

# THE TAWHIAO COTTAGE



REPORT TO  
THE NEW ZEALAND HISTORIC PLACES TRUST  
AND  
AUCKLAND COUNCIL

HPA AUTHORITY 2011/115

MATTHEW CAMPBELL, JADEN HARRIS,  
WESLEY MAGUIRE AND STUART HAWKINS

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# THE TAWHIAO COTTAGE

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The Tawhiao Cottage was located at the rear of 31 Wallace Road, Mangere Bridge (Lot 3 DP 19852), on land formerly owned by Tawhiao, the second Maori king. Details of who built the cottage and whether Tawhiao ever lived in it are unclear, but it is believed to have been constructed shortly after 1890 (Murdoch 2007: 11). The land passed out of Maori ownership in 1926 but continued to be occupied by Maori families until 1947 when a new house was built on the front of the section at 31 Wallace Road and the cottage was abandoned.

By 2005 the cottage was in a dilapidated state and the then owners, who had no further use for the building, commissioned a Conservation Plan with a view towards having the cottage removed from the property. This Plan was prepared by Dave Pearson Architects with funding from Manukau City Council (Dave Pearson Architects 2005: 7). The cottage was scheduled as item 72 in Schedule 6A of the Manukau District Plan but was not recorded as an archaeological site at that stage. In 2010 plans for the proposed relocation of the cottage had progressed and an archaeological assessment was carried out by CFG Heritage Ltd (Campbell 2010a). The cottage and curtilage behind the current house were recorded as archaeologi-

*1. Location of the Tawhiao Cottage, showing other sites recorded in the general area.*



cal site R11/2535 in the New Zealand Archaeological Association site recording scheme.

In early 2012 work to implement the relocation proposed by the former Manukau City Council was begun by Auckland Council. Archaeological work involved detailed recording of the building carried out by buildings archaeologist Wesley Maguire on 22 and 23 February 2012 and monitoring of the deconstruction of the lean-to portion of the building in March. Preliminary investigations of the underfloor deposit were conducted on 4 and 5 April after the building had been jacked up on sties prior to the removal, and the main investigation of the cottage footprint and curtilage was carried out from 23 April–3 May 2012. The cottage has now been relocated to a site next to the Mangere Mountain Education Centre on Coronation Road.

Investigation and recording were carried out under authority 2011/115 issued by the New Zealand Historic Places Trust under Section 14 of the Historic Places Act 1993. The archaeological work at site R11/2535 is now complete and no archaeological deposits associated with the site remain on the property at 31 Wallace Road. The site record has been updated through ArchSite, the online database of the New Zealand Archaeological Association ([www.archsite.org](http://www.archsite.org)).

## HISTORIC BACKGROUND

Much of the historical significance of Tawhiao Cottage lies with the fact that the property and cottage were originally owned by the second Maori King, Tawhiao, who reigned from 1860 to 1894, as well as the connections of his family during subsequent occupation of the cottage. Tawhiao was the son of Potatau who was crowned as the first Maori King in 1858, and was in turn succeeded by his eldest son Mahuta who reigned from 1894 to 1912. From 1912 to 1933 Te Rata, the eldest son of Mahuta, assumed the title of Maori King.

### Overview of the 19th and 20th century history of Mangere

The first European visitors to the Manukau Harbour are believed to have been the Rev. Samuel Marsden and his fellow missionaries James Shepherd, William Puckey and the Rev. John Butler, who walked across the Tamaki isthmus from Mokoia (Panmure) in 1820 (Stone 2001: 61). Subsequent raiding expeditions through the area in the 1820s by musket-armed Ngapuhi caused local Maori to abandon their settlements temporarily. After an abortive attempt by the New Zealand Waitemata and Manakou Company to establish a settlement at Cornwallis in 1840 (Stone 2001: 194–205) European settlement on the Manukau began in earnest when the government began dividing land into farms for sale later in the decade. A mission station was established at Ihumatao, near Ellet's Mountain, by Wesleyan missionary Henry Lawry in 1847 (Campbell and Harris 2011: 47).

In response to deteriorating relationships between Maori and Pakeha, and the lack of Imperial troops that could be sent to New Zealand to deal with the situation, Governor Grey established the Royal New Zealand Fencibles, recruited from Britain among ex-soldiers. Four military settlements were to be set up to provide a defensive buffer for Auckland, with the key settlement being Onehunga (Mogford 1977: 16).

As a further buffer, Grey encouraged Te Wherowhero, chief of Ngati Mahuta from the Waikato, to settle with his people at Mangere. On the 22 June 1849 Te Wherowhero and 120 of his people signed an agreement with Governor Grey to provide military protection for Auckland on the same terms as the British Fencible settlements. At Mangere 486 acres (197 ha) was set aside as a settlement for Te Wherowhero and a parallel village was established on the North Shore under the Ngapuhi chief Eruera Maihi Patuone (Lawlor et al. 2010). The Mangere area was subdivided into 81 one acre (0.4 ha) allotments and 81 five acre (2 ha) allotments, based on a regular grid of surveyed land blocks which are today reflected in the main road alignments (Lawlor et al. 2010). Te Wherowhero relocated to Ngaruawahia in 1858 when he was appointed the first Maori King under the name of Potatau Te Wherowhero, though the Mangere settlement continued for another five years (Oliver 1990: 96). By this stage Potatau Te Wherowhero was already an old man and when he died on 25 June 1860 he was succeeded by Tawhiao.

In the 1850s the Maori population of Mangere was around three or four times that of the European, including groups at Pukaki and Ihumatao who sold or bartered peaches, melons, fish and potatoes to the Europeans (Stephen Westney, quoted in Tonson 1966: 102). With the rise of the Maori king movement tensions between the Maori and European communities escalated and came to a head in 1863 when on 9 July, Governor Grey issued an ultimatum to the "Natives of Mangere, Pukaki, Ihumatao, Te Ririki, Patumahoe, Pokeno, and Tuakau" to immediately swear an

Oath of Allegiance to her Majesty the Queen and to put down their arms (*Nelson Examiner and New Zealand Chronicle* 16 July 1863). Maori who did not comply were asked to remove themselves to the Waikato, beyond the Mangatawhiri, effectively declaring themselves as rebels against the Government. Six adults remained behind at Mangere to look after their kainga and possessions (ahi ka). Although other kainga in South Auckland were sacked by the militia, Mangere was not.

In a short time many Maori had abandoned their settlements around the Manukau and within days the invasion of the Waikato by Imperial forces had begun (Belich 1986: 133). On 16 May 1865 much of the land previously occupied by Maori around Mangere, including the Ngati Mahuta village at Mangere Bridge and Lot 49, was confiscated under the New Zealand Settlement Act 1863. In 1867 the Native Compensation Court returned 144 acres (58 ha) of the original 485 acre (196 ha) Mangere Block to Maori ownership under individualised title, with the rest retained by the Crown. Some of this land was sold to settlers but most was set aside as reserves. The Mangere kainga remained the most northerly outpost of Tainui throughout the 19th century and hosted Waikato iwi visiting Auckland. Members of the kahui ariki (royal family) were sent to Mangere for their education.

While the settlers at Mangere had established local churches and a school in the 1860s transport was by foot, horse or boat. Onehunga was connected to Auckland by train in 1873 (Mogford 1977: 34), but until the first Mangere bridge was built in 1875 the main connection between Onehunga and Mangere was an unreliable ferry service (Tonson 1966: 112). The postal service reached Mangere in 1878 (Tonson 1966: 110).

Mangere remained a largely rural area until the second half of the 20th century, that is, for all the period of the Tawhiao Cottage occupation. During the early years mixed farming predominated with wheat, oats, barley and potatoes being grown and dairy herds raised. By the 1880s the Manukau area had become well-known as a wheat producing region, though dairying came to predominate as the demand for milk grew with the Auckland population. A local dairy factory was established and Mangere became the chief supplier of milk to the city. From the 1930s the dairy farms were joined by market gardens run by local Chinese, especially around the Mangere Bridge area (Mace 2004). In the second half of the 20th century farmland around Mangere Bridge gradually gave way to housing development.

### History of ownership

Section 49 comprised approximately 11 acres and is shown on plan SO 234, *Plan of Confiscated Block Mangere*, surveyed in January 1868, although it does not appear to have been part of the lands sold at this stage (Figure 2). Section 49 of the Village of Mangere was granted to Tawhiao in 1890 and is recorded in CT 62/20 dated 13 July of that year. The section is one of several in the Mangere area shown in SO 5735D, *Plan of Mangere Native Awards*, surveyed on 12 December 1890 (Figure 3).

The exact date of construction is not known but the cottage is believed to have been built shortly after the land was granted to Tawhiao in 1890. A date around 1890 would agree well with evidence derived from the buildings archaeology and the analysis of the material culture from the archaeological investigation. There is no evidence from the archaeological investigation of any earlier occupation of the cottage site.

After Tawhiao died in 1894 his lands were divided between his sons and grandsons, with shares of 1/6th and 1/36th, and until the property finally fell out of Maori hands, it had multiple owners whose shares were further divided on their successive deaths (Murdoch 2007: 11–12). ML 9712, dated March 1915, shows the property being formally subdivided into three lots, 49A–C (Figure 4), and Lot 49A





was later subdivided into 49A-1 and 49A-2. The plan appears to have been drawn up in 1921, although a note on it indicates that the subdivision was the result of an order dated 25 June 1917. The site of the Tawhiao Cottage is located on former Lot 49C. ML 9712 shows the cottage, labelled as 'house', with two 'huts' to the east and a 'store' in the north west corner of the property at the intersection of what are now Wallace and McIntyre Roads. Lot 49B is shown with just a single 'hut' and 49A has no buildings or other improvements shown.

On 20 February 1926 the interests of the then owners were redistributed and on the same day Lot 49C appears to have been sold to William Well, Maori Agent. Well was soon after declared bankrupt and title was transferred to Nellie May Henwood, wife of Herbert Henwood, farmer (Murdoch 2007: 12). The exact process seems a little obscure and is clouded by the legal problems of William Well's bankruptcy. In 1947 Lot 3 was sold to Leslie Thomas Williams and the modern house at 31 Wallace Road was constructed shortly after.

### History of occupation

The history of occupation of the cottage is not well known but a few basic facts have been uncovered by research carried out by Dave Pearson Architects for the Conservation Plan in 2005 and in more specific historic research carried out by Graeme Murdoch in 2007. When Section 49 was subdivided in 1915 Lot 49C came to Te Rata, the fourth Maori King (Dave Pearson Architects 2005).

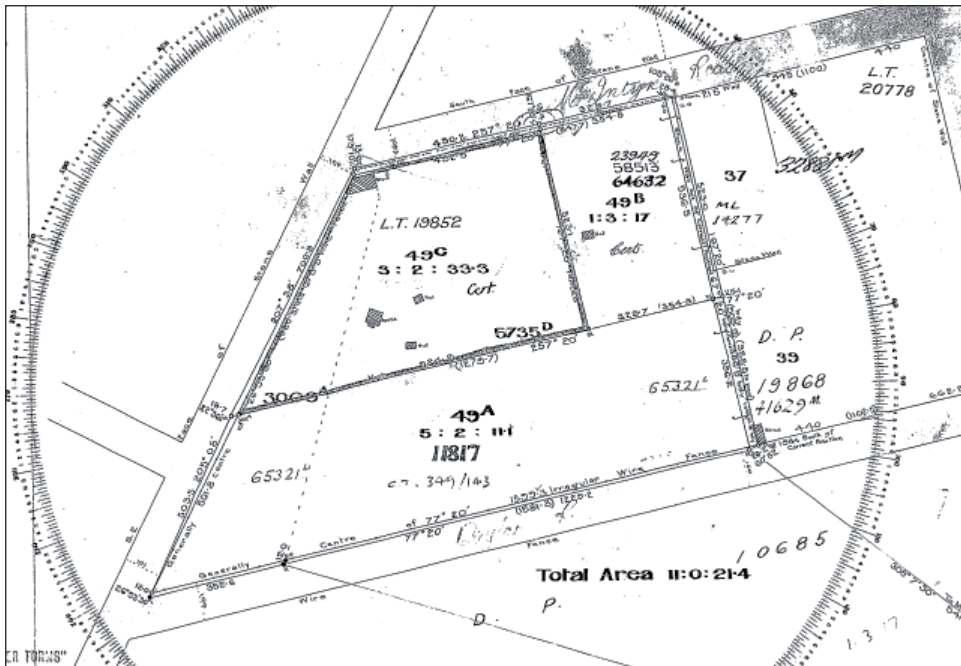
Murdoch (2007: 11–12) gives some more details as to which members of the kahui ariki may have lived or stayed at the cottage:

It is thought that the cottage was constructed not long after 1890. It was used by Tawhiao and other members of the Kahui Ariki when visiting Tamaki Makaurau, and it was maintained by a house keeper known as Te Aorere.

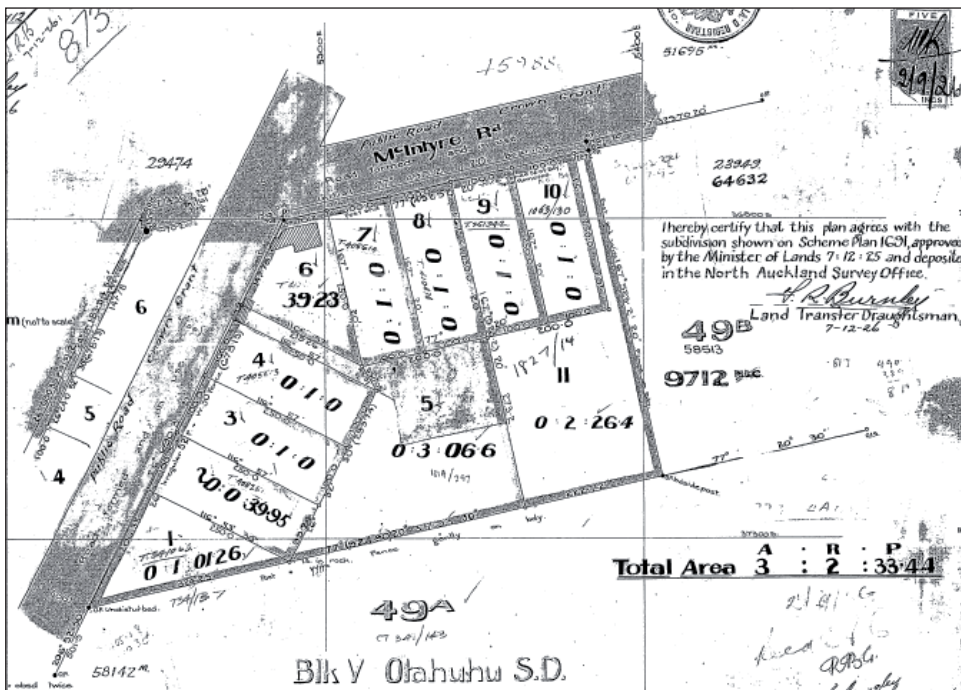
When Tawhiao died in 1894, the Mangere property was left to his children... Te Puea generally resided with Mrs Wati in the Mangere kainga, but is also thought to have stayed in the King Tawhiao Cottage; periodically until 1911... King Mahuta occupied the cottage on occasions, along with members of the Kahui Ariki. They included Tumate Mahuta and Tonga Mahuta who lived in the 'Tawhiao Cottage' while attending nearby Mangere Bridge Primary School.

Other members of the family and relatives also lived in the area at Mangere kainga. In 1907 on 5 October Tawera Mahuta, second eldest son of Mahuta, died at the residence of Wati Ngakura, Mangere. Tawera was 17 years old and had been attending the Mangere school (*Auckland Star* 6 October 1907). An uncle of Mahuta, Honana Te Maioha, brother of Potatau, also lived in Mangere and died at home on 2 March 1905 (*Auckland Star* 3 March 1905). Newspaper accounts also report Mahuta himself as staying in Mangere during his visits to Auckland, such as in July 1903 where: "The Hon. King Mahuta, who was in Auckland yesterday, was to-day staying at Mangere, where he possesses an estate" (*Auckland Star* 9 July 1903). Although Mahuta had a large portfolio of lands presumably the estate in Mangere referred to would be Section 49, and he would have stayed at the cottage.

Although the ownership of Lot 49C has been traced it is less clear who lived in the Tawhiao Cottage in the 1910s and 20s. Following its sale in 1925 it was rented out to a number of local families, including Mary Awhitu (nee Pirihi) and her great aunt (Murdoch 2007: 12). After the final subdivision of the lot in 1947 it appears not to have been further occupied as a dwelling.



4. Detail from ML 9712, surveyed March 1915.



5. Plan DP 19852, surveyed November 1925, showing the subdivision of Lot 49C into 11 smaller lots. The location of the Tawhiao Cottage is on Lot 3.

### Historic photographs

The earliest known photographs of the Tawhiao Cottage were taken by James Richardson as part of three separate series making up panoramic views taken from the summit of Mangere Mountain. The earliest image dates to 1913 and the cottage is visible in the bottom left of the picture (Figure 6). Few details can be made out but of interest are the two huts at the back of the cottage and the hut on Lot 49B marked on ML 9712. The store is also present in the corner of the property by the intersection with Wallace and McIntyre Roads. In the next image, taken in 1923,

6 (below). Part of a panorama taken from Mangere Mountain by James Richardson in 1913, with the Tawhiao Cottage in the lower left. Sir George Grey Special Collections, Auckland Libraries, 4-1497.

7 (opposite, top). Part of a panorama taken from Mangere Mountain by James Richardson in 1923. Sir George Grey Special Collections, Auckland Libraries, 4-5216.

8 (opposite, bottom). Part of a panorama taken from Mangere Mountain by James Richardson in 1931. Sir George Grey Special Collections, Auckland Libraries, 4-4741.

the cottage stands out on what is a relatively undeveloped property with just a few macrocarpa trees and divided into paddocks by post and wire fences (Figure 7). The enclosed porch around the back doorway, which was no longer extant by 2005, is clearly visible on the east side. The huts on 49C and 49B are also gone. In the next photograph, taken in January 1931, the cottage remains relatively unchanged and there is still no evidence of any gardens or other development around the building. In the 1923 image market gardens have begun to be established on the west side of Wallace Road and by 1931 these have noticeably expanded.

In 1940 in aerial photographs available from the Auckland Council website (<http://maps.aucklandcouncil.govt.nz>) the cottage section appears to remain much as it was in 1931, but the adjacent empty sections to the east and south have now also been developed as market gardens. By 1959 Lots 1–4 and 6–10 of the subdivision created from Lot 49C in 1925 have been built on and the Tawhiao Cottage is left boxed in at the back of the house on Lot 3. The area to the rear of the section remains undeveloped and still appears to be used for market gardening at this stage.

#### Archaeological landscape

While the Tawhiao Cottage is a late 19th century historic site, with an occupation dating mainly to the early 20th century, it is located in an area of dense pre-European Maori occupation. Dominating the site to the south east is Mangere Mountain, a volcanic cone occupied as a pa and recorded as site R11/26, and it is highly likely that most of the area surrounding the pa would have been exten-





sively gardened and occupied. To the west, in the area of Ambury Park and around Mangere Lagoon, approximately 100 sites have been recorded (Figure 1), although many of these are essentially components of the same sites and together form a continuous archaeological landscape. For the large area between Ambury Park and Mangere Mountain that has been developed and built over, the only recorded site to date is the Tawhiao Cottage. The picture from recorded archaeological sites then would appear not to accurately reflect the true archaeological resources of the Mangere Bridge area. Historic settlement by Europeans, which began before the Waikato Wars in the 1860s and increased markedly in the late 19th century, is not represented in the archaeological record at all and neither is the settlement founded by Te Wherowhero at the request of Governor Grey in 1849.

## BUILDINGS ARCHAEOLOGY

The standing building was recorded as an archaeological feature. While this is a relatively new method in New Zealand, an examination of the construction of a building allows it to be related to other buildings of the same or similar age, and to follow the sequence of alterations and additions. These can often be tied to the known history of occupation (for instance, Campbell and Furey 2007; Furey 2011).

An important aspect of buildings archaeology is dendrochronology, or tree-ring dating, which can be used to determine the date the tree was felled that was used to construct the building. Wood is usually used within one or at most two years of this date, giving a good date for the building. Samples were taken from the Tawhiao Cottage by Gretel Boswijk of the Tree Ring Laboratory, School of Environment, University of Auckland. The cottage was constructed of kauri (*Agathis australis*), which is an ideal timber for dendrochronology.

Eleven samples were collected from framing timbers in the roof space: six from 2 x 4 inch rafters, four from 3 x 2 inch studs and one from a 3 x 2 inch outrigger. The number of countable rings ranged from 10 to 88, but only four had more than 50. Only one sample, from the outrigger, had a bark edge, i.e., the growing surface when the tree was cut down, and this had only 41 rings. There was no overlap with other samples and not enough rings present to calculate the date when the tree was cut down.

### Methodology

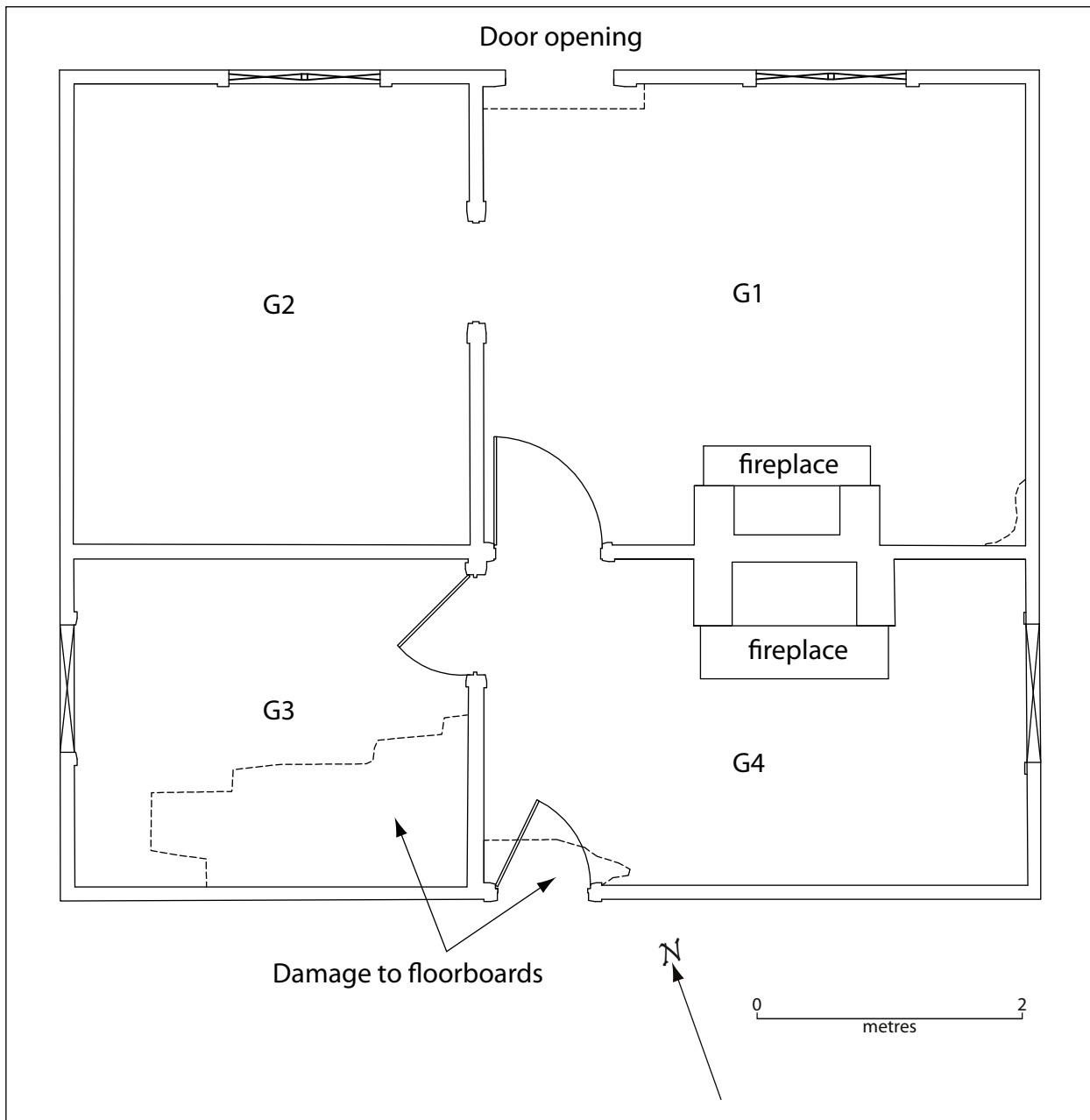
A photographic record and survey drawings of the Tawhiao Cottage were made prior to any demolition work beginning. The photographs of the structure were taken to provide context to the drawings and further detail to some of the building features.

The survey drawings, both plans and elevations, were created in a CAD programme from survey data collected on site using a Leica TCRP 1201 Total Station. This digital approach allows for the drawings to be produced at a variety of scales appropriate to their end use and allowed the survey data to be integrated into the information recorded during the archaeological excavation of the house site.

All external elevations were surveyed and drawn to provide a record of the building, illustrating its form and to show surviving elements of the original structure and modifications. A surveyed plan was also produced showing the floor plan of the cottage.

During the deconstruction of the rear portion of the building further digital photographs were taken. This was undertaken to illustrate the internal structure and techniques that had been used in its construction. A measured elevation of the fireplace and chimney was also produced during the deconstruction works.

In addition to these survey drawings and the drawn elevation of the chimney, hand drawn plans of the buildings subfloor structure and its internal roof structure were produced and digitised in a CAD programme. These drawings were produced once the building had been lifted off its piles, permitting access. Hand drawing was selected for these areas of the building due to the restricted access and confined spaces which would have made using survey instruments impractical.



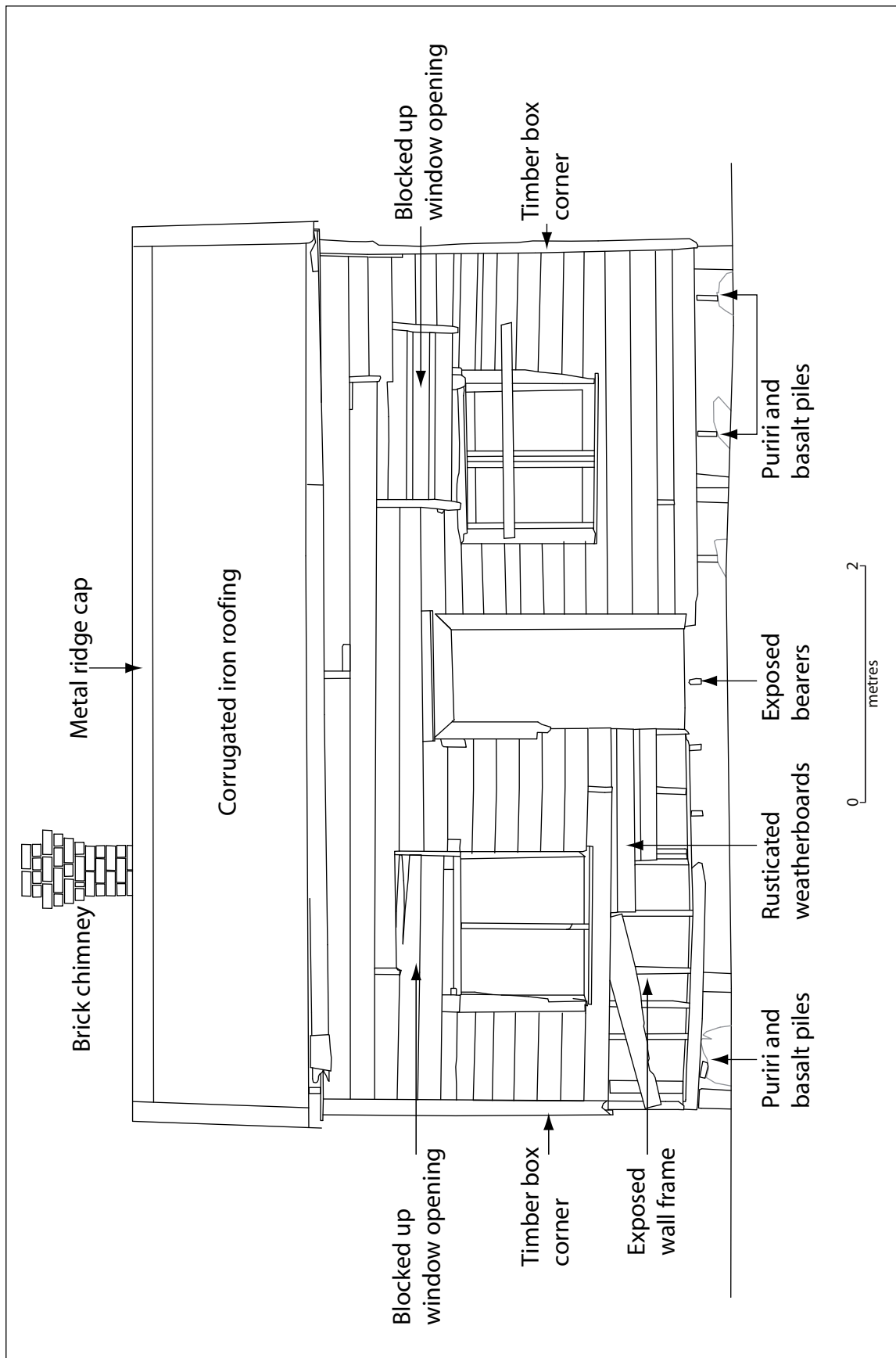
9 (above). Measured floor plan of the Tawhiao Cottage.

### General form of the building

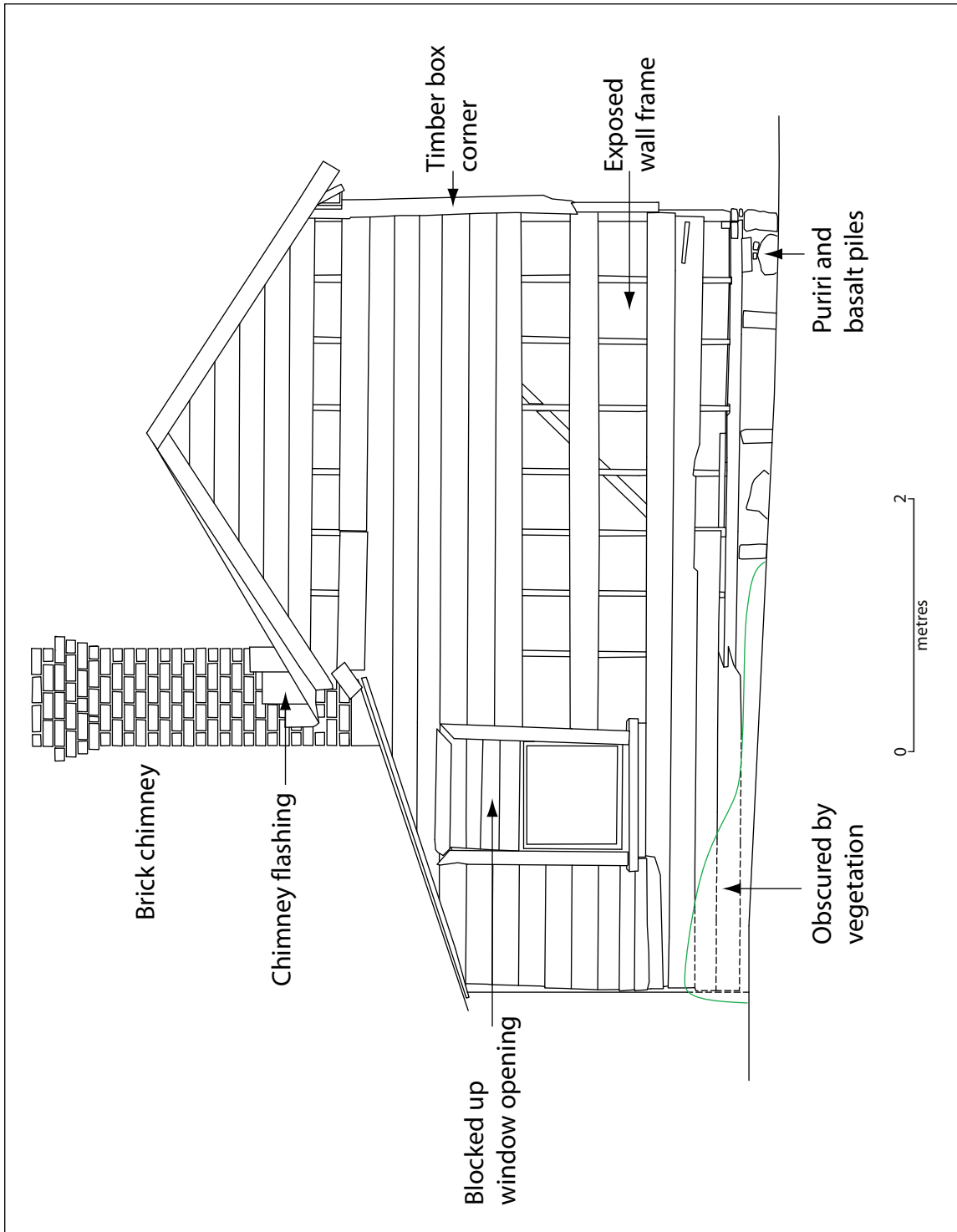
10 (opposite). Measured north elevation of the Tawhiao Cottage.

The Tawhiao Cottage was a single storey cottage containing only four rooms. There were two rooms in the northern, main part of the building, and two in the southern part, which was in the form of a lean-to although built at the same time as the main part. For the sake of simplicity, the southern part is referred to as the lean-to but this should not be taken to imply that it was a later addition.

The cottage exterior was clad with plain weatherboards, roofed with corrugated iron and had a single brick chimney. The roof of the main part of the building was in a gable form, running from east-west, while the lean-to had a skillion roof (Figure 14). The building was in a poor state of repair with sections of weatherboard having

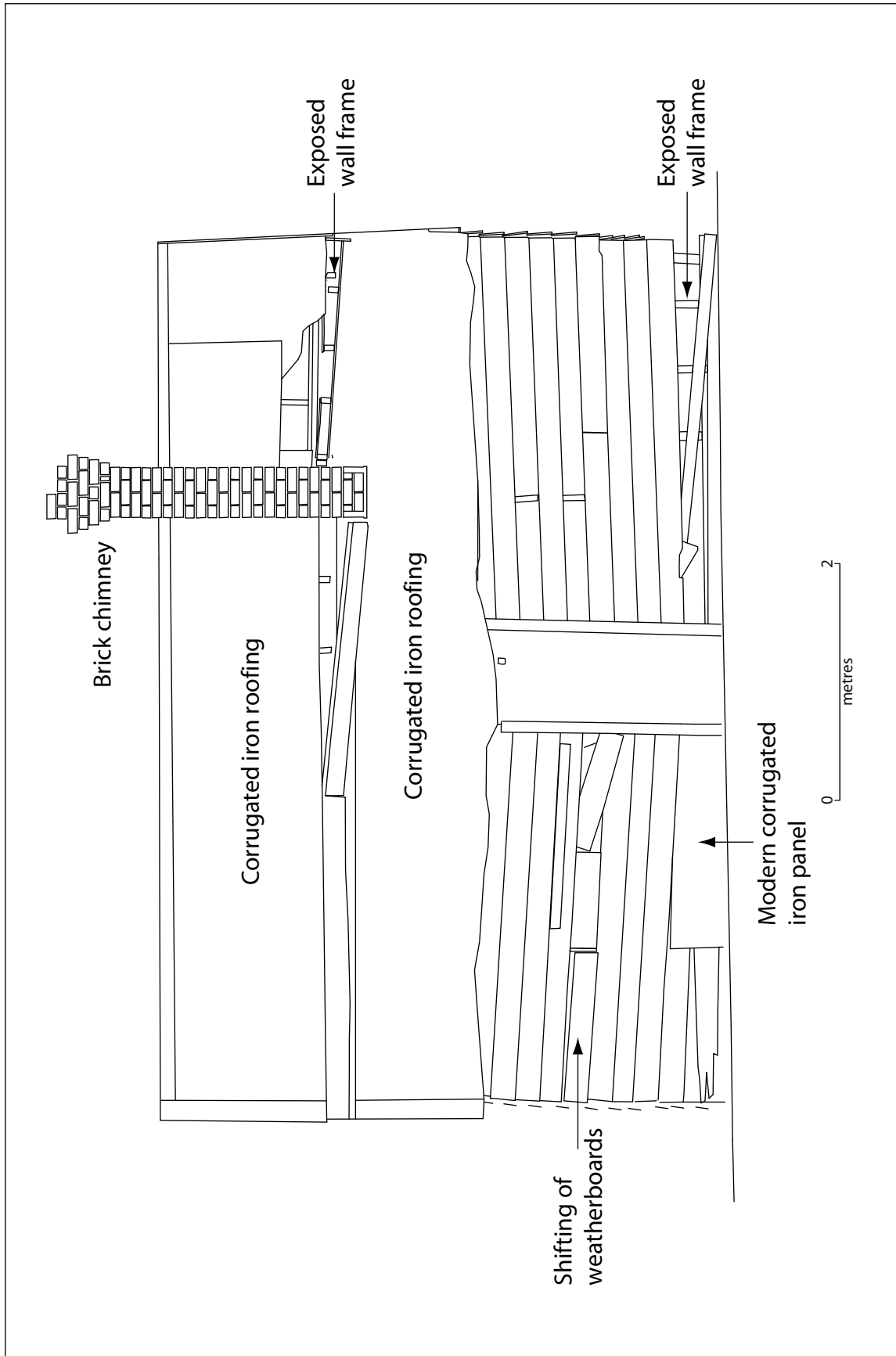






11 (above). Measured east elevation of the Tawhiao Cottage.

12 (opposite). Measured south elevation of the Tawhiao Cottage.



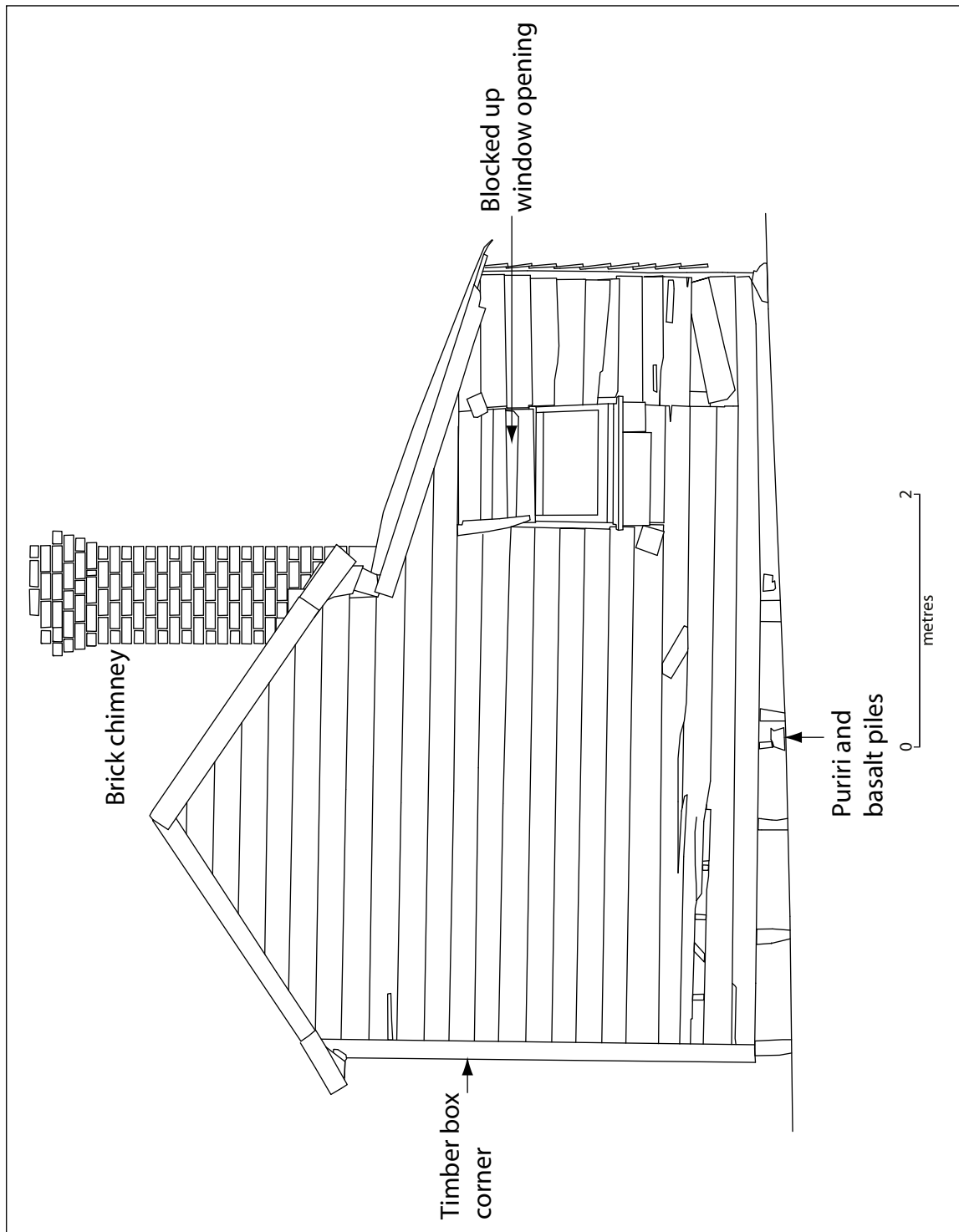


Figure 13. Measured west elevation of the Tawhiao Cottage.

fallen away to leave the building frame exposed in places (Figure 15). In addition to this the roof was no longer weather tight.

The front of the building was orientated to the north, however this orientation did not align to the current property boundaries, suggesting that the building was on site prior to the subdivision of the area. Within the northern elevation there were two 20th century horizontal rectangular windows, replacing the original windows and it was possible to see where the original windows had been located (Figure 9). The original window openings had been infilled with sections of rusticated weatherboard which did not align with the rest of the wall. The proportions of the original window openings suggested that double-hung sash windows had originally been present. The front doorway of the building was located between the window openings in the centre of the north elevation and retained some of its original moulded timber surrounds. The front door itself was no longer present.

On the east elevation the only window present was at the rear of the building in the lean-to. This window retained its moulded timber surround but had also been modified during the 20th century. The original window opening had been infilled with weatherboards and a top hinged window had also been inserted (Figure 16). It was again possible to see that the original window opening had the upright rectangular proportions of a double-hung sash window.

On the southern elevation of the building the only feature present was a door opening in the middle of the wall. The doorway had retained some of its original moulded timber surround on either side but the moulding was missing across the top of the doorway. The rear door to the building had survived in situ and was a four panel rail and stile door with two small panels at the bottom and two large panels above. The lower panels of the door were no longer present and had been repaired with sections of horizontal board. It was clear in this elevation that the building was in poor condition and that the subfloor structure had collapsed in the centre of this wall, causing the entire elevation to sag in the middle.

On the west elevation the only window present was at the rear of the building, in the lean-to section. This window did not retain its moulded timber surround and had also been



14 (top). Western elevation of the building showing the gable roof and skillion roof of the lean-to.

15 (centre). Detail of the north east corner of the building showing where weatherboards had fallen away from the structure.

16 (bottom). Detail of the east elevation showing the location of an original window and the inserted window.



17 (top). Detail of the west elevation showing a fragment of timber at the north west corner of the roof suggested that there also had been decorative fretwork present.

18 (centre). Detail of the wall linings in G2 showing the use of tongue and groove boards with bevelled edges.

19 (bottom). Detail of the wall linings and ceiling in G2 showing varnished finish of the wood, board and batten ceiling, and timber mouldings edging the ceiling.

modified during the 20th century. The original window opening had been infilled with weatherboards, a top hinged window had been inserted and it was again possible to see that the original opening had the upright rectangular proportions of a double-hung sash window. The only surviving section of barge board was on this elevation suggesting that there had at one time been similar boards on the eastern elevation as well. A fragment of timber at the north west corner of the roof suggested that there also had been decorative fretwork present (Figure 17). It was also possible to see on the western elevation that box corners with scribes had been present on the building, as a section of box corner survived in situ. Fragments of box corners were visible elsewhere on the building, but the best preserved was at the north western corner.

### Interior features

As the building was to be relocated and refurbished the interior fabric of the building was not invasively investigated and only a visual inspection was carried out.

The floors throughout the building consisted of tongue and groove floor boards running east–west. The majority of the floor boards were still in situ, however the areas immediately adjacent to the front and rear door were missing as well as a portion of flooring in G3 which had rotted through to expose the subfloor structure and ground surface. This damage was caused by water.

The interior of the walls in G1 and G2 had been lined with planed tongue and groove boards with a bevelled edge detail (Figure 18). The rooms within the lean-to were also lined with this type of wallboard. Where it was possible to observe the back of the wall linings it was apparent that some of the boards had been cut by machine using a circular saw blade and some had been cut by machine using a band saw blade. The wallboards of G2 retained a varnished or lacquered finish while all other wall linings within the building had been painted (Figure 19). Interestingly, there were no traces of any wallpaper, or any indication that the interior walls had ever been covered with wallpaper.

The ceilings of the front two rooms, G1 and G2, were constructed from board and moulded batten with timber mouldings around the edge

(Figure 19). As with the walls of G2 the ceiling in this room had not been painted and retained a varnished or lacquered finish, while the ceiling in G1 had been painted.

The ceilings of the lean-to rooms, G3 and G4, followed the line of the skillion roof and were clad with planed tongue and groove boards with a bevelled edge detail identical to the boards used to line the walls of the building. The ceilings of these rooms had been painted in the same manner as their walls. A simple timber moulding was used to edge the ceilings (Figure 20). The ceiling in G3 had been damaged by water which had led to the floorboards decaying in this room.

There were no skirting boards present in any rooms of the building. It was not clear whether skirting boards had been present and were removed, or if they had never been present.

Two timber fireplace surrounds were present around the fireplaces in G1 and G4 (Figure 21). These features were considered to be original to the building and were not highly decorative, having a simple utilitarian form. Above the fireplaces the wallboards lining each room had been used to enclose the chimney.

### Roof structure

The structure of the gable roof was of a standard form with a ridge board, rafters and purlins. The purlins had been cut to fit around the rafters. There were no collar ties used in the structure and the roof rafters were joined by a single diagonal cross brace on each side of the roof (Figure 22). The rafters themselves were resting directly on top of the ceiling joists, which in turn rested on top of the north and south walls. The wall studs from the east and west walls continued up to the roof to support the weatherboards on the gable ends (Figure 23). No complex carpentry joints were used to secure the roof structure, just butt joints and nails.

The area of the roof surrounding the chimney had been boxed out using a header and trimmer. The timbers used for this work were of the same type as those used in the rest of the roof so are assumed to be an original feature of the roof.

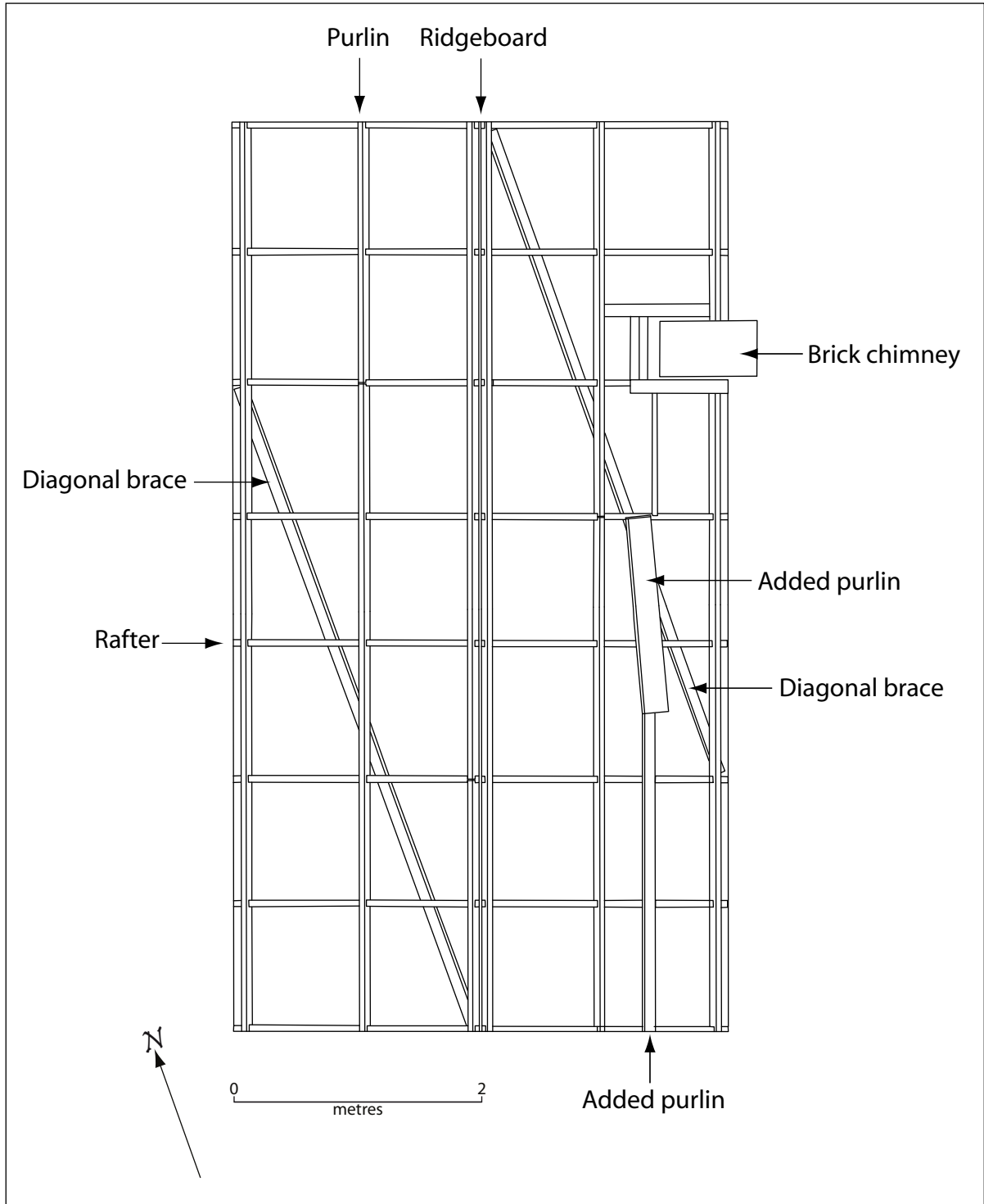
The only modification to the roof structure was a series of extra purlins which were present along the lower part of the south side of the roof. This vernacular repair to the roof was made up



20 (top). Detail of the ceiling in room G3 showing the use of simple timber mouldings to edge the ceiling.

21 (centre). The fireplace surround in room G1.

22 (bottom). The interior of the gable roof showing the ridge board, rafters, purlins, cross brace (on southern side of roof) and ceiling joists.



23. Measured drawing of the roof structure.

of recycled pieces of timber nailed between the rafters. All other timbers observed in the roof were original to the building and had been cut by machine using a circular saw blade.

### Wall framing

The wall framing for the building consisted of vertical timber studs running from a base plate to a top plate in both the front portion of the building and rear lean-to. A series of diagonal nogs were used to brace the framing between the studwork and were arranged to run diagonally across each section of wall. The only exception to this was the southern (rear) wall of the lean-to where two opposing sets of diagonal nogs ran from the top corners of the wall to the base of the door opening in the centre. Double studs were used at the corners of the front section of the building as well as at the southern corners of the lean-to (Figure 25). This is a standard feature of timber framed buildings. All timber used for the framing had been machine cut using a circular saw blade.

The framing surrounding the window and door openings within the front portion of the building were not examined as no deconstruction works occurred within this section. However, the rear lean-to was deconstructed and a closer inspection of the framing was possible. In the lean-to the window openings had a header and sill running between the vertical studs with a cripple stud below the sill.

The floor boards were cut to fit around the studs along the perimeter of the building (Figure 26).

The internal wall structures within the front section of the building, between G1 and G2, were not investigated as this section was not being deconstructed. In the lean-to it was possible to examine the interior wall between G3 and G4 due to the deconstruction works. This interior wall was comprised of a simple structure of vertical studs and a header attached to the floor boards and timber linings of the lean-to. It should be noted that this wall was not load bearing and was just an internal partition. It is expected that this would also be true for the internal wall between G1 and G2.

### Subfloor and piling

The building was located on a site which was sloping down to the north. This meant that the



24 (top). Detail of the roof structure showing that the rafters were resting directly on the ceiling joists, which were resting on the top plate of the wall.

25 (centre). Detail of the south wall of the lean-to, during deconstruction, showing diagonal nogs between the wall studs.

26 (bottom). Detail of the north wall showing the floorboards cut around the wall studs.





27 top). Detail of the main bearer after lifting of the building, showing the lap joint joining the two pieces of timber with puriri piles still attached.



28 (bottom). Detail of the east end of the building, showing the use of puriri piles and basalt rocks to support the building.

lean-to at the rear of the building was built almost on the ground surface with very little air space beneath.

The subfloor of the front portion of the building consisted of a main bearer which was aligned east–west below rooms G1 and G2. The base plates of the east and west walls and the floor joists were resting on this main bearer. At the corners of the building the base plates were joined with simple lap joints. The floor joists were aligned north–south. The main bearer itself was made up of two pieces of timber jointed in the middle with a lap joint (Figure 27). The main bearer and base plates were supported by a series of puriri piles, which were the original supports for the building but had been supplemented by basalt rocks (Figure 28).

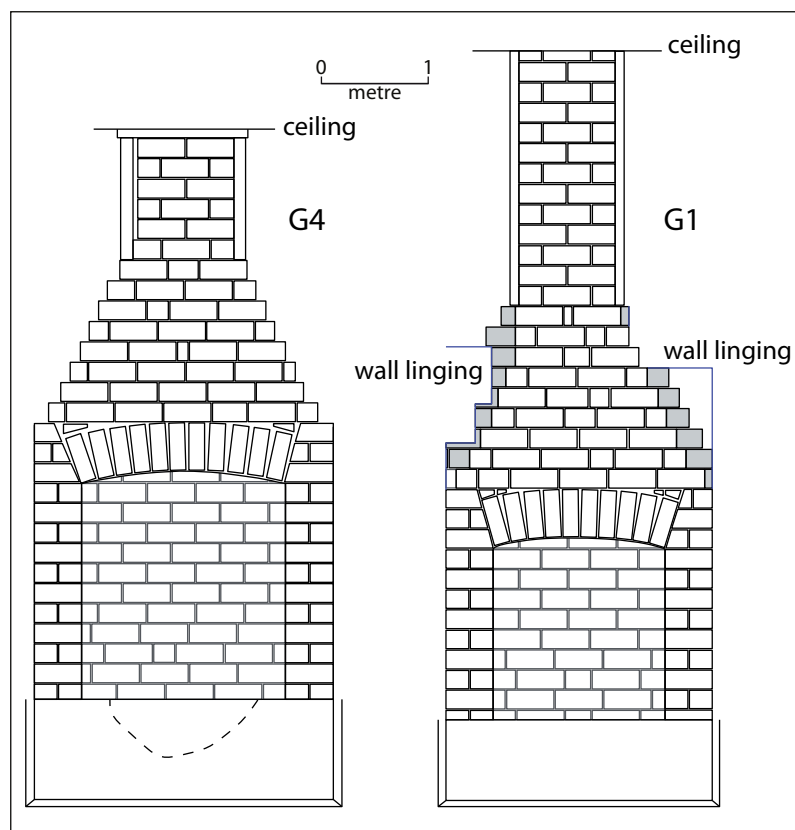
The subfloor structure of the lean-to at the rear of the building consisted of bearers around the perimeter of the structure; these bearers were supporting floor joists that were aligned north–south. The lean-to bearer abutted the southern base plate of the front portion of the building and had been nailed on to it. The floor level was the same throughout the building with no change between the lean-to and the front portion. It was not possible to determine if any wooden piles or basalt rocks had been used to support the lean-to portion of the building as this part had settled and was resting on the ground surface.

The subfloor had been boxed out around the chimney base and the hearths within G1 and G4 were not supported by the subfloor structure.

### Chimney and fireplaces

The building contained a back-to-back fireplace located between G1 and G4 which shared a single chimney. The chimney base and hearths had been constructed as one feature as opposed to a hearth supported within the subfloor structure. The material used to construct the base and heath consisted of basalt and shell loosely bonded together with a concrete skim forming a surface of the hearth and the fireplace.

The chimney and fireplaces had been built on top of this base from brick mortared with concrete. The bricks were yellow in colour with a rectangular frog. At present the brick maker is unknown. The fireplaces were constructed with a rounded arch with an iron brace above the openings. During deconstruction of the fireplaces it was evident the fireplace in G4 was of a larger size and in order to accommodate this the brick work extended further out than that in G1. The chimney flue stepped in from the fireplace becoming narrower and extending through the roof of the building (Figure 29). The chimney top was not overtly ornate in style and consisted of a simple stepped design. No chimney pots were present and it is unclear if a chimney pot was ever present.



29 (above). The chimney and fireplace within room G4, following deconstruction of the lean-to.

30 (left). Measured drawing of the chimney in elevation.

Of the two fireplaces, the one located within G4 was of a larger size. As this fireplace was located within the rear of the building it is assumed that this represents the location of the kitchen, although there was no trace of a kitchen range within the fireplace. Neither fireplace had been infilled to hold a coal burning fire surround and are therefore considered to be in their original form.

### Modifications over time

Based on the structural evidence the form of the building has remained unchanged with only modifications to the windows and repairs to the subfloor having been carried out. The building appears to only have ever consisted of a four roomed dwelling; two front rooms with a rear lean-to also consisting of two rooms.

The structures surrounding the chimney suggest that the front rooms, chimney and rear lean-to rooms had all been constructed at the same time. During deconstruction of the fireplaces / chimney it was evident that the structures surrounding it had been constructed specifically for its location with respect to the base plate, bracing of the floor joists and the roof rafters were constructed to accommodate a chimney, and are not reflective of a later feature having been inserted into an existing structure. There were no cut marks or broken timbers surrounding the chimney, which would have been present had the fireplaces / chimney been later additions.

The construction of the lean-to is also considered to be contemporary with that of the front portion of the building as it was built using similar materials and with similar techniques. The lean-to is not integrated into the structure of the main building, but given the slope of the existing ground surface this method of

construction may have been the most simple and practical way to construct the building.

During the excavation of the inground archaeology it appeared that there were two postholes under the chimney base, which aligned with the pile grid for the building. However these postholes, which were sealed by the chimney base, can be explained by the postholes for the piles being dug before the construction of the building and then not used due to the construction of the chimney base.

All of the original windows of the building have been replaced with smaller horizontal rectangular windows at some point in the 20th century and this altered the appearance of the building. The structural parts of the building frame, which would have supported the original windows, remained in situ and the spaces surrounding the inserted windows had been infilled with mismatched weatherboards.

There is no structural evidence of front steps leading up to the front door, although it is suggested that a step may have been present due to the height from the ground to the floor level.

The use of both puriri and basalt rocks used to support the building is a result of the later addition of the basalt rocks as replacements for wooden piles that had deteriorated. The basalt had been inserted under the building where the original wooden piles had decayed or become unstable.

It was evident from inspection of the subfloor structure that repairs had been made to this part of the building. At the north west corner a section of the base plate had been replaced by a piece of timber which had different dimensions to the original base plate. Horizontal braces had also been added to the floor joists at the west end of the building, immediately above the main bearer. In addition to these repairs, sections of timber had been inserted at the eastern end of the building to support the wall framing. These additions to the structure had been added as repairs where the original portions of the structure had become rotten.

As previously mentioned in the section describing the roof, a series of extra purlins had been added along the lower part of the south side of the roof using recycled timber. In addition to these purlins, portions of corrugated roofing material had also been replaced and repaired over time.

## Discussion

The Tawhiao Cottage was not an extensive building, consisting of only four rooms with no internal corridor, but it had been competently built from above average materials. The use of planed tongue and groove wallboards with bevelled edges to line the interiors of the rooms as well as finished box corners and scribes indicated that money had been spent on its construction. A lower status building would have used un-planed wallboards which were not tongue and groove, but a cheaper material such as rough-sawn sarking. This also suggests that the building had been built by a professional builder or carpenter. There is no real evidence to suggest that it was a vernacular building cobbled together by a farmer or settler. This observation fits with the historic accounts that the building was specifically constructed for Tawhiao.

The lack of any complex carpentry joints and the overall use of nails fits with the time period suggested by the historical information, with the use of rose headed nails and wire nails being indicative of an 1890s construction date, at least in the Auckland area. The surviving decorative and stylistic elements such as the position of the windows and central doorways, surviving timber mouldings and the form of the surviving doors also support this date.

It has been assumed that the building was built specifically as a domestic building based on its form and that the rear room, G4, was a kitchen as it contained the largest fireplace, although no trace of a cooking range was present. It is possible

that the building was never intended to be used as a full time dwelling and cooking was carried out elsewhere. Also of note is the apparent lack of internal decoration and ornament of the building. There was no evidence of the internal walls having ever been papered or covered in scrim. The only surviving decorative finishes were varnish and paint, for which it is not possible to provide a date. An explanation for this may be that the tongue and groove wall linings provided enough insulation against draughts and further linings to combat draughts were not needed.

As Mangere was a rural area until the mid-20th century the repair works and the lack of extensions to the building, are not unexpected. There would have been little need to undertake extensive reworking of the building unless it was not fulfilling its required purpose, which apparently it had been. The small size of the building and the fact that it was never extended suggests that Mangere was not an affluent area. The type and style of the building suggests that it was a simple late Victorian cottage in a rural area, the only point of difference is that it was a small building made of good quality materials by a competent builder or carpenter, and that it was constructed for Tawhiao.

## ARCHAEOLOGICAL INVESTIGATIONS

In addition to recording the standing building and investigating the inground archaeology, preparatory earthworks at the relocation site at Coronation Road (Pt Allot 202 Parish of Manurewa) were also monitored on 15 March. No archaeological evidence was observed. This report is solely concerned with the archaeology at 31 Wallace Road.

### Methodology

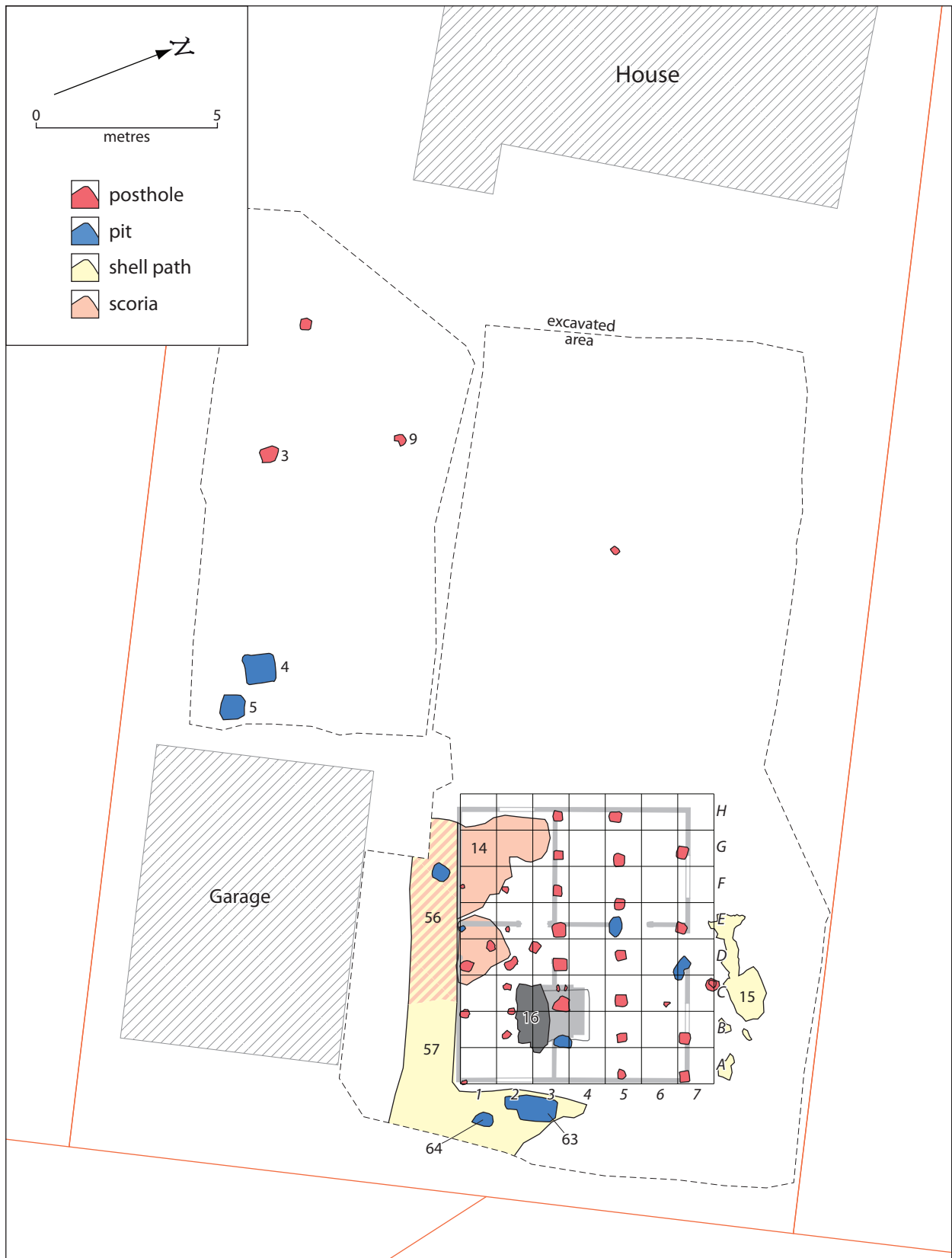
Once the cottage had been removed from the site the area at the back of the current house, excluding the garage, was stripped of topsoil and other overburden with a 3½ tonne hydraulic excavator under archaeological supervision. Due to the limited space available not all of the area could be opened up at once; instead it was stripped in stages, starting with the area under the modern driveway. Then the narrow strips along the sides of the house were cleared (no machine clearance was necessary within the cottage footprint) and finally the yard area between the existing house and where the cottage had stood. Once the overburden had been cleared each area was cleaned down by hand. The footprint of the cottage itself was set out in a grid of 1 m squares and excavated by hand. Details of features were recorded on feature data sheets and entered into the project database. Features were mapped with an electronic theodolite and digital photographs were taken at all stages of the investigation.

### Results

Apart from the underfloor deposit and features related to the construction of the cottage itself, very few archaeological features were found in the area investigated. The property boundary on the east and north side of the cottage left a curtilage between 3.4 and 4.2 m wide and on the south side a garage on a concrete foundation had been constructed 3 m from the back of the cottage. The driveway at the time of investigation was metalled and the yard between the cottage and the 1950s house was undeveloped but had clearly been modified in the past.

#### *The underfloor deposit and cottage footprint*

Prior to the cottage being shifted a large amount of rubbish of mixed age was visible under all parts of the building able to be inspected. At the time of the investigation the piles along the back wall of the cottage had rotted away or otherwise collapsed meaning that there was no gap between the base of the wall and the ground, but at the front there was a gap of around 300 mm, narrowing towards the back of the house. Originally there would have been a narrow gap along the back as well but this would have been partly sealed off by the enclosed porch around the back doorway. Although the south west corner was very close to the ground, part of the floor in G3 had rotted away and so some late rubbish may have been deposited in this area from inside the building. On the surface across the footprint of the house modern plastic and other rubbish was present that must have been discarded well after occupation of the cottage ceased. It isn't clear how it came to be beneath the house: wind deposition, animals and continued use of the cottage for storage are likely sources. Disturbance from rats and other animals was also obvious and even-



31. Site plan.

rything in the surface and loose layer had essentially been churned into a single mixed deposit, with modern plastic buried well into the deposit. The distribution of ceramics, glassware and other artefacts are likely to have been less affected and unlike many other historic buildings there were no plumbing or electrical utilities cutting through the deposit.

The underfloor deposit was investigated by setting up a 1 m grid labelled A–H east to west and 1–7 south to north. Rows H and 7 along the west and north sides were essentially only half squares as they were only excavated to the edge of the building footprint. Preliminary investigations to remove loose surface material were carried out on 4 and 5 April 2012 while the cottage was jacked up by the house movers and placed on sties prior to being removed from the site. All material from the underfloor deposit was retained and bagged by square. Surface material had also been collected from under G3 and G4 following the deconstruction of the lean-to. The loose fill from each square was carefully trowelled down to the firmer fill or subsoil below and artefacts and faunal material picked out by hand, but was not sieved. The same methodology was employed after the cottage had been removed when the squares were excavated down to sterile subsoil. Samples were labelled by square and layer with Layer 1 being the loose fill and surface material and Layer 2 the firmer fill and material below. Apart from the modern rubbish on the surface there was no discernible difference in age between the artefacts recovered from Layer 1 compared to Layer 2 and the majority of the assemblage relates directly from occupation of the cottage from ca 1890 to 1947.

From the underfloor grid a total of 323 fragments of ceramic, 612 fragments of glassware and 18.5 kg of window glass was recovered. The distribution of this material shows that the area under G3 contained the least amount of artefacts and that there was more material in the first 1–2 m from the outside around the rest of the house. Shell midden was also present in the underfloor area especially around the fireplace and under G4. The large amount of window glass is not surprising given that none of the original window fittings remained as of 2005 and between this time and the investigation many of the panes in the replacement windows had subsequently been broken. Window glass however was found in most features, including in postholes for the house piles and so some at least must date to the early part of the occupation.

Under the area where the back doorway had been a number of bricks were present that may have been used in an attempt to prop up the floor joists after the puriri piles had settled or failed. Scoria rubble in the north west corner under G3 also appears to have been added as fill, possibly at the time the house was constructed. Unlike the bricks under the doorway, which had artefacts among and underneath them, the scoria layer contained only clean soil with no artefacts and there were no postholes in this corner to suggest that there had been any timber piles. Most of the other scoria and basalt rocks around the edge of the house appear to have been added after the construction of the house. Basalt blocks which acted as piles were

32 (top). Rubbish, old and new, exposed under G4 once the floor had been lifted. Scale = 1 m.

33 (bottom). The cottage footprint excavation in progress, showing the exposed fireplace and chimney foundation, bricks and rubble under the floor in the area around the back door, and scoria rubble under the floor of G3. Scales = 1 m.



initially left in place and worked around, but at the end of the excavation as they were removed many were found to be resting on mixed soil and artefacts, indicating that they had been added later. The postholes for the main puriri house piles were arranged in five regular rows running east-west (Figure 31).

The largest feature in the footprint of the cottage was the fireplace and chimney foundation. The north part of the foundation was partly damaged and destroyed during removal of the cottage and so only the southern half was investigated in detail. A large amount of oyster shell and other midden material was present around the fireplace foundation and as the investigation proceeded it became evident that some of this material at least had been used in the construction of the chimney foundation. This measured 1500 mm wide x 450 mm high and had originally been 2200 mm long, and was constructed of irregular scoria rocks partly set into the natural subsoil, with smaller stones and rubble in between and then shell midden used as levelling fill and the top plastered over with a concrete skim. Midden from the centre of the fireplace was capped by the plaster layer and a bulk sample was taken for analysis. The fireplace in the cottage had been a back-to-back construction with brick open fireplaces in G1 and G4 sharing a brick chimney.

As the fireplace foundation was deconstructed evidence of rat disturbance continued right down to the base, with some burrows even undermining the bottom layer of stones. The larger stones were not mortared together but were simply set into a shallow footing with smaller stones, soil and midden used as packing in between. On the north side of the foundation, which had been disturbed when the cottage was moved, two postholes were present that had been dug, then filled back in and the foundation built over the top. The fireplace appears to be original as there is no evidence of later rebuilding or substantial repair.

#### *Features around the cottage*

Only narrow strips of land remained on the north and east sides between the cottage and the property boundary, and on the south side between the cottage and the modern garage. The area on the west side of the cottage was investigated with the yard area, discussed below. On the north side of the cottage footprint a small area of scoria stones was exposed on the west side of the front doorway and a sparse scattering of shell midden on the east side. This surface and fill was recorded as Feature 15 and a bulk sample taken of the shell midden for analysis. While neither the stone or shell layer were very substantial they did run parallel to the cottage and appear to have been a deliberately laid path. Small finds from this surface such as two 1941 halfpenny coins, a slate pencil and a manganese glass jar fragment indicate that the surface was contemporary with occupation of the cottage. A single posthole on the east side of the doorway may have been to hang an out-



34 (top). Fireplace and chimney base showing the plastered hearth surface with layer of levelling midden below on a foundation of irregular scoria rocks. Scales = 1 m and 0.5 m.

35 (bottom). The cottage footprint after excavation. Scales = 1 m.



door kerosene lamp from, such as the one that was found in Feature 63, discussed below.

On the east side of the house the surface was scattered with fragments of shell and the occasional small artefact, but nothing that suggested any formal paths. Towards the south east corner of the cottage the fill became deeper and appeared to have been built up with mixed scoria, soil and shell midden. This feature continued around the back of the cottage to the back doorway. On the west side of the back doorway another similar layer of fill but with more artefacts and up to 220 mm deep was present. Artefacts from this layer including an Alfred Meakin tureen, in the same pattern as a dinner plate found from the underfloor deposit, which would appear to date from the 1930s.

After the excavation of the cottage footprint and fill layers was complete, the strips around the outside of the cottage were cut down by hydraulic excavator to check for any underlying features. On the east side two features, a sump and pit, were revealed and on the west side a rubbish pit. Feature 63, the sump, was exposed as a rock filled rectangular pit with a stack of six bricks and a kerosene lamp lying on the surface at the south end. The bricks were of the same type as the chimney and the kerosene lamp was a box type designed for stationary outdoor use. The sump measured 1050 x 680 mm on the surface and the base was stepped down with the south side 500 mm deep and the north end excavated to a depth of 750 mm. The fill consisted of large scoria rocks and clean soil, with the occasional artefact, including a metal ploughshare tip. The sump is unlikely to have served to drain storm water away from a down pipe, as it was located centrally outside of the east wall, and its original function is unknown.

To the south of the sump was a small oval shaped pit measuring 630 x 430 mm, which was truncated somewhat by the digger during the final scrape down and upon excavation had a remaining depth of just 30 mm. The pit was filled with shell midden, including fragments of ceramic and glass, and a bulk sample was retained for analysis. Around the back of the cottage on the west side of the doorway a roughly circular rubbish pit measuring 560 x 480 mm was revealed beneath the fill layer (Feature 56). The pit contained fragments of tin cans, glassware and ceramic in a very dark and damp soil matrix and measured 520 mm deep.

#### *The driveway and yard*

The surface of the driveway was gravel up to 250 mm deep, with a base course below this of mixed scoria 200 mm deep. Few features were revealed beneath the driveway with just a single rubbish pit and two postholes possibly relating to the occupation of the cottage. All of the other features related to drainage works from the 1950s house, and one other small rubbish pit was modern and contained plastic and polystyrene. Feature 4 was a rectangular rubbish pit 800 x 750 mm x 450 mm deep that contained a 1930s or 40s milk bottle and a moulded alcohol bottle base and probably relates to the cottage occupation. One posthole had the base of a puriri post in the base and another contained the base of a square sawn hardwood post. Neither posthole was related to a larger structure and their date and function is unknown.

In the yard area topsoil stripping revealed that the area had been cut down and levelled in the past, possibly when the earthworks for the modern garage were carried out. No topsoil

36. Feature 63 before excavation with pile of bricks and kerosene lamp on the south side. Scale = 1 m.



was present and the natural subsoil was buried under a layer of redeposited subsoil up to 300 mm thick. The few features included a ceramic drain, which continued from the driveway area, a modern PVC storm water drain running from the north west corner of the garage and two unrelated rectangular postholes.

## MATERIAL CULTURE

A sizeable material culture assemblage was collected, mostly from beneath the cottage but with significant amounts from several rubbish pits around the house. This is analysed here by category.

### Glassware

The date of occupation of the Tawhiao Cottage (ca 1890–1947) spans the transition from mould-blown, hand-finished glass containers with cork closures, to fully machine-made containers, typically with crown seal or screwtop closures. With increasing mechanisation in the glassware industry a number of technical innovations were introduced over a relatively short period of time in the early 20th century. This allows for individual items to be dated with greater precision than bottles from some 19th century contexts, where the forms and methods of manufacture remained relatively unchanged for decades. Even at the end of the 19th century the majority of glassware containers imported into New Zealand were manufactured in Britain, which meant that bottles were costly items and intended to be reused. By the late 19th century Australia had a flourishing glassworks industry, with plants such as the Melbourne Glass Bottle Works established in 1872, and more of New Zealand's bottles began to be imported from this source. It was not until 1922, however, when the Australian Glass Manufacturers company established a plant at Penrose, Auckland, that glass containers were made on a viable commercial basis in New Zealand (Tasker 1989).

The predominance of the Australian market in supplying bottles to New Zealand companies is well represented in the Tawhiao Cottage assemblage. Of the earlier mould-blown bottles many are marked on the base with an 'M' standing for the Melbourne Glass Bottle Works or 'AGM' standing for Australian Glass Manufacturers. These bottles and jars are in aqua coloured glass and are still mould-blown, rather than machine-made. The use of a capital 'M' by the Melbourne Glass Bottle Works dates to 1900–1915, after which time the company became part of the Australian Glass Manufacturers group ([www.aussiebottledigger.com.au/](http://www.aussiebottledigger.com.au/)). For the period from the 1920s–1947, virtually all of the glassware from the Tawhiao Cottage is machine-made, mainly in clear glass, and is marked with some form of AGM mark. When it was established in 1922 the AGM plant in Penrose only had one furnace for amber or brown coloured glass, and so aqua or clear coloured glass products still had to be imported from Australia or elsewhere. In 1927 a second furnace was added to the Penrose plant for clear glass containers and most of the bottles bearing the AGM mark from this date could have been produced in New Zealand. The use of the AGM monogram mark (a large A with the G and M inside) has been dated for AGM's Australian factories to the period 1932–1948 ([www.aussiebottledigger.com.au/](http://www.aussiebottledigger.com.au/)) and presumably the same or similar marks were used at the Penrose plant. This mark was used again in the 1960s, but machine made glassware of this era is diagnostically quite different from that produced up to World War II.

### *Alcohol*

Relatively few glass bottles that could specifically be said to have contained alcoholic products were recovered. The earlier bottle types that are likely to have con-



37. Black beer shape bottle.

tained alcohol are champagne shape ring-seal bottles in green glass and tall black beer shape bottles in olive green glass. In the late 19th and early 20th century ring-seal bottles were used for a variety of products including beer, wine, spirits and aerated water. Fragments representing a minimum number of five champagne shape ring-seals were found under the house along with one near complete black beer bottle 290 mm high with a base diameter of 72 mm and fragments of three other similar bottles. Both the ring-seal and black beer type bottles are mould-blown with tool finished tops. Fragments of at least three 'Udolpho Wolfe's Aromatic Schnapps' bottles were also found under the house, along with fragments of one case gin type bottle and two aqua glass whisky or spirit flasks. Like the ring-seals and black beers these bottles are also mould-blown containers. A fragment of a metal bottle top seal embossed '... SCHNAPPS' from Square D3 is probably from an Udolpho Wolfe's bottle. Machine-made glassware did not become common until after the First World War and so the mould-blown bottles probably date ca 1890s–1910s.

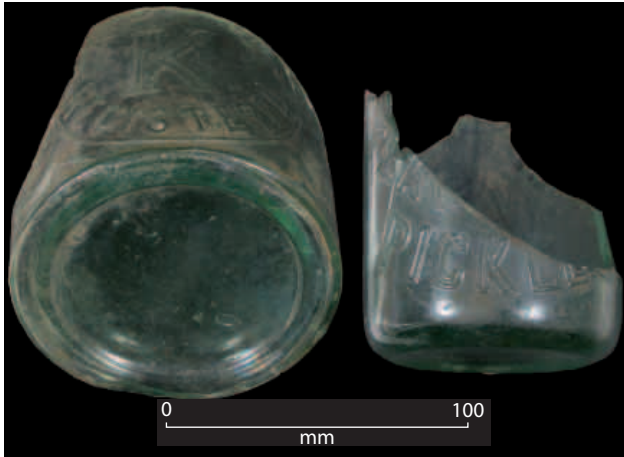
Later alcohol bottles are almost exclusively in the form of amber or brown, machine-made, crown seal beer bottles. All of the examples recovered from the underfloor deposit are long-neck 'ABC' quart size bottles and date from the 1920s to the 1940s. Fragments of a John de Kuyper and Son, Rotterdam, gin bottle were also found in Feature 56 and which most likely dates to the 1920s or 1930s.

### Condiments

Most glass bottles and jars are generic containers, where without the aid of the original label, it is virtually impossible to state what the original contents may have been. It should also be noted that just as glass containers replaced earlier metal or ceramic vessels, glass has in turn been replaced for many products today by cheaper plastic and foil packaging. In 19th century contexts many bottle forms are specific to contents, with some bottle designs even being able to be attributed to individual manufacturers. By the end of the century, however, and especially in the early 20th century with the increasing use of mechanisation in the glassware industry, mass production of glass containers resulted in more generic bottle forms and the standardisation of sizes and measures. The condiment bottles and jars from the underfloor deposit fall neatly into two groups: mould-blown containers with tool finished tops dating up to

Category and type	MNV
<b>Alcohol</b>	
crown seal beer	6
black beer	4
ring-seal	5
spirit flask	3
gin/schnapps	6
miscellaneous	3
subtotal	27
<b>Aerated Water</b>	
Codd patent	3
crown-seal/other	11
subtotal	14
<b>Condiments</b>	
coffee & chicory	1
salad/olive oil	2
sauce	2
pickle	3
jar	12
milk bottle	3
miscellaneous	3
subtotal	26
<b>Pharmaceutical</b>	
Baxter's	1
Lane's	1
Wood's	1
castor oil	1
jar	5
vial	5
perfume	2
miscellaneous	18
subtotal	34
<b>Household and miscellany</b>	
ink	4
jar	15
lamp chimney	1
bowl/dish	5
tumbler	4
stemmed glass	1
clear glass	17
aqua glass	2
green glass	3
brown/amber glass	2
subtotal	54
Total	155

Table 1. Summary of glassware (all contexts).



38. Mould blown condiment bottles: Kirkpatrick jam jar and Hayward Bros pickle bottle.

around 1920, and machine-made containers dating from around the time of World War I onwards. There is a period of overlap between the introduction of bottle making machinery and the continuation of mould-blown technology, and so it is not possible to date all items precisely in this period.

#### Mould-blown containers

Products represented by mould-blown containers include jam or preserve jars, pickles, salt, salad oil, sauce and vinegar. In the mid-19th century virtually all of these packaged products were imported from Britain, but by the end of the century several New Zealand based companies had become established to supply the local market. New Zealand brands include the base of a Kirkpatrick 'K Brand' jam jar and fragments of two Hayward Bros 'Flag Brand' pickle jars. All three items are in aqua glass and were produced by the Melbourne Glass Bottle Works (1900–1915), as indicated by the 'M' on the base. Samuel Kirkpatrick established a jam factory and cannery in Nelson in 1881 ([www.teara.govt.nz](http://www.teara.govt.nz)) and the business continued through to the mid-20th century. George Hayward and Joseph Hayward established their pickle and sauce manufactory in Christchurch in 1890 (*The Cyclopaedia of New Zealand* 1903).

In the late 19th century salad oil, which was essentially olive oil used at the table as a dressing, came in highly decorative aqua glass bottles, and one fragment from a bottle with a fluted body is probably from such a bottle. Another similarly decorated body fragment, but from a much larger bottle, possibly originally contained vinegar.

Sauce bottles are represented by a whole aqua 'Lea & Perrins' brand Worcestershire sauce bottle and the base of a 'Holbrook's' brand bottle. The Lea and Perrins bottle is marked on the base 'K/769' and the Holbrook's bottle with a 'J' in a circle. The Lea and Perrins bottle was most likely produced by the Kinghorn Bottle Co, Fifeshire, Scotland, who used a 'K' as their mark from 1907–1920 (Toulouse 1971: 299). The maker of the Holbrook's bottle has not been identified.

Items which fit into the pre-1920 category include clear containers with an amethyst tint to the glass, which indicates that manganese has been added to the glass. Manganese was commonly used as a decolourising agent to produce clear glass containers from the 1880s up to World War I. The main supply of manganese was from Germany and as stocks ran out, alternative agents, which ultimately proved cheaper and more readily available, had replaced the use of manganese by the end of the war. Fragments from preserving type jars were found in the under-floor deposit and the rim of a moulded jar in the fill layer outside the front door and an early machine-made rim from Feature 56, which was produced by a semi-automatic machine and probably dates to the period 1910–1918.

#### Machine-made containers

Of the later machine-made glassware few items could be identified as having contained condiments. Two jars that contained foodstuffs are an octagonal shaped clear jar base embossed 'PROPERTY OF SANITARIUM HEALTH FOOD CO' and a small milk-glass jar just 50 mm high and 40 mm in diameter embossed on the base 'PROPERTY OF MARMITE COMPANY.' Both vessels are marked with

an 'AGM' monogram dating 1932–1948. Two other condiment bottles are a clear base 43 mm in diameter with a partial paper label 'OLIVE/OIL' and a whole clear bottle 150 mm high and 45 mm in diameter with a part label. Like the jars the bottles bear the 'AGM' monogram on the base dating them 1932–1948. One other whole clear machine-made, screwtop bottle 205 mm high with a square body 47 mm wide is embossed 'ESSENCE COFFEE & CHICORY' and most likely dates from the 1930s or later.

Milk was another product increasingly packaged in glass bottles from the early to mid-20th century and fragments of at least two clear glass, machine-made, pint sized bottles embossed 'MILK STATION' were recovered from the underfloor deposit. Fragments of one other larger quart sized bottle were found in a rubbish pit under the present driveway (Feature 4). The partially preserved embossing reads: 'THIS BOTT... ..HE PROPERTY OF/ NZ CO... DAIRY COY Ltd.' The base has a valve mark on it indicating machine manufacture and was probably produced in the late 1930s or early 1940s. The top of the bottle has a recess for a cardboard tab, which was largely replaced by the more hygienic foil top by the mid-20th century.

Small decorative clear glass jars probably contained products such as meat paste. The designs of such bottles were often registered and one top fragment 50 mm in diameter is embossed under the rim 'REGD NO 465660', which dates to the year 1905. One other whole jar 90 mm high with a hexagonal body 40 mm wide has the embossed number '684051', dating to 1921. The registration dates only provide a date for the year the design was registered and some designs may have remained in production for several years.

### *Pharmaceutical*

Glass containers that may have contained pharmaceutical products range from small pill bottles and vials to rectangular or oval sectioned bottles for cough medicines and other products. Many of these bottles have carefully finished tops designed to pour out exact measures or for the contents to be consumed directly from the bottle. Items likely to have contained pharmaceutical products in the assemblage include bottles in brown or amber glass, aqua and clear glass, and represent both mould-blown bottles and machine-made examples. Of the few embossed pharmaceutical bottles one whole example in aqua glass 130 mm high with a rectangular base 48 x 25 mm from Square C1 is embossed on one side 'WOODS'/GREAT PEPPERMINT CURE/FOR COUGHS & COLDS', and on the other side part of the original paper label is preserved. The bottle is mould blown with a tool finished top. Fragments of a cardboard 'Woods Cure' packet were also recovered from Square E5. Another whole aqua bottle 200 mm high with a rectangular base 62 x 32 mm from around the chimney base is embossed 'LANE'S EMULSION//LUNG-HEALER//BODY BUILDER.' The bottle is an early machine made example with a valve mark on the base and probably dates to around 1920. Lane's emulsion was developed by Oamaru chemist Edward Lane in 1898 and consisted mainly of cod liver oil along with several other ingredients and continued in production until 1984 ([www.otagomuseum.govt.nz](http://www.otagomuseum.govt.nz)). A whole clear bottle 140 mm high with a rectan-



39. Machine-made condiment bottles: left, miscellaneous with part label; middle, meat paste jar; right, olive oil with part label.



40. Pharmaceutical bottles: left, Lane's Emulsion; middle, plain pharmaceutical type bottle; right, Wood's Cure bottle with part label (inset, Wood's Cure packet fragment).

gular base 50 x 33 mm embossed 'BAXTER'S/LUNG PRESERVER/CHRISTCHURCH', and a whole brown glass 'Kruschens Salts' jar 93 mm high with a base 50 mm in diameter, are later machine-made examples dating to the 1920s or 1930s. J. Baxter first developed his formula for coughs and respiratory ailments in his pharmacy in Christchurch and by the 1880s was advertising nationwide. Baxter's lung preserver, Woods' cure and Kruschen salts are products still available today.

#### *Aerated Water Manufacturers*

A number of aerated water or soft drink bottles were recovered from the underfloor excavation, mainly representing Auckland aerated water manufacturers. Information on the periods of manufacture for individual companies is derived from Robson (1995). The bottles range from mould-blown aqua glass Codd Patent bottles dating to the period 1890–1920, through to fully machine-made crown seal or screwtop bottles dating 1920–1940s.

#### Auckland manufacturers

- Cyprian Nicholls, Ponsonby Road, 1890–1906

One fragment from an aqua glass Codd Patent bottle was identified as being a Nicholls bottle by the partial embossing 'C.N...' and by the fragment bearing part of the distinctive Masonic trade mark symbol employed by this firm. No top or base could be attributed to the fragment but a Codd base from Square G5 with the partial embossing '...ADE MA.../...CKLAND' and the makers mark 'KILNER BROS/MAKERS/LONDON' may possibly be from the same bottle.

- Grey and Menzies, Eden Crescent, 1902–1964

Although this company was formed by the merger of John Grey and Sons with Robert Menzies in 1902 the one clear glass, machine-made, bottle base in the assemblage from this firm dates to a much later period. Around the bottom of the body the base fragment is embossed 'THIS BOTTLE IS THE PROPERTY OF GREY & MENZIES AUCKLAND' and on the base is conveniently marked with the year of manufacture, 1945, and 'M/N.Z.'

- Waiwai Mineral Water Company Ltd, Great North Road, Ponsonby, 1903–1969

The Waiwai Mineral Water Company was established in Stanley Street in 1903 before later moving to larger premises in Great North Road around 1921. Three bottles from this manufacturer were recovered, all dating to the later Great North Road period of production. One whole clear glass, machine-made, crown seal bottle 225 mm high with a base diameter of 60 mm was embossed with the 'Y-Y' trade mark and around the bottom of the body 'THIS BOTTLE IS THE PROPERTY OF WAI WAI LTD AUCKLAND.' The trade mark is repeated on the base along

with an 'AGM' monogram dating 1932–1948. One similarly embossed base fragment from another bottle of the same size was also recovered. The other bottle was a whole example 270 mm high with a base diameter of 70 mm and a screwtop finish. The embossing is the same as for the crown seal bottle and is marked on the base with an 'AGM' monogram dating 1932–1948. By the 1930s Waiwai, along with Grey and Menzies and Innes, were the dominant players in the Auckland aerated water industry, with many of the smaller factories having been bought out or ceased business.

- A.C. Scott and Company, Ponsonby Road, 1906–1920

One aqua glass Codd Patent bottle base from Square F6 carried the embossing '...KLAND' with the makers mark 'J.K. & S. 4034' on the reverse and a large 'S' on the base, which identifies it as having been produced for A.C. Scott and Co. The company was purchased by Waiwai in 1920 as part of an expansion of their business.

- Westburys Ltd, Federal Street, 1916–1935

Top and base fragments of an aqua glass crown seal bottle from Square A6 had the embossing 'XLO' on the base, which was the trade mark used by Westbury and Sons, Auckland. Westburys were bought out by Waiwai in 1935.

- C.L. Innes and Company, Khyber Pass Road, 1924–1964

C.L. Innes and Co was established in Hamilton in 1899 before later opening a factory in Auckland in 1924. Two clear glass, machine-made, crown seal bottles are present in the assemblage, with the complete example measuring 225 mm high with a base 60 mm in diameter. The bottle is embossed with the C.L. Innes trade mark and around the bottom of the body: 'THIS REGISTERED TRADE MARKED BOTTLE IS THE PROPERTY OF C L INNES & Co Ltd AUCKLAND.' A base fragment from another bottle is similarly embossed but with the location being Hamilton, rather than Auckland. As bottles produced for the two factories were owned by the same company it is likely that bottles could be reused at either plant. Both bottles are marked on the base 'INNES' and the Hamilton example has an 'AGM' monogram dating 1932–1948.

- William Handley, Wellington Street, 1890–1912

No glass bottles were recovered from this manufacturer but one vulcanite stopper from an internally threaded bottle found in Square B2 is embossed 'Wm. HANDLEY.AUCKLAND.' The internal thread bottle was a relatively short-lived innovation in the aerated water industry and in any case the business of William Handley was bought out by Waiwai in 1912.

Manufacturers outside of Auckland

- Waipuna Aerated Water Company, Cambridge, 1878–1928

Three fragments from an aqua glass Codd Patent bottle were found embossed '...IPUNA CORDIAL FAC...' identifying it as having come from the Waipuna Aerated Water Co, Cambridge. Bottles were embossed to mark them as the property of individual manufacturers but it is not impossible that empty bottles could have been refilled and then on sold by other factories, especially when they had circulated out of their area of origin.



- Star Aerated Water Company, Petone, 1931–1969

One fragment from a clear glass, machine-made, soft drink bottle carried the embossing ‘...ATER Co/...ONE.’ The most likely manufacturer is the Star Aerated Water Co, Petone.

#### *Household products and miscellany*

Other products that came in glass containers include cleaning fluids, oil, and ink. Earlier containers in this category include a whole octagonal ink bottle in aqua glass 60 mm high with a base 40 mm wide and fragments of two others from the underfloor deposit. The bottles are mould blown and have burst or shear tops, indicating a manufacture date prior to about 1920. A later ink bottle from Square A2 is a clear glass bottle 48 mm high and 40 mm in diameter embossed ‘PROPERTY OF STEPHENS INKS NZ.’ This example has an ‘AGM’ monogram on the base and dates 1932–1948. The only other ink bottle present is a ceramic stoneware penny ink with the top broken off.

Table glass is represented by several moulded dishes and fragments of one stemmed drinking glass and four plain tumblers. One complete dish found in two halves from Squares C1 and D1, measures 150 mm in diameter with a domed lid and may have served as a butter dish or something similar.

One miscellaneous item of note is a clear glass, machine-made, bottle base 63 mm in diameter with Chinese characters embossed on the base. Along with two Chinese ceramic items discussed below this bottle may relate to Chinese market gardeners who had established themselves in the Mangere area by the 1930s but it is likely that the occupants of the cottage may have occasionally used Chinese products.

Several fragments and a few nearly complete square or rectangular pieces of heavy plate glass 7.5 mm thick with chamfered edges are likely to be from some form of box lamp. One such box lamp was found outside the east side of the house on the surface of Feature 63. The lamp consisted of a copper alloy or brass metal box measuring 115 x 100 mm on the side and 95 x 100 mm on the ends, and a glass pane on one side measuring 125 x 100 mm x 7.5 mm thick. Flat-wick kerosene lamps in a metal box were designed to be a stationary outdoor lamp and were not intended to be portable ([en.wikipedia.org/wiki/Kerosene\\_lamp](http://en.wikipedia.org/wiki/Kerosene_lamp)). One side of the lamp is missing and it is likely that there was glass pane on each side, which would mean

that at least two other lamps of this design are represented by lamp glass from the underfloor deposit. A lamp chimney from a more conventional portable kerosene lantern with a mantle wick was also found in fragments around the chimney base (Feature 16). The lamp chimney is marked ‘FIRE PROOF/MADE IN JAPAN’ with a man seated on a camel in a circle in the centre. The use of ‘Made in Japan’ suggests a manufacture date after 1921. During the occupation of the cottage up to the 1940s the building did not have any form of electrical services and so the only form of lighting would have been candles or kerosene lamps. One fragment of a large rectangular kerosene tin from the underfloor deposit further indicates that kerosene lamps were one source of lighting.

41. Moulded glass dishes and bowls.

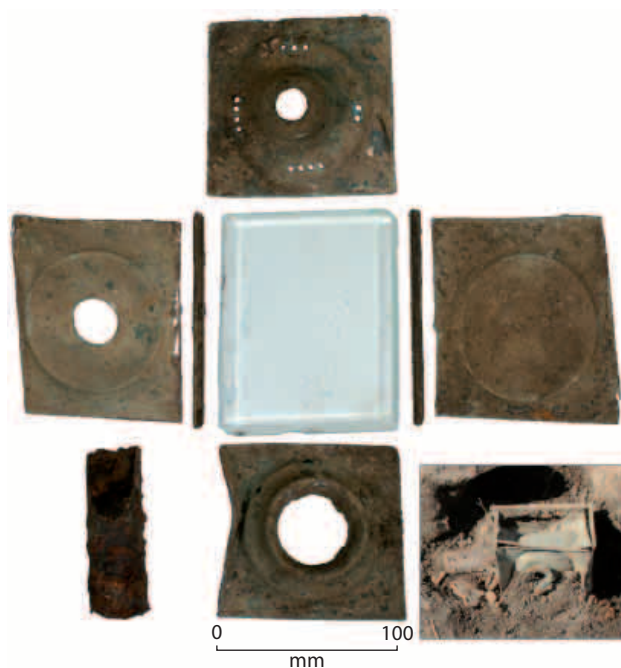


Other glassware is mainly represented by fragments of window glass distributed across the underfloor deposit and found in most of the other features and contexts excavated. Window glass was weighed and discarded with a total of 19.6 kg from all contexts, with 18.5 kg of this coming from the underfloor deposit.

### Ceramics

The ceramics from the Tawhiao Cottage derive mainly from the underfloor deposit and are represented almost exclusively by tableware in the form of cups, saucers and a lesser number of plates. In total 478 fragments of ceramic were analysed representing a minimum number of 107 vessels. The late date of the occupation means that there are virtually no transfer printed wares, which is the most common decoration type in 19th century contexts in New Zealand from the 1840s–1880s and none of the common patterns, such as Willow or Asiatic Pheasants, are present. One of just nine transfer printed vessels is a plate printed in green backmarked ‘...RUIITS/H & K.’ The pattern name in this case is Fruits and the manufacturer is Hollinshead and Kirkham, with the mark dating up to 1900.

The most common decorative technique is gilt or gold hairlining, with half of the cups and saucers decorated in this fashion. One of the saucers also has a central ‘tealeaf’ motif which is commonly found in association with gold hairlining. All of the printed or painted designs are in multiple colours, apart from the ‘Blair’s China’ saucer which is decorated with a printed design in light green. The teapot is represented by a red-bodied earthenware lid decorated with a black slip from Square E6 and body fragments of what is probably the same teapot from Features 56 and 65. The prevalence of decorative techniques other than transfer printing along with the few manufacturers marks (discussed below) confirms the largely 20th century origin of much of the ceramic assemblage.



42. Kerosene lamp from Feature 63. Inset, the lamp during excavation.

Vessel	Whiteware	Semi-vitreous	Porcelain	Other	MNV
Cup	13	20	3		36
Saucer	8	30			38
Plate	13	1			14
Side Plate	1	1			2
Teapot				1	1
Eggcup		1			1
Tureen	1				1
Dish		2	1		3
Total	36	55	4	1	96

Table 2. Summary of ceramic tableware.

Vessel	Gold hairlined	Printed/painted	Transfer printed	Moulded	Undecorated/other	Total
Cup	13	10	3		10	36
Saucer	21	13	1		3	38
Plate		7	5	3	1	16
Total	34	30	9	3	14	90

Table 3. Summary of decoration type for cups, saucers and plates.



43. Transfer printed ceramics: top, Hollinshead and Kirkham 'Fruits' plate; middle-left, green side plate; middle-right, blue/grey cup and saucer; bottom, brown plate.

Other ceramic items of note include fragments of a fake egg and two items of Chinese manufacture – a ginger jar and a whisky jar. Ceramic eggs or suitably shaped stones painted white, were placed in nesting boxes to encourage birds to lay eggs of their own and strongly suggests that the occupants of the cottage kept hens, as was the case at the Westney and Scott farmsteads, Mangere, where similar items were found (Campbell and Furey 2007; Furey 2011). While Chinese ginger jars can be found on both European and Chinese sites in New Zealand, the more unusual item is the *ng ka py* whisky jar, with 34 fragments found in several squares across the underfloor deposit. The jar is decorated with a thick brown slip glaze and has the distinctive flared out top, which is of a form unchanged from the whisky jars



44. Other ceramics: top, printed Alfred Meakin plate and tureen fragment in same pattern; middle-left, printed Alfred Meakin side plate; middle-right, printed Blair's China saucer; bottom, moulded plate with part registration number and examples of edgebanded/hair-lined decoration.

found on Chinese gold mining sites in Otago dating from the 1860s. One possible source for the whisky jar, ginger jar and a glass jar or bottle with Chinese characters embossed on the base is from the Chinese community who established market gardens in the Mangere area from the 1930s. Alternatively, the occupants of the cottage may have on occasion used Chinese products; the point of origin of an artefact often bears little relationship to the ethnicity of the end-user. Aerial photographs from 1940 show the sections adjacent to Tawhiao Cottage, back towards Mangere Mountain and to the south, developed as market garden plots.



45. Japanese ceramics: top-left, 'Made in Nippon' saucer with heron design; top-right, printed and handpainted teacup; middle-right, 'Made in Japan' printed dish; bottom-left, printed and handpainted eggcup; bottom-right, 'Koshitsu Toki Co' moulded plate.

Vessel	Whiteware	Semi-vitreous	Porcelain	Other	MNV
Chinese whisky jar				1	1
Chinese ginger jar				1	1
Baking Dish				2	2
Ashtray	1				1
Ceramic egg	1				1
Jar/Bottle				1	1
Jug	1				1
Miniature cup		1			1
Ink bottle				1	1
Unidentified			1		1
Total	3	1	1	6	11

Table 4. Summary of non-tableware ceramics.

#### Ceramic manufacturers

- Blair and Co; Blair's Ltd; Blair's (Longton) Ltd, Longton, Staffordshire, 1880–1930 (Godden 1991: 79)

Fragments of a semi-vitreous body saucer decorated in a green printed design were recovered from several squares in the underfloor deposit. One fragment from Square B1 was stamped on the base 'BLAIRS/CHINA/ENGLAND.' Godden dates this particular mark 1900–1930. Other examples of Blair's china have been previ-

ously recovered around Auckland, including from the Scott farmstead site, Ihumatao, where a cup base was stamped with the same mark (Furey 2011: 88).

- E. Brain and Co, Fenton, Staffordshire, 1903–1963 (Godden 1991: 96–97)

An undecorated semi-vitreous saucer 140 mm in diameter found in fragments in Squares D1 and E5 has the stamped mark 'FOLEY CHINA/MADE IN ENGLAND.' Foley China was a trade name used by E. Brain and Co and the use of 'Made in England' dates the saucer to ca 1913+.

- Crown Lynn, New Lynn, Auckland, New Zealand, ca 1940s–1974

Fragments of a plain white plate found just under the house in Square G7 carried a black stamped backmark with a crown and below this 'MADE IN N.Z.' in a circular fashion. Crown Lynn did not start making domestic pottery until the mid-1940s and this particular mark would appear to date to later in the 1950s. Clearly this item post-dates the permanent occupation of the cottage and can be considered as intrusive.

- Thomas Forester and Son(s) (Ltd), Longton, Staffordshire, 1884–1959

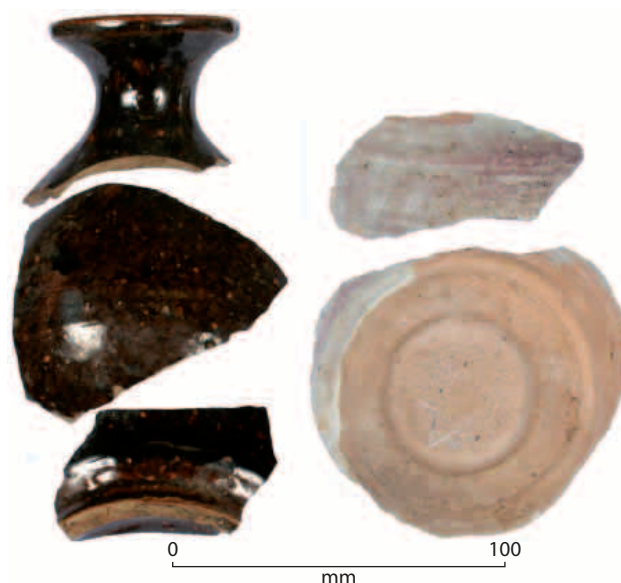
Two cup bases from two different squares from the underfloor deposit were stamped identically in black 'PHOENIX WARE/MADE/IN/ENGLAND/T.F. & S. LTD.' Phoenix ware was a trade mark used by this firm and the style of the mark dates to ca 1910–1959, although it should be noted that the use of 'Made in England' as opposed to 'England' is more common from the 1920s onwards.

- Hollinshead and Kirkham (Ltd), Burslem and Tunstall, Staffordshire, 1870–1956

Fragments of a green transfer printed plate from Square D3 were found back-marked '...RUIITS/H & K.' The pattern name would appear to simply be 'Fruits' and the manufacturer is Hollinshead and Kirkham. The style of the mark dates up to 1900, meaning that this plate is one of the few items in the assemblage securely dated to having been manufactured in the 19th century.

- Alfred Meakin, Tunstall, Staffordshire, 1875– (Godden 1991: 425–426)

At least three vessels in the assemblage were produced at the pottery of Alfred Meakin, a dinner plate and tureen in the same printed pattern and a side plate in a different printed pattern. The fragment of side plate from Square A5 (under-floor), decorated with a polychrome print, is backmarked '...ED MEAKIN ...' A tureen found in fill on the west side of the back door outside of the house footprint (Feature 56) carries the full stamped mark 'ALFRED MEAKIN/ENGLAND' and a dinner plate found in fragments from the underfloor deposit in the same pattern carries part of the same mark. All three marks are stamped in green ink and date



46. Chinese ng ka py whisky jar and ginger jar fragments.

to ca 1907+, although it should be noted that the marks do not include the term 'Ltd' and may date as late as ca 1930+.

- Japanese ceramics

Several ceramic items from the underfloor assemblage carry backmarks indicating that they are of Japanese manufacture. Two are marked with Japan as the country of origin, two with Nippon indicating the country of origin, one with the trade name 'Manto Ware', and a plate with a mark from the 'Koshitsu Toki Co, Japan.' All of these are 20th century marks known to have been used by Japanese potteries on wares produced for export to Western countries. The use of the word 'Nippon' to indicate that an item had been produced in Japan was supplanted by the use of 'Japan' or 'Made in Japan' after 1921 in compliance with United States tariff laws. The only mark which can be attributed to a particular pottery is on a white-ware plate with relief moulded decoration backmarked: 'IMPERIAL IRONSTONE CHINA/NIPPON KOSHITSU TOKI Co/JAPAN.'

- Miscellaneous marks

One dinner plate with a light yellow body and relief moulded decoration from Feature 56 has 'Rd 13276' stamped on the back in brown ink. The registration number appears to be incomplete, as all such numbers from 1889 onwards should be at least six digits and it is possible that the first digit may have been omitted. The style of the decoration and the form of the plate would appear to date more to the early 1930s. A tureen from the same feature has an Alfred Meakin mark which may also date to this period.

### Metal tins and containers

Metal containers fall into two basic categories: hermetically sealed, tin-plated steel canisters typically used for preserved foodstuffs; and metal boxes used for a range of different products such as tobacco and matches. After glassware and ceramics, tin cans form the next most substantial component of the assemblage.

The first commercial canning enterprise was established by an English firm in 1812, but despite some early innovations the British preserved food canning industry remained insignificant until after World War I (Ritchie and Bedford 1985: 97). The main technical improvements were developed in America with notable inventions being the tapered, rectangular can developed for meat products in Chicago in 1875 and the use of double interlocking seams, eliminating the reliance on solder to seal joints, in 1898 (Rock 2000: 279). The solderless 'sanitary can' came into production in 1904 and soon became the mainstay of the canning industry (Rock 2000: 279).

Various other innovations focused on the filling method for cans and can be useful for dating assemblages. The earliest type known as 'hole-and-cap' simply had a hole in one end that was closed by a cap, which was soldered in place. This method was quickly supplanted by the 'hole-in-cap' type which introduced a small pinhole in the cap which allowed the can to be vented before the pinhole was sealed with a drop of solder, thus greatly reducing the rate of can failure. After 1900 'hole-in-top' cans were used which simply had a pinhole or matchstick filler hole in one end (Rock 2000: 279). Other can closure types include cans with flanged or 'push-on' lids that were commonly used for dry products such as cocoa and baking powder and key-wind opening meat cans. The first key-wind opened can was developed by Edwin Norton of Chicago in 1895 (Rock 2000: 279).

Despite the increased use of mechanisation in the production of tin cans, especially in America, many local industries still produced their own cans. As early as 1848 two Australian firms were canning meat for export and in New Zealand a factory at Green Island, near Dunedin, was packing meat in cans made on site from 1871 (Ritchie and Bedford 1985: 98).

The form of tin cans and boxes is also useful, as while paper or printed labels rarely survive in archaeological contexts, the shape of the container is often a good indicator as to its original purpose. Meat cans tend to be rectangular tapering cans or squat cylindrical cans, fish in larger oval cans or small rectangular ‘sardine’ type cans and more general foodstuffs in standard cylindrical cans. Tin cans were also used for a variety of products other than foodstuffs and it is important to look at the form, manufacture and closure of a tin can in determining its likely use. From the underfloor deposit the preservation of most tin cans was very good allowing for each element to be inspected and recorded, but from other features only fragments of cans were preserved.

Among the cans that most likely contained food products, cylindrical cans are the most common and can be identified by being hermetically sealed, as opposed to other push-on or push-in type lid closures. Many of the cylindrical cans in the miscellaneous category in Table 5 have closures of this type and would have been equally suited for dried food products such as baking powder or cocoa, or products such as golden syrup, or for other non-food products. The rectangular food cans appear to be mainly from products such as corned beef, in large tapering cans and sardines in small shallow rectangular cans.

The non-food cans include one square tin 90 mm high and 40 mm wide with a shaker dispenser top with a partially preserved paper label identifying it as a Johnson’s baby powder tin. Kerosene tins are large rectangular tins with wire handles on the sides and one fragment with a wire handle 70 x 30 mm found in Square E5 is likely to be from such a tin. One push-on type lid 90 mm in diameter from Square B5 has a partially preserved printed label ‘DO.../... POLISH’ and is most likely from a Dot’s furniture polish tin, a product still marketed today.

Category	MNV
Food cans	
cylindrical cans	23
rectangular cans	13
subtotal	36
Non-food cans	
tobacco tin	13
match box	3
kerosene tin	1
baby powder	1
cylindrical cans	4
rectangular tins	2
subtotal	24
Miscellany	
cylindrical cans	22
subtotal	22
Total	82

Table 5. Summary of metal tins and containers (all contexts).





47 (top). Tin cans: left, 'hole-in-cap' rectangular tapered preserved meat can; right, cylindrical 'hole-in-top' food can (note the soldered seams on both cans).

48 (bottom). Tobacco tin from the underfloor deposit containing chalks and a hairclip.

No labels are preserved on the tobacco tins but the whole examples are in two sizes, 100 x 80 x 20 mm and 110 x 80 x 20 mm, and probably represent two specific brands of tobacco. Wax vesta matches were marketed in tin boxes up to the 1940s and fragments of boxes from two different brands are represented. One lid found among the fireplace foundations is embossed 'R BELL & CO//No/ESTB 1832/4//NEW ZEALAND' and measures 70 x 38 mm. Another whole, albeit slightly squashed, match box measuring roughly 70 x 40 x 20 mm from Square G6, with a poorly preserved embossed lid, is likely from the same brand. These examples date ca 1910–1930s (Anson 1983; Bedford 1985). A base from Square C3 measuring 65 x 36 mm with a recessed striker plate probably represents a different brand.

One of the more interesting aspects of the tin can assemblage is items which show evidence of reuse. One tall cylindrical can 170 mm high and 90 mm in diameter with a push-in type closure has had holes punched in the base to use it as a coarse shaker. Another smaller cylindrical can 62 mm high by 48 mm in diameter with a push-on type lid has had much finer holes punched in the base, probably for use as a salt or pepper shaker. A whole tobacco tin from Square F5 contained sticks of coloured chalk and a hairclip. While this example of reuse may be contemporary with the occupation of the cottage, it is just as likely to be the result of children playing in the building long after it had been abandoned.

### Clothing hardware and footwear

A variety of clothing hardware and footwear items were recovered from the underfloor deposit, with manufacture dates spanning the full range of the occupation. Relatively few buttons were found considering a time span of at least fifty years and of these the plastic and synthetic examples either date from the very end of the occupation or are later intrusive items. A small decorative black plastic button was found near the base of Feature 4, a rubbish pit in the driveway area, dating the fill of this feature at least to the mid-1930s or later. The buckles all appear to be men's belt buckles, apart from one smaller double-framed brass example measuring 25 x 21 mm which was probably used on footwear or other clothing.

The footwear ranges from heavy leather boots through to more lightly constructed women's shoes and smaller shoes and boots probably belonging to children. The majority of the footwear is constructed of leather with both leather uppers and soles and heels made up of pieces of leather joined with copper or iron nails. Heels of this type also have the remains of iron heel plates nailed to them. Many of the soles and heels of the shoes and boots are well worn, and have probably been discarded for this reason. Numerous offcuts of leather and a shoe or



49. Top, adult's leather shoe; middle, child's leather boot; bottom, handmade belt, possibly cut from a piece of horse tack.

boot sole which has had a piece cut out of it suggests that the occupants of the cottage were attempting to repair items of footwear. Two items of leather horse gear, discussed below, also show evidence of having been used for this purpose. A leather strap or belt fragment, 28 mm wide, which is clearly hand cut, has possibly been manufactured from one of these items of horse gear.

### Household and miscellany

Household and miscellaneous artefacts include personal items such as a small collection of marbles, found mainly from the underfloor deposit. The marbles are a mixture of clay and glass examples and while some almost certainly relate to the occupation of the cottage, others may have been dropped by children playing around the site at a later date. Other toys include what appears to be part of a cast-iron toy car and a wooden object with a string attached, probably a toy boat.

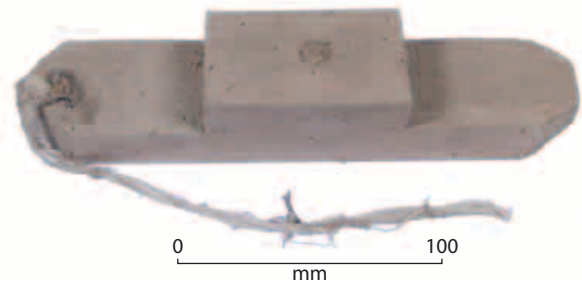
Other more personal items include jewellery, in the form of two small coloured glass beads and a metal brooch, and smoking equipment. Two vulcanite mouthpieces were recovered from the underfloor deposit, including one collected with the midden sample from Square A2, from composite tobacco smoking pipes. Both examples are black and the more complete mouthpiece from Square D4 measures 55 mm long and has a bone threaded tenon insert in one end for attachment to the stem

Category	MNI
<b>Buttons</b>	
bone, 16 mm, 4-hole	1
ceramic, 12 mm, 4-hole	2
shell, 19 mm, 2-hole	1
shell, 17 mm, 2-hole	1
shell, 10 mm, 4-hole	1
brass, 18 mm, 4-hole	1
brass, 17 mm, 4-hole	1
brass, 14 mm, 2-hole	2
plastic, 16 mm, 2-hole	1
plastic, 15 mm, 2-hole	1
plastic, 14 mm, 2-hole	1
plastic/synthetic, 12 mm, 2-hole	1
plastic/synthetic, 12 mm, 4-hole	1
subtotal	15
<b>Buckles</b>	
iron, single-framed, 37 x 35 mm	1
brass, single-framed, 46 x 40 mm	1
brass, single-framed, 32 x 25 mm	2
brass, double-framed, 25 x 21 mm	1
subtotal	5
<b>Footwear</b>	
leather boot, 185 x 60 mm	1
leather boot, 290 x 100 mm	1
leather sandal, 205 x 75 mm	1
leather shoe, 225 x 80 mm	1
women's shoe, 255 x 80 mm	1
leather shoe, 270 x 95 mm	2
leather shoe, 240 x 80 mm	2
leather shoe, 300 x 95 mm	2
child's shoe, 145 x 60 mm	1
women's shoe, 270 x 90 mm	1
women's shoe, 240 x 80 mm	1
women's shoe, 260 x 85 mm	1
women's shoe, 270 x 100 mm	1
leather shoe, 260 x 85 mm	1
leather shoe/slipper, 200 mm long	1
shoe, 260 x 80 (modern)	1
shoe/boot fragments	18
subtotal	37
<b>Leather Miscellany</b>	
belt fragment, 23 mm wide	1
belt fragment, 20 mm wide	1
belt fragment, 28 mm wide, hand cut	1
leather offcuts	21
subtotal	24

Table 6. Summary of clothing hardware and footwear.

Category	MNI
<b>Marbles</b>	
clay, 13 mm	1
clay, 14 mm	2
clay, 17 mm	1
clay, 26 mm	1
clay, 30 mm	1
glass, 15 mm	3
glass, 17 mm	1
glass, 25 mm	2
subtotal	12
<b>Jewellery</b>	
glass bead, 9 mm	1
glass bead, 11 mm	1
metal brooch 45 x 33 mm	1
subtotal	3
<b>Smoking</b>	
vulcanite mouthpiece	2
clay tobacco pipe stem	1
cardboard cigarette packet	1
cardboard match box	1
subtotal	5
<b>Table Cutlery</b>	
table knife, fake bone handle	2
table fork	1
bread knife	1
subtotal	4
<b>Writing</b>	
writing slate fragments	2
slate pencil fragments	19
subtotal	21
<b>Household</b>	
safety pin, 58 mm	1
wooden broom/brush head fragment	1
wooden clothes peg	5
furniture castor	2
cane umbrella handle	1
subtotal	10
<b>Miscellany</b>	
flounder spear	1
canvass container with metal rim	1
metal whistle	1
cast iron toy car	1
light bulb	21
subtotal	25

Table 7. Personal and miscellaneous items.

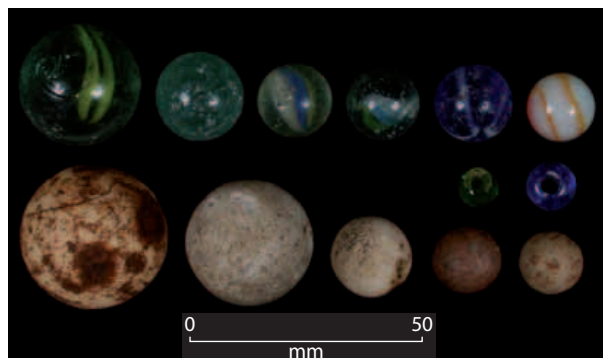


50. Handmade child's wooden toy boat.

of the pipe. In earlier 19th century contexts clay tobacco pipes are much more common, but from the Tawhiao Cottage just a single fragment of clay pipe stem was recovered. Pipe smoking is also well represented in the assemblage by tobacco tins from the underfloor deposit and cigarette smoking by an 'OGDEN'S/GUINEA GOLD' cigarette packet.

Writing as an activity is well represented by slate pencils and fragments of writing slate, while other household items are relatively scarce. Slate pencils remained in common use in schools and homes through to the mid-20th century. Writing is also represented by the glass and stoneware ink bottles from the underfloor deposit.

One miscellaneous item of interest is a metal whistle found outside the north east corner of the cottage. The whistle is inscribed 'LONDON.../CITY PO.../DYKE & .../LONDO...'. and is a type produced for the police and other services in Britain. The whistle was manufactured by A. de Courcy and Co, Birmingham, a firm established in 1888, and who did not mark their wares until 1906, but did supply services such as the police and other retailers (<http://whistlemuseum.com>). One of these retailers was T. Dyke and Co, London, and so the present example was probably produced



51. Marbles and glass beads.

1888–1906. Other items include a home-made flounder spear found under the house in Square B5. The flounder spear has a single iron barb attached with copper wire to a straight branch from a tree or shrub.

For a building that has never had electricity connected, a surprisingly large number of light bulbs (21) were recovered from the underfloor deposit. These must relate to informal use of the building after 1947 when there was another house and possibly a garage on the site which would have had electricity.

The small number of coins from the site would seem to support an occupation span of ca 1890s–1947. Several halfpenny coins were found dating to the 1940s and the earliest coin is a 1902 penny from Square E2. Later coins represent informal use of the building and site after it was abandoned.



52. Slate pencils and writing slate; vulcanite tobacco pipe mouth-piece; brooch.

Context	Type	Date
Square E2	penny	1902
Fireplace (in G4)	halfpenny	1941
Square H2	halfpenny	1941
West side of house	halfpenny	1941
North side of house	halfpenny	1942
	halfpenny	1946
Square D1	1 cent	1979
Feature 56	2 cents	1987
Square E6	1 cent	1986

Table 8. Coins.

## Metal and hardware

Numerous metal and other items were found in the underfloor deposit relating to the occupation of the cottage up to 1947. Items not included in Table 9 are obviously modern material such as an electric drill bit and small miscellaneous items such as bottle caps. Fastenings are represented mainly by wire rosehead nails, many of which may have come from the construction and subsequent repairs to the cottage and also include a small number of wire fencing staples and leadhead roofing nails. One item of interest is a copper fastening 28 mm long found on the south side of the cottage which is of a particular type used in the construction of small wooden boats, where a copper nail is driven through a pre-drilled hole to join two pieces of wood and then the excess cut off and a washer or rove riveted over the end. The size of the fastening may seem small for this purpose but is comparable to the smaller fittings recovered from a partly excavated wooden boat from the Te Hoe shore whaling station (site Y19/82), Mahia Peninsula (Harris and Smith 2005: 110-111).

A large 'S' shaped iron hook 130 mm long is of the type used to suspend pots and cooking utensils over an open fire. Another large iron hook 105 mm long with an eye-head may also have been used for this purpose, suspended on a wire above a fireplace.

Category	MNI
<b>Fittings/Fastenings</b>	
copper boat nail 28 mm long	1
copper tacks	3
ferrous bolts	5
ferrous spikes	3
brass screw	1
brass hooks	3
iron 'S' hook 130 mm long	1
large eye-head ferrous hook 105 mm long	1
small ferrous hooks	2
wire nails	139
subtotal	159
<b>Hardware &amp; Tools</b>	
butt hinge	3
strap hinge	1
door knob	1
file	2
latch bolt & plate	1
door lock	1
pick head 200 mm long	1
rasp 410 x 42 mm	1
sickle stone	1
whetstone	1
miscellaneous ferrous hardware	11
miscellaneous non-ferrous hardware	2
subtotal	13
<b>Miscellany</b>	
plough share tip	1
fire poker 460 mm long	1
lead fishing net weight	1
steel wire fishhook 68 mm long	1
white enamel mug	1
subtotal	5

53. Metal items and hardware: from left, bolt door latch; heavy 'S' shaped hook; chain and pin; iron ring; bottom row, sickle sharpening stone fragment; brass hook; butt hinge; eye-head hook.



Table 9. Metal items and hardware

The small number of butt hinges and other hardware are also likely to have come from an outbuilding or shed, rather than having been used in the cottage itself. A large door latch bolt 230 mm long would certainly seem more suitable for a shed, although it is possible that the enclosed porch around the back door visible in historic photographs may have had a separate exterior door closed with a simple bolt.

Tools are represented by a large multi-purpose rasp 410 x 42 mm x 10 mm thick, a small pick head and by a fragment of sickle stone and whetstone. A ploughshare tip found in the fill of Feature 63

represents the largely rural landscape which the cottage would have been set in up to the mid-20th century.

### Horse gear

Distinctive among the metal and leather artefacts from the underfloor deposit are several items of horse gear. The most instantly recognisable objects are iron horseshoes, with four whole and one fragmentary example recovered. The largest horseshoe has maximum dimensions of 170 x 170 mm and the smallest 150 x 145 mm. A complete spur with maximum dimensions of 140 mm long x 100 mm wide was also found. Other metal items which are likely to be related to horse gear are three large brass buckles. One is a square single-framed buckle 60 x 60 mm and one a rectangular double-framed buckle 63 x 42 mm, both with iron tangs. Another slightly smaller brass single-framed buckle with an iron tang 52 x 48 mm may also be from horse tack. Two pieces of leather definitely appear to be from horse tack and several other fragments may also be from such items. There is clear evidence that sections have been cut out of both pieces, with a possibility being that old items of horse tack were being used to repair leather shoes or boots. The cut-out shape of one of the pieces in Figure 54 is certainly the right size and shape to repair the toe of a leather soled boot or shoe.



54 (top). Leather horse tack pieces.

55 (bottom). Spur and buckles.

### Prehistoric artefacts

The site of Tawhiao Cottage is located between the volcanic cone pa settlement of Mangere Mountain (site R11/26) and an extensive recorded prehistoric landscape adjacent to the Manukau Harbour and around Mangere Lagoon in what is now Ambury Park, and it is likely that much of the developed area between Mangere Mountain and Ambury Park would also have been utilised by Maori in prehistory. No prehistoric features were located within the area investigated, but two small pieces of obsidian found in historic features most likely relate to earlier prehistoric occupation in the area. One small angular fragment with maximum dimensions of 23 x 15 mm was found in the underfloor deposit in Square D2 and another small flake 24 x 14 mm in the fill of Feature 3 (posthole) in the area of the driveway. Both fragments are green in transmitted light, indicating that they came from Tuhua (Mayor Island) in the Bay of Plenty, and the flake from Feature 3 has some possible light unifacial usewear along one edge.

## FAUNAL

A dense shell midden was present under the house and in lower densities in the fill layers around the sides of the house, and midden had also been used in the construction of the fireplace and chim. This midden contained significant quantities of animal bone. Small amounts of shell and bone were also recovered from post-holes and other features. Bulk samples were taken of the main midden deposits for analysis and shell and bone was handpicked and retained from all other excavated contexts. All bone was analysed and the underfloor deposit was later sampled by analysing the shell from two transects across the house footprint.

The great majority of material came from the underfloor midden and was deposited in a single event, whether over one day or a period of days, before or during the construction of the cottage. Midden was incorporated into the chimney base as a levelling fill and it is clear that this fill is the same deposit as the general midden beneath the cottage. It seems probable, but not certain, that the midden was deposited by the builders of the house; in any case, the midden predates the main structure of the cottage. Some of this midden was present outside the footprint of the cottage, but this was much more weathered, crushed and dispersed than the well-preserved component beneath the cottage. The bones were quantified in a variety of ways including NISP (Number of Identified Specimens), MNE (Minimum Number of Elements), MNI (Minimum Number of Individuals) and MAU (Minimal Animal Unit). Because of the disturbance at the site the assemblage was treated as a single unit and quantification methods were aggregated accordingly. Percentage of MAU was used in particular to show skeletal element representation so as to take into account the different number of elements for each animal unit.

### Mammal and bird

Identifications were made to the lowest taxonomic level possible, whether that was family, genus, or species. The most fragmented bone which, could not be assigned to a taxonomic class, was put into a broad mammal, fish or bird category. Mammal was often divided further into small, medium and large to take into account the range of mammal species being identified.

The domesticated ungulates were identified by comparison to archaeological samples and with the aid of illustrations (Hillson 1992; Schmid 1972; Sisson 1930) while the bird remains and small mammals were identified using the Auckland War Memorial Museum land vertebrate reference collection.

Modifications such as burning, carnivore gnawing, rodent gnawing and weathering were recorded as present/absent on each individual bone. Only weathering at stage 3 or greater (Behrensmeyer 1978) was recorded. A distinction was made between two types of burning, calcination and carbonization.

Butchery modifications such as cut marks, fresh fractures, which indicate chopping, and saw marks were recorded. These indicate dismemberment of skeletal elements into butchered units using saws and cleavers, while cut marks indicate skinning and removal of meat using a knife

Butchery cut definitions follow Watson (2000: Fig. 3.3) for pork and mutton, and Schulz and Gust (1983: Fig. 1) for beef. Bones were assigned to butchery cuts to the limits possible with the available reference collections.

Animal age at time of death is estimated based on rates of epiphyseal fusion and timetables for tooth eruption (Silver 1969; Bull and Payne 1982; Grant 1982) and is expressed as age ranges in years for MNI or in age classes of juvenile, sub-adult and adult/mature adult.

1244 mammal and bird remains were recovered from under the Tawhiao cottage. Most of the remains appear to be mixed and disturbed by rat activity. There appear to be a number of natural animal bone accumulations belonging to cats, hedgehogs and rats. The cat remains are mostly from juvenile individuals, suggesting natural mortality from rat attack, hunger, or disease. A combination of adult and juvenile or sub-adult hedgehog remains were present, indicating natural mortality. Hedgehogs have been known to suffer from cancer and from fat related diseases as a consequence of poor diet. Seeing they will eat any animal substance it is possible the high hedgehog mortality under the house is a result of hedgehogs eating leftover food waste deposited by the household. A few small song bird (Passeriformes) remains smaller than a black bird were present and these are also unlikely to be human food remains. There was also an unidentified ferret-sized mustelid humerus which was morphologically distinct to cat. Some of these natural accumulations were partially articulated as preservation conditions under the house were good.

The rest of the animal remains are clearly deposits related to meat consumption. Most of these animal food remains are those of domesticated farm mammals including pig (NISP = 428), cattle (NISP = 161) and sheep (NISP = 144). Small amounts of domestic chicken were also present (NISP = 18). Burning, cut marks, dog gnawing and rat gnawing were recorded in only low proportions.

Pig was clearly the most frequent food remains present with 428 bones coming from at least 10 individuals based on skeletal element abundance and age profiles. Six out of ten of the pigs were killed under 2 years of age of which two were killed under 1 year. One pig was killed at 2 years of age. This suggests pigs were

Taxa	Common name	NISP
<i>Sus scrofa</i>	Pig	428
mammal		254
<i>Bos taurus</i>	Cattle	161
<i>Ovis aries</i>	Sheep	144
cf sheep/pig		73
bird		36
small mammal		36
<i>Felis catus</i>	Cat	33
<i>Erinaceus europaeus occidentalis</i>	Hedgehog	24
<i>Gallus gallus</i>	Chicken	18
<i>Rattus</i> sp.	Rat	17
large mammal		7
<i>Meleagris gallopavo</i>	Turkey	3
<i>Oryctolagus cuniculus</i>	Rabbit	2
Passeriformes	Song bird	2
<i>Hemiphaga novaeseelandiae</i>	Wood pigeon	2
Anatidae	Duck	1
cf cat/rabbit		1
cf hedgehog		1
Mustelidae	Cat, ferret, weasel	1

Table 10. Mammal and bird taxa.



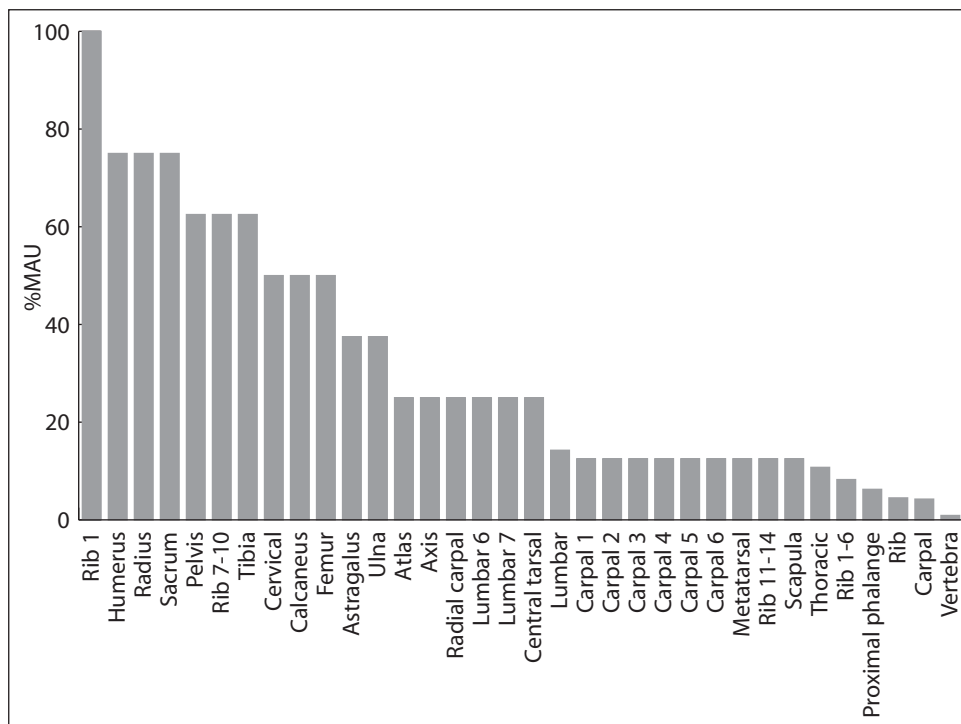
being killed primarily for meat. Older individuals were present in smaller numbers including two individuals between the age of 4 and 7 years and an individual about 3.5 years old. The axial skeletal elements from the trunk and neck and foot elements were the most common. These comprise cuts from the loin (lumbar vertebrae, thoracic vertebrae, proximal ribs), blade cuts (cervical vertebrae, scapula, proximal humerus), and ham hocks (metacarpals/metatarsals). Hocks are quite often slow cooked in stews and soups or braised to make them tender for roasts, and add a distinctive flavour. The pork loin elements were mostly complete and not butchered while some were still articulated suggesting the meat from these were not cut up into chops or steaks but rather the meat could have been stripped and cured into bacon. The cervical vertebrae are not butchered either, and these blade cuts where the meat is a bit tougher than the rest of the body make good bacon. Leg and pelvic elements are also very well represented which usually make leg ham cuts but could also have been roasted judging by the large portions of bone intact. There was also a reasonable amount of skull elements present which could have been used to make brawn. It appears that a range of pork dishes could have been served from cuts over a wide proportion of the body apart from hand cuts (ulna, radius, distal humerus) which are hardly represented at all.

Cattle appear to have been butchered somewhere else as only low quality tougher and less tender but cheaper beef cuts were selected, probably from a butcher: including short rib/cross rib (mid shaft rib sections), neck (cervical vertebrae), foreshank (lower forelimbs) and brisket/short plate (distal ribs sternum and costal cartilage elements). There are also other low quality cuts present in frequent numbers including hind shank (tibia) and chuck (scapula) cuts. All these cuts had been sawn into large portions, short rib/cross rib cuts in particular had very frequently been sectioned by sawing rib shafts twice into complete mid sections. All these cuts tend to be more suitable for soups, stews/casseroles, and corned beef in the case of brisket, but short ribs and short plate are also good for grilling as steaks to reduce toughness. The few high quality cuts include a few rib cuts (thoracic vertebrae) but there are no cuts associated with the highly valued short loin or eye fillet steak (lumbar vertebrae), sirloin (sacrum/pelvic ilium), rump (pelvic ischium/proximal femur) and round cuts (distal and shaft femur). There are also few cuts associated with butchery waste such as the skull and tarsals. Age data for cattle was limited with at least one mature adult over 7 years of age and one under 7 years. The mature adult past its prime again suggests choosing the cheaper option.

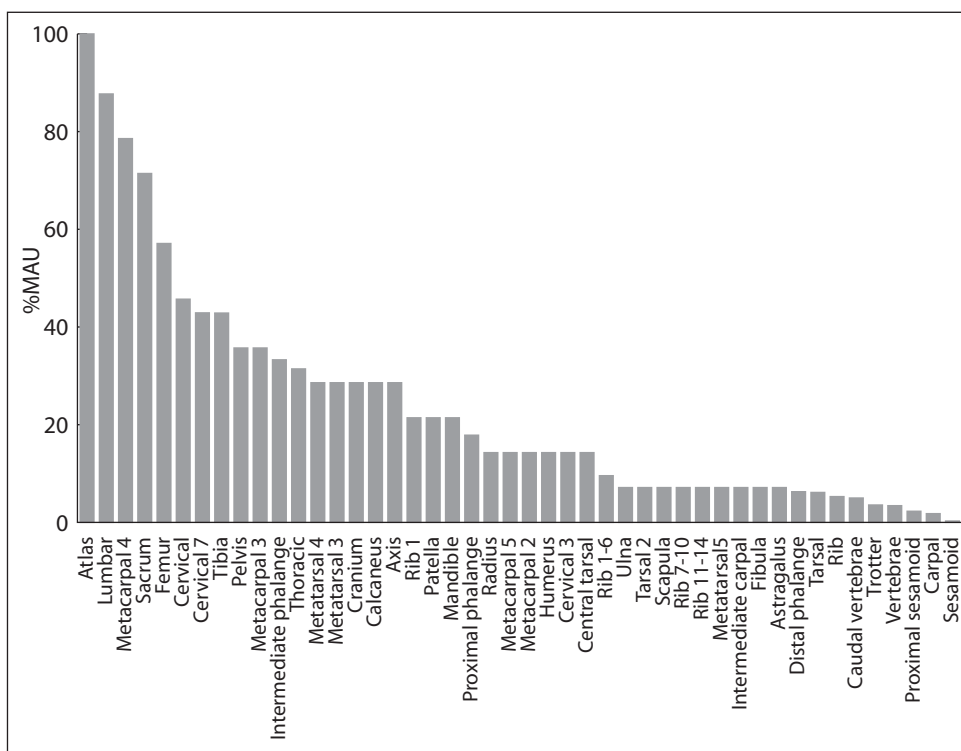
Sheep exploitation was quite varied with a range of mutton, prime adult and lamb being consumed. The sheep remains represent an MNI of at least 5 individuals, 2 of which were mature adults over 4 years of age and an individual prime adult 2.5–3.5 years old with the remaining two being under 2 years of age, of which one was a juvenile under 10 months of age. This kind of profile suggests it is possible that the inhabitants kept their own sheep and butchered them on site. There is mixed skeletal element evidence on this issue. Skull remains, key elements representing butchery waste, are completely missing. But some foot bones (calcaneus, astragalus, carpals) are quite well represented in the assemblage. This could be the result of large wholesale limb cuts being purchased for household consumption. It appears that lamb and mutton cuts were consumed in great numbers. These include mostly blade shoulder cuts (rib1, scapula), shoulder cuts (humerus, radius, ulna), leg cuts (sacrum, pelvis, tibia, femur) including lamb shanks (tibia with unfused epiphyses), rib chops (rib 7–14) and mutton scrag neck cuts were all frequent. Loin cuts (lumbar vertebrae) were not so frequent. There may have been a lot of breast cuts as well but confidence in identifying medium mammal costal cartilage to pig or sheep was not high. Some cuts including a shoulder ulna/radius with carpals still fully articulated suggesting they may not have been consumed but discarded as waste is possible. Most of the remains had been sawn into a vari-

ety of cuts including some small thin leg and shoulder chop retail cuts. But most of the cuts were large and probably consumed in roasts, and stews/casseroles. Overall this represents a wide variety of mutton and lamb cuts being consumed with some variety in the types of meals being prepared.

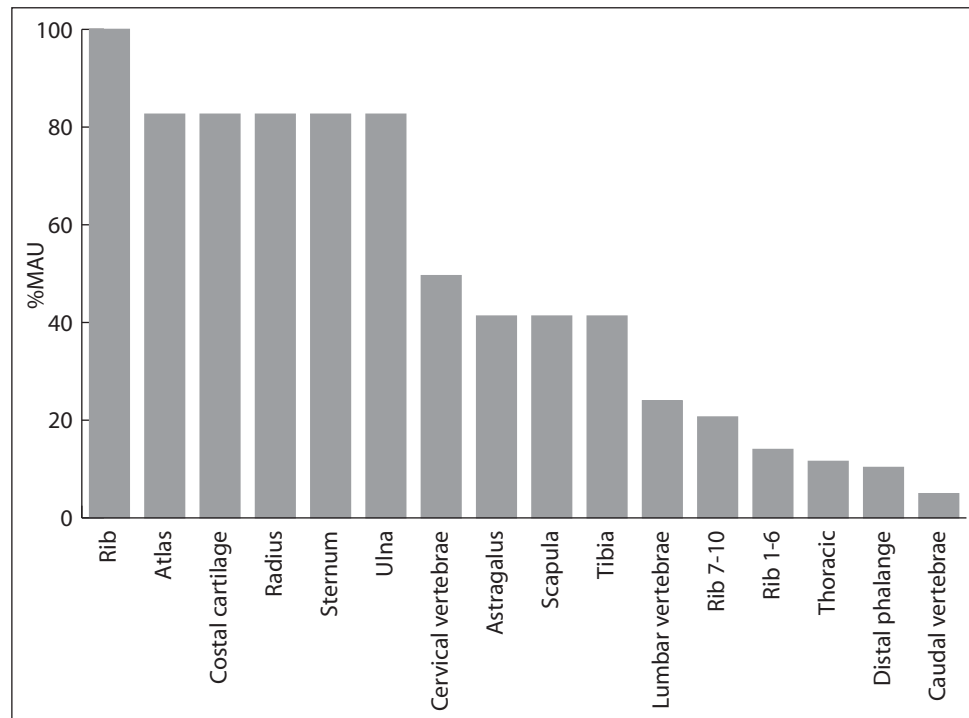
In addition to the domestic aspect of the faunal assemblage there was also a small amount of endemic wood pigeon remains, which may have been hunted but



56. Pig skeletal element representation, %MAU.



57. Cattle skeletal element representation, %MAU.



58. Sheep skeletal element representation, %MAU.

it is also possible they could be the result of cat or ferret activity under the house. The duck bone could belong to one of the many wild endemic species present in New Zealand but could also be the introduced mallard. It is also possible that the few introduced turkey and duck remains represent hunting as these were usually released into the wild but both could have had their wings clipped and kept close to the house by hand feeding.

### Fish

The fish bone came almost entirely exclusively from the midden beneath the house, with very few bones (25 in total) coming from other fill layers, pits or postholes. While the underfloor midden was excavated and bagged by grid square, it was clear that rats had turned the midden over and that nothing was likely to be in its original place. The midden is not large and is quite homogenous, even without rat disturbance, and is likely to have been deposited as single event. For the purposes of analysis, the midden is treated as a single unit. Fishbone analysis followed the method outlined by Leach (1986, 1997). The five main mouth bones – lefts and rights each of dentary, articular, quadrate, maxilla and premaxilla – are identified to the lowest possible taxonomic level (usually species). These are sorted to left or right sides and counted. Special bones may also be identified, although none were found in the Tawhiao Cottage assemblage. The count of bones used in this report is the NISP, or Number of Identified Specimens, which is the total of all identified mouth bones for each species. Identifications were carried out using the comparative collection at CFG Heritage.

The midden was dominated by snapper (*Pagrus auratus*), as Table 11 shows, with 96.5% of securely identified elements coming from the species. The other three species, kahawai (*Arripis trutta*), hapuka (*Polyprion oxygeneios*) and trevally (*Pseudocaranx dentex*), were identified from very few bones and probably represent

Taxon	NISP
Kahawai ( <i>Arripis trutta</i> )	1
Snapper ( <i>Pagrus auratus</i> )	165
Hapuka ( <i>Polyprion oxygeneios</i> )	3
Trevally ( <i>Pseudocaranx dentex</i> )	2

Table 11. NISPs of fish identified using the standard method.

a single individual each. All these species take a baited hook and could have been caught in the Manukau Harbour.

In addition to the five main mouth bones, many other fish bones can potentially be identified to species level. Because snapper dominated the assemblage other bones that were *very probably* from snapper were set aside and counted, but not formally identified. These included the paired head bones, palatine, hyomandibular, opercular, preopercular, scapula, cliethrum, supracliethrum, posttemporal, epihyal and ceratohyal, as well as the unpaired head bones, vomer, parasphenoid and basioccipital. These bones have been identified at other sites (Torpedo Bay in Devonport [Brooks et al. 2012] and Mill Road in Whitianga [Harris and Campbell 2012]). In addition, vertebrae that were *most likely* to be snapper were counted separately from other fish vertebrae (Table 12). A single distinctive shark or ray (Chondrichthyes) vertebra was also identified.

Ten operculars that were not snapper were identified. These are almost certainly grey mullet (*Mugil cephalus*), a species that has very small mouth bones that often do not preserve well in archaeological sites, or fall through the screen of the sieve. They could be from yellow-eyed mullet (*Aldrichetta forsteri*) but they are large bones indicating a full size grey mullet of around 600 mm in length, whereas yellow-eyed mullet have a smaller opercular and do not grow as large. The ability to identify this species, which is a common schooling fish in estuaries and harbours and was probably eaten far more commonly than surviving evidence indicates, from operculars is a potentially interesting and useful result of this analysis. Unlike the other species identified in the assemblage, mullet do not take baited hooks and are caught in nets (the other species, of course, can also be netted as well as hooked). It seems likely that all these specimens were caught in a single episode.

The majority of vertebrae were tentatively identified as most likely to be snapper, while of the 15 that were not identified several were too fragmented to allow any species level identification. Several, however, were clearly not snapper, although

Taxon	NISP	Vertebra
Grey mullet (cf. <i>Mugil cephalus</i> )	10	
Snapper (cf. <i>Pagrus auratus</i> )	141	34
Shark/ray (Chondrichthyes)		1
Fish sp.	432*	15

\* unidentified elements

Table 12. Other bones not formally identified. Grey mullet, identified from operculars, has a high likelihood of being an accurate identification; snapper vertebrae are only tentative identifications.

whether these were from species already identified in Table 11 and Table 12 or from other species is not known. Identification of fish vertebrae to species level has not generally been undertaken in New Zealand, although it should be possible.

Only 49 bony fish vertebrae were counted, compared to 171 mouth bones. Fish generally have 25 to 30 vertebrae, and only 10 standard mouth bones, so we would expect many more vertebrae to be present. This result indicates that whole fish were not being brought onto the site. At pre-European Maori sites where there are low numbers of vertebrae this is taken to indicate that fish were being processed and preserved for consumption elsewhere. The Tawhiao Cottage occupation, however, did not take place under a subsistence economy but under a capitalist market economy. While it is possible that this represents fish preservation other explanations are possible, and would seem to be more likely.

Fish may have been bought on site already filleted, with fish heads being used to make soups or cooked for the delicate cheek meat. It is possible that the fish were being caught, cleaned and headed on site, while the fillets, including vertebrae, were taken elsewhere for consumption. It is notable, however, that very few pharyngeal bones from the gill arches were found, so it seems that the fish were already cleaned when they were deposited, rather than being cleaned on site.

## Shell

Bulk samples of midden were collected from the fireplace and chimney foundation, where it was used as a levelling fill, Pit 64, Square A2, and from a fill layer/shell path outside the front door of the house (Feature 15). Standard 10 litre sized samples were taken from chimney foundation and Square A2, but from Features 15 and 64 this was not possible and 8 and 7 litre total samples were collected respectively. In Table 14 the figures have been adjusted to 10 litre equivalents to allow for comparison between the different contexts. Bulk samples were dried and weighed, and then wet sieved through a 6 mm screen and re-dried, before being sorted. Shell was identified to taxon and all diagnostic shell counted and weighed. Other material such as bone and stone was sorted and weighed. For the underfloor deposit all shell and bone was initially retained from each Square and for the purposes of analysis only the shell from two transects was analysed: Row E (running north–south) and Row 5 (running east–west). Shell from these two transects was identified to taxon and counted, but not weighed.

The shell assemblage is dominated by cockle and oyster with other species in small numbers. Oyster is a larger species than cockle so that, while there are similar numbers of shell, oyster would have provided more meat. All the species represented could have been gathered from the rocks, beaches and mudflats of the Manukau harbour, only about 500 m from the site. The primary species targeted appears to be oyster but other species were also gathered expediently.

Context	Type	Volume (l)	Dry weight (g)	Sieved weight (g)	Dry wt/vol (g/l)	Sieved wt/vol (g/l)	% loss
16	fill	10	8640	6956	864	696	19.5
A2	Square	10	9140	3750	914	375	59
15	fill	8	7870	2938	984	367	63
64	pit	7	7260	2568	1037	367	65

Table 13. Volume and weight data for bulk midden samples.

Sample	Pipi ( <i>Paphies australis</i> )	Cockle ( <i>Austrovenus stutchburyi</i> )	Rock oyster ( <i>Saccostrea cullata</i> )	Green-lipped mussel ( <i>Perna canaliculus</i> )	Scallop ( <i>Pecten novaezelandiae</i> )	Cat's eye ( <i>Turbo smaragdus</i> )	Mud snail ( <i>Amphibola crenata</i> )	Miscellaneous gastropods	Miscellaneous bivalves	Total
A2	60	114	24	1		11	4	4	1	219
16		144	237				2		2	385
15*	6	74	9		1			5		95
64*	29	96	41		1	19	20	3		209
Total	95	428	311	1	2	30	26	12	3	908

\*counts adjusted to 10 litre equivalents (rounded)

Table 14. Counts of shell by species, bulk midden samples (MNI).

Square	Pipi ( <i>Paphies australis</i> )	Cockle ( <i>Austrovenus stutchburyi</i> )	Rock oyster ( <i>Saccostrea cullata</i> )	Green-lipped mussel ( <i>Perna canaliculus</i> )	Scallop ( <i>Pecten novaezelandiae</i> )	Paua ( <i>Haliotis iris</i> )	Cat's eye ( <i>Turbo smaragdus</i> )	Mud snail ( <i>Amphibola crenata</i> )	Miscellaneous gastropods	Miscellaneous bivalves	Total
E1	5	21	14	1		1	6	2			50
E2	13	45	29	2	1	1	15			3	109
E3	3	10	19	1			3				36
E4	1	8	12	1			6		1		29
E5	1	5	11	2			3				22
E6	1	3	2	2	1	1	5				15
E7		1	1								2
A5			1		1						2
B5	1	2	7	1			1				12
C5		3	6	1			3		1	1	15
D5		4	11	2							17
F5			1	2			1				4
G5				1							1
H5				1							1
Total	25	102	114	17	3	3	43	2	2	4	315

Table 15. Counts of shell by species, underfloor deposit, Row E and Row 5 transects (MNI).

## DISCUSSION

We know from the documentary evidence that the owners and occupants of the Tawhiao Cottage were Maori. However, the problem of interpreting ethnicity or race from archaeological assemblages is an old one (e.g., Orser 2007: 46–49). Archaeologists excavate material things which, particularly in the modern period, may relate to economic conditions but generally aren't able to be linked to any particular group of people. Material culture is held to reflect peoples' identity, but it has proven impossible to identify consistent assemblages of artefacts that correlate with the, presumed, ethnic identity of their users. Thus archaeologists often settle for one or two ethnic 'markers', such as Chinese ginger jars. If there are particular characteristics of people or groups of people that affect their access to different possessions then these are not always immediately clear (Orser 2007: 50). The most obvious such characteristic is not ethnicity or race, but wealth, the money to obtain such possessions.

By the end of the 19th century Maori were enmeshed in the global economic system of western capitalism; half a century after the signing of the Treaty of Waitangi and the beginnings of concerted European settlement, the material culture of a site known to have been occupied by Maori is not markedly different from any site of similar age known to have been occupied by Europeans. We can expect such homogenization in material culture because of the entrepreneur's urge to sell as much as possible to as many people as possible, regardless of their 'race.' In New Zealand the problem is compounded by the limited range of some goods available, much of which had to be imported from Britain. The British merchant decided what would be available in the colonial market, and it was equally available to Maori and Pakeha.

Perhaps class is of greater importance in this instance – Tawhiao and his family were among the highest status Maori families at that time – it might be argued that Tawhiao would have deployed material culture to reinforce his status within Maori society. However, he did not live at the cottage, using it only when he was in Auckland, and it was looked after by a housekeeper. After his death members of his family stayed there from time to time, but it seems probable that most occupation evidence relates to the housekeeper or subsequent occupants and not the kahui ariki.

Of greater interest is the shell midden. Middens are the most commonly recorded pre-European site type and are generally characterised by shell with some fish and bird bone often present, much the same as the Tawhiao Cottage midden, but which also has introduced European farm animals. But a midden alone does not equate with a Maori occupation; Europeans also ate shellfish, fish and farm animals and would have had to dump the remains somewhere. The shellfish and fish are almost certainly gathered locally and there are some aspects of the assemblage that might be interpreted as Maori, particularly the collection of numerous species of shellfish – Europeans would be unlikely to collect cat's eyes or mudsnails – the prevalence of fish head bones rather than vertebrae, and the sparse presence of native bird bones not seen in late 19th century European residence sites (Hawkins et al. 2010). On their own, although these are indicative, they are still not definite markers of any one race or culture. The mammal bone shows evidence of pig farming and home curing of bacon and a preference for cheaper cuts of purchased sheep and cattle, but this is probably related to wealth rather than ethnicity or race.



Mullins (1999) has shown how African Americans in the 19th and early 20th century at Anapolis, Maryland, often caught their own fish and otherwise obtained food and consumer goods outside the local markets, allowing them to avoid what Orser (2007: 29) refers to as the “racialized public sphere.” There may be an element of this in the Tawhiao Cottage midden assemblage, although equally it may represent a continuation of traditional subsistence patterns, although with new technology and new species. A combination of continuing traditional fishing, where Maori may have been comfortable, farming of pigs, and limited shopping in local stores and markets, where they may have been less comfortable, seems likely.

One aspect of the midden does stand out – the use of shell, including all the same fish and mammal bone parts present in the main midden deposit, as a levelling fill in the chimney foundation. This fill was plastered over to form the hearth. This seems to be a highly unusual use of shell, which was probably just an expedient material. It seems probable that Maori would be more likely than Pakeha to view shell as a structural material, since levelled shell floors are a known site type and they would have been familiar with it. This is perhaps the only marker of ethnicity that can be picked out of the excavation, and indicates at the same time that the cottage was built by Maori.

There is very little in the way of late 19th century Maori-occupied houses with which to compare the Tawhiao Cottage. Several houses were excavated near Lake Rotoaira, Taupo, as part of the Tongariro Power development in the 1970s, but although they date to the 1880s to 1930s they do not appear to have been of European-style construction (Newman 1989). At Papahinu in South Auckland, Foster and Sewell (1995) excavated historic Maori houses that were built and occupied in two phases; up to 1823 and then between 1835 and 1863 when Te Akitai refused the oath of allegiance and departed to the Waikato. Again, they are not of European construction but retained the traditional layout with late phase houses having square, spade-cut postholes. Neither of these examples is really comparable to the Tawhiao Cottage which, for the present, must stand as the only specifically Maori-occupied late 19th century site investigated archaeologically in New Zealand. Such sites have considerable potential for exploring the ways in which Maori became increasingly incorporated into the wider New Zealand, and Imperial, economy. At the same time, they would have retained the underlying basis of their unique culture – at present this is not so well demonstrated in the archaeological record.

If we did not know that the cottage was occupied by Maori there is little in the archaeology to indicate that it is any different from other late 19th century cottages occupied by Europeans. However, since we have the historic record to assist us, we are in a position to analyse the assemblage with reference to its occupants. In many ways the archaeology is typical of a late 19th to early 20th century semi-rural house site and its historical connections to Tawhiao are, largely, archaeologically invisible.

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