



T11/512, Royal Billy Point, Pauanui: final report (HNZPTA authority 2020/231)

report to
Thames–Coromandel District Council
and
Heritage New Zealand Pouhere Taonga

Arden Cruickshank and Hayley Glover

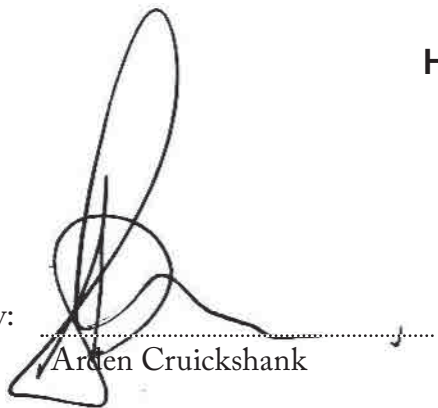


CFG Heritage Ltd.
132 Symonds St
Eden Terrace
Auckland 1010
ph. (09) 309 2426
cfg@cfgheritage.com

T11/512, Royal Billy Point, Pauanui: final report (HNZPTA authority 2020/231)

report to
Thames–Coromandel District Council
and
Heritage New Zealand Pouhere Taonga

Prepared by:


Arden Cruickshank

Reviewed by:


Matthew Campbell

Date: 26 April 2022

Reference: 19-1022



This report is made available by CFG Heritage Ltd under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-sa/4.0/>.

Report distribution

Heritage New Zealand Pouhere Taonga, Auckland
New Zealand Archaeological Association (file copy)
CFG Heritage Ltd (file copy)

electronic copies may be obtained from
www.cfgheritage.com/19-1022RoyalBillyPoint.pdf

T11/512, Royal Billy Point, Pauanui: final report (HNZPTA authority 2020/231)

Arden Cruickshank and Hayley Glover

Thames–Coromandel District Council (TCDC) have upgraded a pier and boat ramp in the Esplanade Reserve at Royal Billy Point, Pauanui (Section 10 BLK XIV Whitianga SD). Archaeological site T11/512 is recorded in the New Zealand Archaeological Association (NZAA) Site Recording Scheme (SRS) at this location. A shovel test pit during the archaeological assessment for the project identified midden in the vicinity of the landing ramp for the pier (Cruickshank and Glover 2019). TCDC applied to Heritage New Zealand Pouhere Taonga (HNZPT) for an archaeological authority under section 44 of the Heritage New Zealand Pouhere Taonga Act 2014 to undertake the works. Authority 2020/231 was granted on 12 November 2019 and archaeological monitoring and investigation was undertaken on 17 and 31 May 2021 by Arden Cruickshank of CFG Heritage.

Background

Pauanui is situated on the southern bank of the mouth of the Tairua River, which originates in the Coromandel Ranges. On the northern bank are Tairua and Paku, the latter a volcanic cone connected to the mainland by a tombolo. The Coromandel Ranges consist of a greywacke basement rock, with andesitic and rhyolitic volcanic eruptions dating from the Miocene and Pliocene forming the current landscape (Homer and Moore 1992; Barker 1992). These later rhyolitic eruptions are responsible for much of the high-quality lithic resources that made the Coromandel Volcanic Zone a major source of basalt and obsidian for tool manufacture (Turner 2000: 271).

Pauanui township is built on a barrier dune complex forming a spit covering 2.5 x 1.5 km, and soils are sandy loams originating from andesitic and rhyolitic rock. These range from well-drained in the east, ocean side of the spit (Pinaki sand) to imperfectly drained in the west, adjacent to the harbour (Tangitiki sand). The coastal environment includes estuarine areas, as well as sandy and rocky shores. The remains of sea mammals, birds, fish and shellfish show that the wider environment was being exploited by Māori (Campbell and Trilford 2019).

Archaeological landscape

Evidence of Māori settlement in the Tairua Harbour dates to the early period (Schmidt and Higham 1998). Many settlement areas in this early period seem not to have been permanent, and groups probably had high mobility. Analysis of faunal material from the Tairua Site (T11/64) suggests that early settlement areas like Tairua were likely short-term seasonal settlements that were returned to multiple times (Rowland 1977).

Royal Billy Point, and Pauanui as a whole, are part of a wider archaeological landscape encompassing the Tairua River mouth and the Lower Tairua Valley. This landscape is dense; within two kilometres of the boat ramp are 46 recorded Māori sites, including 37 midden/oven sites, four pit/terrace sites, two urupā and a pā.

Many of the archaeological sites in the Pauanui and Tairua area were first recorded during a site survey of the Lower Tairua Valley by Larryn Diamond in 1978 (Diamond 1979). Following this were smaller surveys usually driven by residential subdivision, infrastructure

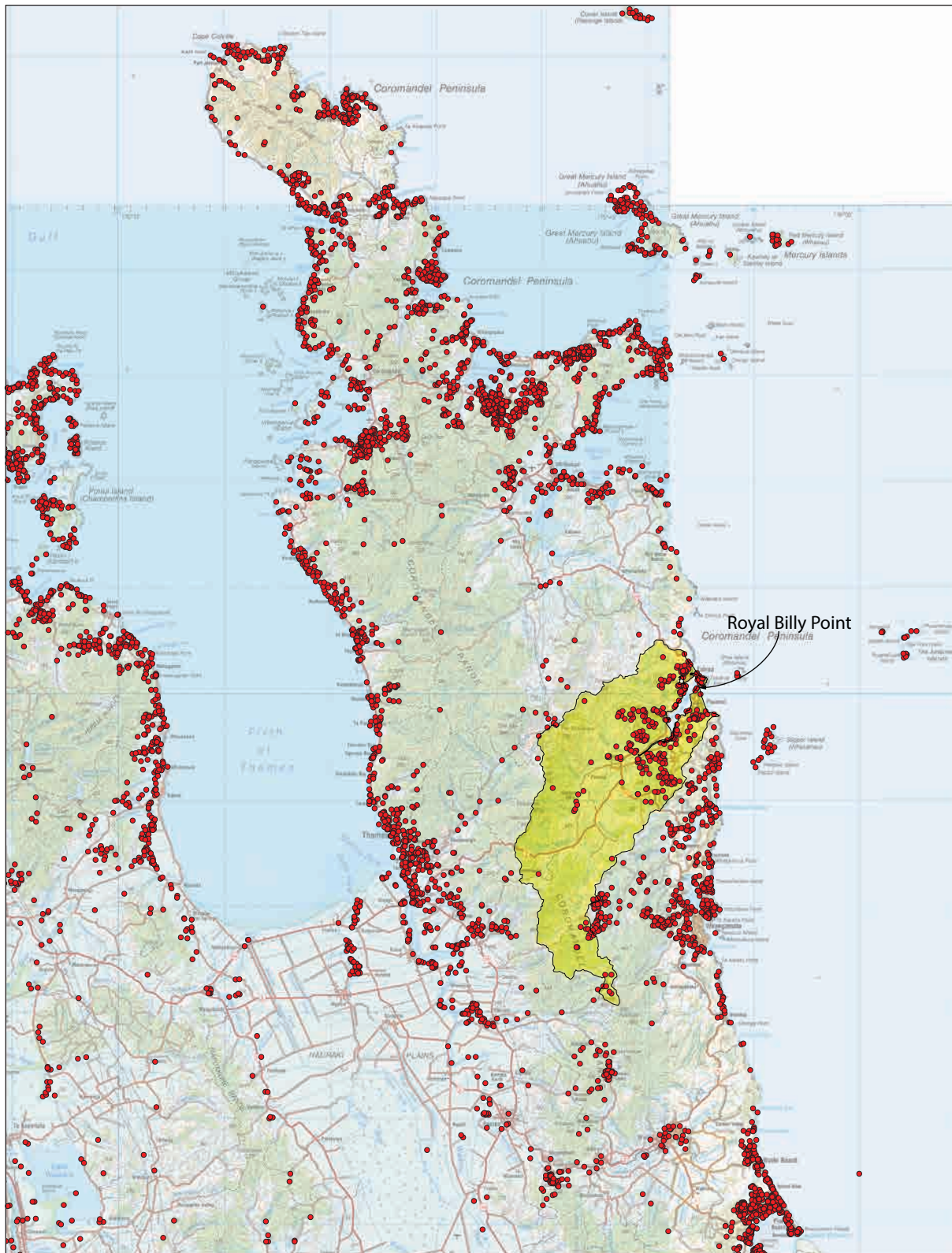


Figure 1. The Coromandel Peninsula showing the location of T11/512 in the Tairua Catchment.

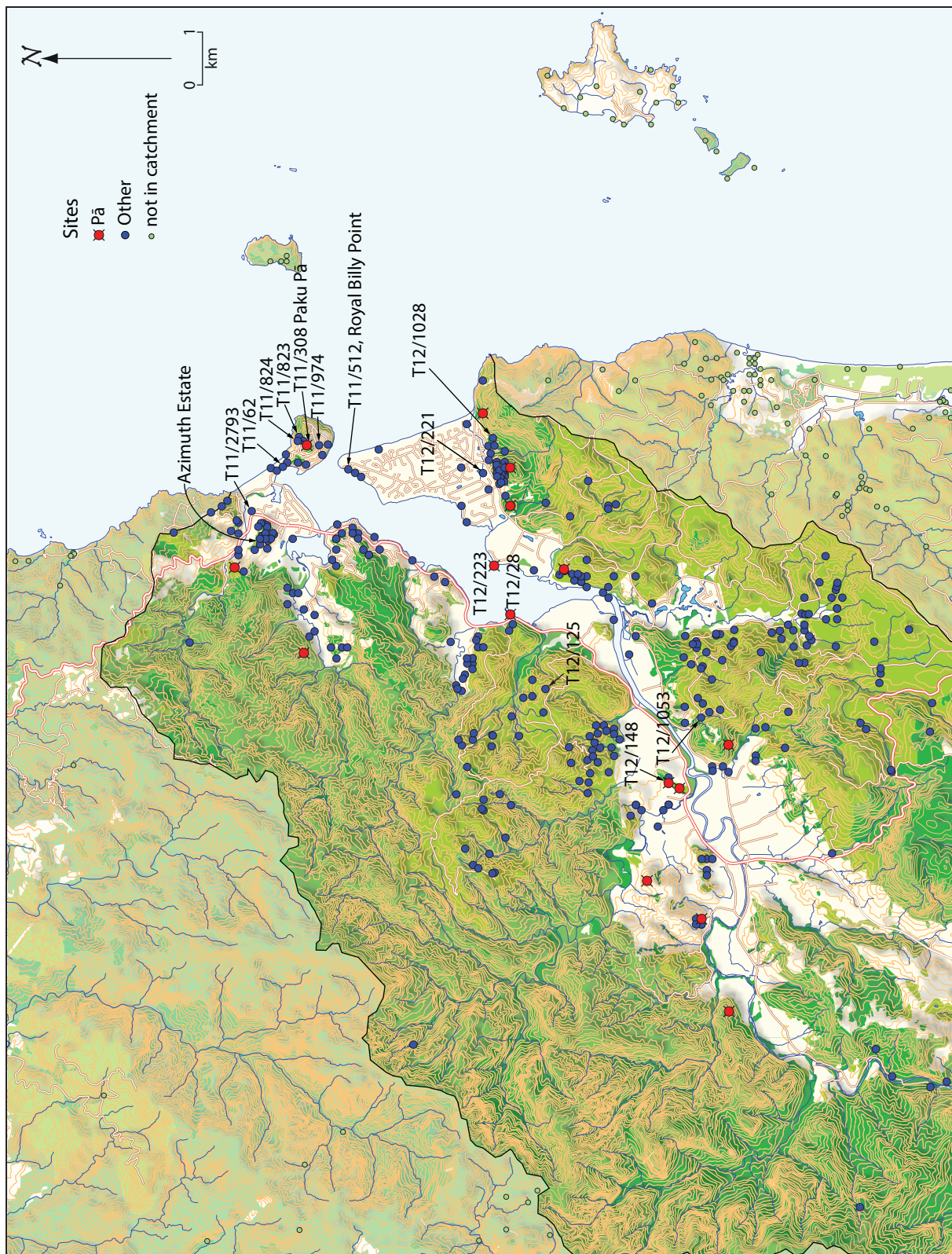


Figure 2. Excavated sites and other sites mentioned in the text.

and forestry. In total, Diamond recorded 94 sites, 90 of which were pre-European. The four European sites were all related to the timber milling industry (Diamond 1979). The majority of sites, 68, were middens, while he also recorded 7 pā (3 of these, including Paku, had been previously recorded). One hundred and seventy-eight sites are now recorded within Diamond's original survey area.

Diamond's analysis of site distribution by distance from navigable water and height above sea level, showed that most sites were located at lower elevations (below 50 m), but not necessarily close to navigable waterways (72% were within 300 m) (Figure 3). In other words, accessibility by canoe was a factor in site location but not a major one, particularly as settlement spread inland slightly to take advantage of better gardening soils. Unsurprisingly, pā tend to be at higher elevations and at a distance from waterways. However, there are numerous middens and pit/terrace sites at higher elevations and greater distances from navigable waterways, that lie outside his survey area (Campbell and Cruickshank 2014).

While there are a limited number of recorded archaeological sites in the immediate vicinity of Royal Billy Point, there are three middens recorded along the southern side of the harbour mouth (T11/512, T11/1008 and T11/1009) as well as another approximately 700 m south of Royal Billy Point on Pauanui Beach (T11/1015) (Figure 4).

Despite the density of recorded archaeological sites in the area, few archaeological investigations have been reported in Tairua and Pauanui (Figure 4). The best known and most significant is a site known simply as the Tairua site (T11/62), located on the tombolo connecting Paku to the mainland, which was excavated over several seasons in the late 1950s and early 1960s by Roger Green, Colin Smart and Bob Jolly. Layers 2, 4, 6 and 8 were the cultural layers, each separated from the other by clean dune sand. The early period layer is Layer 2, which was where a tropical pearl shell (*Pinctada margaritifera*) lure was found during the 1964 excavations (Smart and Green 1962; Green 1967), at that time the only known artefact from tropical Polynesia known from New Zealand excavations (a tropical shell chisel has since been identified from Wairau Bar museum collections, Davidson et al. 2011). As one of the first North Island sites for which a faunal analysis was carried out (Rowland 1977: 135) the site has an important place in the history of New Zealand archaeology. For these reasons the excavated assemblages have been well studied. Layer 2 dates to the mid-13th to 14th centuries AD, which is earlier than most accepted dates from the upper North Island (Schmidt and Higham 1998), though the date is statistically indistinguishable from dates more firmly in the late 13th to 14th centuries and, other than the find of a single highly significant item, Tairua does not stand out from other sites of similar age and situation on the Coromandel Peninsula. Apart from the pearl shell lure, one adze and four roughouts of Tahanga basalt, abraders, moa bone fishhooks and tabs as well as needles and an awl were recovered. Bone of four species of moa (*Dinornithiformes*) was recovered. Four sea mammal species, mostly kekeno (fur seal, *Arctocephalus forsteri*), were identified (Smith 1978). Age/sex categories indicate at least nine fur seal individuals were present, while pups indicate a nearby breeding population. Twenty-four small bird taxa from coastal, forest and wetland environments were found, including pelican (*Pelecanus conspicillatus*), though in generally small numbers (Matthew Campbell pers. comm.). The small fish assemblage was dominated by tāmure (snapper, *Chrysophrys auratus*) with a significant proportion of wrasse (*Labridae* sp.) and tarakihi (*Nemadactylus macropterus*). Shell was dominated by rocky shore species with a significant component of *Cellana denticulata*¹ in contrast to the dense Layer 6 midden, dated to 16th or 17th centuries AD, dominated by pipi (*Paphies australis*) and tuangi (*Austrovenus stutchburyi*) (Davidson 1964).

¹ *C. denticulata* requires cold conditions to breed and populations in the upper North Island are considered to be relicts or stragglers and were extirpated soon after people arrived. They are therefore a marker of early sites in the region.

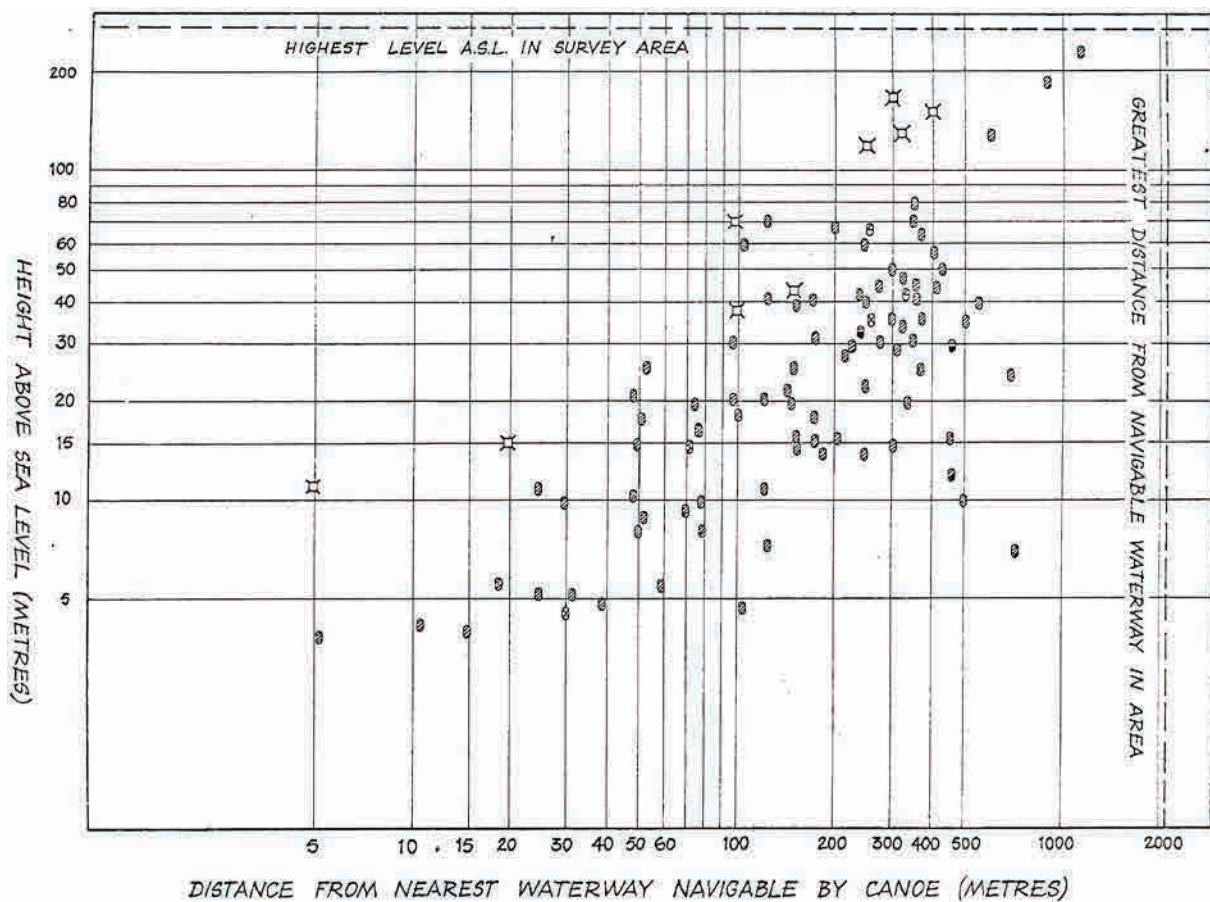


Figure 3. Diamond's (1979: Figure 16) image showing sites graphed by distance to navigable water and height above sea level. Both scales are \log_{10} .

Site T11/308 on Paku² was investigated by Cathryn Barr in 1994. The midden was primarily pipi with some tuangi. One flake of obsidian was recorded.

Sites T11/823 and T11/824 were investigated by Amanda Young (1996) and Nicholas Twohill (1996) on the north side of Paku. T11/823 consisted of two layers of midden with no internal features and few artefacts. It seemed to have been deposited downslope in a fan, and dated to the mid-15th to mid-17th centuries. T11/824 was a less dense midden deposit on a natural terrace. It dated later than T11/823, to the early 16th to early 18th centuries. Both middens were dominated by tuangi and pipi.

T11/974 on Paku was excavated by Brenda Sewell in 2008. The midden was dominated by pipi and tuangi, and no bone or stone was recovered. Charcoal from the midden contained both broadleaf trees such as pūriri (*Vitex lucens*) and pōhutukawa (*Metrosideros excelsa*), and shrub/scrub species like mānuka (*Leptospermum scoparium*) and *Coprosma* sp., indicating clearance of the local landscape, probably for gardening. The site was dated to the 16th or early 17th centuries AD (Sewell 2008).

Warren Gumbley (2002a, 2002b) investigated two sites in the Tairua Forest in 2001 that were being affected by forest harvest and associated infrastructure. T12/125 was partly damaged by forest operations but 13 firescoops were found, eight of which contained small quantities of shell, dominated by tuangi and pipi, with low numbers of whelk (Buccinidae)

² T11/308 is the site record for Paku Pā. Twelve sites are recorded on this prominent hill, all of which are probably part of a single site complex, including other sites discussed here.

and mudsnail (*Amphibola crenata*). T12/1053 was a more complex site, with at least three terraces, on one of which a small pit was excavated. Several patches of midden and patches of blackened soil were found during site trenching. No midden samples were analysed, but were identified in situ as dominated by tuangi and pipi. Charcoal samples were analysed, which were typical of secondary regrowth, indicating initial forest clearance and abandonment prior to re-occupation. The site dated to the late 17th or early 18th centuries AD.

T11/2793 was investigated by Andrew Hoffmann in 2015 following damage to the site during Waikato Regional Council floodway improvements. Two middens, charcoal stained soils and possible garden soils were recorded. Midden A contained two layers separated by 150 mm of flood deposits, an upper layer of crushed shell 100 mm thick, and a lower layer of pipi and tuangi 200 mm thick (Hoffmann 2015). A final report for this investigation is not yet available.

At Pauanui, Warren Gumbley investigated a kāinga, T12/1028, on the hillside overlooking the Tairua Harbour as part of a subdivision (Gumbley 2003: 1). The excavation recorded postholes on a terrace, midden, and previously unrecorded terraces running over 50 m. The shellfish species indicated people were primarily exploiting the harbour and sometimes the sandy shoreline (Gumbley 2003: 3). A small faunal assemblage included red gurnard (kumu, *Chelidonicthys kumu*), mackerel (hauture, *Trachurus* sp.) and a small unidentified lizard. Dating suggested occupation was within a few decades either side of AD 1600 (Gumbley 2003: 4).

Seven sites located at the Azimuth Estate development were investigated by CFG Heritage Ltd between 2016 and 2020. These sites were all initially identified as middens, but T11/283 also contained several small kūmara storage pits and a bin pit was found at T11/1055. Radiocarbon dates suggest a range of dates of occupation from the mid-15th to the mid-18th century.

Shellfish identified were primarily estuarine species that could have been taken from the Tairua Harbour, the nearest body of water, with a few sandy and rocky shore species taken from more distant environments such as Paku or Tairua Beach. The assemblages were all generally similar, with no identifiable fishbone. Charcoal analysis showed significant assemblages of both kauri, indicating primary forest, and mānuka, indicating secondary growth. Early historic plans of Tairua show that the area was never extensively cleared of kauri and primary forest suitable for firewood collection would have been relatively close to the site. During this period of occupation, the local environment and the resources taken from it did not change a great deal, and the Azimuth Estate site results are consistent with other late occupations in Tairua (Campbell et al. 2021).

Site T12/221 was investigated by Matthew Campbell and Danielle Trilford in 2018 (Campbell and Trilford 2019). The area investigated was in low lying, formerly swampy ground that was a remnant of an originally larger midden that extended onto higher ground to the east, now destroyed by development of the adjacent golf course. The main occupation would have been on the higher ground and the midden excavated would have been an incidental deposit. Two midden layers were excavated, dated to the mid-16th to mid-17th centuries (Layer 2) and the late 16th to early 18th centuries (Layer 1). In both the main resource being targeted was pipi and tuangi from the nearby harbour, with some shellfish from the open beach, while a small fish assemblage demonstrated that other resources were also being exploited.

As Campbell and Trilford (2019) pointed out, the barrier dune complex beneath Pauanui township can be assumed to have originally had numerous similar middens across it although only 10 are recorded. It is probable that the original dune midden landscape would have represented a much more varied set of occupation and subsistence strategies than found from the small excavation of T12/221. One a similar sized dune midden landscape at Omaha

in northern Auckland, for instance, nearly 300 middens of varying size and complexity were recorded and investigated during subdivision development (Bickler et al. 2003). The construction of Pauanui has destroyed much of this dunefield landscape although remnants may be preserved beneath houses and in back yards.

T11/512

T11/512 was originally recorded by Easdale and Jacomb (1982) and was described as extending some distance along the beach, with the densest section of midden exposed in a 3–4 m high eroding bank 30 m south of the boat ramp and boat shed, and at least four layers of midden containing pipi, tuatua (*Paphies subtriangulata*), tuangi and oyster (*Saccostrea* sp.) along with fire-cracked rock, separated by natural sand layers. The site was revisited by Louise Furey in 2006 (updated in 2010), who noted deposits over a 50 x 50 m area to the rear of where Easdale and Jacomb had identified the midden, with the bank heavily eroded since it was recorded. Furey also identified further deposits in conjunction with the road / carpark and footpath and behind the Coastguard boat shed. The site appears to have been heavily modified in the years between the two visits, both through erosion and development of the carpark, but in situ archaeological deposits were still evident.

During the 2019 assessment the midden used as a central GPS point for T11/512 in the 2010 site update was relocated to the south the carparking area near a playground. It is a large mound approximately 20 x 20 m x 3 m high with shell, charcoal and oven stones eroding to the north and west. Associated material was identified in the roots of a pōhutukawa approximately 25 m southwest of the mound, around a recently installed park bench and was detected intermittently by probing the grassed area between the mound and the boat shed to the west of the carpark. There was some redeposited midden identified on the bank beneath some pōhuehue behind the Coastguard boatshed.

A 200 x 200 mm test pit (TP 1) was dug beside a recently installed shower where the new ramp for the pier will be located (Cruickshank and Glover 2019). There was 150 mm of recently deposited dredged sand on top of a 50 mm deposit of bark mulch, presumably from previous landscaping. Below this was 350 mm of mottled sand followed by a midden. This shower has subsequently been removed and will be relocated in the area investigated and described in this report (Figure 6). The midden lens encountered in TP 1 was approximately 50–60 mm deep and appeared to consist primarily of pipi, with lesser quantities of tuangi and fire-cracked rock. This deposit was detected approximately 500–600 mm below the current ground surface through intermittent probing towards the staircase. Additional test pits (TP 2 and 3) were dug near the timber retaining wall to the north of the boat ramp, where the new retaining wall has been installed. Most of this area appears to have been cut down when the Coastguard boatshed was installed and no midden was evident here (Figure 5).

Pre-authority works

Prior to the authority being granted, some additional test pits were cut into impermeable surfaces within the extent of works to see if any archaeological material existed beneath them. One 1 x 1 m test pit was cut into the concrete surface of the boat ramp (TP A), and two 1 x 1 m test pits (TP B and C) were cut from the asphalt surface of the carpark. All three test pits showed clean sand. Although TP B and C were covered with compacted clay and base course, they all appeared to consist of clean dredged sand. The sand was probed, and no archaeological material could be identified beneath.

Because no evidence of archaeological material was encountered in the three test pits, the remaining boat ramp structure above the mean high-water spring was removed under



Figure 4. Pauanui, showing archaeological sites.

archaeological supervision on 23 September 2019 to see if any evidence of the original dune could be located beneath the ramp (Figure 5). The concrete surface was lifted, revealing a layer of clean dredged sand up to 500 mm thick sitting on top of a previous concrete structure. Near to the pier that was being replaced, cobbles and boulders mixed with dredged sand was observed. This is probably fill associated with an earlier boat ramp which appears to have been upgraded between 1971 and 1980, based on aerial photographs.

In summary, T11/512 appears to represent a near continuous midden deposit running approximately 150 m along the beachfront. It is likely there are associated features such as cooking areas in the vicinity. This site has been heavily impacted through the construction of the current boat ramp, accessway, carpark and other modifications to Royal Billy Point, but there are still some in situ archaeological features present within this extent as shown by Test Pit 1.

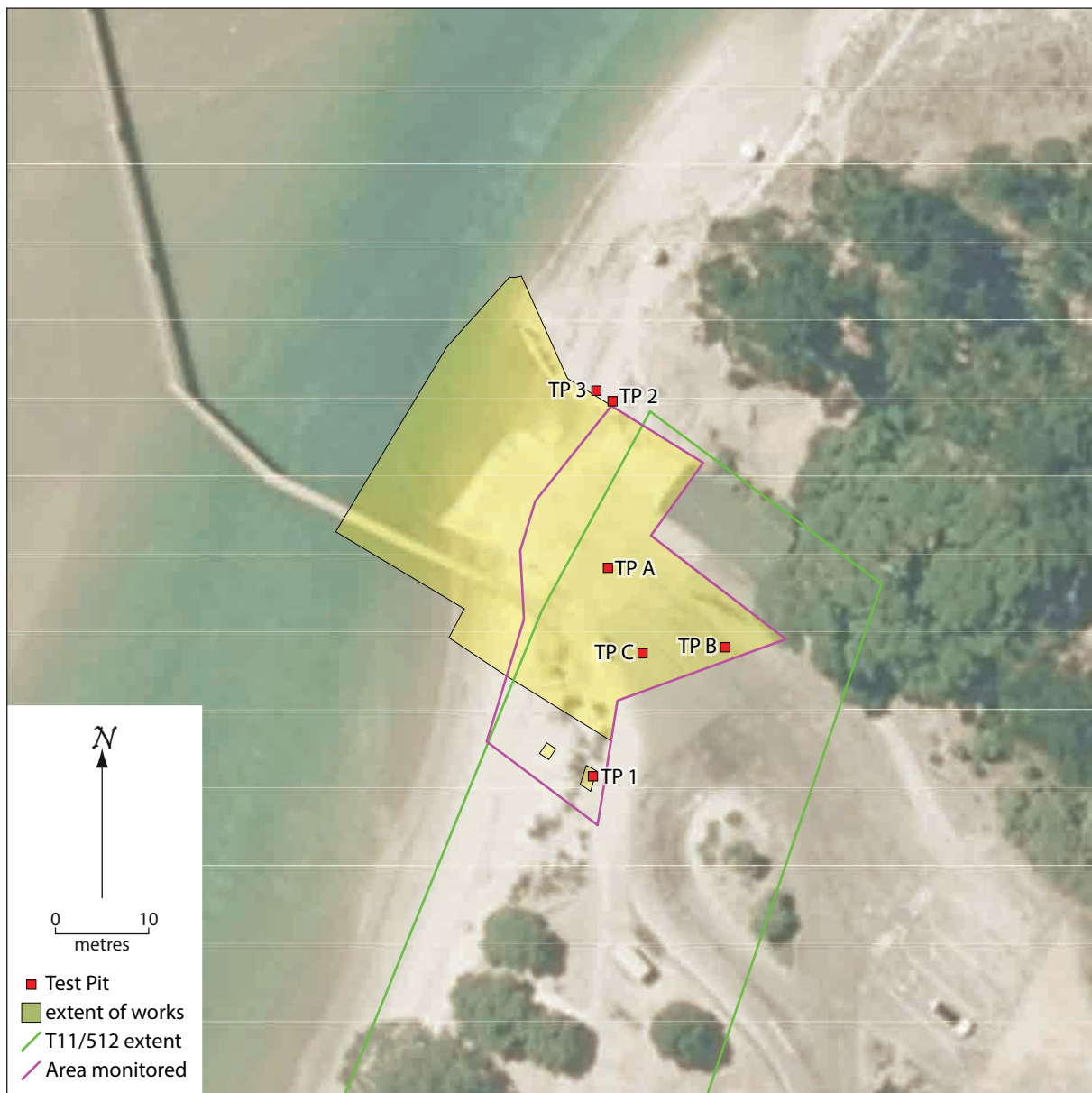


Figure 5. Area of works showing locations of test pits from assessment.

2021 Archaeological investigations

Archaeological investigation was undertaken on 17 and 31 May 2021 in the vicinity of the test pit (TP1) where midden was observed during the 2019 assessment (Cruickshank and Glover 2019). This was to allow for the excavation of the ramp landing and shower footing at the entrance of the pier, and for the installation of piles on the dune itself (Figure 6). Although they only required 200 mm of footing for the ramp landing and shower, these were excavated to 500 mm to ensure any underlying archaeological material could be adequately recorded and sampled.

During monitoring on 17 May, five features were identified across three distinct archaeological phases / layers (Table 1). The upper two phases were evident only in the baulk beneath the concrete walkway during clean up, but the third layer occurred within the excavated area at a depth of approximately 650 mm below the ground surface.

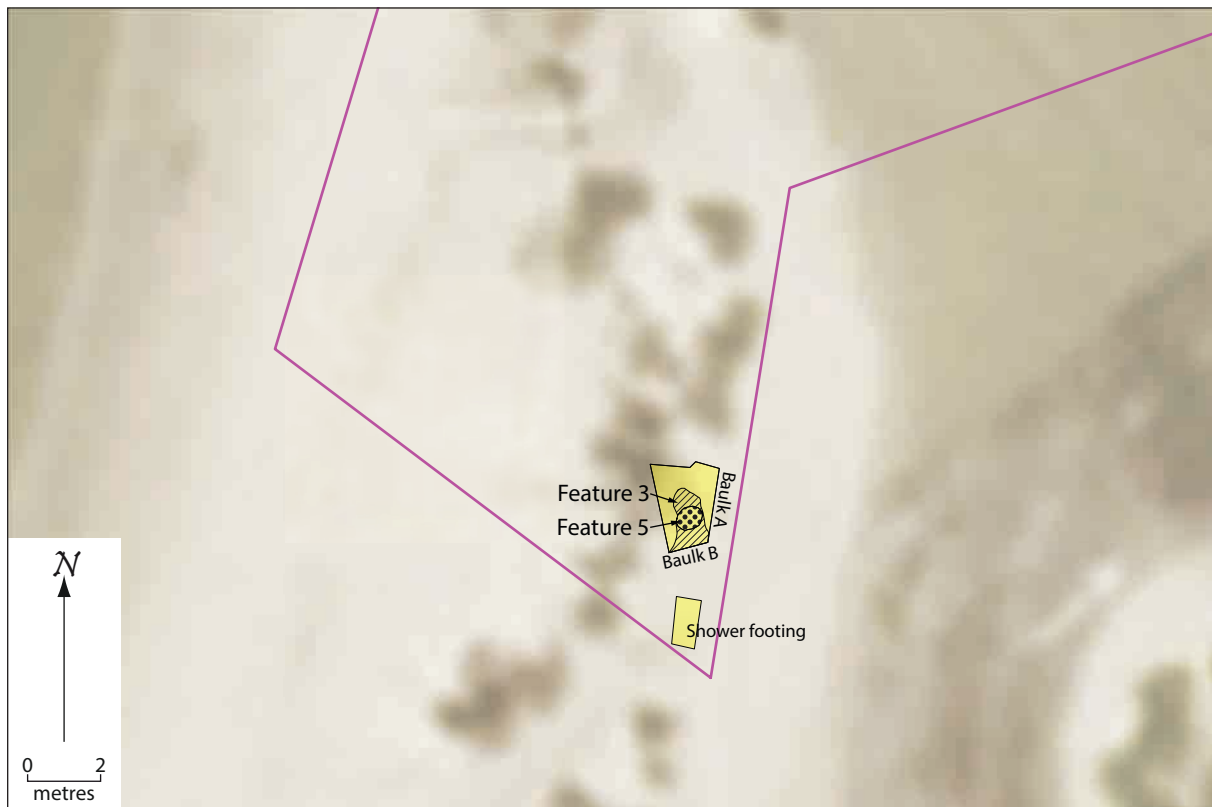


Figure 6. Extent of archaeological investigation and excavated features.

The upper layer (Phase 3) was a sparse, relatively homogenous midden lens with pipi and tuangi cockle noted. The lens was 3.3 m long, with a maximum depth of 300 mm. No associated features were identified. One 10 litre bulk sample was taken from this layer.

The second layer (Phase 2) was also a relatively homogenous midden lens with pipi and tuangi cockle, but less sparse than Phase 3. This lens was at least 4.2 m long with a maximum observed thickness of 150 mm. A single fire scoop (Feature 4) was identified in the west of the baulk, extending outside of the extent of works. A 10 litre bulk sample was taken for analysis.

The lower layer (Phase 3) was cleaned down and found to be a 700 mm diameter fire scoop (Feature 5), with a with an associated rake out (Feature 3) covering approximately 2 x 1 m, extending east into the baulk beneath the concrete walkway (Figures 6–8).

The fire scoop was initially excavated in half section (Figure 8), with a 10 litre bulk sample taken from the eastern side. The remaining half was then excavated with a second 10 litre bulk sample taken from the western side.

Works for the installation of the three piles on the dune were monitored on 31 May 2021. Due to extreme weather that had occurred in the previous week, the dune around the

Table 1. Features and associated phases identified during works at T11/512

Feature	Type	Phase	Sample
1	Midden lens	3	2 litre sample
2	Midden lens	2	
3	Rake out	1	
4	Fire scoop	2	10 litre bulk sample
5	Fire scoop	1	2 x 10 litre bulk samples

two pier piles had been eroded away exposing clean dredged sand with no evidence of archaeological material. The footing for the timber pile was excavated by hand and no archaeological features were noted.

It is likely that similar features are still present underneath the concrete path and throughout the remainder of the indicative extent of T11/512.

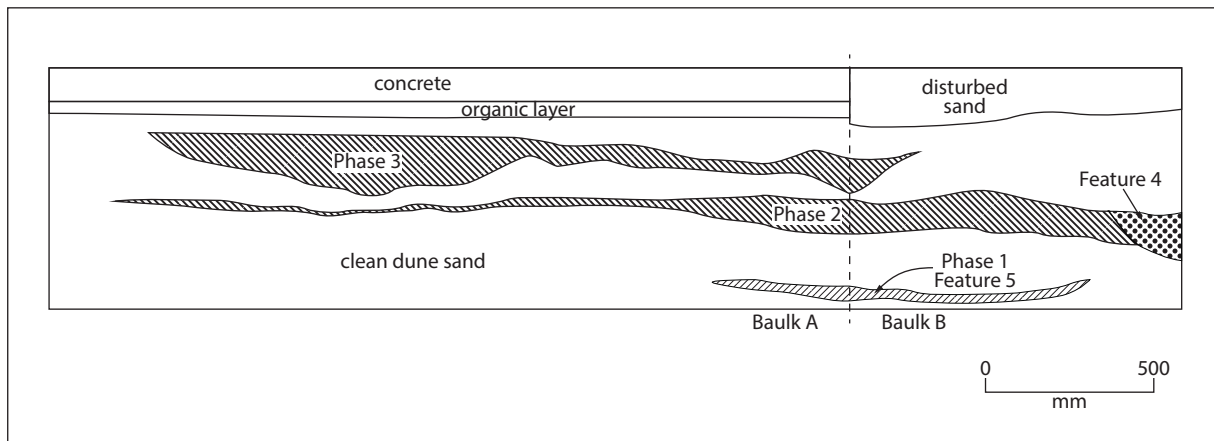


Figure 7. Profile of Baulks A and B.



Figure 8. Feature 5 prior to excavation.



Figure 9. Feature 5 excavated in half section.

Analysis

Bulk samples were returned to the lab and wet sieved through a 3.2 mm screen. The dried material was sorted by hand to faunal class as well as sorting stone (primarily fire cracked rock) and charcoal. Each class was weighed and bagged separately.

Shell

Midden was sorted and shellfish analysed by Lucy Arrell of CFG Heritage Ltd following standard analytical methods (Somerville et al. 2017; Campbell 2017). Identification of shellfish was based on Morley (2004) and Riley (2003). Counts for bivalves (based on identified hinges) were divided by two to obtain MNIs (Minimum Numbers of Individuals), while the count for gastropods (based on the greater of apex, aperture or operculum) was taken as the MNI.

All three phases were dominated by pipi, with tuangi consistently the second most common species. Tuangi are sourced in soft-shore environments like harbours, while pipi can favour a slightly sandier shore. While small numbers of other species from a variety of environments were present in all phases, numbers are too small to draw any conclusions about changing patterns of shellfish exploitation.

Pipi and tuangi were likely to have been collected from the Tairua Harbour adjacent to Royal Billy Point. The presence of occasional rocky shore species indicates that more distant environments, such as the rocky coastal edges of Paku, were also occasionally exploited.

Table 2. Shellfish from T11/512, by MNI.

Taxon	Phase			Environment
	1	2	3	
Pipi (<i>Paphies australis</i>)	806	84	21	Soft / sandy shore
Tuangi (<i>Austrovenus stutchburyi</i>)	43	3	6	Soft shore
Tuatua (<i>Paphies subtriangulata</i>)			1	Sandy shore
Mussell (kūtai, Mytilidae)	1			Various
Cat's eye (akanakana, <i>Lunella smaragda</i>)	1			Various
Mudwhelk (<i>Cominella glandiformis</i>)	4			Soft shore
Horn shell (Koeti, <i>Zeacumantus lutulentus</i>)	20	1		Various
Common top shell (kūpūmai, <i>Melagraphia aethiops</i>)	9			Rocky shore
Speckled whelk (kawari, <i>Cominella adspersa</i>)	16	2		Soft shore
Limpet (Ngākihi, <i>Cellana</i> sp.)		2		Rocky shore
Oyster borer (Kaikai tio, <i>Lepsiella Scobina</i>)		1		Rocky shore
Total	900	93	28	

Fish

A small assemblage of fishbone was analysed by Matthew Campbell of CFG Heritage. Most bones were undiagnostic. Only one unidentified small fish vertebra was found from Phase 2. From Phase 1 the most common taxon was *Scorpiis* sp., which included 3 vertebrae and two head bones, while the four shark vertebrae were probably Triakidae (either rig (kōinga, pioke, *Mustelus lenticulatus*) or school shark (kapetā, tupere, makohuarau, *Galeorhinus galeus*)) (Campbell et al. 2022). The single mackerel bone is not unusual, but warehou are not commonly found in archaeological sites, probably because their bone is quite porous and does not survive well.

All these fish would commonly be caught in open waters rather than the Tairua Harbour, and while shark are often caught with baited hooks, the other identified fish do not have particularly large mouths and were more likely to have been netted.

Table 3. Fish from T11/512, by NISP.

Taxon	Phase	
	1	2
Shark (mango, Chondrichthyes)	4	
Fish sp.		1
Sweep / blue maomao (hui, maomao, <i>Scorpiis</i> sp.)	5	
Warehou (<i>Serirolella brama</i>)	1	
Mackerel (hauture, <i>Trachurus</i> sp.)	1	

Charcoal

Charcoal was sorted and analysed by Ella Ussher of CFG Heritage Ltd. A representative sample of 50 specimens, or all charcoal in a sample if less than 50 fragments were present from each bulk sample were identified, with a system of identification to extinction. While this is a low number overall, it can be argued that this strategy still follows the methods for anthracological analysis outlined in Chabal et al. (1999), Théry-Parisot et al. (2010) and Dotte-Sarout et al. (2015), ensuring that the analysed assemblages are representative of the deposits.

Fifty fragments were analysed from Samples 1, 2 and 4 and 10 fragments were analysed from Sample 3, being all of the charcoal extracted from this bulk sample (Table 4). Species

Table 4. Summary of charcoal from T11/512.

Taxon	Phase					
	1	2	3			
Mānuka (<i>Leptospermum scoparium</i>)	7	25	4			
Kānuka (<i>Kunzea ericoides</i>)		1				
Patē (<i>Schefflera digitata</i>)		1		94%		40%
Hebe (<i>Hebe</i> sp.)						
Cassinia (<i>Cassinia</i> sp.)	3	16%				
Kōwhai (<i>Sophora microphylla</i>)	5		20			
Pōhutukawa (<i>Metrosideros excelsa</i>)	1					
Pukatea (<i>Laurelia novae-zelandiae</i>)	11					
Māhoe (<i>Melicytus ramiflorus</i>)	5	28%	1	2%	3	30%
Karaka (<i>Corynocarpus laevigatus</i>)	12					
Kauri (<i>Agathis australis</i>)	4					
Conifer	52	56%	2	4%	3	30%

diversity in Samples 1, 2 and 4 (all samples from fire scoops) were roughly equal with six to eight species present in these, while Sample 3 (midden lens) had only 3 species present. Phase 1 (Samples 1 and 2 from F5) is dominated by conifers and broad-leaved trees such as karaka and pōhutukawa, suggesting the presence of established primary forest in the vicinity of the site for firewood collection. Phases 2 and 3 show an increasing presence of small trees and shrubs such as mānuka and *Cassinia*, indicating that firewood is being collected from an environment of secondary growth after forest clearance. Overall, the charcoal is derived from similar percentages of both small trees and shrubs (42%) and conifers including kauri (38%). Broad-leaved canopy species such as pōhutukawa are slightly under-represented, making up only 20% of the charcoal identified.

Radiocarbon Dates

Mānuka charcoal from Features 1, 4 and 5 was submitted to the Radiocarbon Dating Laboratory at the University of Waikato for dating. The results are all similar and indicate repeated occupation in the late 15th to mid-17th centuries (Table 5). This indicates that the three layers / phases detected in the stratigraphy are more likely to represent repeated seasonal occupations rather than distinct periods of occupation across a longer time frame.

Table 5. Summary of radiocarbon results from T11/512.

Feature	Lab no.	CRA BP	Cal AD 68%	Cal AD 95%
Phase 1 (Feature 5)	Wk 54072	365 ± 16	1500–1520 (10%) 1540–1600 (49%) 1610–1630 (9.4%)	1490–1640
Phase 2 (Feature 4)	Wk 54071	341 ± 16	1510–1550 (40%) 1560–1580 (15.6%) 1620–1640 (12.7%)	1500–1600 (75.7%) 1610–1650 (19.8%)
Phase 3 (Feature 1)	Wk 54073	381 ± 16	1490–1520 (13.8%) 1540–1630 (54.5%)	1460–1630

Discussion and conclusion

Middens are often (but not always) easily identifiable and visible markers for a wider archaeological site with associated features such as storage pits, fire scoops, post holes or other evidence of semi-permanent or permanent occupation. There is a noticeable absence of recorded sites around the project area considering the favourable conditions for pre-European Māori occupation. The exposure of midden during projects such as these works supports the likelihood that while archaeological investigations may have been few, there are pre-European Māori sites that remain in situ with archaeological value.

The shellfish collection patterns are generally consistent across samples and match those of a recently analysed assemblages from nearby investigations at Azimuth Estate (Campbell et. al. 2021). These sites lie around 1.8 km across the Harbour from the deposits sampled at Royal Billy Point and date from the mid-15th to mid-19th century. Deposits from these sites are all primarily pipi with lesser counts of tuangi and minor but generally consistent counts of rocky shore gastropods (Campbell et. al. 2021).

Similar sites nearby from the middle-to-late period of human occupation also show this pattern - such as T11/974, T11/308, T11/823 and T11/824 on Paku (Sewell 2008; Barr 1994; Young 1996; Twohill 1996), and the upper layer of The Tairua site (Davidson 1964), T12/221 at Pauanui (Campbell and Trilford 2019) and T12/1053 in the Tairua Forest (Gumbley 2002), all contain midden essentially similar to the deposits at Royal Billy Point, dominated by pipi and tuangi with little fishbone. This pattern of soft shore shellfish exploitation contrasts with the earliest layer at T11/62, the Tairua site, which was dominated by rocky shore species, with significant quantities of bone as well as artefacts (Smart and Green 1962).

Dates obtained for the three phases are all similar. However, charcoal samples show that the earliest phase (Phase 1) is dominated by conifers and broadleaves, suggesting the presence of established primary forest for firewood collection, while Phases 2 and 3 show an increasing presence of small trees and shrubs indicative of secondary growth after forest clearance. It is probable that the layers / phases represent repeated seasonal occupations of the site.

The archaeology encountered at Royal Billy Point shows that, in spite of the lack of recorded archaeological sites present, repeated occupation and land use, particularly around the coastline, was taking place, and that subsurface archaeological remains have survived intact even in developed areas.

References

- Barker, R.G. 1992. *Geology of the Coromandel Peninsula*. Pagez Productions, Auckland.
- Barr, C. 1994. Fieldwork and other activities: Waikato–Coromandel. *Archaeology in New Zealand*, 37(1): 8.
- Bickler, S., M. Campbell, R. Clough, D. Prince, M. Plowman, V. Tanner, S. Burgess, K. Tatton, T. Mace and M. Turner 2003. Omaha Beach: final archaeological report. Unpublished Clough and Associates report to Omaha Beach Ltd.
- Campbell, M. and A. Cruickshank 2014. 297C Main Road, Tairua: archaeological assessment. Unpublished CFG Heritage Ltd report to Tairua Mason Trustee Ltd and RMS Surveyors Ltd.
- Campbell, M and D. Trilford 2019. T12/221, 1201 Hikuai Settlement Road, Pauanui (HNZPTA authority 2017/754): final excavation report. Unpublished CFG Heritage report to Heritage New Zealand Pouhere Taonga and Watts Group.
- Campbell, M., A. Cruickshank and H. Glover 2021. Azimuth Estate, 297C Main Road, Tairua (HNZPTA authority 2017/023): final excavation report. Unpublished report to Heritage New Zealand Pouhere Taonga and Thames-Coromandel District Council.
- Campbell, M., L. Shepherd, M. Kellett and R. Brassey 2022. A highly fragrant comestible: the cartilaginous fish (Chondrichthyes) in pre-European Māori New Zealand. *Archaeology in Oceania*, 57: 1–15.
- Campbell, G. 2017. “What can I do with all these shells?” Basic guidance for the recovery, processing and retention of archaeological marine shells, *Quaternary International*, 427 (Part A): 13–30.
- Chabal, L. 1990. L'étude paléo-écologique de sites protohistoriques à partir des charbons de bois: la question de l'unité de mesure. Dénombrement de fragments ou pesées. In T. Hackens, A. Munaut and C. Till (eds), *Wood and Archaeology. Bois et Archéologie. First European Conference, Louvain-la-Neuve*, pp. 189–205. PACT, 22. Conseil de l'Europe, Strasbourg.
- Cruickshank, A. and H. Glover. 2019. *Royal Billy Point boat ramp and pier: archaeological assessment*. Unpublished CFG Heritage Ltd report to Thames-Coromandel District Council.
- Davidson, J.M. 1964. The physical analysis of refuse and New Zealand archaeological sites. MA thesis, University of Auckland.
- Davidson, J.M., A. Findlater, R. Fyfe, J. MacDonald and B. Marshall 2011. Connections with Hawaiki: the evidence of a shell tool from Wairau Bar, Marlborough, New Zealand. *Journal of Pacific Archaeology*, 2(2): 93–101.
- Diamond, L. 1979. Lower Tairua Valley archaeological survey. Unpublished report to New Zealand Historic Places Trust.
- Dotte-Sarout, E., X. Carah, and C. Byrne. 2015. Not just carbon: assessment and prospects for the application of anthracology in Oceania. *Archaeology in Oceania* 50(1):1-22
- Easdale, S. and C. Jacomb 1982. Coromandel Coastal Survey: A Study of Archaeological Sites on the Beaches of the Coromandel Peninsula. Hauraki Catchment Board Report No. 121.
- Furey, L. 2009. Archaeological monitoring at T11/62, the Tairua Site. Unpublished CFG Heritage report to New Zealand Historic Places Trust and Thames–Coromandel District Council.
- Green, R.C. 1967. Sources of New Zealand's East Polynesian culture: the evidence of a pearl shell lure shank. *Archaeology and Physical Anthropology in Oceania*, 2: 81–90.
- Gumbley, W. 2002a. Archaeological investigation of T12/1053: Ohui Block, Tairua Forest. Unpublished report.
- Gumbley, W. 2002b. T12/125, Hikuai Block, Tairua Forest – an archaeological investigation. Unpublished report.
- Gumbley, W. 2003. Archaeological Investigation of T12/1028: a prehistoric kainga at Pauanui, Coromandel Peninsula. Unpublished report.
- Hoffmann, A. 2015. Assessment of archaeological site damage (T11/2793) and effects of Waikato Regional Council's floodway improvement works at Graham's Creek, Tairua, Coromandel Peninsula. Unpublished report to Waikato Regional Council.
- Homer, L. and P.R. Moore 1992. *Vanishing Volcanoes: A Guide to the Landforms and Rock Formations of Coromandel Peninsula*. Landscape Publications, Wellington.
- Morely, M. 2004. *A photographic guide to seashells of New Zealand*. New Holland Publishers, Auckland.
- Riley, M. 2003. Know your New Zealand Seashells: Hinemoana's Family. Viking Sevenses Ltd, New Zealand.
- Rowland, M.J. 1977. Seasonality and the interpretation of the Tairua site, Coromandel Peninsula, N.Z. *Archaeology and Physical Anthropology in Oceania*, 12(2): 135–150.
- Schmidt, M. and T. Higham 1998. Sources of New Zealand's East Polynesian culture revisited: the radiocarbon chronology of the Tairua archaeological site, New Zealand. *Journal of the Polynesian Society*, 107: 395–403.

- Sewell, B. 2008. Excavation of T11/974, Paku, Tairua. Unpublished report to B. Jamieson. Turner, M.T. 2000. The function, design and distribution of New Zealand adzes. PhD. Thesis, University of Auckland.
- Smart, C. and R.C. Green 1962. A stratified dune site at Tairua, Coromandel. *Dominion Museum Records in Ethnology*, 1(7): 243–266.
- Smith, I.W.G. 1978. Seasonal sea mammal exploitation and butchering patterns in an Archaic site (Tairua, N44/2) on the Coromandel Peninsula. *Records of the Auckland Institute and Museum*, 15: 17–26.
- Somerville, L., Light, J. and M. Allen 2017. Marine molluscs from archaeological contexts: how they can inform interpretations of former economies and environments. In M. Allen (ed.), *Molluscs in Archaeology. Methods approaches and applications. Studying Scientific Archaeology*, 3. 214–223.
- Théry-Parisot, I., L. Chabal and J. Chrzavzez. 2010. Anthracology and taphonomy, from wood gathering to charcoal analysis. A review of the taphonomic processes modifying charcoal assemblages, in archaeological contexts. *Palaeogeography, Palaeoclimatology, Palaeoecology* 291: 142–153.
- Twohill, N. 1996. Archaeological monitoring on Resort Lodges' Property, Paku. Unpublished report.
- Young, A. 1996. Archaeological investigation of sites T11/823 and t11/824, Oceana Resort Lodge, Tairua. Unpublished report to Oceana Resort Lodge.