

**Te Tiki o Te Ihingārangi Pā, T15/225 –  
Transpower tower HAM–KPO–A0001:  
final report (HNZPTA authority 2019/756)**

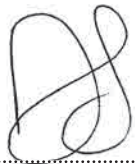
report to  
Heritage New Zealand Pouhere Taonga  
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Danielle Trilford

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# Te Tiki o Te Ihingārangi Pā, T15/225 – Transpower tower HAM–KPO–A0001: final report (HNZPTA authority 2019/756)

Danielle Trilford

Transpower New Zealand have undertaken earthworks for stabilisation and grillage works at tower HAM–KPO–A0001, located at 542 Maungatautari Road, Karāpiro (Lot 1 DP 318873) (Figure 1). This includes excavation of an 11 x 11 m area around the base of the tower at depths from 300 mm to 1.9 m to expose the legs of the tower, remedy any corrosion, then fill the excavation with cement to protect the steel foundations. No other earthworks such as access tracks, machinery benching or vegetation removal was undertaken. These works were on an archaeological site recorded as T15/225, Te Tiki of Te Ihingārangi Pā, in the New Zealand Archaeological Association (NZAA) Site Recording Scheme (SRS) (Figure 1). The works were assessed by Danielle Trilford of CFG Heritage (Trilford 2019) and Transpower applied to Heritage New Zealand Pouhere Taonga (HNZPT) for an archaeological authority to undertake the works under section 44 of the Heritage New Zealand Pouhere Taonga Act 2014. Authority 2019/756 was granted 29 July 2019. Earthworks commenced on 7 October 2019 and were completed on 23 October 2019.

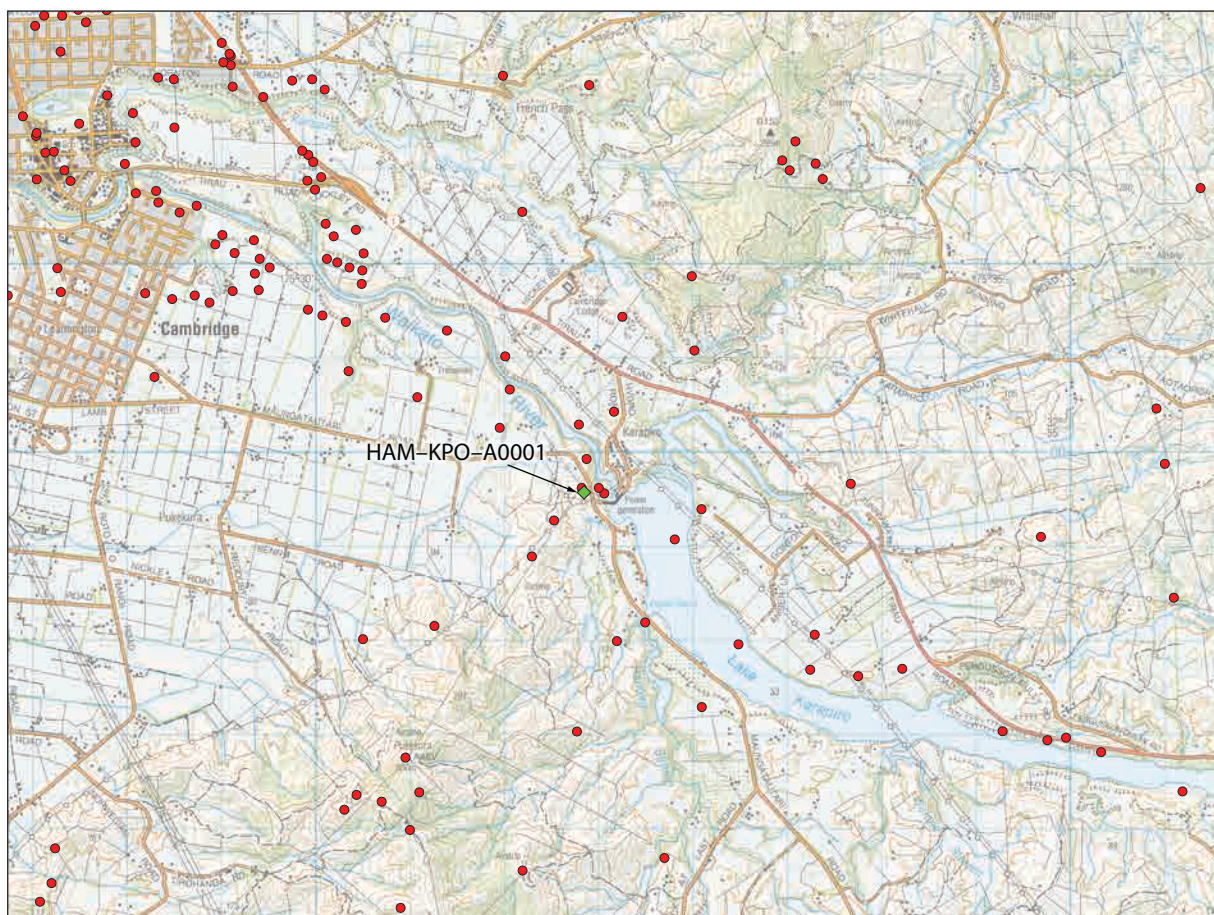


Figure 1. Location of HAM–KPO–A0001 tower and recorded archaeological sites in the area.



## Background

The structure stands on farmland on a hill overlooking Lake Karāpiro at the north-western margin of the Pukekura Range, which forms the southern boundary of the Waikato Basin. With a view of the Waikato basin, and abundant food sources from forest, river and swamp, the pā provided its occupants with an important strategic position.

### *Historical background*

Te Tiki o Te Ihingārangi was the home of Te Ihingārangi, tūpuna of Ngāti Koroki Kahukura, who moved to the area from the Te Rohe Pōtae / the King Country after a disagreement with his stepbrother Maniapoto around AD 1600 (KKHW 1996; Adams and Meredith 2005). In 1831 the battle of Taumatawiwi was fought between Te Waharoa of Ngāti Haua and Ngāti Maru on the river terraces east of Te Tiki o Te Ihingārangi, bringing the occupation of Hauraki tribes in the area to an end (WDC 2016). Te Tiki o Te Ihingārangi hosted the one of the first recorded Koroneihana (Coronation Celebrations) of King Tāwhiao (NKK n.d.).

### *Land wars and the Waikato Invasion*

The signing of the Treaty of Waitangi in 1840 was a document the Crown saw as means to enable first rights to buy whenua from Māori. The differing understandings and questionable dealings by companies like The New Zealand Company stoked tensions between Māori and the Crown. By the late 1850s the government was eager for more whenua to be available for settlement, mainly to provide for the influx of migrants from Britain. Māori farmers were thriving in the Waikato, so much so that they grew most of the food Auckland depended on, and the Waikato was broadly known as a food bowl. Māori resistance to selling land was increasing, especially in the Waikato, where the Kīngitana movement was developing. Tribal unity concerning the opposition to selling whenua was growing and became formalised in 1857 when Wiremu Tāmihana Tarapīpipi Te Waharoa helped Waikato iwi elect a King. Te Wherowhero, a Ngāti Mahuta rangatira, was crowned the first Māori King in 1858 (Stokes 2002). He was known as King Pōtatau. The Kīngitanga opposed the sale of Māori land and although some were receptive to leasing, the Crown saw this as a further obstruction to the development, and the Kīngitanga as a direct attack on British authority.

Tensions between Māori and Europeans in the Auckland and Waikato districts gradually increased and in July 1863 Governor Grey issued an ultimatum to the Waikato tribes around Auckland to immediately swear an oath of allegiance to the Queen and to put down their arms. Those who did not comply were told to remove south of the Mangatāwhiri, effectively declaring themselves rebels against the Crown (O'Malley 2019). A number of battles were fought as the British pushed further south into the Waikato, culminating in the siege of Ōrākau between 31 March and 2 April 1864.

### *Te Tiki o Te Ihingārangi*

The Kīngitanga under Wiremu Tāmihana had built the pā at Te Tiki o Te Ihingārangi around December 1863, utilising existing features from the pre-European Māori phase of the pā. Following Ōrākau, the British arrived via the Waikato River and fired toward the pā, although documents do not record any large-scale battle occurring. The British took over the pā on 24 April 1864.

The engagement at Te Tiki o Te Ihingārangi is described by Cowan (1955: 409):

*Soon after the capture of Orakau the Ngati-Haua and their allies from Tauranga, who had entrenched themselves at Te Tiki o Te Ihingarangi, evacuated their stronghold. The fortification, a pa of ancient days, had been strengthened by deepening the trenches, digging covered ways, and erecting palisades. The main pa stood on the edge of a high cliff overlooking the rapid Waikato, at the foot of the Pukekura Range; in rear was a higher pa of small area. General Cameron had made preparations to shell the place and had gathered a strong battery at Pukerimu. Tamehana and his people did not wait for the bombardment. They abandoned the place under cover of night, crossing the river in canoes—a dangerous feat, for the current was very swift, and there were rapids just below the crossing-place. Men, women, and children all safely reached the eastern side and marched across the plain to Peria, near Matamata. For some time after the British occupation of Te Tiki o Te Ihingarangi a force of Militia garrisoned a redoubt on the site of the upper pa.*

And in more detail by Belich (1986: 175):

*Cameron had been preparing for operations against the eastern flank of the Line before the unexpected engagement at Orakau. With the interruption over, he advanced to attack one of the Maungataurtari pa – Te Tiki of Te Ihingarangi. Tamehana had completed this pa in December 1863, and it was extremely strong. The Maoris awaited attack, justifiably confident that they could repel any assault. Fortunately for the British, this was also apparent to Cameron. He concluded that, like Paterangi, Te Tiki was ‘too strong to be taken by coup de main’. Unlike Paterangi, however, it could not be outflanked and the British simply settled down in front of it. On 5 April, after waiting for three days, the Maoris evacuated Te Tiki, probably because they had exhausted its supplies...*

*After the Maori evacuation of Te Tiki, Cameron left the bulk of his troops holding their conquests in central Waikato and withdrew the core of his striking force to Auckland. Though it was not apparent to anyone at the time, this ended the active war in the Waikato basin.*

In the archaeological site record, Owen Wilkes compiled quotes from a series of texts and newspaper articles relevant to the pā. Sir William Fox reported on several pā and on the New Zealand Wars, and indicates Te Tiki o Te Ihingārangi was abandoned by the Kīngitanga before British arrival (1866: 105, cited by Wilkes in site record T12/225):

*General Cameron now returned to Pukerimu to prepare for his intended attack on Maungatautari.... To his surprise he found it evacuated. A few remnants of old clothing, a kit of mouldy corn, and an old musket, was all that remained to reward the party of six men who crossed the river, and clambered up into the works. It was however a place of great strength, both from position and by artificial works. What, however, was not unusual in old Maori wars, and was the case at Orakau, not a drop of water existed within the works. In the old times the Maories, when besieged, trusted to their braves getting out at nights and bringing water through the lines of the enemy. But closely invested, these waterless entrenchments were mere traps.*

Wilkes included quotes from the journal of Gamble, presumably Colonel Gamble who was the Quartermaster General to General Cameron. Gamble describes the layout of Te Tiki o Te Ihingārangi, and after the Kīngitanga abandoned the site the nature of the Lower Pā.

Gamble (Journal, p. 101, cited by Wilkes in site record T12/225) described the pā and its situation:

*The enemy's works consist of two entrenchments palisaded, the lower one being much the larger, and heavily flanked, and constructed evidently with great care*

*and labour. The Waikato winds around it, at a few yards distance, with very steep banks. The upper pah is situated at 450 yards from the lower, on the crown of an underfeature of the range, and appeared to be a square redoubt stockaded.*

*Though a strong position, and formidably defended, yet the facility of approach by a good open road, and the nature of the ground in the vicinity, offer counterbalancing advantages for a regular attack.*

After the abandonment of the pā Gamble (Journal, p. 107, cited by Wilkes in site record T12/225) wrote:

*The lower pah, which blocked the road, was completely commanded from the upper, and even from the slopes of an unoccupied spur, on which a position might have been taken up out of fire of the upper one. The defences however, on the lower entrenchment were carefully constructed, and the features of reciprocal defence in its outline resembled, more than others of the enemy's works, the first system of Vauban.*

Mould and Brook of the Royal Engineers made a plan of the upper and Lower Pā of Te Tiki o Te Ihingārangi in April 1864 which shows at least 17 buildings, rifle pits, ditches and palisading on the Lower Pā (Figure 2) (this forms the basis of the published plan in Cowan 1922: 410). Another was drawn by Major G. Greaves at around the same time, which shows the surrounding land including the Upper Pā (T15/4) and three headland pā (north to south: T15/39, T15/224 and T15/239) directly adjacent to the Waikato River (Figure 3), while another plan of the pā annotated in te reo Māori presumably dates to the 1860s (Figure 4).

### Archaeological background

Gumbley (2011) stated “that the archaeology of the inland Waikato Basins is not well understood”; while there has been some improvement in the intervening decades this statement still rings true. Since Cassell’s work in the early 1970s (1972b, 1972a) it was 40 years until another substantial overview of the area was undertaken (Campbell 2012). There remained very little concerted investigation between Cassell’s 1970s work and the advent of heritage management and commercial mitigation archaeology in the late 1990s. In more recent years occasional academic investigations have been undertaken, such as doctoral research projects by both Warren Gumbley (in prep.) and Isaac McIvor (in prep.).

While institutional research investigations are limited, they remain informative. Two swamp pā were investigated in the late 1960s; S15/18, Lake Mangakaware (Bellwood 1978) and S15/9, Lake Ngāroto (Shawcross 1968). Excavations at Ngāroto revealed that, prior to modern drainage systems, the pā was built up on an island on a natural rise in the lake floor. A mound was built up artificially by about 2 m from layers of Hamilton clay and Hinuera sands, with lenses of midden, charcoal and burnt soils. Structures excavated included heavy posts that may have been either palisades or reinforcing for the mound, possible lightly framed houses, earth ovens and drains, but no rectangular storage pits. Artefacts included stone adzes, a needle and a bird spear point as well as an iron adze and a clay pipe bowl indicating occupation perhaps until the confiscation of the 1860s. Faunal remains, not formally analysed, included kākahi (freshwater mussel, *Hyridella menziesi*), along with bone of dog, rat and pig. Shark / ray vertebrae were “well represented” indicating links with coastal sites.

Mangakaware is around 27 km west of Te Tiki o Te Ihingārangi, and was first excavated by Peters in 1968, and then by Bellwood in 1969 (Peters 1971; Bellwood 1978). The mound had a similar construction to Ngāroto but was built on the lake edge. There was clear evidence of a double line of palisades, well preserved in the swamp conditions. There was also burnt human bone and, along with the removal of palisades, Bellwood speculated that this may have been evidence of an attack on the pā. A large area in the centre of the site was



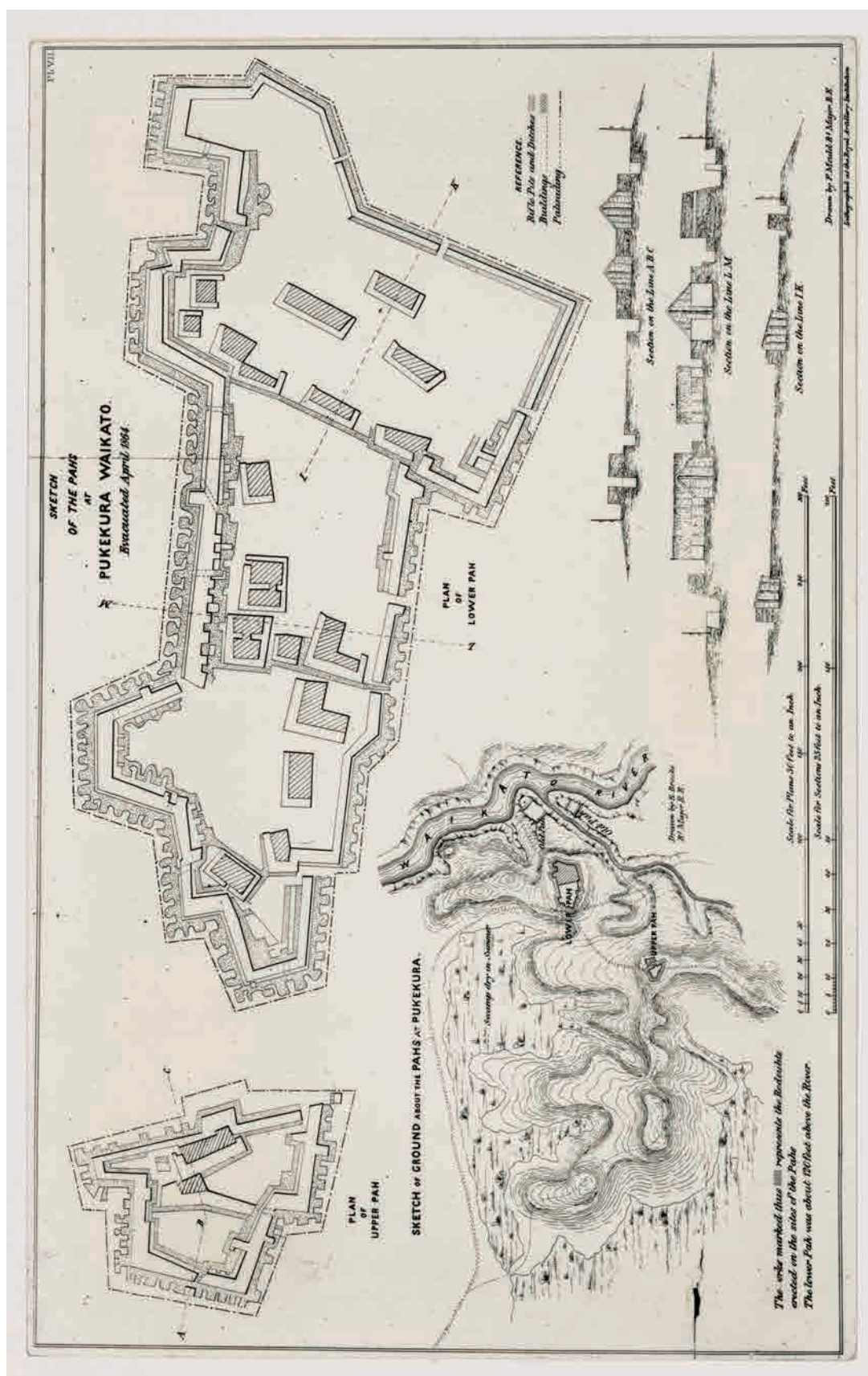


Figure 2. 1864 plan of Te Tiki o Te Ihingārangi (National Library, PAColl-3033-1-38).





Figure 3. 1864 plan of Te Tiki o Te Ihingārangi and surrounding sites – north is at the bottom of the image (National Library of Australia Map Ra 148).

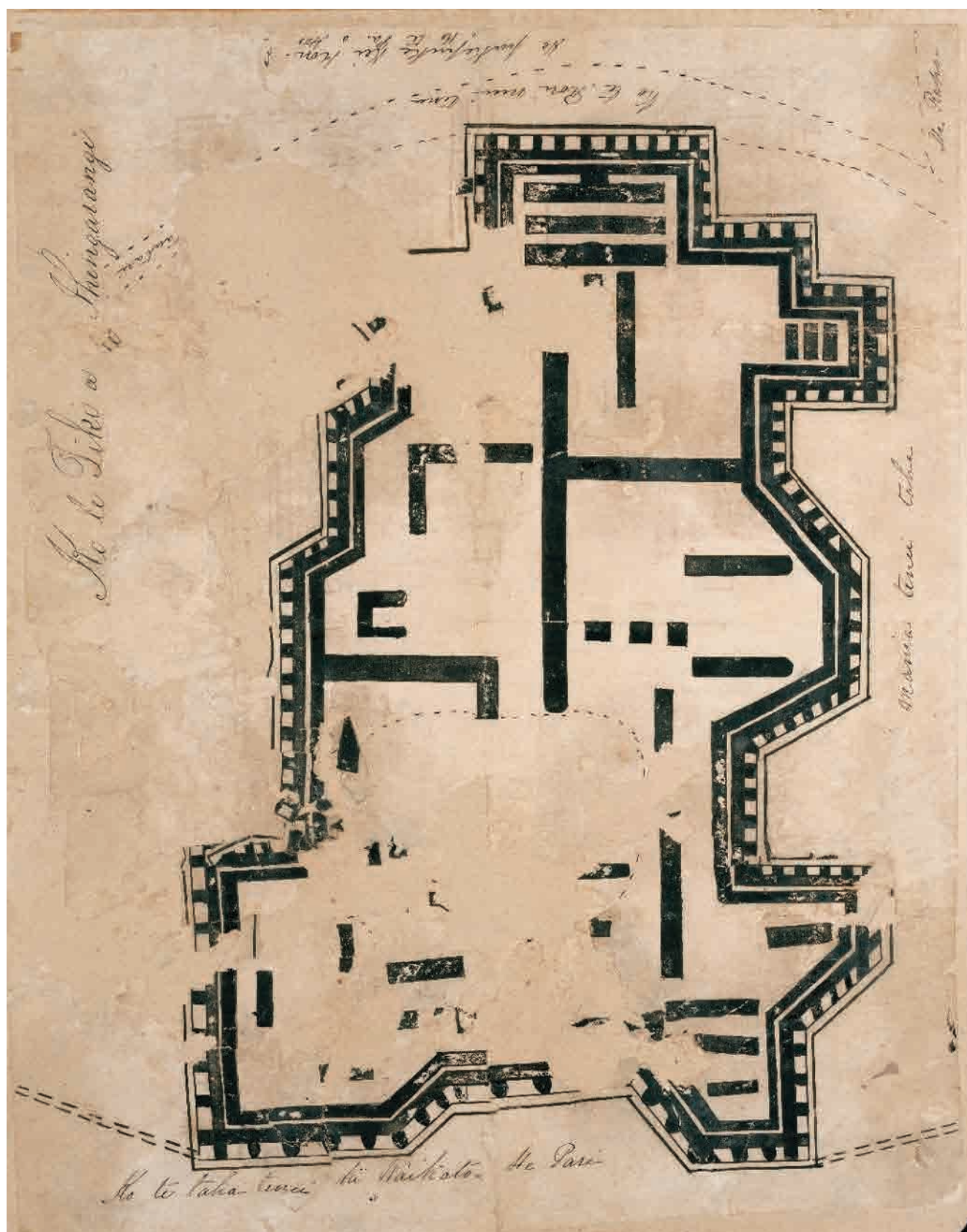


Figure 4. c. 1860s plan of Te Tiki o Te Ihingārangi, annotated in te reo Māori – north is at the bottom of the image (Auckland Libraries, Sir George Grey Special Collections, NZ Map 4629).

built up of layers of clean sand and dark midden soils but was clear of structures – it was interpreted as a marae area. Elsewhere houses were built on consecutive floor levels as the mound was built up and were accompanied by earth ovens. One large structure was interpreted as a wharepuni with two internal hearths. Pipi (*Paphies australis*) and occasional tuangi (*Austrovenus stutchburyi*) and scallop (*Pecten novaezelandiae*) were also found. Given that the shells were transported whole rather than just the meat this could indicate canoe transport up the Waikato River rather than being carried overland. Small amounts of dog, bird and fish bone were also found, including 13 shark / ray vertebrae. Artefacts, including adzes, net weights, a bird spear, pendants, grinders and numerous wooden artefacts were found in the excavation. The well-preserved wooden artefacts included beaters, a weaving stick, garden tools of various kinds, adze handles, paddles, bowls, tops, weapons including a finely carved taiaha, and structural timbers. Bellwood (1978: 68) interpreted the site as occupied year-round with some families moving out to their cultivations and resource exploitation areas in summer.

Te Tiki o Te Ihingārangi is on the Pukekura Ridge system where there are a series of pā and storage pits recorded and it seems likely that further systematic survey or investigation would expose additional previously unrecorded sites. Along the foot of the range are dozens of pre-European Māori horticultural sites, evidenced by borrow pits and garden soils. In the Waikato, garden soils are made when pumice gravels of the Hinuera surface are quarried from borrow pits up to 2 m deep and 5 m across, and added to the fertile tephra topsoils, either as a soil additive, a surface mulch or in individual bowl-shaped hollows that are generally interpreted as the bases of puke, or kūmara growing mounds (Campbell 2012: 9). The flats below Te Tiki o Te Ihingārangi Pā has soils suitable for these gardens.

Around 400 m southeast of Te Tiki o Te Ihingārangi is site T15/315, a pre-European Māori gardening area. The investigation exposed numerous bowl-shaped hollows, fire features and postholes (Sykes and Canton 2019). No material suitable for radiocarbon dating was present in the samples taken.

S15/775 and S15/776, around 5 km west of Te Tiki o Te Ihingārangi, were modified by modern farming, but patchy garden soils survived along with fire features and postholes. The sites date to the 18th to early 19th centuries, a similar to nearby sites S15/771, S15/772 and S15/773 (Gainsford and Gumbley 2020).

One of the more significant investigations was the works undertaken on behalf of the Cambridge Section of the Waikato Expressway, which is around 4.5 km from Te Tiki o Te Ihingārangi. Twenty-one sites were investigated, 12 of which were previously unrecorded (Campbell et al. 2016). The finds were mostly east of Tamahere and around Cambridge, including burials, storage pits, subsurface extensions of pā, and 19th century European occupation such as wells and rubbish dumps (Campbell and Hudson 2013; Campbell et al. 2016). Radiocarbon dates from the investigations indicate two temporal clusters, one which had dates from the early 16th to the mid-17th century, and the other from the mid-17th to early 19th century. Further afield six sites were investigated during similar scale earthworks for the Hamilton Section of the Waikato Expressway. The findings are still to be analysed but the interim report describes borrow pits, extensive gardening sites with planting bases, an adze and 19th century historic sites were investigated (Keith 2016).

## Te Tiki o Te Ihingārangi

Te Tiki o Te Ihingārangi is part of a dense pre-European and 19th century historic Māori archaeological landscape. It was first recorded as T15/255 in the SRS in 1997 by Owen Wilkes. In 2000 John Coster drove through Karāpiro and used existing maps to clarify the locations of four pā, including T15/225.



The construction of Maungatautari Road, the Karāpiro Dam and associated infrastructure, and European agriculture have all combined to obscure these sites. Early aerial photos were thought to be the best chance of locating the sites more accurately. Aerial photographs from 1940 (SN/156B/7 and SN/156B/8) shows the area but unfortunately the evidence is vague: a possible damaged ditch associated with T15/39; a line that may be a ditch associated with T15/239; and a square that may be the ditch of T15/4, the Upper Pā beneath the modern water tank. Figure 5 shows this area with the site locations and possible features highlighted. No features associated with Te Tiki o Te Ihingārangi can be seen.

Several archaeological assessments have been undertaken at the Upper Pā (Cable 2007; Simmons 2015a, 2105b). In 2017 archaeological monitoring for the Karāpiro Duplicate Rising Duct exposed and investigated portions of the pā, and pre-European Māori horticultural site T15/315 (Davies et al. 2018). The area of work extended approximately 850 m from the Karāpiro Water Treatment Plant, across the intersection of Maungatautari Road and Judd Lane West and then northwest to the Karāpiro Reservoirs. Four trenches were excavated at the Upper Pā, exposing pits, post-holes and historic artefacts probably associated with occupations in the 1860s (Davies et al. 2018: 27). Mānuka stems from a charcoal sample below hāngi stones at T15/4 were radiocarbon dated to show the deposit was most probably associated with the late pre-European Māori phase of occupation, providing a date of AD 1651–1810 (Davies et al. 2018). While these works were investigating the Upper Pā, the site is part of the same site use and landscape as Te Tiki o Te Ihingārangi and information gained from the 2018 excavations can inform some of the background and understanding of this wider landscape.

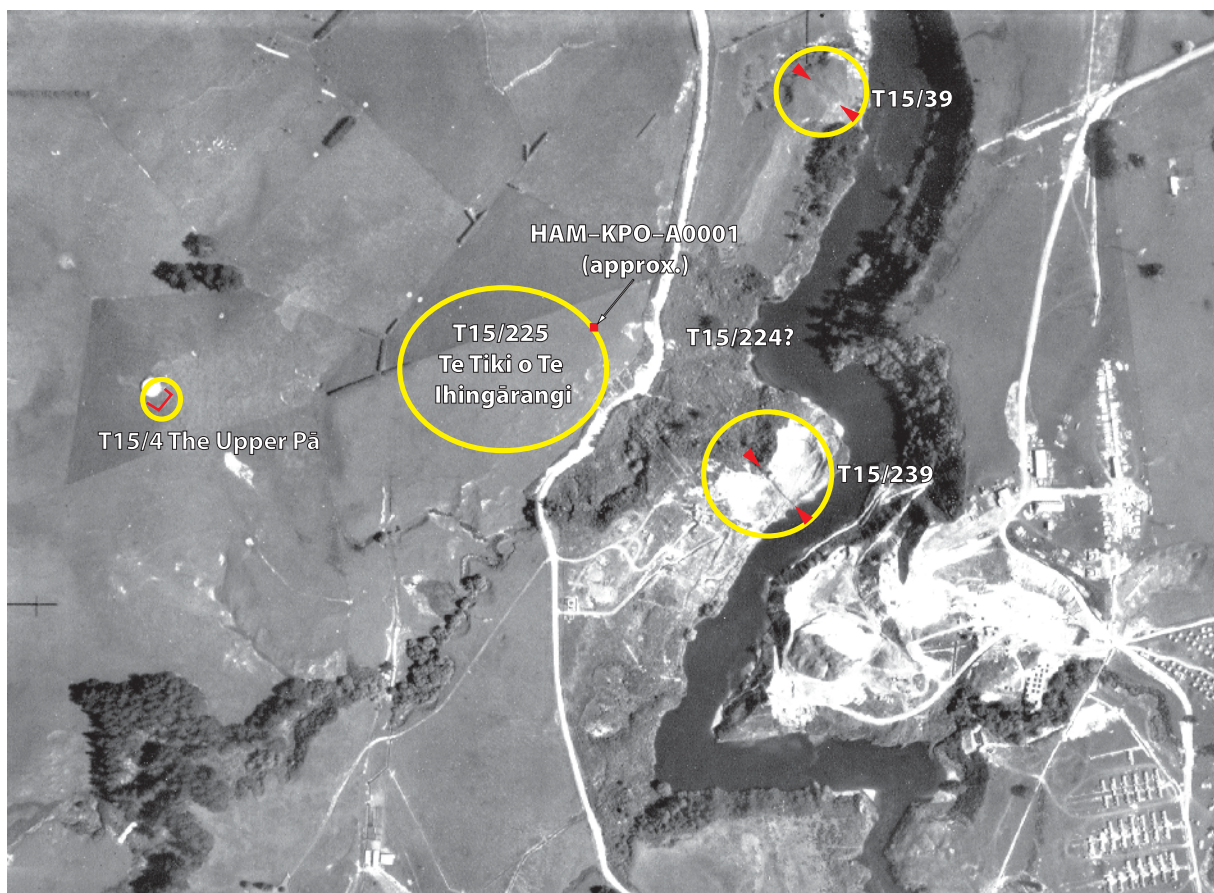


Figure 5. Detail of SN156/B/7 showing the locations of sites T15/239, T15/39, T15/225 Te Tiki o Te Ihingārangi, and T15/4 the Upper Pā. Possible ditches are arrowed. There is no visible evidence of T15/224.

## Summary of assessment for authority 2019/756

The archaeological assessment of effects (Trilford 2019) determined that the works were likely to have an adverse effect on recorded pā T15/ 225 Te Tiki o Te Ihingārangi. The site visit for the assessment did not locate any physical evidence of the pā as the surface features appear to have been infilled before the 1940s, based on the evidence of aerial photos, but it was assumed that subsurface deposits were still present. The likelihood of subsurface evidence of the pā extending into the project footprint meant an archaeological authority was recommended.

## Methodology

All works were monitored by Danielle Trilford of CFG Heritage, accompanied by Vince Taute of Ngāti Korokī Kahukura, Mandy and Penny Hotene of Ngāti Haua, and Munroe and Emerson Rikiriki of Ngāti Raukawa. Below the topsoil, several archaeological features were exposed. All features exposed were flagged and numbered, recorded, and then excavated by hand using standard archaeological procedure. Most features were half-sectioned, but some were excavated in full. Some features extend into the baulks of the works area. Bulk samples were taken for charcoal analysis and radiocarbon dating. All material culture was collected; some was found in the fill of features while others were isolated findspots in the interface of topsoil and subsoil.

## Results

The works involved excavating an 11 x 11 m area around the tower, removing the topsoil to a depth of 400 mm (Figure 7). The ground surface inside the legs was not stripped. Around each of the four tower legs a 3.7 x 3.7 m area was excavated to a maximum depth of 1.9 m deep. These works extended beyond the original footprint of the first tower installation and this is where archaeological deposits were exposed. The presence of some probable 20th century material in the topsoil suggests ongoing modification to the site, probably from farming activities, but below the topsoil the site is in a good condition. The damage caused by the initial tower installation was minimal and in situ features were exposed during the works.

The same natural stratigraphy was evident throughout the excavation (Figure 6):

Topsoil Loose brown organic soil with occasional modern and 19th century artefacts.

Layer 1 Moderately compact and loosely consolidated yellow loam, which becomes moderately consolidated as it dries. No inclusions.

Layer 2 Same as layer 1, but more compact.

Layer 3 Brown, highly compact, moderately consolidated, homogenous base soil. No features penetrate this later.

The works exposed archaeological features below the topsoil, which are summarised in Table 1.



*Table 1. Summary of features exposed (several numbers were applied to features that were not archaeological).*

Feature	Feature description	Dimensions
1	Pit with moderately consolidated mixed loamy fill	870 x 830 mm x 720 mm deep, with an upper bench or step in the corner measuring 480 x 300 mm x 630 mm
4	Defensive trench with mottled fill, connecting with Feature 24.	3.6 m long (extending into the southern baulk) x 1.5 m wide x 790 mm deep sloping up to the east to 620 mm deep
15	Posthole with charcoal stained fill.	200 x 60 mm, flat base, straight sides.
16	Posthole with charcoal stained fill.	200 x 280 mm, flat base, straight sides
17	Posthole with charcoal stained fill.	480 x 60 mm, slightly cupped base, sloping sides
18	Posthole with charcoal stained fill.	310 x 370 mm, irregular base, straight sides
24	Possible Access trench with mottled fill, connecting with Feature 4.	5.2 m long but extending into the eastern baulk, 2.5 m wide x 600 mm deep
25	Posthole with charcoal stained fill.	390 x 290 mm, sloping base, straight, narrowing from 130 mm depth



*Figure 6. Stratigraphy of natural subsoils on site. The topsoil has been removed in the section.*



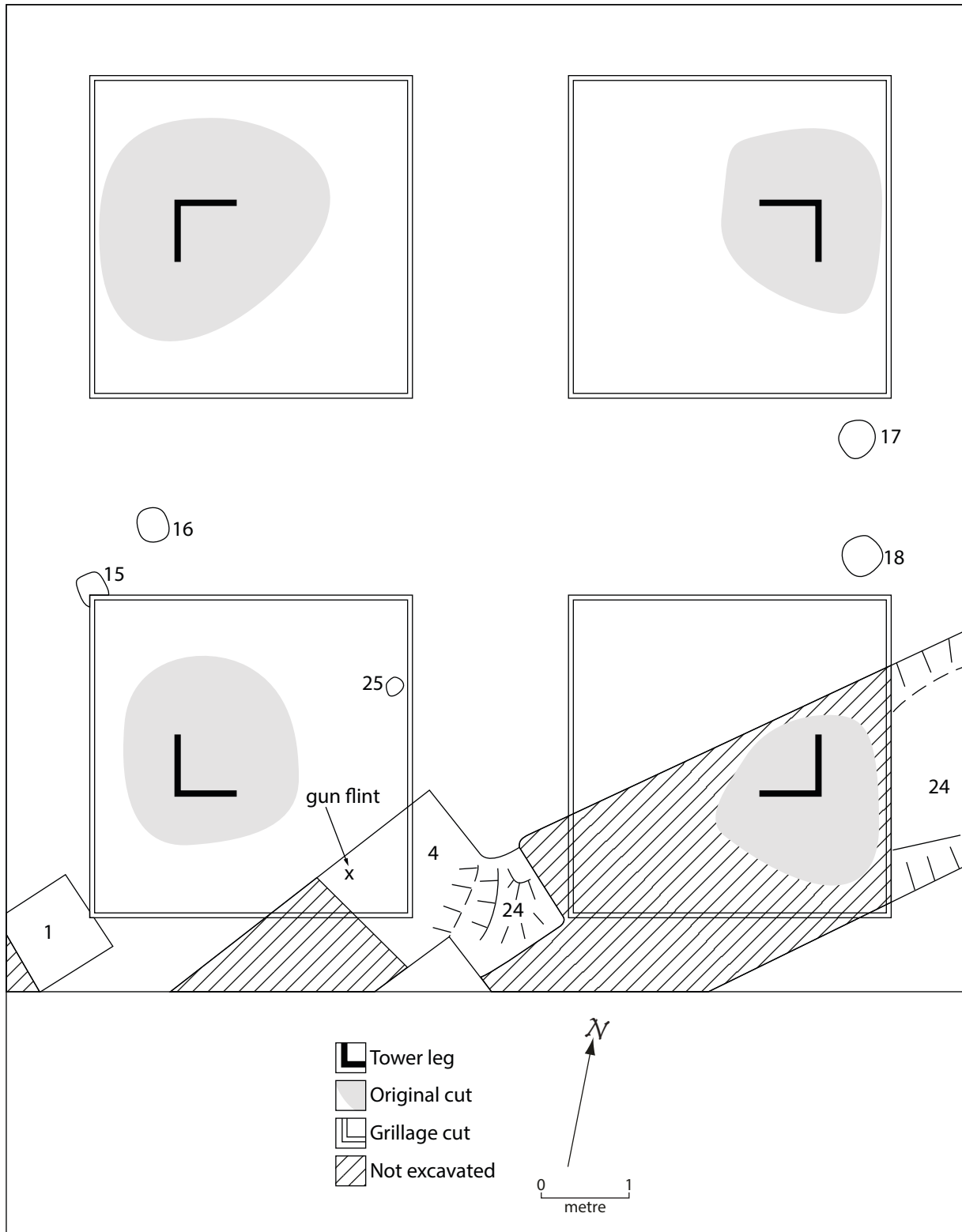


Figure 7. Plan showing works area and features exposed.

## Features

All features were recorded and labelled before and during investigation.

### Feature 1, pit

Feature 1 was a rectangular cut with moderately consolidated, mixed loamy fill. The feature extends into the south east corner of the excavated area and its full extent is not known (Figure 8). The excavated section measured 870 x 830 mm x 720 mm deep, with an upper bench or step in the corner measuring 480 x 300 mm x 630 mm above the base of the pit – this is too shallow to be a firing platform. No associated features, such as postholes, were found to indicate it was a typical kūmara storage pit.

The pit has a charcoal-stained lens overlying the step but not extending into the deeper part of the feature, which could represent burning the roof or the lining of the structure. The material sampled from the burnt layer was identified as mostly mānuka with no ferns (see charcoal analysis, below), so the roof seems more likely.

### Features 4 and 24, trenches

Feature 4 is a rectangular cut with a loosely consolidated yellow-brown fill, at least 3.6 m long, extending into the southern baulk, 1.5 m wide and up to 790 mm deep, sloping up to the east to 620 mm deep. At this corner it intersects with Feature 24, which measures at least 5.2 m long, extending into the eastern baulk, 2.5 m wide x 600 mm deep. Where the two features intersect, Feature 24 slopes down into Feature 4, probably a partly collapsed step.



Figure 8. Feature 1 after investigation, facing south east.

Feature 4 was excavated in half section, with the northern half being removed. The fill of the feature includes a burnt, charcoal stained layer at the base, with a clean layered fill above this, with clear tip-lines showing it had been deliberately filled (Figure 12). The tip lines run south to north indicating it was filled from inside the pā. Mould and Brooke's plan of the pā (Figure 2) show banks behind the trenches in places, so presumably this was the material used as fill. Parts of a pig skull were found in the fill at a depth of 210 mm (Figure 11) and a gunflint was found near the base just above the burnt layer at a depth of 700 mm from the top of the ground surface. The burnt layer at the base suggests that a superstructure such as a roof was burnt before the pit was infilled, and the gun flint also showed signs of having been burnt (see analysis, below). There were no features such as postholes in the base of the feature.

At the north end of Feature 24 fire cracked rock and a partly articulated cattle spine were found at the base (Figure 18). The feature was excavated in section at its eastern and southern ends. The overlap and alignment with Feature 4 indicate the construction of the features are contemporaneous. Feature 24 may be an entry / access passage to the rifle pit (Feature 4). A similar interpretation of a shallower rectangular trench connected to a deeper trench was made at Tūkiata Pā (U14/3559), a gunfighter pā near Tauranga (Keith et al. 2019).

### Features 15–18 and Feature 25, postholes

Apart from Feature 17, these features were circular cuts with a mottled charcoal-stained fill, interpreted as postholes. Feature 17 was a bowl-like cut with a charcoal-stained fill. The postholes were either excavated in full or half-sectioned depending on their size, and a sample was taken from each for charcoal extraction and sampling. Features 15 and 16 were near each other (Figure 21), as were 17 and 18 (Figure 7). Features 17 and 18 were wider than Features 15 and 16.



*Figure 9. Feature 4 in situ before investigation facing east.*





*Figure 10. Feature 4 in situ before excavation, facing south.*



*Figure 11. In situ pig mandible in pit fill.*





Figure 12. Feature 4 after half-section, facing south west. The charcoal stained base and tip-lines in the fill are clearly visible. Scale = 1 m.



Figure 13. Feature 4 and Feature 24 intersecting, facing south east toward Lake Karāpiro.





Figure 14. Feature 4 with the elevated base which feeds into Feature 24. The wall of Feature 24 (right edge) appears to be collapsed.

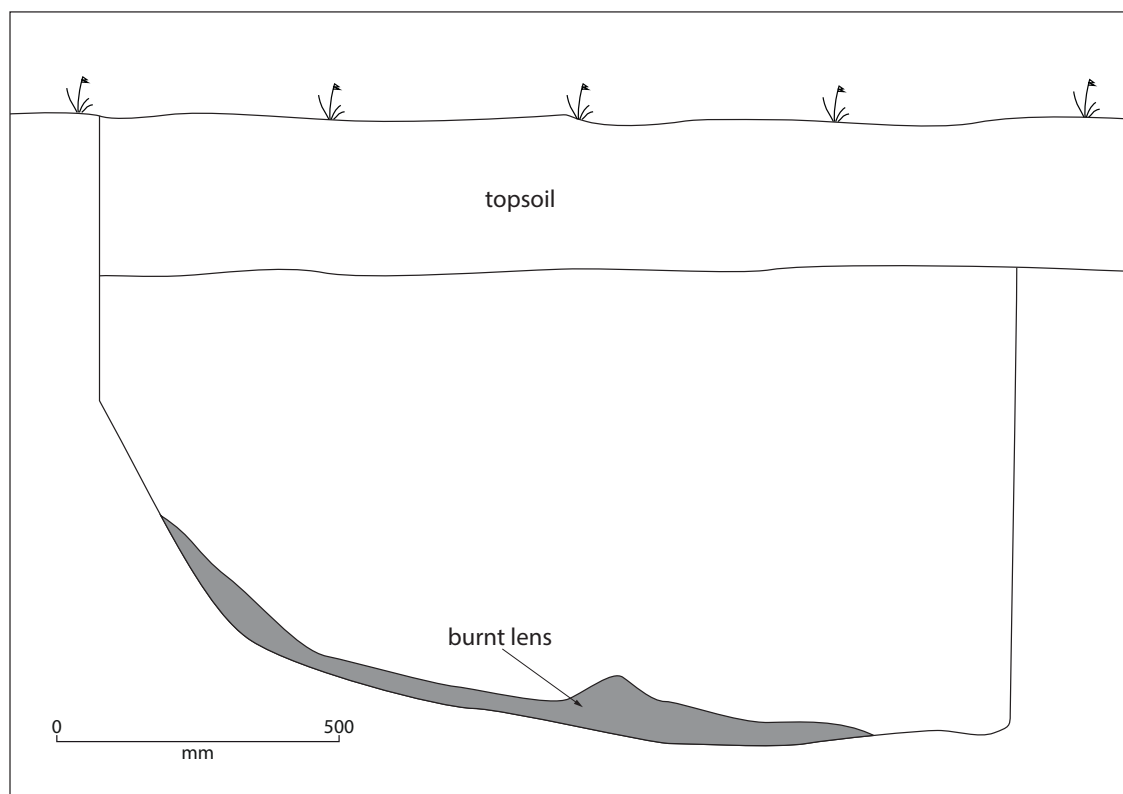


Figure 15. Profile drawing of the half-sectioned face of Feature 4.





*Figure 16. Feature 24 before excavation, with rabbit damage, facing south east.*



*Figure 17. Section of Feature 24, facing north east, showing stone and bone at the base of the feature.*





*Figure 18. Articulated cattle vertebrae and unarticulated femur at the base of Feature 24 before removal.*



*Figure 19. Feature 24 in section after bone and rock removal, facing north east.*



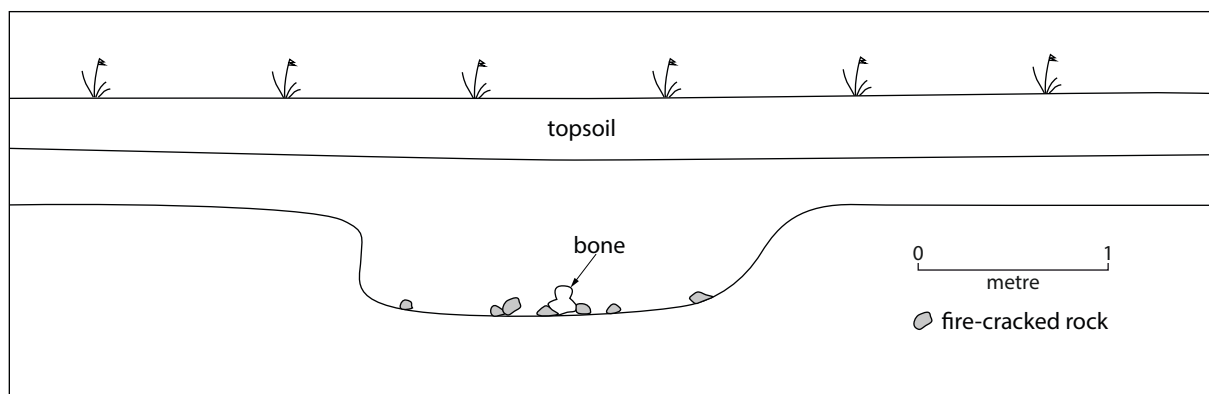


Figure 20. Profile drawing of Feature 24, east baulk.

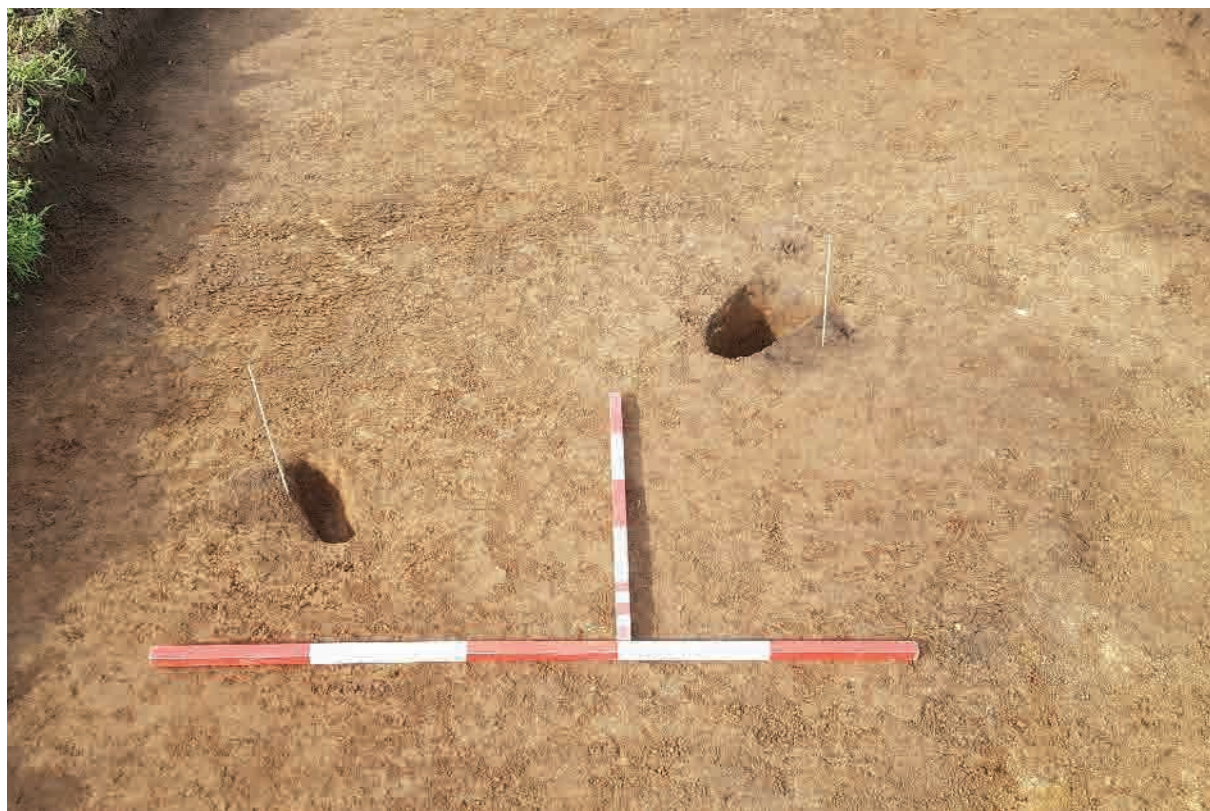


Figure 21. Features 15 and 16 after half section, facing north west.





*Figure 22. Feature 16 after half section in plan.*



*Figure 23. Feature 18 in plan after half-sectioning.*





*Figure 24. Feature 25 after half sectioning.*

## Summary

The absence of postholes in the base of Features 4 and 24 suggest they were not kūmara storage pits. These features, and probably Feature 1, are interpreted as part of the 1864 Māori defences at Te Tiki o Te Ihingārangi, burnt and infilled by the British after the pā was abandoned. Tower HAM-KPO-A0001 is located at what would have been the north east of the pā, as mapped by Mould and Brooke (Figure 2), which is the area where the map shows that redoubts were erected “on the sites of the Pahs.” It seems probable, then, that the British either remodelled the pā or completely infilled it and built a redoubt from scratch.

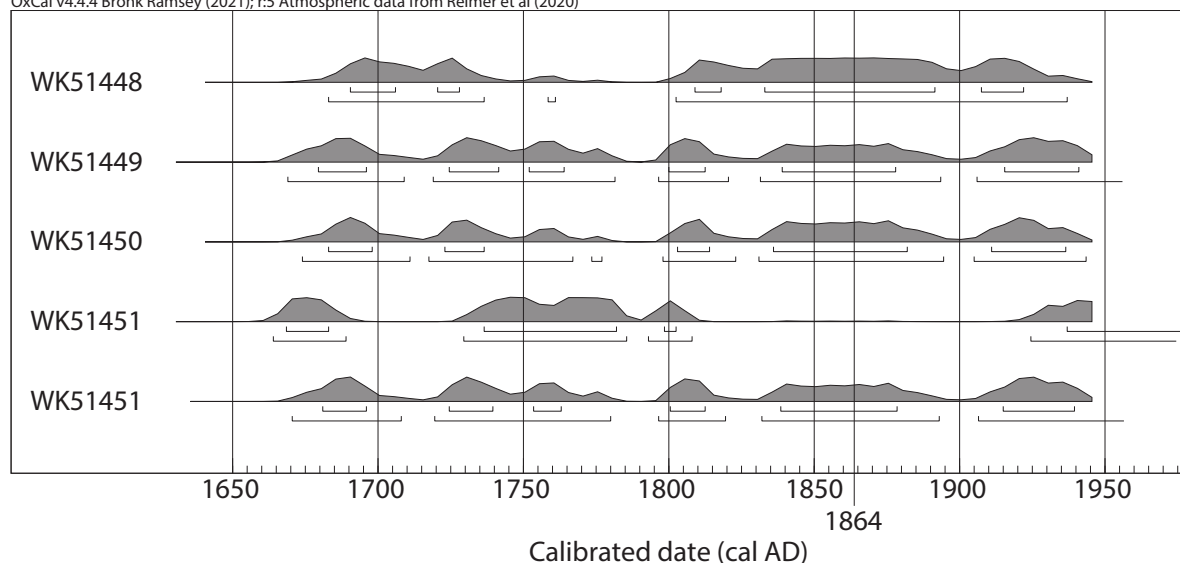
## Chronology

Five charcoal samples, all mānuka, were submitted to the Waikato University Radiocarbon Laboratory for radiocarbon analysis (Table 2, Figure 25). The dates from Features 1 and 24 all support the hypothesis that these are 19th century features, although the Feature 24 date could also support an earlier occupation, the archaeology itself makes this unlikely. The fill of Postholes 17 and 18 included other species than mānuka, indicating that it was not the post that was being dated but general background charcoal, but the dates indicate a 19th century occupation. The dates cannot distinguish between the occupations of Wiremu Tāmihana and the British troops.

*Table 2. Summary of radiocarbon results.*

Lab number	Context	CRA BP	cal AD 68.2%	cal AD 95.4%
Wk 51450	Feature 1, Layer 1	140 ± 18 BP	1700–1730 (14.9%) 1810– (53.4%)	1690–1730 (16.4%) 1800– (79.1%)
Wk 51452	Feature 1, Layer 2	146 ± 19 BP	1690–1730 (14.8%) 1810– (39.7%)	1690–1730 (19.3%) 1800– (76.1%)
Wk 51451	Feature 24	180 ± 17 BP	1670–1710 (21.7%) 1720–1740 (11.6%) 1800–1820 (9.0%) 1830–1850 (7.2%) 1860–1880 (7.0%) 1920– (11.9%)	1670–1780 (45.5%) 1790–1820 (11.3%) 1830–1900 (24.9%) 1920– (13.8%)
Wk 51449	Feature 17	148 ± 23 BP	1690–1730 (14.9%) 1810–1900 (38.7%) 1920– (14.7%)	1690– 1730 (20.4%) 1800– (75.11%)
Wk 51448	Feature 18	124 ± 21 BP	1710–1720 (5.6%) 1810–1840 (18.7%) 1850–1870 (5.6%) 1880–1930 (38.3%)	1810– (82.8%) 1690–1730 (12.7%)

OxCal v4.4.4 Bronk Ramsey (2021); r5 Atmospheric data from Reimer et al (2020)

*Figure 25. Multiplot of radiocarbon results.*

## Analysis

### Charcoal

Analysis followed the methods outlined in Chabal et al. (1999), Théry-Parisot et al. (2010) and Dotte-Sarout et al. (2015), although the rule that 200–400 pieces should be identified could not be met. At least 50 pieces from each sample were counted where possible, until no new species were observed, with final counts of 32 to 55.

A range of features and contexts were sampled for charcoal analysis. The overall range of species include high percentages of small trees and shrubs (38%) and conifers (42%). On its



Table 3. Species identified within all charcoal samples at Te Tiki o Te Ihingārangi Pā T15/225.

Species	Type	F1 Sample 1	F1 Sample 2	F1 Layer 2	F16	F17	F18	F24
Unidentified Monocot Bracken ( <i>Pteridium</i> sp.)	Monocot		1					1
Mānuka ( <i>Leptospermum scoparium</i> )		13	16	7		34	8	17
Hebe ( <i>Hebe</i> sp.)		1	1					
Tutu ( <i>Coriaria</i> sp.)				1		2	2	
Kōwhai ( <i>Sophora</i> sp.)			1					
Kāmahi ( <i>Weinmannia racemosa</i> )						3		3
Kōtukutuku ( <i>Fuchsia excorticata</i> )	Small trees and shrubs						2	
Hīnau ( <i>Elaeocarpus dentatus</i> )								1
Mangeao ( <i>Litsea calicaris</i> )		1	3					
Makomako ( <i>Aristotelia serrata</i> )			1					
Puka ( <i>Meryta sinclairii</i> )								2
Toro ( <i>Rapanea salicina</i> )								12
Whau ( <i>Entelea arborescens</i> )						2		
Tawa ( <i>Beilschmiedia tawa</i> )	Broad-leaved canopy trees	14	14	10				
Taraire ( <i>Beilschmiedia taraire</i> )					7	1		5
Northern rātā ( <i>Metrosideros robusta</i> )							6	
Conifer	Conifers	26	13	32	43	8	14	9
Storage parenchyma	Roots, tubers, fruits and seeds							5
Total		55	50	50	50	50	32	55

own, mānuka can often indicate an environment of secondary growth when in larger numbers, however the high presence of conifers in these samples suggest remnant stands of primary forest in the vicinity of the pā, with a subcanopy of broad-leaved trees such as tawa and taraire (17%). Below this grew smaller trees and shrubs such as mānuka, kōwhai, hīnau and mangeao.

All of the samples contained at least two species, indicating that these are not likely to be the remnants of burned posts but instead are background environmental species that were included in the backfill. This does not mean the features were not postholes, just that the fill was not wood from a post.

Feature 24 contains a larger range of species, as well as some evidence of the cooking and consumption of plant foods and the backfill possibly contained rake-out from a cooking fire.

## Fauna

Faunal remains were cleaned and analysed following standard procedures. They were identified to the lowest taxonomic level possible through comparison with online 3D reference collections and with the help of published resource materials (France 2009). Age estimations were made where possible and butchery marks were also recorded.

Mandible fragments of pig (*Sus scrofa*), including several teeth no longer embedded in the jaw, were found in Feature 4. Teeth included four incisors, two pre-molars and two canines (tusks). Despite being no longer in situ in the mandible, the canines suggested the pig was approximately 2 years old. No butchery marks were visible.

Bones of at least one pig and one cattle beast (*Bos taurus*) were recorded from Feature 24. Many of the cattle bones were in articulation, showing they came from a single animal. Two vertebrae had unfused epiphysial plates suggesting it was not adult. One femur had been sawn.

### Material culture

Material culture was cleaned, dried and analysed following standard procedures.

### Glass

Glass was analysed following Tasker (1989) and the Otago University Bottle Glass Identification Guide (Smith 2004). A total of 19 pieces of glass were recovered from the excavation, all surface / topsoil findspots. All pieces were small, which limited analysis. Manufacturing evidence, such as pontil marks or bubbles in the glass, and the presence of three 'black beer' type bottle lips indicated 19th century manufacture.

The 15 bottle glass fragments represent at least seven bottles: three black beer bottle lips; one brown bottle; one olive green bottle; one dark olive-green bottle with a square base and sides; and one dark olive-green bottle with a round base and curved sides.

Three fragments of flat clear glass were collected, but these lacked diagnostic features and no further analysis was undertaken.

### Ceramics

Three ceramic fragments and two broken stoneware ink bottles were also found, all surface / topsoil findspots. The ceramic fragments are all white earthenware typical of table services. Two had blue edge banding, which dates to generally between the 1860s and the 1940s. The ink bottles are unmarked.



Figure 26. Glass bottle and ceramic fragments.

The surface / topsoil finds were all small and mostly broken and had probably been damaged and redistributed by ploughing, which further limits their usefulness for analysis. It is probable that they are associated with either the Kīngitanga or the British occupations, but it is also possible they may have been deposited later in the 19th century.

## Metal

Three ferrous metal items were recovered, all from the fill of Feature 1: a square sided cut nail fragment; a square sided rod with square head and base; and a rectangular piece with three nail-like protrusions out of both sides.

Iron cut nails were produced throughout most of the 19th century, but had disappeared completely by 1900, replaced from the late 1880s by cheaper steel nails (Wells 1998: 87). Since they were found in the fill of Feature 1, they were most likely associated with the 1860s occupation of the pā.



Figure 27. Ink bottle.

## Gunflint

A gun flint was found in the fill of Feature 4. It matches what Best (2002: 72) calls the “standard type gunflint found in New Zealand sites.” These are flints that are prismatic in shape and light grey, most likely from the quarries at Brandon, Suffolk, England (Best 2002; Karklins 1984; Whittaker and Levin 2019: 633). Flints of similar morphology and colour have been found in several New Zealand archaeological sites, for example: Hohi Mission Station (Smith et al. 2012), Rewa’s Pā, one of which is chalcedony, probably from France (Best 2002), Tūkiata Pā (Keith et al. 2019), Otuhia Pā (Prince 2009), Unnamed site R12/591 (O’Keeffe 2016), and Otawhao (Simmons 2015c).

Analysis of the flint followed basic attribute analyses by recent overseas gunflint studies such as de Lotbiniere (1984), Whittaker and Levin (2019), Horowitz and Watt (2020) and Ballin (2013). This attribute analysis captures conventions of lithic analysis with added attributes specific to gunflints. The details included metric analyses (length, width of the leading edge and heel, thickness, and weight), colour, blank type (flake or blade), edge modification (heel and lateral edges), and use-wear (chipping, powder burns, or edge damage). Both 10 and 30 x magnification loupes were used to examine the edges, particularly the leading edge, for evidence of wear.

The gunflint measured 24.3 mm long, 18.7 mm wide at the leading edge and 19.1 mm at the heel, 8 mm thick and weighed 4 g. It was light to mid-grey in colour and confirmed to de Lotbiniere’s type 3, square blade flint with two dorsal / bevel arises or demicones (Figure 31). There was evidence of use wear: chipping at the leading edge, polish on the lower face, and depression and roughening where the flint lock touches the upper / dorsal face. There is evidence of burning on the lower face, which is stained black with two heat spalls (Figure 28 and Figure 29).





Figure 28. The gunflint.

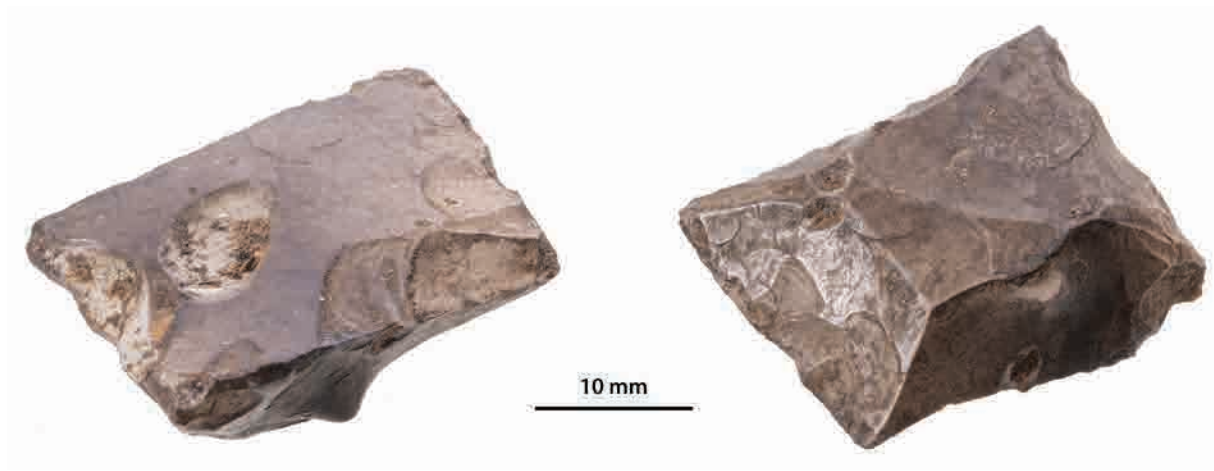


Figure 29. Oblique views of the gunflint.

British flints were usually made of black or grey flint, either by striking a flake with a strong bulb of percussion and then shaping it into a rectangle, or by sectioning the longer blades into squares up to four or five gunflints (Best 2002; Whittaker and Levin 2019: 632). The latter method is more common from the 19th century so more probably the method used for producing this flint. This is also supported by the two demicones present on the dorsal / bevel faces. Demicones are produced during segmentation from a parent/original flake (Ballin 2013: 6).

Horowitz and Watt (2020: 99) note that:

*Gunflint use-wear is relatively difficult to identify... most frequently, use-wear comes in the form of polish of the lower surface of the flint, heavy step flaking from contact with the frizzzen of a musket, retouch of the working edge, or powder burns.*

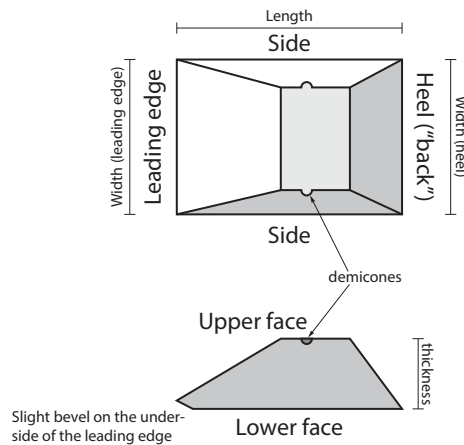


Figure 30. Elements of a gunflint, following Ballin (2012) and Horowitz and Watt (2019).

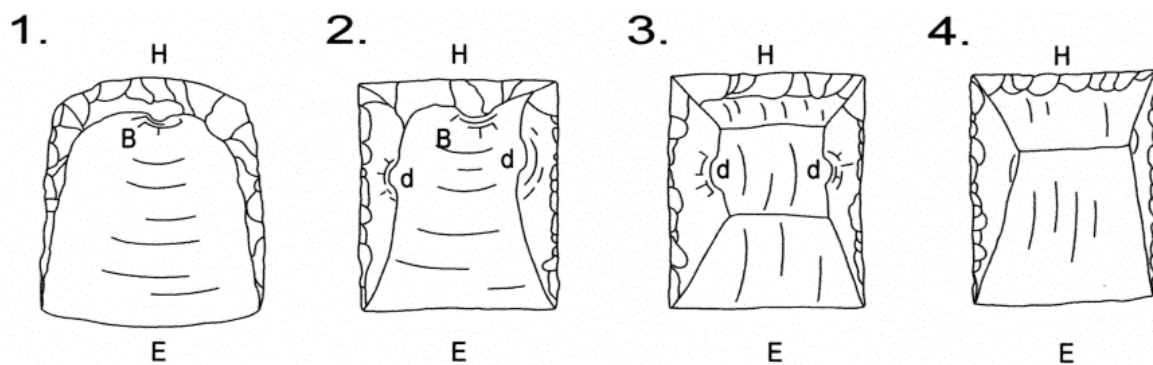


Figure 31. De Lotbiniere's main gunflint types: 1) a D-shaped flake gunflint; 2) a square flake gunflint; 3) a square blade gunflint with two dorsal arrises; and 4) a square blade gunflint with only one dorsal aris. H = heel; E = leading edge; B = bulb-of-percussion created when the blank was detached from its parent core; d = demicones from the segmentation of the original flake or blade blank (Ballin 2013: 6).

Measurements of a flint can provide information on the size of guns for which they were used (Gartley and Ballin 2015). Horowitz and Watt (2020) analysed gunflints from 19th century American sites and identified three size classes (width is the mean of the leading edge and heel widths): flints from pocket pistols were <20 mm wide; flints 20–28 mm wide were from horse / carbine pistols; and flints >33 mm were from “wall-pieces.” The mean width of the gunflint from Te Tiki o Te Ihingārangi is 18.9 mm, which might indicate it was from a pistol, but is also possible that it had been reworked and reduced from a larger flintlock musket.

At the time of the Waikato wars British Imperial and Colonial troops were using the 1853 Pattern Enfield rifle, a muzzle loading gun with a percussion cap that fired a .577 bullet (and from the later 1860s the breech loading Snider conversion that fired cartridges). Māori were armed with a variety of weapons, including rifles, shotguns and smooth bore flintlock muskets (Taylor 2004). The gunflint, then, was almost certainly used by Māori rather than by the British.

Firearms Acts in the 19th century were underpinned by the goal of preventing arms and ammunition supply to Māori (Innes 2005). While this was not entirely effective, it did

limit access, and gunflints may have been carefully conserved and reworked. A gunflint from Tūkiata Pā (U14/3559), a gunfighter pā of similar age to Te Tiki o Te Ihingārangi, measures 19 x 19 mm, also smaller than what would be commonly expected for a musket, but has been reworked and has a missing bevel (Keith et al. 2019). Some of the flints from Hohi (Smith et al. 2012) and Rewa's Pā (Best 2002) were very worn, no longer prismatic like the Te Tiki o Te Ihingārangi example, but probably still functional. Further research into gun types available to Māori in the mid-19th century should be undertaken before any definitive conclusion can be arrived at.

## Discussion and conclusion

In summary, the works have exposed the evidence of the 1864 Māori defensive features as part of Te Tiki o Te Ihingārangi Pā in the form of rifle pits / trenches. Postholes exposed in the excavation are also likely to be associated with these defences, although too few were exposed to propose any alignments. The known presence of buildings based on drawings by the British military (Figure 2) after the site abandonment suggests that some at least of the postholes may belong to these.

A gunflint found within the rifle pit was probably made in Brandon in the UK and the evidence of use wear and size suggests it is smaller than usually associated with flintlock muskets – it may have been used to fire a pistol but it is more probable that it had been skilfully reworked and conserved as a musket flint.

Feature 1 was only exposed in the corner of the excavation but is also assumed to be part of the defensive works. Evidence of burning was found in the base of Feature 4, indicating that the British military burnt any wooden superstructures such as rifle pit roofs, and filled the trenches after their abandonment by the Kīngitanga.

The presence of pig and cow may be associated with either the Kīngitanga or subsequent British site use. Cattle bone and associated fire cracked rock in the base of Feature 24 may be associated with cooking in situ, or deposition in the feature soon after use. An 1863 drawing of rifle pits (Figure 32) states "...food was also cooked in them." The pig bone was not articulated and was mixed through the fill of the trench, indicating it was deposited when the feature was filled.

There are several known phases of use at Te Tiki o Te Ihingārangi: Ihingārangi's initial arrival and establishment in the area in the 17th century (KKHW 1996; Adams and Meredith 2005); the arrival of Wiremu Tāmihana and the Kīngitanga in 1864 (Belich 1986); subsequent reuse by the British; and later European farming. It is also probable that the site was occupied for the roughly 250 years between Ihingārangi and Tāmihana, probably not continuously but several pre-European phases are likely to be present. The archaeology Features 4 and 24, and probably Feature 1, show that these features were almost certainly associated with the Kīngitanga occupation and nearby postholes also had probable 19th century dates. Undated postholes may relate to earlier phases of occupation, but this is uncertain.

At the Upper Pā, also occupied by the Kīngitanga, 450 m south west of Te Tiki o Te Ihingārangi, pre-European storage pits were excavated and dated to AD 1651–1810, but glass and nails were also recovered, showing continued use of the landscape.

There are a handful of other 19th century Māori 'gunfighter' pā in New Zealand which have been systematically investigated. Sian Keith exposed a trench which was part of Tūkiata Pā, (Keith 2019). Firing platforms enabling gun fire to the east, entry ways for secure access to the trench, lead balls, a gun flint, and other chert fragments were recorded. The site shares obvious similarities to Te Tiki o Te Ihingārangi both in feature form, chronology, and material culture.



Excavations at Tūkiata were larger, with 37 m of the trench exposed, while the excavations at Te Tiki o Te Ihingārangi were restricted to an 11 x 11 m area around the Transpower tower, with only short lengths of the trench excavated. Entry and exit trenches at Tūkiata which were around the similar depth to Feature 24 at Te Tiki o Te Ihingārangi, further supporting the interpretation of Feature 24 as an exit / entry trench, explaining the stepdown to Feature 4, a presumed rifle pit. Plans from the 1860s (Figures 2–4) show Te Tiki o Te Ihingārangi is probably over 300 x 400 m in area, so the current excavation is only a small sample.

Matarikoriko Pā in Taranaki (Q19/122) was investigated in 2013 by Charlotte Judge (Judge 2014). Gunfighter trenches of similar form to Te Tiki o Te Ihingārangi were excavated. At Matarikoriko Pā the trenches were undercut on the firing side. At Te Tiki o Te Ihingārangi the firing side of Feature 4 is that facing east to the Waikato River and is the deepest point, but was not undercut. There is no such variation in depth in Feature 24, further supporting the interpretation that this is an exit/entry way.

Also in Taranaki, Janice Adamson recorded rifle pits at P19/292 in Omata (Adamson 2013). The site dated to 1860–61 and consisted of rifle pits, trenches and palisade rows in a strategic position facing towards Omata village. Adams (2013) considers that “the backfilling of the trenches... was probably a statement of re-possession.” Keith et al (2019: 81) made a similar suggestion for the infilling of Tūkiata Pā, and proposed that the pace it was back-filled would prevent the pā from being used again and was a statement of repossession by the Crown, “it had not infilled naturally; there was limited evidence for the defences suffering significant erosion from being left open for any length of time; material culture was largely absent from the pā; there were no datable artefacts from later than its known use period; and; the fact that the pā does not appear on any survey plans. It must be assumed from this that one side, or the other, backfilled the defences intentionally preventing it from being used again.” Te Tiki o Te Ihingārangi also shows evidence of having been swiftly infilled: there were no collapsed or eroded walls in the features, tip lines are evident in the fill of Feature 4, the material culture is contemporaneous with the pā use. The occupation by the British after the pā was deserted by the Kīngitanga, and the British occupation of the pā and reconstruction of it as a redoubt was both a strategic military installation and a strategic act of possession.

### *Archaeological sites at transmission structures*

Earthworks at transmission structures are often wider than the earthworks associated with the original structure installation, and potentially expose archaeological features that were not destroyed when the structure was installed. This is evident at Te Tiki o Te Ihingārangi Pā where the footprint of the original ground disturbance was far smaller than the cut for grillage works (see the grey area in Figure 7). Similarly, investigation of works at recorded site Q09/993 on the Kaipara recorded intact archaeological features and deposits (Trilford 2021), while a kūmara storage pit was recorded at Whareturere Pā at Maungatautari (Cruickshank 2014).

Transpower New Zealand has a unique role in recording and protecting archaeological sites in rural parts of New Zealand. This is because many of New Zealand’s archaeological sites are recorded on an ad-hoc basis during residential developments or projects like roading, subdivision and similar works. The majority of Transpower’s transmission structures are on remote rural land which has otherwise never been field surveyed by archaeologists, and many structures are on high ground that is more likely to contain archaeological sites. Historical research and field survey can help record archaeological landscapes (both pre-European Māori

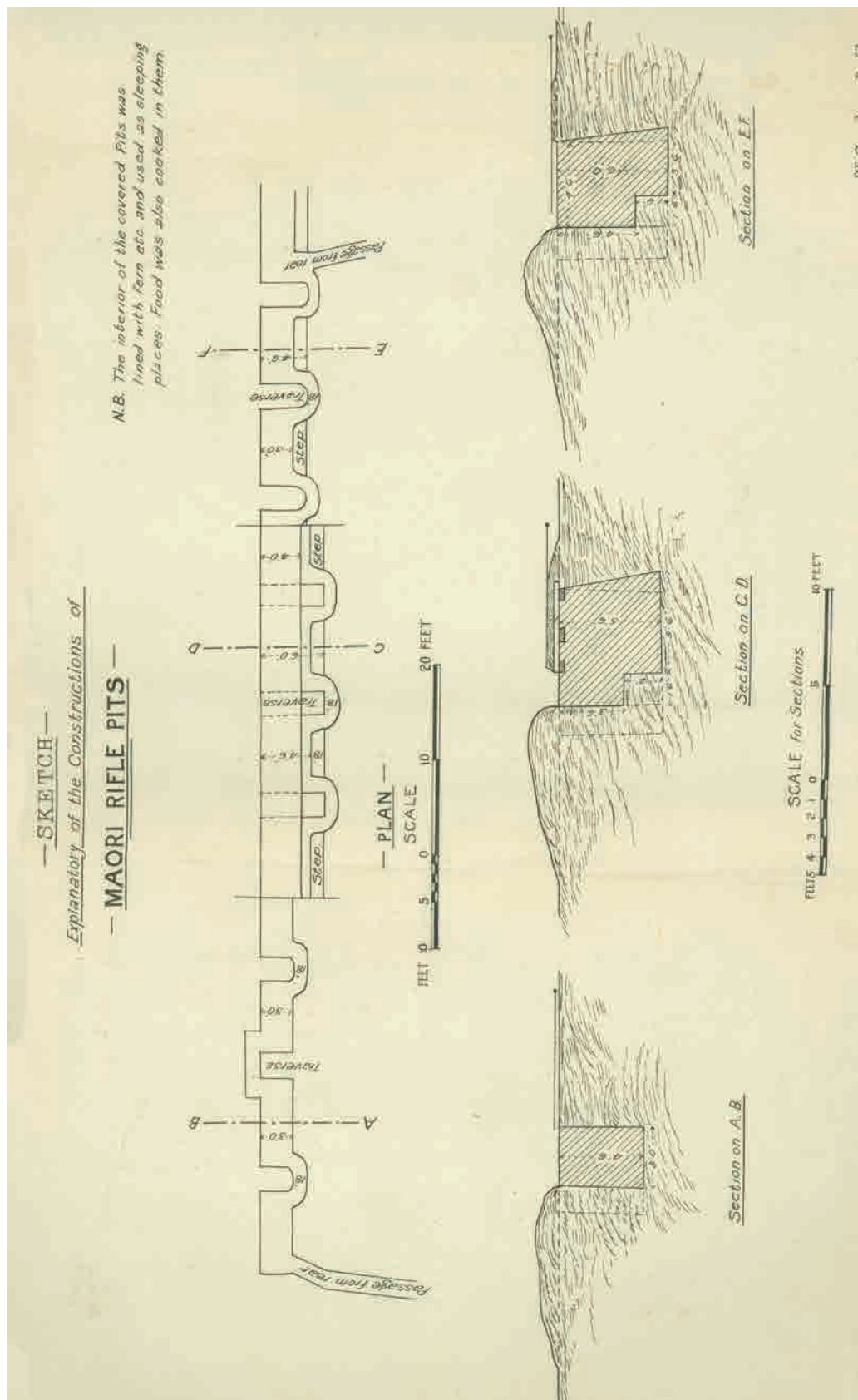


Figure 32. Sketch – Explanatory of the Constructions of Maori Rifle Pits, undated (ARC2004-320 Puke Ariki, New Plymouth.)

and historic) and investigation during works can provide important information regarding the occupation of those landscapes.

Nigel Prickett (2016: 221) identified several New Zealand Land Wars fortifications for which protection should be prioritised, including Te Tiki o Te Ihingārangi:

*Consideration for protection must begin with the most important sites. The list below is of sites that deserve immediate attention. Although not definitive, it is a starting point for the registration and notification work required to make effective protection and conservation decisions. Further consideration of sites deserving protection could be carried out on a regional basis. Note that the list below includes sites already in public ownership and/or under effective conservation management... Te Tiki-o-te-Ihingarangi.*

The pā should be considered for listing in the HNZPT Rārangi Kōrero / List as a site of significance and efforts to protect and conserve the site be undertaken. The site, as part of the wider Karāpiro heritage landscape, has potential for public engagement and education. The site may have associated defensive features beyond the pā. Isolated rifle pits and trenches which are not part of pā are found elsewhere in New Zealand (for example Adamson 2008; Prickett 2016) and pre-European Māori occupation evidence may be extensive.



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