



State Highway 20B Short Term Improvements: final report (HNZPTA authority 2020/209)

**report to
Waka Kotahi NZ Transport Agency
and
Heritage New Zealand Pouhere Taonga**

Arden Cruickshank and Ella Ussher

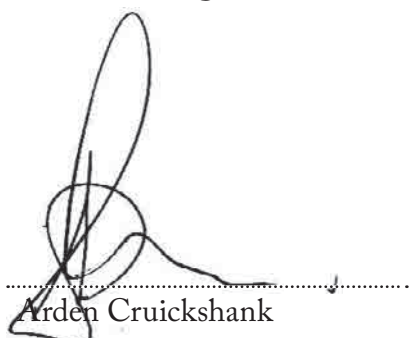


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Arden Cruickshank and Ella Ussher

Introduction

Waka Kotahi NZ Transport Agency (Waka Kotahi) and Auckland International Airport Ltd (AIAL) have recently completed earthworks for the short-term improvements to State Highway 20B (Puhinui Road) between Pukaki Creek and the State Highway 20 interchange. An archaeological assessment of effects was undertaken by Arden Cruickshank of CFG Heritage (Cruickshank 2019) and applications for archaeological authorities to modify or destroy archaeological sites or features encountered during works were made to Heritage New Zealand Pouhere Taonga under section 44 of the Heritage New Zealand Pouhere Taonga Act 2014. Two authorities were granted for the works: authority 2020/208 for works in Waka Kotahi NZ Transport Agency road reserves east of Pukaki Creek, and 2020/209 on Auckland International Airport Limited land west of the creek (Figure 1). No archaeological material was encountered west of the creek and authority 2020/208 and that authority was closed off with a brief interim / final report (Ussher 2021). One site, R11/3340, was encountered during monitoring and the results of investigation and analysis are presented in this final report.

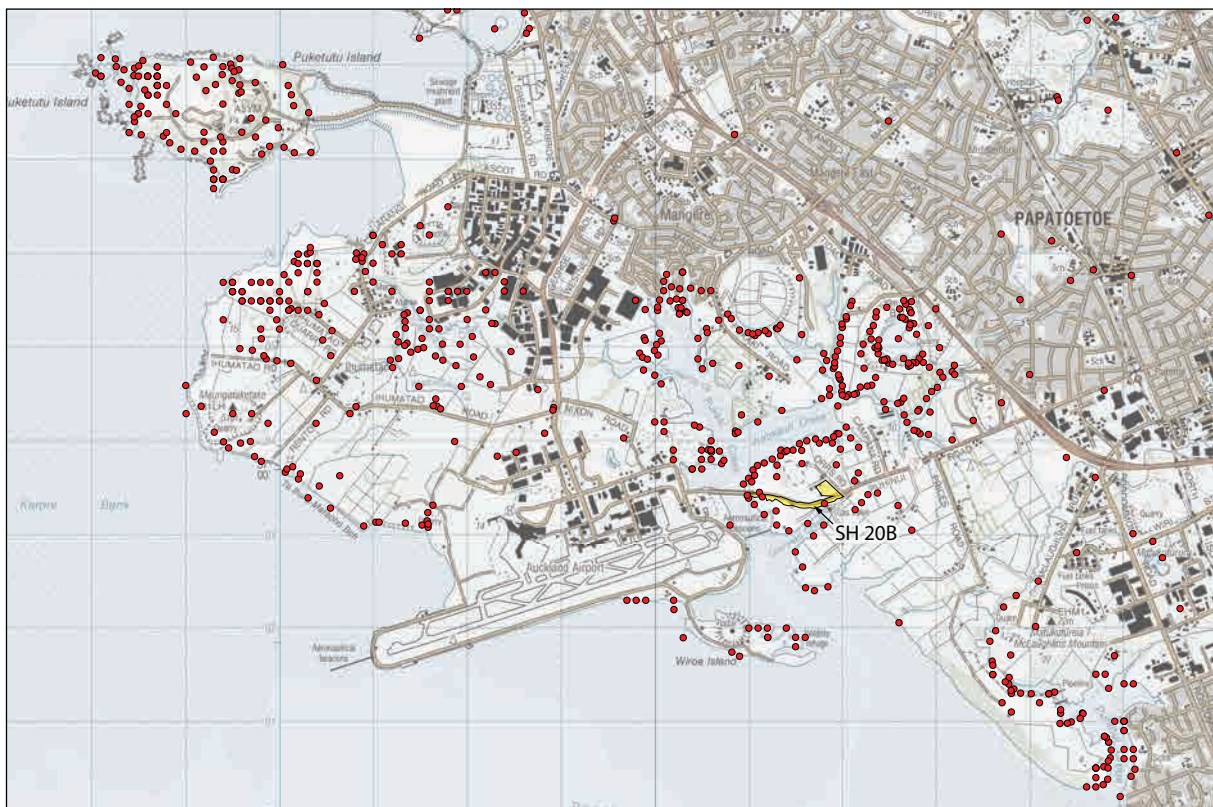


Figure 1. Location of the project footprint, showing archaeological sites recorded in the vicinity.

Summary of assessment

During assessment of the project (Cruickshank 2019) 13 archaeological sites were identified within 200 m of the project footprint. Of these, then were determined to be outside the scope of works, with two sites (R11/229 and R11/1800) identified as having moderate potential for being affected by works and one (R11/230) as having low potential. These three sites are all associated with the Papāhīnau kāinga, a significant archaeological landscape both regionally and nationally.

Papāhīnau kāinga

This kāinga was described by Sullivan (1973) as being a significant settlement, stretching from Otaimako in the south to the Waokauri Creek in the north (Sullivan 1973: 49) (Figure 2). Sullivan suggests that the focus of settlement would have been to the north on the flat area around R11/231, to the south on the promontory south of R11/1800 and to the northwest towards pā R11/45.

It is more accurate to view Papāhīnau and the area west of the Pukaki Creek in general as an archaeological landscape rather than a collection of sites (Campbell et al. 2013), as it is likely that the subsurface features are more extensive and continuous than what is currently visible. It is likely that at least four of the sites in the westernmost portion of the project area (R11/45, R11/229, R11/230 and R11/1800) are associated with Papāhīnau, based on the identification of historic artefacts, along with other sites in the vicinity (Sullivan 1973). The true extent of the kāinga and associated occupation is unknown, and further research and investigation is required to determine the connections between the recorded archaeological sites in the area.

R11/229, 'Papāhīnau A', was initially recorded by Sullivan in 1973 and was excavated by Foster and Sewell in 1993 during the initial construction of Puhinui Road and the bridge over the Pukaki Creek. Excavation revealed an early 19th century, historic period Māori occupation. This overlay an earlier midden layer, dated to AD 1450–1690. The site was occupied from at least the early 19th century up until 1823 and then reoccupied from 1835 until 1863 when Te Ākitai refused the oath of allegiance to the Crown and departed to the Waikato (Sullivan 1973; Foster and Sewell 1995: 15, 56). Fourteen houses were excavated, defined by rows of postholes and bedding trenches, all one room and of similar size and layout, some stratigraphically superimposed on others. European tools and artefacts become increasingly common in the late phase. Late phase houses had square cut postholes indicating the use of iron tools but retained the traditional layout of early phase houses. One late house had no European artefacts and is thought to have been a storage structure (Foster and Sewell 1995: 25). Food sources seem to have remained pretty much the same in both phases, with only very occasional pig bone found from the late phase (Foster and Sewell 1995: 58). Typical pre-European Māori artefacts were recovered, including flakes of obsidian, mostly from Tūhua (Mayor Island), and local chert; sandstone abraders; adzes of basalt and argillite; and bone fishhook points. European artefacts, often clustered in particular houses, included buttons, nails, clay pipes, glass bottles, table ceramics and cooking pots; in many ways typical of any 19th century New Zealand site. Papāhīnau is clearly an important transitional site, from the earliest contact period to a time when European influences begin to show up in the archaeology. Although this site was recorded as destroyed, it has not been made clear why the excavation extent to the east was established, or the exact location of the excavation. It was expected that the site extends further than what was excavated by Foster and Sewell, especially to the north and northeast.



Figure 2. Extent of Papāhīnau (Sullivan 1973), showing nearby archaeological sites.

Also excavated at the same time was R11/1800 ‘Papāhīnau B’, a single occupation pit storage site, giving two dissimilar dates of AD 1520–1800 and AD 1704–modern. The later date may indicate that it was contemporaneous with Papāhīnau, but this is not clear; there were no European artefacts. The site contained 24 pits in two main alignments, 11 with external drains running downslope to the south. Only in one case did a drain intersect another pit, which was itself drained, indicating only a single phase of occupation. Most pit interiors were not excavated so that the layout of internal drains, if any, is not known (Foster and Sewell 1995: 50). Although the site has been recorded as destroyed, the southern extent of excavation only went as far as the AIAL aviation fuel pipeline, so it was thought likely that further archaeological material may survive to the south, west and east within the project corridor.

R11/230, Papāhīnau Chapel, was built by Wesleyan Missionaries in 1863 to serve the Papāhīnau kāinga but was abandoned that same year when Te Ākitai left for the Waikato. This would have been one of the first European structures in the area. The exact location of

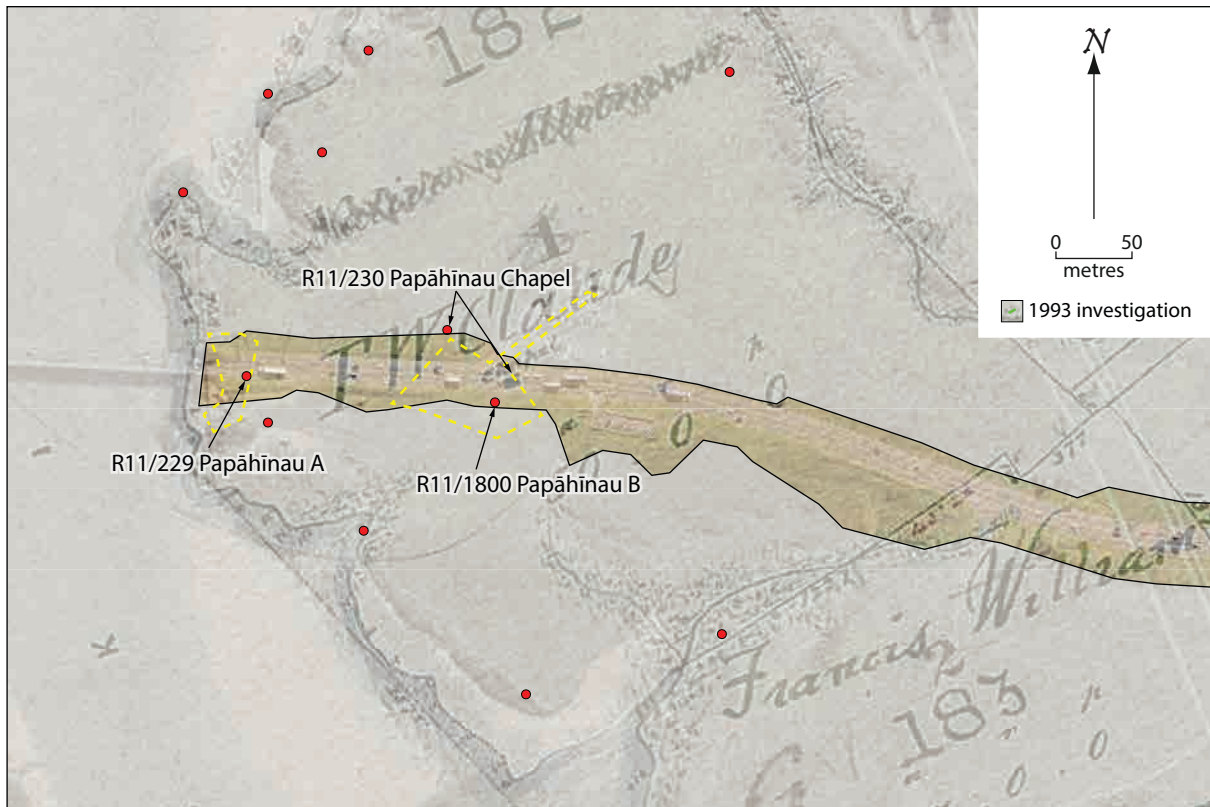


Figure 3. Detail of SO 238 showing the Papāhinau Chapel (R11/230) and location in the current site record.

the chapel has not been confirmed archaeologically, but 1866 plan SO 238 places it directly beneath Puhinui Road (Figure 3). Sullivan (1973) places it approximately 50 m northwest of the location indicated on SO 238 (Figure 3), on the northern side of the 1990s extent of work. This location suggested by Sullivan is what is used on the current NZAA site record. Due to the uncertainty of the location of the chapel, it was thought possible that subsurface archaeological material may be present within the project corridor.

The main constraints during the assessment were determining the extent of ground modification undertaken in the 1990s and the extent of the archaeological investigations undertaken for R11/229 and R11/1800. The original plans for the project could not be relocated, so an indicative extent was created from studying aerial photography supplied by AIAL of the project area during the construction phase. The plans provided for the extent of R11/229 and R11/1800 by Foster and Sewell (1995) are not presented in a larger map of the area and did not have any survey information provided to tie them into the landscape. Indicative locations for both sites were determined on a western and northern extent of R11/229 and a southernmost extent of R11/1800 and are shown in Figure 4.

Geophysical survey was undertaken during the assessment of this project in the vicinity of R11/1800 to see if the extent of the 1993 road construction or extent of archaeological investigation could be determined. This was to help to guide road design, especially erosion and sediment controls. Unfortunately, due to poor ground conditions, the results were inconclusive. Consequently, works in the extent of Papāhinau as indicated by Sullivan (1973) were reduced as far as practicable through the project design phase. Design adaptation to reduce the project footprint in this location consisted of batter slope refinement, as well as the deletion of stormwater swales and a retention pond in favour of a proprietary device. While earth-

works in unmodified areas were limited where possible, batters within the indicative extent of Papāhīnau could not be completely avoided for geotechnical reasons.

Although the potential effects on known archaeological sites were minimised, they could not be entirely avoided. Non-invasive methods of assessing any potential effects including desktop research and archaeological and geophysical surveys did not provide any evidence of areas where archaeology definitively survived. It was therefore thought possible that features associated with Papāhīnau may be present in undisturbed ground in the project footprint.

Methodology

An indicative extent of earthworks from the original road construction in the 1990s was established and overlain with the extent of works to guide the Historic Heritage Management Plan (HHMP) for the project. Those areas which were not modified during the 1990s construction were identified as requiring archaeological monitoring for any topsoil stripping and cut (Figure 4). Works undertaken near to, or within the known extent of the 1993 Papāhīnau kāinga investigations and near the possible location of Papāhīnau Chapel were also monitored in case archaeological material, whether in situ or not, was encountered (Figure 4). Elsewhere works were subject to regular spot checks to ensure that protocols were being adhered to and to see if the 1990s extent was indeed correct. If buried topsoil was encountered during works in areas thought previously modified, excavation within these areas was also monitored by an archaeologist.

Bulk earthworks commenced in January 2020 and ran until April 2021. Archaeological monitoring was undertaken by Arden Cruickshank, Ella Ussher, Hayley Glover, Brendan Kneebone and Kirstin Roth of CFG Heritage Ltd.

Results

Monitoring was undertaken within the areas identified in red and yellow in Figure 4, and one new site, R11/3340, was recorded outside of these monitoring areas that was identified through the exposure of a buried topsoil.

Laydown

The main project laydown was situated at 2 Orrs Road, with the existing farmhouse used as a site office, and gravel stockpiles, additional offices and carparking for the project created. Initially the laydown had been planned to be topsoil stripped, but an alternative method of laying geotechnical cloth and building up the surface with 500 mm of GAP 25 was used (Figure 5). This meant that ground disturbance was minimised, and the gravel could be lifted afterwards and reused on another project. The main disturbance within this area was associated with the creation of stormwater ponds and installation of septic systems for the offices.

Works associated with ground disturbance was monitored by an archaeologist. The silt ponds and septic tank excavations featured similar soil profiles, with approximately 200 mm of topsoil followed by sterile clay. No pre-European Māori or historic European archaeological features were observed.

R11/229

Intended stormwater ponds were removed early in the design process and a proprietary device was installed on the southern side of Puhinui Road through the recorded extent of



Figure 4. Extent of project footprint showing areas monitored and previous investigations.



Figure 5. View south of silt pond being built next to Orrs Road, with metal laid for the laydown.



Figure 6. View east of septic tank cut behind farmhouse.

R11/229 in order to minimise effects. Works through here were monitored as it was possible that discarded archaeological material from the excavation is likely to be encountered which would trigger discovery protocols outlined in the HHMP.

Most of the trench was in the access road for underneath the bridge that was built in 1993, with the last portion through a bund that was presumably built at the same time. No material was encountered along the road section of the trench, but some redeposited midden was encountered next to the bund. There was also a lot of mid-20th century rubbish within the bund material indicating that a modern rubbish pit had been dug through during 1990s road construction.

R11/230

Although the designs for the works initially had some cut occurring in the paddock where R11/230 is recorded, this was modified during the project as erosion and sediment control options were changed. Works did not encroach into the paddock, and no evidence of R11/230 was encountered.

R11/1800

Although R11/1800 was not able to be confidently located during the assessment (Cruikshank 2019), its assumed location was monitored as it was possible that discarded archaeological material from the excavation could be encountered, which would trigger the discovery protocols outlined in the HHMP.



Figure 7. Redeposited midden within previously modified extent of R11/229. Photo scales = 0.5 m.



Figure 8. Works near Papāhīnau Chapel – the recorded location is in the paddock in the background.



Figure 9. Indicative location of R11/1800 showing imported clay fill.

During the geotechnical investigation prior to the project, imported white clay to a depth of approximately 2 m was observed in the area. Similar clay was observed across this entire area during the cut for the shared use path indicating that there has been extensive modification through this section of road. No evidence of archaeological material was encountered within this portion of works, or in the vicinity that can help identify the location of R11/1800.

R11/3340

A cluster of six features were recorded between chainage 840 and 860 beneath a buried topsoil layer, that have now been recorded as site R11/3340. There was also a row of four postholes that were later determined to be from a modern security fence that was removed for the 1993 construction of the road. The remaining six features all appear to be associated with pre-European Māori occupation of the area (Table 1, Figures 10–15). These included one post-hole (Feature 4), three fire-scoops (Features 1–3), one scoop feature without charcoal (Feature 6), and one larger fire feature or possible hāngi (Feature 10). The post-holes were all fully excavated, while the fire scoops were half-sectioned and the hāngi was quarter-sectioned to investigate dimensions and fill contents. All fire-scoops and the hāngi were bulk sampled for charcoal analysis. No midden was present in the features.

Table 1. Features recorded as site R11/3340.

Feature	Type	Dimensions (mm)	Description
1	Fire scoop	400 x 500 x 100	Oval shaped. Shallow with scoria, charcoal and topsoil fill from original topsoil
2	Fire scoop	401 x 500 x 100	Oval shaped. Shallow with scoria, charcoal and topsoil fill from original topsoil.
3	Fire scoop	402 x 500 x 100	Oval shaped. Shallow with scoria, charcoal and topsoil fill from original topsoil – densely packed.
4	Posthole	200 x 200 x 400	Fill is loose mixed brown silty clay like topsoil above.
6	Scoop	1200 x 800 x 170	Fill same as Feature 4. No charcoal.
10	Hāngi	1400 x 1000 x 300	Mid brown compact silty clay with some gravel and many charcoal inclusions. Some scoria at base.

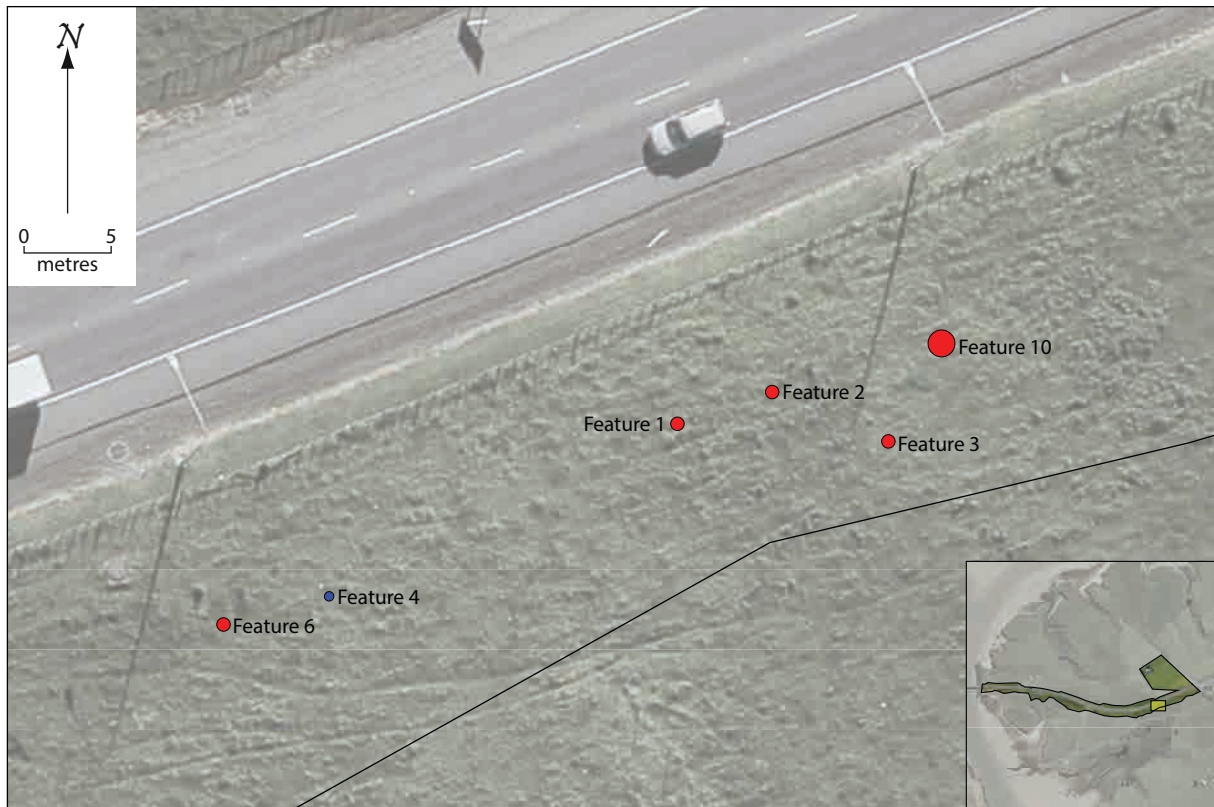


Figure 10. Plan of R11/3340.



Figure 11. Overview of R11/3340 after excavation, with Feature 10, hāngi, in the foreground.



Figure 12. Fire feature / hāngi Feature 10 excavated in quarter section (photo scale = 1 m).



Figure 13. Feature 2 excavated in half section (photo scale = 1 m).



Figure 14. Feature 3 excavated in half section (photo scale = 1 m).



Figure 15. Small scoop Feature 6 with no charcoal (photo scale = 1 m).

Analysis

Analysis is restricted to R11/3340 as no other features were encountered elsewhere. No faunal remains or artefacts were recovered from the site.

Charcoal analysis

Charcoal was analysed by Ella Ussher of CFG Heritage Ltd following the methodology outlined in Chabal et al. (1999), Théry-Parisot et al. (2010) and Dotte-Sarout et al. (2015), although the sample sizes were lower (50 fragments) than recommended (200–400 fragments).

Features 1–3 contained an almost identical range of species, manuka (*Leptospermum scoparium*) and conifer (*Podocarpus* sp.) in varying proportions. In addition, Feature 1 had a fragment of unidentified vegetative storage parenchyma, indicating possible use of the feature for the cooking of roots or tubers, or disposal of peels in the fire. Feature 10, the hāngi, contained a wide range of wood collected from the surrounding coastal environment. Small trees/shrubs and broad-leaved canopy species were equally represented, suggesting that the surrounding environment contained remnant stands of primary or regenerated forest. In contrast, the smaller fire-scoops (Features 1–3) were generally dominated by manuka, suggesting an environment of secondary regrowth after forest clearance.

Table 2. Results of charcoal analysis from site R11/3340

Taxon		F1	F2	F3	Total No.	%	F10	Total No.	%
Manuka (<i>Leptospermum scoparium</i>)		3	43	43			4		
Coprosma (<i>Coprosma</i> sp.)							3		
Wharangi (<i>Melicope ternata</i>)	Small trees and shrubs						3		
Weeping mapou (<i>Myrcine divericata</i>)					89	64	7	24	48
Tutu (<i>Coriaria arborea</i>)							1		
Olearia (<i>Olearia</i> sp.)							5		
Pseudopanax (<i>Pseudopanax</i> sp.)							1		
cf. Kohekohe (<i>Dysoxylum spectabile</i>)	Broad-leaved canopy species			6	6	4	23	23	46
Pohutukawa (<i>Metrosideros excelsa</i>)									
Conifer (<i>Podocarpus</i> sp.)	Conifer	35	7	1	43	31	3	3	6
Parenchyma	Other	1			1	1			
Total		39	50	50	139		50		

Chronology

Two samples of manuka charcoal from Features 2 and 10 were sent to the Waikato Radiocarbon Dating Laboratory at the University of Waikato for AMS dating. These dates indicated that there was very little overlap between the two features. Feature 10 had a range of cal AD 1506–1642 (95.4% probability), while Feature 2 returned a range of cal AD 1692–present (95.4% probability) (Table 3, Figure 16). These indicate that these two features are probably related to different phases of occupation at site R11/3340.

Feature	Lab no.	CRA BP	Cal AD 68%	Cal AD 95%
2	Wk 53877	150 ± 16 BP	1698–1722 (17.5%)	1692–1728 (21.9%)
			1833–1838 (3.3%)	1807–1896 (52.8%)
			1843–1891 (31.1%)	1906–present (20.7%)
			1924–present (16.4%)	
10	Wk 53878	343 ± 16 BP	1510–1550 (40.2%)	1506–1591 (76.9%)
			1560–1579 (17.2%)	1618–1642 (18.5%)
			1622–1634 (11%)	

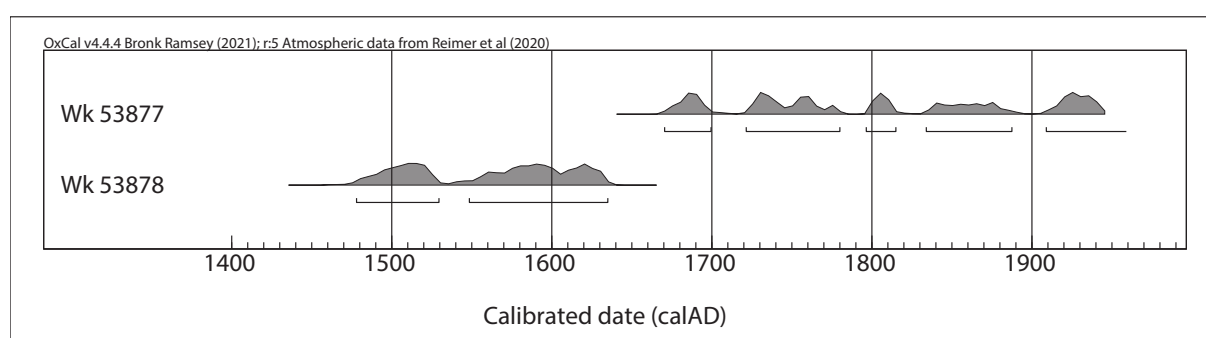


Figure 17. Multiplot showing calibrated ranges for Features 2 and 10 (OxCal v.4.4.4).

Discussion and conclusions

From the available evidence, it would appear that site R11/3340 is the location of a small camp that was occupied over two distinct time periods, initially from late 15th to mid-17th century and then later sometime from 18th century onwards.

The early phase of occupation was characterised by a single larger fire feature / hāngi (Feature 10). Charcoal analysis from this feature suggested a surrounding environment with remnant stands of primary forest. This is similar to recent analysis of charcoal from a similar undefended camp site (R11/3390) at the Auckland Airport Park and Ride from a similar time period (Farley 2021).

The later phase of occupation appears to be characterised by the smaller fire-scoops (Features 1–3), all similar in size, fill and charcoal content. The radiocarbon date from Feature 2 produced a large range from 1600 AD onwards, with a highest probability of occupation in the 19th century. It is probable that these features are related to the historic occupation of Papāhīnau (Sullivan 1973; Foster and Sewell 1995), although this cannot be demonstrated directly.

Overall, site R11/3340 appears to be an open undefended camp site, likely occupied short-term over at least two time periods, that fits within a landscape of similar recorded sites on the Manukau Harbour near tidal inlets around Pukaki Creek.

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