
**Sample Material** Pipi shell  
**Physical Pretreatment** Surfaces cleaned. Washed in an ultrasonic bath. Tested for recrystallization: aragonite.  
**Chemical Pretreatment** Sample acid washed using 2 M dil. HCl for 200 seconds, rinsed and dried.

$\delta^{13}\text{C}$	$1.7 \pm 0.2$	$\text{‰}$
$\text{D}^{14}\text{C}$	$-99.1 \pm 3.1$	$\text{‰}$
$\text{F}^{14}\text{C}\%$	$90.1 \pm 0.3$	$\%$
<b>Result</b>	<b><math>839 \pm 27 \text{ BP}</math></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  $\text{‰}$  wrt PDB.
- $\text{F}^{14}\text{C}\%$  is also known as pMC (percent modern carbon).

