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– ARTICLE –

Early Māori Settlement in Auckland CBD: Redating the Queen Street Gaol Excavation

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Abstract

The Queen Street Gaol Site (R11/1559) excavation in 1987 was one of Tāmaki Makaurau Auckland's earliest large-scale archaeological investigations of a 19th century colonial site. However, one of its significant findings related to much earlier Māori occupation along the Waihorotiu Stream. Despite over 40 years of work in Auckland, the site remains the only securely dated Māori site in the Auckland Central Business District. Redating samples from the site confirmed the likelihood of human presence in Tāmaki Makaurau, Auckland as early as AD 1290. This discovery aligns with evidence from other early settlement sites around the Waitematā Harbour and the Hauraki Gulf. The Gaol site also provided evidence of Māori occupation in the AD 1430s–1690s, including kō and ketu (digging and weeding sticks), ochre, woven flax, and shell midden deposits which suggest an established community engaged in gardening and marine resource exploitation. These results offer insights into the landscape history of the Horotiu Valley, a topic that has received little attention despite the increasing number of excavations in the region. The redating of material from the Queen Street Gaol underscores its significance in debates over the timing and environmental impact of early Polynesian settlement in Aotearoa, New Zealand.

Keywords: Auckland CBD archaeology, Māori settlement, Queen Street Gaol, Ligar Canal, Pre-European occupation, Environmental history, Gardening implements

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1. Excavation of the Queen Street Gaol Site

Archaeological investigation at the Queen Street Gaol Site (R11/1559) in 1987 was one of the earliest excavations of a 19th century colonial site in Tāmaki Makaurau, Auckland's Central Business District (CBD) (Figure 1). Located in an inner-city block bordered by Queen, Elliot, Darby and Victoria Streets (Figure 1 - Figure 2), the investigation was focused primarily on identifying the remains of the Gaol buildings erected in 1841 alongside the main Court House (Best 1992, Bickler and Best 2024). Best (1992) identified the potential to find evidence of Māori sites along the Waihorotiu Stream running down the valley, and a tapu-lifting ceremony was held on the site prior to the start of the archaeological excavations. The possibility of such sites had been recognised over a century earlier when the Court House was demolished to make way for the later Theatre Royal. The Theatre Royal was built on the corner of Victoria and Queen Streets, and at its inauguration on the 14th August 1876, the inaugural address concluded with the lines:

> *"And here, as saddest memories pass away, Where once the Maori hummed his native lay, This great assemblage, radiant with delight, Inspires fresh hopes of still increasing light; When Truth and Honour shall advance the age, And highest talent dignify the Stage"* (Thames Advertiser, 16 August 1876: 3).

However, it was the swampy conditions of the Gaol site that led to the surprising preservation of wooden artefacts and organic material on the old stream bank, along with a small layer of shell midden, found during the project.

Two samples from the 1987 excavation were obtained for dating. The earliest was from leaf litter on the old streambank, and indicated that human occupation in the area may have begun before AD 1300. A date from the shell midden layer was more definitive and probably 200 years later. Those radiocarbon dates had large measurement errors and therefore had little influence on subsequent chronology-building in the Auckland Region (e.g., Campbell et al. 2018: 22, 81ff; Campbell et al. 2019), or on debates over the earliest settlement of Aotearoa New Zealand (Bunbury et al. 2022). Despite a significant number of archaeological projects in the Auckland CBD since then, no additional radiocarbon dates from Māori contexts have been obtained (e.g., Petchey et al. 2022). This makes the Gaol site even more important, as the chronology of settlement in the region has received relatively little attention despite the dramatic increase in archaeological excavations in the Auckland Region (e.g., Bickler 2024). Bickler and Best (2024) have re-examined the role of the Auckland Gaol and the later Mt Eden Prison in relation to the colonial history, while this paper re-evaluates the earlier evidence of Māori settlement from the Gaol excavations.

2. The Creek Bed Excavation

The archaeological investigations were restricted to approximately 60m x 50m (Figure 3), with much of the evidence lost due to the construction of buildings during the late 19th and 20th centuries. The excavation proper was undertaken in just 10 days but revealed a range of features related to the Queen Street Gaol complex, as well as parts of the brick Ligar Canal constructed over the Waihorotiu Stream, which ran down through the Horotiu Gully (Best 1992, Bickler and Best 2024).

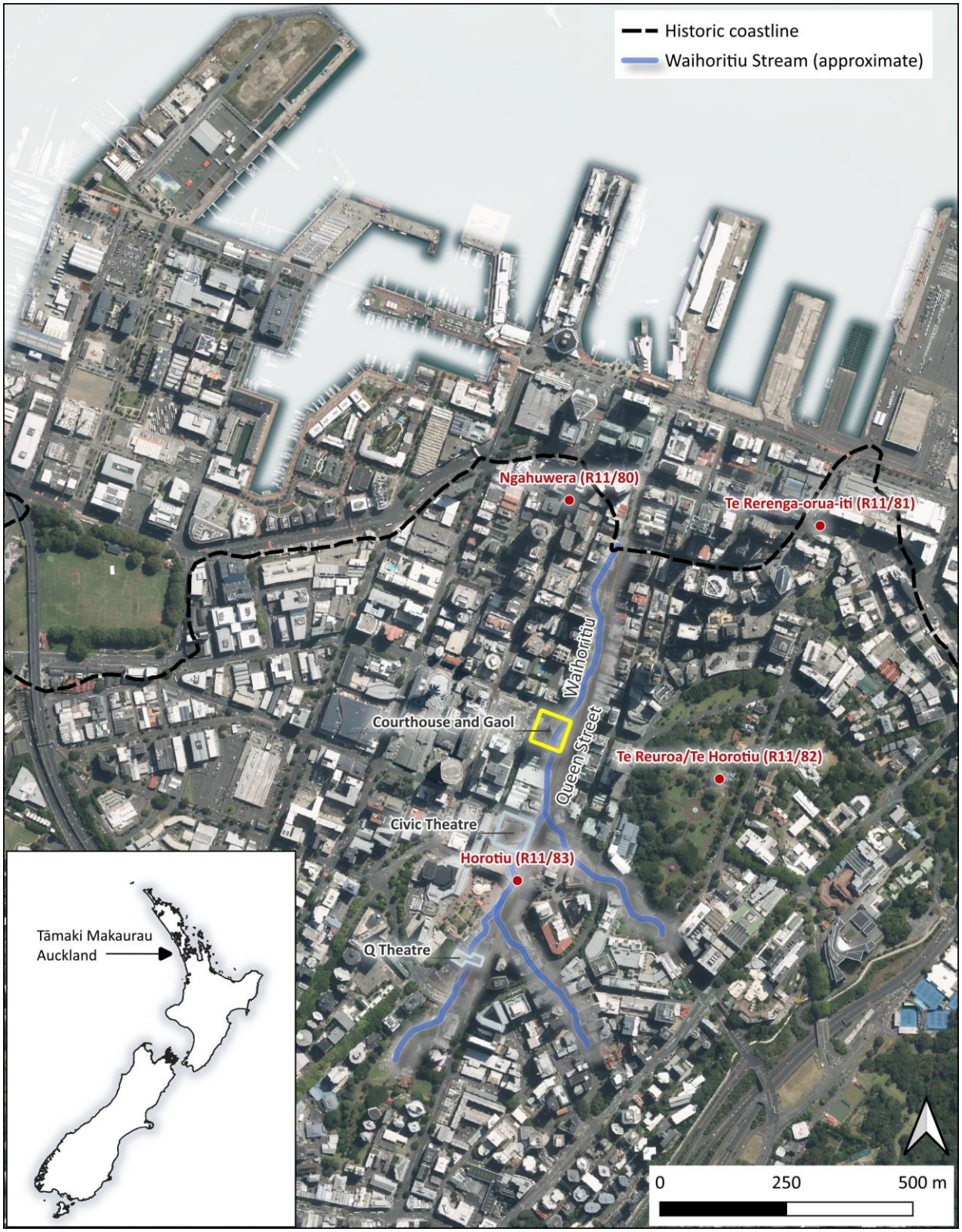


Figure 1: The location of the Queen St Gaol with recorded pā sites (red text and NZAA IDs), approximate original path of the Waihorotiu Stream and shoreline (dashed line) prior to 19th and 20th century reclamations (LINZ Satellite Imagery, Auckland Regional Council n.d.)

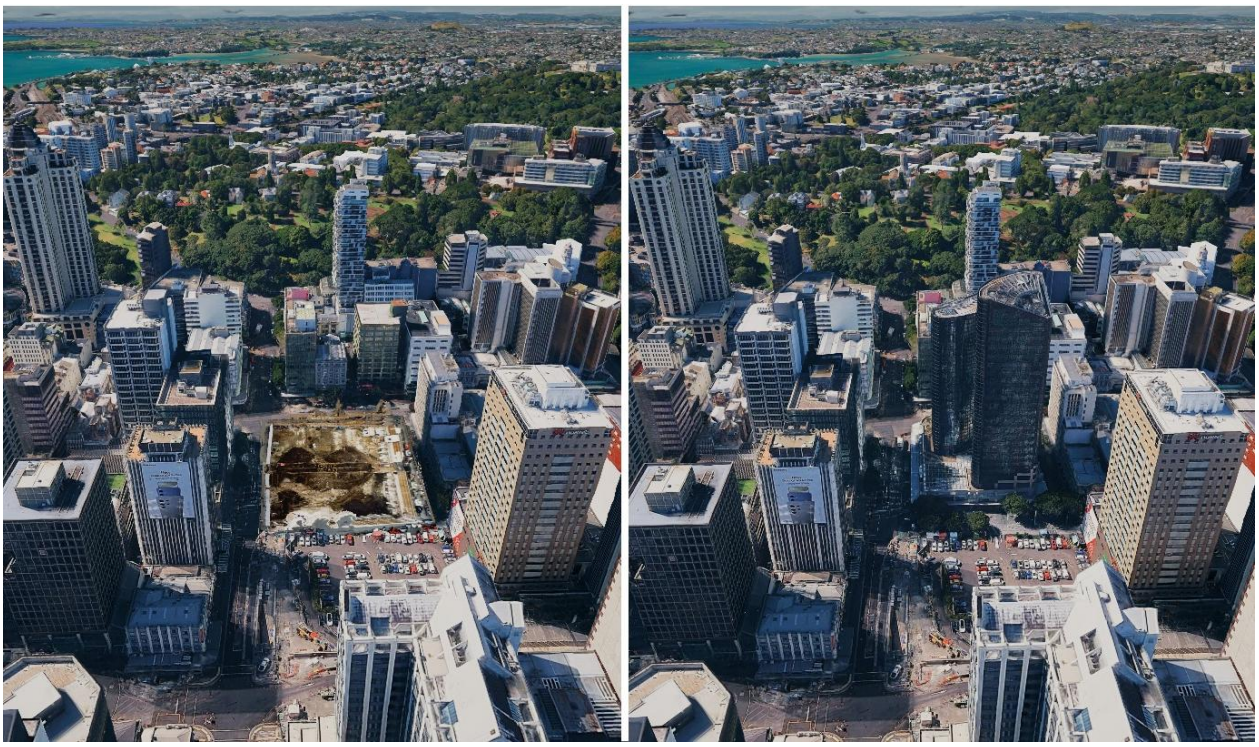


Figure 2: Oblique view looking east from approximately near the top of Auckland's Sky Tower down at the excavation of the Queen Street Gaol in 1987 (left) and with the current buildings now present in that location (right) (reconstructed view using Unreal Engine 5 with Cesium plug-in and Google 3D Tileset)

Theatre Lane had been built north to south across the middle of the block, connecting Victoria Street West and Darby Street around 1875 (Best 1992). This had been raised to the altered levels of the neighbouring streets, thus preserving earlier layers.

The Waihorotiu Stream itself had flowed through the centre of the site, down towards the harbour. The stream would occasionally flood, carrying away the Gaol fences (ICCS 1845). The Waihorotiu had been lined with stone in 1845, and in 1875, was contained within a brick barrel drain (Best 1992). Rubbish deposits were found in the stream bed during excavation A sump hole to accommodate a pump for the 1980s development's earthworks was dug some 13m from Darby Street, exposing the west side of the stream and part of the 1875 brick barrel drain. This drain had been dug into the banks of the earlier streambed and uncovered evidence of pre-European Māori settlement.

A section of the sump hole was cleaned down and recorded, with several layered deposits present between the base of the stream and the brick drain (Figure 5 - Figure 6). A further 5m long trench, around 1m wide, was dug along the watercourse immediately north of the sump hole and revealed stonework lining the creek base. Immediately under the lining in one area was a small ketu or Māori weeding stick, broken by the weight of the rock (Figure 4).

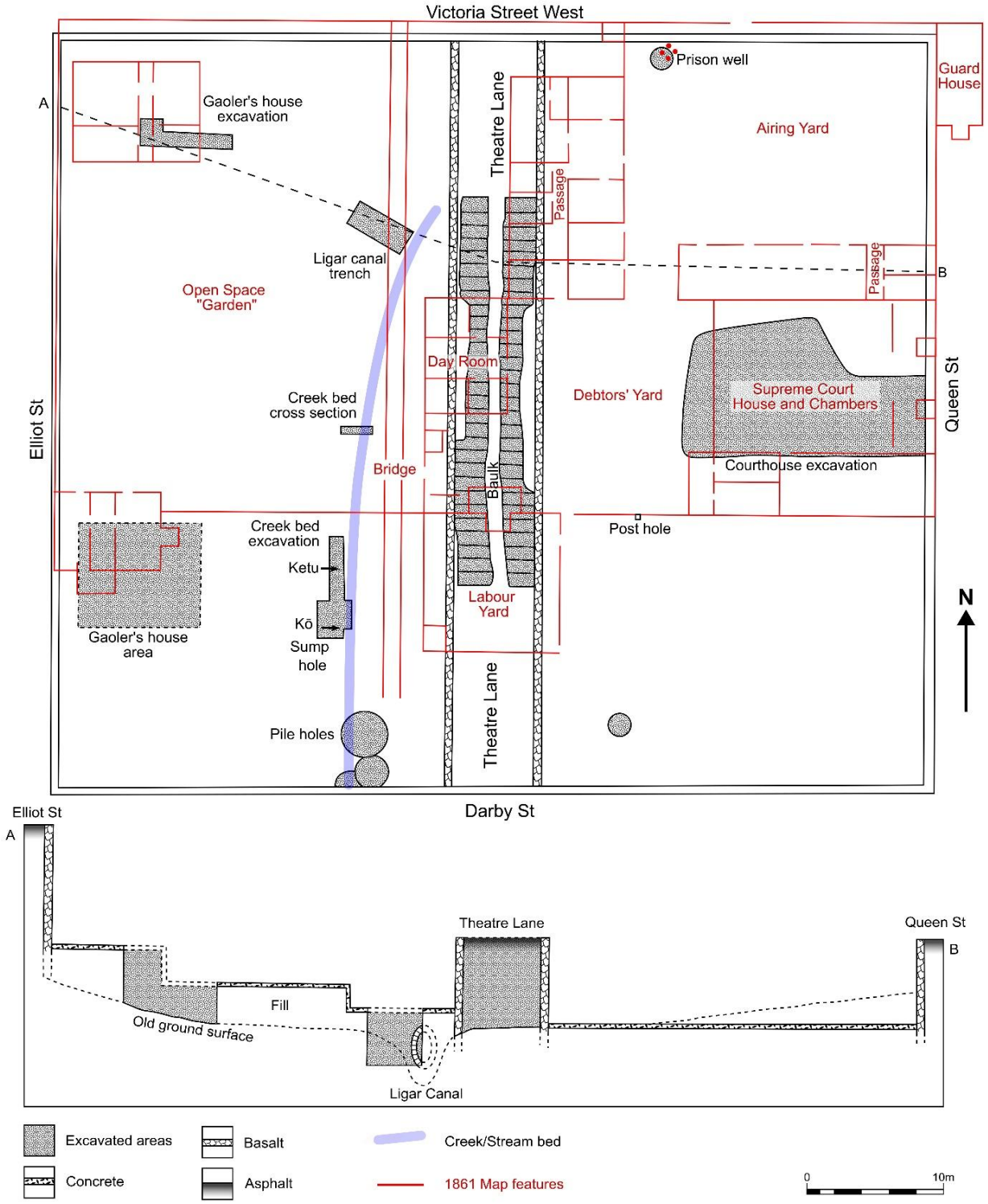


Figure 3: Excavations of R11/1559 showing plan of excavated areas, including location of the Creek Bed excavation with overlay of 1861 Gaol features (adapted from Best 1992: Figure 10)

Lengths of wood, some showing signs of working, were visible next to a concentration of shell midden containing charcoal and hangi stones. A knotted length of plaited flax and a piece of red colouring material were found within the shell matrix. Other artefacts include a totara plank, another piece of limonite or haematite, and a section of flax weave. The tip of a kō, digging stick (Figure 5 - Figure 7), was found at the same level as the ketu. Gaol refuse and historic stone lining for the stream were visible at the rear of the sump hole. The sump hole, the kō, the old stream bed, the gaol refuse under the barrel drain, the Māori midden and artefacts, the ketu, stone lining to the stream, and the tins and bones lying on that lining could all be related, both horizontally and vertically (Best 1998: 121-123, Figure 4 - Figure 6). The limited excavation and wet ground conditions, however, prevented structural remains from this layer being easily visible in the photographs, but preservation of organic remains was good.

Figure 4: R11/1559 showing ketu under basalt lining to Waihorotiu Creek

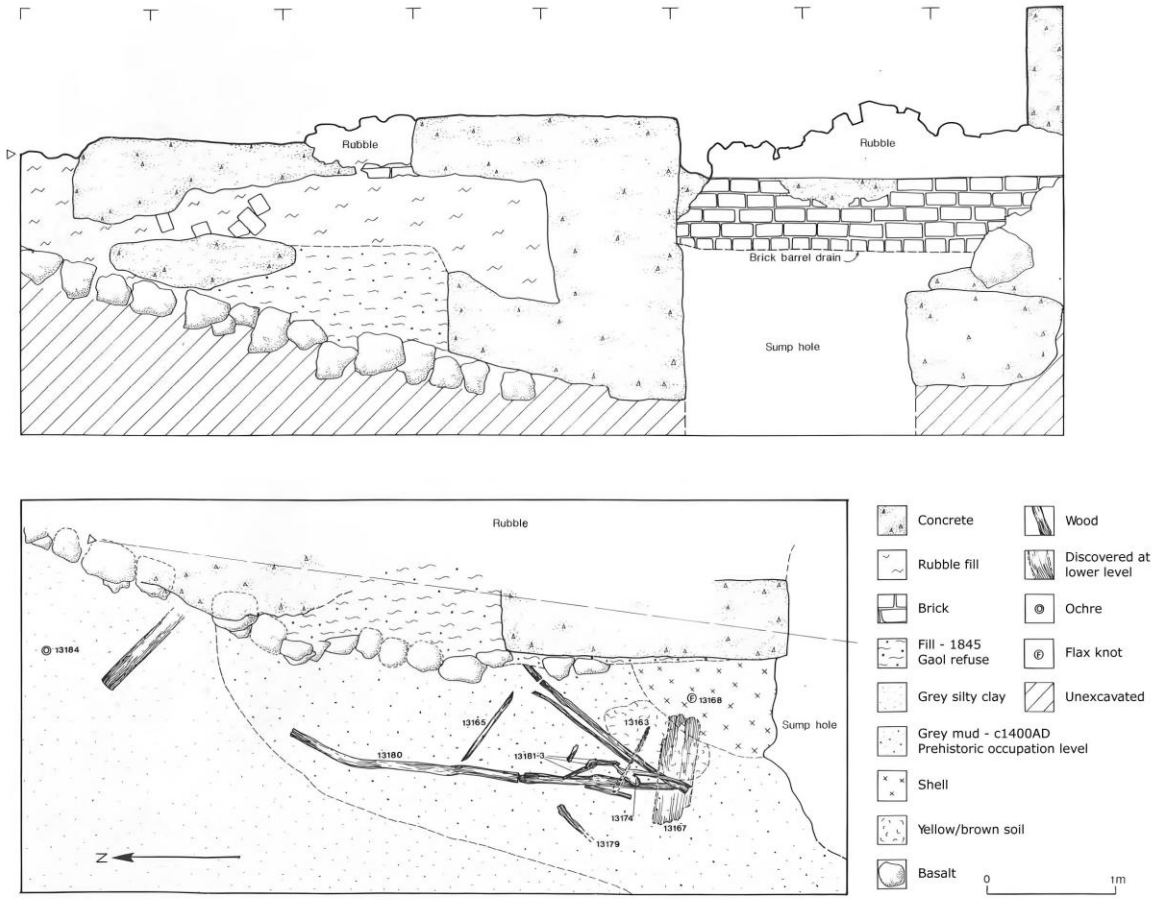
3. Artefacts

The shell midden included shellfish remains, which were in two main concentrations, one with cockle (*Austrovenus stutchburyi*) and pipi (*Paphies australis*), the other dominated by scallop (*Pecten novaezelandiae*). Gastropods and mussels were also present along with a single fish scale, probably evidence of other organic material which had not been preserved due to the environmental conditions. Charcoal and hangi stones were found well mixed within the sand-mud matrix.

Figure 5: R11/1559 showing sump hole and location of the kō

There were 13 fragments of wood from the occupation surface. The kō and ketu were made from mānuka (*Leptospermum scoparium*), with two other likely tool shafts made from mapou (*Myrsine australis*) and kānuka (*Kunzea ericoides*), the most common timber for such implements (Figure 7). Four other pieces of wood were the most degraded of the group, and the suspected modifications to their ends may be a result of this process. However, according to R. Wallace (pers. comm. 1991), these could have been single-use implements, a slim branch roughly sharpened at one end and used for a day or two. Given the shaft-like appearance of most of the doubtful pieces and their proximity to other similar worked implements, it seems probable that these had been intended for gardening or had been brought in originally for other reasons and discarded. Improvisation using crooked wood samples for implements is known from other sites, such as at Kohika (V15/80, Wallace and Irwin 2004: 87ff).

A totara (*Podocarpus totara*) plank (880 x 270 x 45 mm) was recovered 15cm deeper than the surface of the midden, lying in a matrix of brown sandy material. Although no definite adze marks could be identified, the evenness of the piece indicated that it had been worked. Many of the wood fragments in the immediate area appeared to have the last centimetre or two of their ends charred.



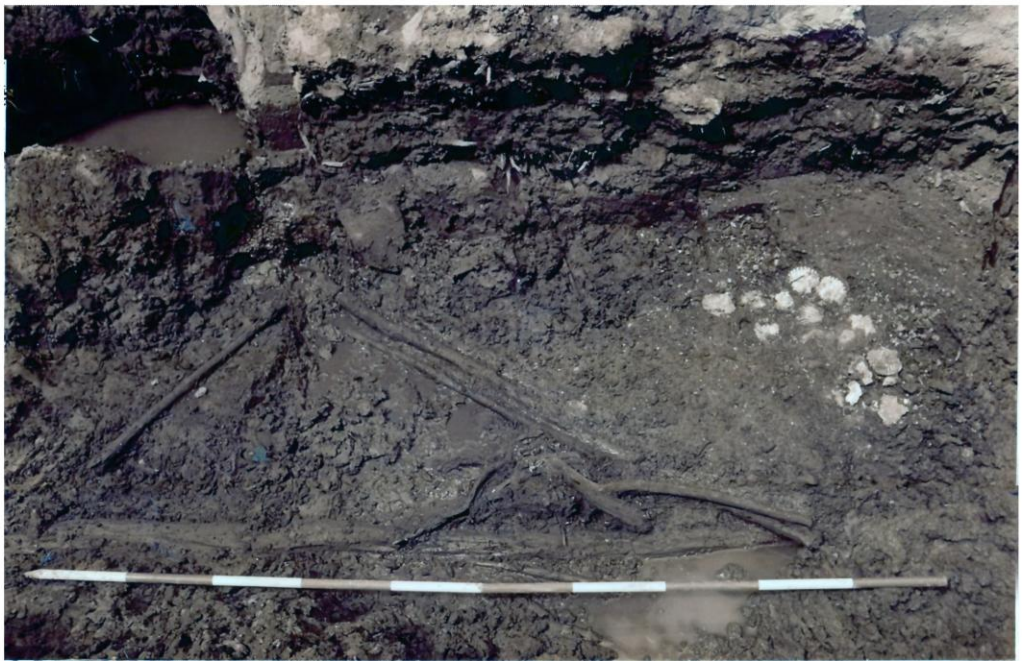


Figure 6. Plan (top) and east section (middle, bottom) of Waihorotiu Stream bed duringexcavation showing artefacts and midden (Best 1998: Figures 50-51)

Basalt hāngī stones and a single stone of a siliceous red scoria material, similar to that found in archaeological sites on Waiheke and Motutapu (e.g., Campbell 2002), were also recovered. The scoria material is like that quarried today on McCallum's Island (Karamuramu) off Ponui Island in the Hauraki Gulf, but previously found around other volcanic cones in the area (e.g., New Zealand Herald, 18 July 1885: 3). Two pieces of soft red weathered haematite rock were also found and are probably kōkōwai (ochre) brought into the site from elsewhere. No abrasion facets were seen on either, although the piece from lower in the midden had one flat, slightly dished surface.

A knotted and plaited section of flax fibre was found on or near the surface of the shell midden. A second piece, a section of woven leaf strips, was found inside a large scallop shell (Figure 8) taken as part of a midden sample from around the plank, and although not formally identified, it was considered likely to be flax as well. The pieces were not large enough to determine whether they were from flax kēte (baskets) and whāriki (mats) or other similar objects.

Figure 7: The kō tip (top) and ketu (bottom) after conservation treatment

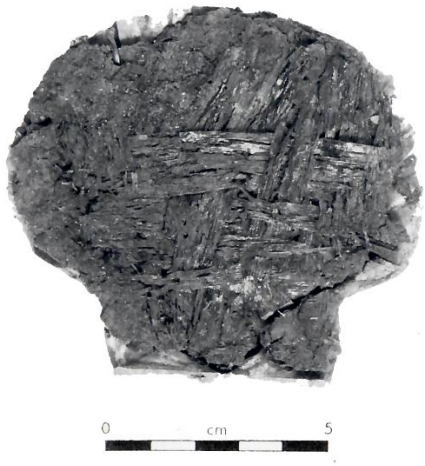


Figure 8: Section of woven flax leaf strips, preserved in a scallop shell from the midden

4. Chronology

Best (1992) obtained two radiocarbon dates (Wk-1142 and Wk-1143) from material relating to the pre-European occupation along the banks of the Waihorotiu Stream. A date from the shell midden in the middle of the exposed sequence and the layer containing the wooden artefacts originally suggested that the latter was probably dated to sometime between AD 1400 and 1600. Below this, the radiocarbon date from leaf litter provided evidence of land use over 200 years earlier (Best 1992). Modern recalibration of these dates (Table 1) did not change these conclusions, but the presence of rat-gnawed hīnau (*Elaeocarpus dentatus*) berry kernels in the leaf litter did suggest that Horotiu Gully may be an indicator of the earliest human settlement in Auckland (Best 1992: 122-137). However, the calibrated age range of the leaf litter date made it difficult to confirm this, especially as the dates could be from the late AD 1300s, and there are several other locations throughout Auckland of this date (e.g., Brassey 2025, Campbell et al. 2018).

Two samples (WkA-56414 and WkA-56415), a midden shell and a rat gnawed hīnau seed from the same contexts as the previous dates were submitted for Accelerator Mass Spectrometry (AMS) Radiocarbon Dating at the University of Waikato Radiocarbon Dating Laboratory. The calibrated dates (Table 1 and Figure 9) are consistent with the dates obtained 40 years previously, but the new results are significantly more precise, with standard errors for the original measurements of ± 50 years compared to less than ± 20 years for the new measurements.

Both shell dates suggested that the midden probably dated to the c. AD 1430-1690s. There is widespread occupation throughout the Auckland Region at this time, as indicated by the history, archaeological sites and radiocarbon dates (e.g., Bickler 2024, Petchey et al. 2022, Simmons 1987, Stone 2001). The radiocarbon date from the rat-gnawed seed, however, was much more precise than the previous results from litter at AD 1230-1295 (at 95% prob.). This is one of the earliest Auckland dates and shows the rapid spread of kiore rat (*Rattus exulans*) across the landscape in the late 13th century.

Table 1: Radiocarbon dates from the R11/1559. Dates are calibrated using the most current calibration curves, SHCal20 (Hogg et al., 2020) and Marine20 (Heaton et al., 2020), with a ΔR of -154±38 ^{14}C years (Petchey and Schmid 2020) and so differ from the original publication in Best (1992).

Lab No.	Context	Material	CRA ± Error BP	Calibrated Age Range (Years AD)			
				68% prob.		95% prob.	
Wk-1143	Fire event?	Leaf litter (broadleaf forest)	750 ± 50	1270	1385	1220	1395
WkA-56414	Fire event?	Hīnau seed (Rat gnawed)	779 ± 12	1270	1290	1230	1295
Wk-1142	shell midden/ wooden artefacts	Marine shell: *Austrovenus stutchburyi*	850 ± 50	1425	1595	1340	1670
WkA-56415	shell midden/ wooden artefacts	Marine shell: *Austrovenus stutchburyi*	792 ± 17	1485	1630	1430	1690

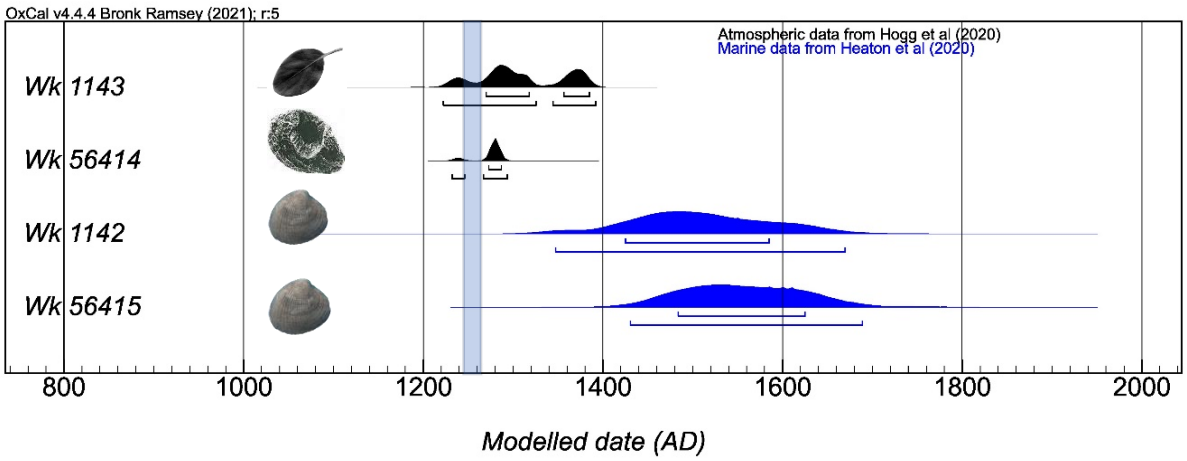


Figure 9: Radiocarbon results showing 68.3% and 95.4% probability distributions (Black dates from terrestrial leaf litter and hīnau berry samples, blue dates from cockle shell, blue bar indicates likely settlement period from Bunbury et al. 2022).

5. Environmental history of the Waihorotiu Stream

The environment around the Queen Street Gaol site was the northern end of a swamp or pond. When the first Europeans arrived, the Waihorotiu drained the watershed bounded by the ridges along Symonds and Albert Streets, and to the south by Karangahape Road. Its main source was a small swamp in what is now Myers Park (Figure 1). The stream was tidal to Durham Street and navigable to Wyndham Street at least (George n.d.: 407). Small swamps occurred where side streams joined the main creek, and at the mouth, and from the very beginning, progress in the new settlement often became literally bogged down (Daily Southern Cross 10 December 1862: 3).

Half a millennium earlier, the situation of Polynesian settlers would have been different. The archaeological and environmental samples collected during the 1987 excavation capture a snapshot of the environmental landscape around the Waihorotiu watershed at the time of human arrival in the 13th century AD and provide some data on how that landscape underwent significant changes. Approximately 50kg of organic material was collected from the base of the stream during the excavation, with a smaller sample taken from the level of the midden. A pollen sample was also obtained from a sample of the basal clay immediately under the stream. Identification of the vegetation in the deposit involved a thin-section study of twigs and small branches, leaf and seed identification, and pollen analysis. Using both pollen and macrofossils ensured that the effects of wind drift on the former could be checked. Analysis of the pollen was undertaken by Newnham (1992), wood fragments by Wallace (1992) and organic deposits by Ogden and Cameron (1992). Results are summarised in Table 2 and the discussion below follows from Best (1992) and its appendices.

Newnham's (1992) analysis of the pollen in the sedimentary clay at the creek base suggested a landscape dominated by grasses, herbs, and shrubs, indicating an open, unforested countryside. This most likely dates from the last glacial maximum (18,000–25,000 years ago) based on the dominance of cool-climate species such as grasses, beech, daisies, grass trees (e.g., *Dracophyllum* sp.), and hebe

(Newnham et al. 1989; see also Barrell et al. 2013, Newnham et al. 2018 and Horrocks et al. 2005, 2009, 2024 for the Auckland region). Beech pollen was likely wind-blown from forests in the Waitākere or Hunua Ranges, or from now-submerged coastal areas north of Auckland (Best 1992: 132, see also the discussion in Marske and Boyer 2024 for a more national perspective).

The organic material from the base of the stream revealed a very different environment consisting of coastal broadleaf–podocarp forest around AD 1295, shortly after initial Polynesian arrival in the North Island. Species found included rimu (*Dacrydium cupressinum*), miro (*Prumnopitys ferruginea*), kauri (*Agathis australis*), hutu (*Ascarina lucida*), rewarewa (*Knightia excelsa*), and kiekie (*Freycinetia banksii*), indicating a warm-temperate climate (Ogden and Cameron 1992, Wallace 1992). Human activity was evidenced by fire-induced scrub and regenerating forest species like wineberry (*Aristotelia serrata),* tutu (*Coriaria sp.*), mahoe (*Melicytus ramiflorus*), mapou/matipo, and bracken fern (*Pteridium sp.*), and microscopic charcoal fragments indicative of forest clearance (see discussion Newnham et al. 2018). The rat gnawed hīnau berry kernels demonstrate the presence of kiore and this suggests the early arrival of humans in the Auckland Region (see also Bunbury et al. 2022, Wilmshurst et al. 2008).

Twigs and sticks found at the midden level dating to between AD 1430 and AD 1690 demonstrate the continuation of the coastal broadleaf podocarp forest, but possibly with a greater proportion of shrubs due to nearby forest clearance. Material deposited after the midden suggested that the environment had shifted and was largely treeless, dominated by ferns rather than grasses (Ogden and Cameron 1992, see also Newnham et al. 2018). An undated sample from the base of the Civic Theatre excavation 500m inland along Queen Street (Figure 1) produced a similar suite of charcoal and bracken spores along with evidence of podocarp pollen (miro [*Pectinopitys ferruginea*], rimu and tanekaha/toatoa [*Phyllocladus spp.*]) (Horrocks 2011). It is uncertain whether this transformation resulted from progressive land-use and population pressure, which ultimately removed the primary forest cover, or from changes in settlement and exploitation practices during the last 400 years before European contact Archaeological evidence indicates extensive gardening, along with the presence of large pā (palisaded or defended forts) and kāinga (undefended villages) recorded in the vicinity of the Gaol site. Climatic changes associated with the Little Ice Age (Bunbury et al. 2022; Newnham et al. 2018) were also influential.

Table 2: Summary of changing environment around the Queen Street Gaol site (R11/1559) based on organic materials recovered

Time Period		Environment	Key Features	Human/Climatic Influence
25,000–18,000 BP	— Last Glacial Maximum	Open, grassy, cool environment	Grasses, herbs, shrubs, beech pollen; cooler climate	Natural glacial conditions; no human presence
c. 670 BP	c. AD 1280	Dense coastal broadleaf–podocarp forest	Rimu, miro, kauri; warm-temperate forest	Early Polynesian presence; forest burning and clearance; rat-gnawed hīnau kernels
c. 500 – 300 BP	AD 1425 to AD 1630	Coastal forest with more shrubs	Evidence of increasing clearance	Ongoing human modification; small sample
Post c. 300-150 BP	Post AD 1630 to AD 1800	Treeless, fern-covered hills	Landscape drastically altered; forest disappearing	Extensive human impact; possible population pressure or land-use shift

When D'Urville stopped off in 1827 in Auckland, first around the north shore of the Waitemata Harbour and then along the southern side of the harbour, his crew explored the nearby land. They described the area as being clothed in tall bracken, bushes, and occasional brushwood (Wright 1950: 153-155). The first Europeans to settle in what was to become Auckland ran up the flag on Point Britomart on 18 September 1840. Around them as far as the eye could see was an expanse of fern and "teatree" (typically mānuka, with some native trees in the gullies and pohutukawa (*Metrosideros excelsa*) on the headland cliffs (e.g., J. Campbell 1881: 98ff, Daily Southern Cross 10 December 1862: 3, New Zealand Herald, 11 January 1896, Page 1 (Supplement), Stone 2007). Although there was little evidence of Māori settlement visible, it was likely that the area had been abandoned only relatively recently due to the Ngā Puhi invasions in 1821-1822 (Best 1966: 280), and the secondary vegetation was probably indicative of regeneration of cultivated gardens (Simmons 1987: 13).

Although Māori had drastically altered the vegetation in this part of the watershed, the relatively low scrub in the valley made colonial settlement easier than having to clear large forest blocks. However, it was inevitable that a watercourse in such a steep valley would cause problems in its lower part, where the earliest city began to expand. The building of the Gaol complex was originally on the margin of the colonial settlement, so much so that it was commented:

> *"We are at a loss to know how his honour, the Chief Justice, the Law Officers, and all connected with the Court, will contrive to get to it in wet weather - to pass and repass from the Court House to other parts of the town, with decent facility, will be out of the question"* (New Zealand Herald and Auckland Gazette October 9 1841: 2).

For 35 years, until it was contained in a brick barrel drain, the watercourse hindered pedestrians and vehicles alike. Initial management efforts included constructing drains, but these often failed. On 27 July 1845, another downpour caused more damage to the Gaol drain and Queen Street sewer. Plans and estimates for repairs were prepared, and the remodelling of the sewer involved reusing existing materials, enlarging the existing drain, with provisions for masonry and carpenter work, and adding flaps or flood gates and a flood-resistant bridge. Works on the drainage system have continued to the present day as the modern CBD has largely covered all traces of the Waihorotiu.

6. Discussion

The relationship between the Waihorotiu Stream and the people living alongside it continues to be relevant in the 21st century. A century and a half of engineering works have tamed and hidden the stream underneath modern Queen Street, but it still influences how Aucklanders live and work in the central city (e.g., Auckland Regional Council n.d., Parsons 2025). The Gaol site remains one of the few locations in New Zealand with evidence of almost 700 years of human settlement, though it represents just a glimpse of this past. The project was one of the earliest "rescue archaeology" projects in New Zealand to use palynological analysis of sediment samples from sites primarily of colonial age (see for examples MacPhail 1999 in Australia). The application of palynological and other macrofossil analyses on archaeological sites has become standard practice across New Zealand (e.g., Barber and Benham 2024, Holdaway et al. 2019, Horrocks et al. 2024, 2025). The results discussed here focus on the pre-colonial era, but the evidence of landscape changes and the disappearance of remaining forest species during the European settlement around the Gaol site is clear.

The excavation exposed the banks of the Waihorotiu Stream at a time when Polynesians were likely exploring the Auckland Isthmus, before or around AD 1295. Contemporary dates from kiore rat and rat-gnawed seeds have been found elsewhere around New Zealand (Bunbury et al. 2022, Wilmshurst et al. 2008). Polynesian arrivals encountered a coastal broadleaf podocarp forest with abundant plant resources to complement the marine protein available when they occupied what is now the Auckland CBD. Later occupation by Māori, dated to AD 1430-1690, suggested a well-established settlement along the stream with artefacts such as a kō tip, arguing for nearby gardening, with ochre and woven flax fragments amongst the shell midden suggesting an established settlement.

This collection remains one of the few caches of gardening implements found in Auckland and in the North Island. Best (2000) excavated a cache of 5 ketu gardening tools from Ruakaka (Q07/897) near Whangarei, but these were not from dated contexts (see Horrocks et al. 2003). Baquié recovered a set of kō fragments and other wooden implements, including an unusual arrow-shaped handle, from a swamp area in Kawakawa Bay, east Auckland (S11/1025, Harlow et al. 2012). These were identified as made from kanuka, but were from a mixed area, with more modern material recovered as well. More recently, at least four kanuka kō were also recovered from a swampy area at site R09/2247 near Warkworth, along with a puriri (*Vitex lucens*), teka (footrest for a kō) and other implements (Shakles et al. 2023). However, the artefacts were in a palaeochannel suggestive of secondary deposition, and no date was possible (Shakles et al. 2023: 429). Further away, at Kohika (V15/80) in the eastern Bay of Plenty, over 12 kō, a teka and a ketu are described from the excavations undertaken in the 1970s (Wallace and Irwin 2004: 87-92). The kō were made from mānuka, kānuka and maire. These kō are similar to those from the Gaol site, although Kohika is likely to date from the late 17th century, around 50-100 years later (Irwin and Jones 2004: 82).

Historic archaeology in the main centres of New Zealand tended to ignore the likelihood of prehistoric evidence under the bricks and bottles of the European settlers, but searches of construction companies bore logs, and the use of old street levels to reconstruct the topography are useful aids to developing excavation strategies. Various "peaty" deposits were located along the length of Queen Street between the Town Hall and Victoria Street. In the excavations for Stage 1 of the City Library, such a deposit was found, and another in the northeast corner of the Civic Car Park excavations in Aotea Square (Jefferson 1980: 10). Māori artefacts may have been identified but not reported. Artefacts did turn up when the foundations for the Civic Theatre were excavated in 1929 and apparently sparked a discussion about their ownership (Auckland Star, 10 October 1931: 8). That project also identified the area's Māori history:

> *"The massive steel, brick and concrete walls of the Civic Theatre… will rest on solid rock. This has necessitated colossal excavations, entailing the removal of the old banks and bed of Ligar Canal, exposing the blue marine rock on which the foundations of the theatre will rest. Early Aucklanders drew their water supply from the Ligar Canal, and in the Civic Theatre's winter garden, which will occupy the excavation, fashionable ladies will sit and sip afternoon tea several feet below the banks where Maori ladies of past centuries sat and fished"* (Auckland Star, 1 June 1929: 8).

Such comments were a common contemporary acknowledgement of Māori history about the Waihorotiu.

Excavation works around Myers Park, further up the Horotiu Valley, did find evidence of work undertaken in the 19th century to manage the waterflow of the Waihorotiu, including the exposure

of parts of a dam and ceramic, brick, and stone drains (Best 1998, Harding et al. 2023). However, no material dating prior to the 19th century has been identified. The excavations at the Queen Street Gaol site remain the only dated sequence of the Waihorotiu watershed.

At the time, the NZ Historic Places Trust (now Heritage New Zealand Pouhere Taonga) required only 10 days paid excavation to complete the investigation of an inner-city block of known historic importance. This reflected an expectation that the archaeology of colonial-period Auckland was of little significance. Indeed, it was stated to Best at the time that hopefully nothing would be found, and that there would be no more talk of historic archaeology in Auckland. The discovery of the prehistoric settlement under the Gaol site, while not unexpected, still relied on almost seven months of volunteer archaeological monitoring and token payment for the report.

Traditions concerning Māori sites in the area indicate that it was quite densely populated, and the low-lying aspect of the immediate area of Gaol suggested that preservation of organic remains was probable. The redating of the Queen Street Gaol samples is significant as it includes the earliest date, c. AD 1280, obtained from archaeological excavation in the Auckland CBD and one of the earliest in Aotearoa New Zealand. The radiocarbon samples came from a well-described archaeological context, and the material collected, especially rat-gnawed hīnau seeds, are ideally suited for precise dating by AMS methods (e.g., Bunbury et al. 2022: 3, Wilmshurst and Higham 2004). Debates over the earliest settlement and its environmental impacts continue (e.g., Bunbury et al. 2022, Tomlinson et al. 2024), with the archaeological dates presented here making an important contribution to understanding human settlement in Aotearoa New Zealand.

Furthermore, despite many excavations in the Auckland CBD, no additional datable material has been published relating to Māori settlement along the Waihorotiu (e.g., Petchey et al. 2022). The earliest phases of occupation around Devonport (Campbell et al. 2018) on the opposite shoreline to the Horotiu catchment, as well as early settlement at sites in the Hauraki Gulf (e.g., Brassey 2025), illustrate the activities of early arrivals around the Waitemata Harbour and include moa-hunting and shellfish gathering during the AD 1300s. The rat-gnawed seed date supports earlier arrival. By the AD 1500s, the evidence from the Gaol site suggests that settlement to access the rich volcanic soils for gardening close to easily obtained coastal resources had become well established.

As Auckland became established as a colonial centre, the Gaol and Courthouse were built at the swampy fringes of the early town. They were quickly surrounded by the expanding settlement, and their functions moved elsewhere (see Bickler and Best 2024). The Waihorotiu Stream became the Ligar Canal and was eventually buried as part of the water management system in the central city. The Theatre Royal replaced the Courthouse and Gaol in 1875, and as one perceptive (and possibly prophetic) individual commented:

> *"Archaeologists and skatemakers alike may be considered out of their element in Auckland. But even in so young a community, where changes are rapid and where old landmarks are fast vanishing, some matter of interest may occasionally be found for the first, though, unless our climate alters, no inducement whatever can be held out for the advent of the second."* (Daily Southern Cross 31 August 1875: 1).

In June 1987, 102 years later, the whole block was cleared once again, and remnants of the old ground surface, not seen since the Gaol occupation, were revealed for the last time prior to their removal by the developers. The Theatre Royal gave way to high-rise office buildings (Figure 2). The stratigraphic evidence of these successive activities exposed the palimpsest of occupation in the

Horotiu Valley and a glimpse into the changing fortunes of the Auckland CBD and the long history of the Tāmaki Makaurau Auckland region.

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Conflicts of Interest

The authors declare no conflicts of interest.

Author Contributions

Conceptualisation, S.B. and S.H.B.; methodology, S.B. and S.H.B., writing – original draft preparation, S.B., S.H.B., and F.P.; formal analysis, F.P.; writing – review and editing, S.B. and S.H.B. All authors have read and agreed to the published version of the manuscript.

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References

Auckland Regional Council n.d. Waihorotiu Stream Day Lighting: Identifying Opportunities for Central Auckland: Concept Design. www.aucklandcity.govt.nz

Barber, I.G.; Benham, R.W. 2024. American sweet potato and Asia-Pacific crop experimentation during early colonisation of temperate-climate Aotearoa/New Zealand. *Antiquity,* 98 (401): 1376–1394. DOI: 10.15184/aqy.2024.143

Barrell, D.J.A.; Almond, P. C.; Vandergoes, M. J.; Lowe, D. J.; Newnham, R. M.; INTIMATE members. 2013. A composite pollen-based stratotype for inter-regional evaluation of climatic events in New Zealand over the past 30,000 years (NZ-INTIMATE project). *Quaternary Science Reviews*, 74, 4–20. DOI: 10.1016/j.quascirev.2013.04.002

Best, A.D. 1966. *The Journal of Ensign Best*. Wellington: Government Printer.

Best, S. 1992. *The Queen Street Gaol. Auckland's First Courthouse, Common Gaol and House of Corrections (Site R11/1559)*. Auckland Conservancy Historic Resource Series No. 2. Department of Conservation, Auckland.

Best, S. 1998. *The Myers Park Excavations. Dam Site Wall (R11/2017)*. Final Archaeological Report. Prepared for Metrowater.

Best, S. 2000. *The Prescott's Dam Site, Ruakaka, Site N24/581: Archaeological Excavation of Artefact Findspot*. Report for Whangarei District Council.

Bickler, S.H. 2024. Estimating the number of archaeological excavations undertaken in Aotearoa New Zealand. *Archaeology in New Zealand*, 67 (1):39-55.

Bickler, S.H.; Best, S. 2024. Spectacle and concealment of Colonial Auckland prisons. *Journal of Pacific Archaeology*, 14(1). DOI: 10.70460/jpa.vi.358

Brassey, R. 2025. New Zealand's own Pompeii? The Sunde site, Motutapu Island, through a geoarchaeological lens. *Journal of Pacific Archaeology*, 15(1). doi:10.70460/jpa.v15i1.359

Bunbury, M.; Petchey, F.; Bickler, S.H. 2022. A new chronology for the settlement of Aotearoa (New Zealand) by Māori and the role of the Little Ice Age in demographic developments. *PNAS*, 119: e2207609119. DOI: 10.1073/pnas.2207609119

Campbell, J.L. 1881. *Poenamo*. London: Williams and Norgate.

Campbell, M. 2002. *Graveyard Point, Awaawaroa Bay, Waiheke: Monitoring and Excavation of Sites S11/213 and S11/911, 14–18 March 2002: Report to Ahuareka Trust*.

Campbell, M.; Hudson, B.; Craig, J.; Cruickshank, A.; Furey, L.; Greig, K.; McAlister, A.; Marshall, B.; Nims, R.; Petchey, F.; Russell, T.; Trilford, D.; Wallace, R. 2019. The Long Bay Restaurant site (R10/1374), Auckland, New Zealand, and the archaeology of the mid-15th century in the upper North Island. *Journal of Pacific Archaeology*, 10(2): 19–42. DOI: 10.70460/jpa.v10i2.291

Campbell, M.; Plowman, M.; Brooks, E.; Cruickshank, A.; Furey, L.; Horrocks, M.; Turner, M.; Wallace, R.; Walter R. 2018. *The Torpedo Bay Excavations: Volume 1, the Pre-European Maori Site (HPA Authority (2009/275)*. Unpublished report.

George, J. n.d. A Few Odds and Ends of Remembrances Collected and Jotted in Leisure Hours of my Experiences for the Last Half Century in the Colonies of Tasmania, South Australia, Sydney and New Zealand from 1823 to 1876. Typescript M.S. in Auckland Public Library.

Harding, L.; Low, J.; Roth, K.; Jones, B.; Cohen-Smith, H.; Farley, G. 2023. *Myers Park Underpass Upgrade, Auckland: Final Archaeological Report (HNZPT Authority No. 2022/358).* Unpublished report for Auckland Council.

Harlow, D.; Baquié, B.; Bickler, S.H. 2012. *Kawakawa Bay Wastewater Scheme Project: Final Archaeological Report. NZHPT Authority No. 2006-162*. Prepared for Watercare Services Limited.

Heaton, T.J.; Köhler, P.; Butzin, M.; Bard, E.; Reimer, R.W.; Austin, W.E.N.; Ramsey, C.B.; Grootes, P.M.; Hughen, K.A.; Kromer, B.; Reimer, P.J.; Adkins, J.; Burke, A.; Cook, M.S.; Olsen, J.; Skinner, L.C. 2020. Marine20—The Marine Radiocarbon Age Calibration Curve (0–55,000 cal BP). *Radiocarbon*, 62 (4): 779–820. DOI: 10.1017/RDC.2020.68

Hogg, A.; Heaton, T.J.; Hua, Q.; Palmer, J.; Turney, C.; Southon, J.; Bayliss, A.; Blackwell, P.G.; Boswijk, G.; Bronk Ramsey, C.; Petchey, F.; Reimer, P.; Reimer, R.; Wacker, L. 2020. SHCAL20 Southern Hemisphere calibration, 0-55,000 years cal BP. *Radiocarbon*, 62 (4):759-778. DOI: 10.1017/RDC.2020.59

Holdaway, S.J.; Emmitt, J.; Furey, L.; Jorgensen, A.; O'Regan, G.; Phillipps, R.; Prebble, M.; Wallace, R.; Ladefoged, T. N. 2019. Māori settlement of New Zealand: The Anthropocene as a process. *Archaeology in Oceania*, 54: 17–34. DOI: 10.1002/arco.5173

Horrocks, M. 2011. Appendix J: Plant microfossil analysis. In Best, S.; Harlow, D. *Archaeology and History of the Q Theatre Site, Auckland (R11/2717): Final Archaeological Report to Q Theatre Trust and New Zealand Historic Places Trust in fulfilment of Authority No. 2010/64*.

Horrocks, M.; Augustinus, P.; Deng, Y.; Shane, P.; Andersson, S. 2005. Holocene vegetation, environment, and tephra recorded from Lake Pupuke, Auckland, New Zealand. *New Zealand Journal of Geology and Geophysics*, 48 (1), 85–94. DOI: 10.1080/00288306.2005.9515100

Horrocks, M.; Best, S.B.; Byrami, M. 2003. Analysis of sediments and plant remains from the find-spot of a cache of Polynesian gardening tools at Ruakaka, Northern New Zealand. *New Zealand Journal of Archaeology*, 23 (2001): 189-210.

Horrocks, M.; Bickler, S.H.; Apfel, A.; Shakles, R.; Cameron, E.; Foster, R.; Presswell, B. 2025. Tracing historic Māori activity at two volcanic cone maunga pā, Auckland, New Zealand using microfossil and 14C analyses. *Pacific Science*, 78 (4):407-428. DOI: 10.2984/78.4.3

Horrocks, M.; Deng, Y.; Ogden, J.; Nichol, S.L.; Bickler, S.H. 2024. Palynological tephra and ^{14}C records from southern Kaitoke Great Barrier (Aotea) Island New Zealand since c. 30 000 cal. yr BP. *New Zealand Journal of Botany*. DOI: 10.1080/0028825X.2024.2402091

Horrocks, M.; O'Loan, A.; Wallace, R. 2009. Discontinuous late Pleistocene–Holocene pollen records from Auckland Domain, northern New Zealand. *New Zealand Journal of Botany*, 47(3), 239–247. DOI: 10.1080/00288250909509807

Inward Correspondence of the Colonial Secretary (ICCS), 1845. No 1A 1 45/1072, National Archives, Wellington.

Irwin, G.J.; Jones, M.D. 2004. Site chronology. In Irwin, G. J. (Ed.), *Kohika: The Archaeology of a Late Māori Lake Village in Ngāti Awa Rohe, Bay of Plenty, New Zealand* (pp. 76–82). Auckland University Press.

Jefferson, R.F. 1980*. Ligar's Canal.* Unpublished Report. (Available at the HNZPT Digital Library).

MacPhail, M. 1999. A hidden cultural landscape: Colonial Sydney's plant microfossil record. *Australasian Historical Archaeology,* 17, 79–106.

Marske, K.A.; Boyer, S.L. 2024. Phylogeography reveals the complex impact of the Last Glacial Maximum on New Zealand's terrestrial biota. *Journal of the Royal Society of New Zealand*, 54 (1): 8–29. DOI: 10.1080/03036758.2022.2079682

Newnham, R. 1992. Pollen analysis of two Waihorotiu Creek bed samples, Site R11/1559: Report on the palynology of an organic sediment sample from Queen Street, Auckland (Appendix J). In Best, S., *The Queen Street Gaol: Auckland's First Courthouse, Common Gaol and House of Corrections (Site R11/1559).* Auckland Conservancy Historic Resource Series No. 2. Department of Conservation, Auckland.

Newnham, R.; Lowe, D.; Gehrels, M.; Augustinus, P. 2018. Two-step human–environmental impact history for northern New Zealand linked to late-Holocene climate change. *The Holocene*, 28 (7): 1093-1106. DOI: 10.1177/0959683618761545

Newnham, R; Lowe, D.; Green, J. 1989. Palynology, vegetation and climate of the Waikato lowlands, North Island, New Zealand since c. 18,000 years ago. *Journal of the Royal Society of New Zealand*, 19 (2): 127–150. DOI: 10.1080/03036758.1989.10426443

Ogden, J.; Cameron, E. 1992. Leaf and seed identification from Waihorotiu Creek organic samples, Site R11/1559 (Appendix I). In Best, S., *The Queen Street Gaol: Auckland's First Courthouse, Common Gaol and House of Corrections (Site R11/1559).* Auckland Conservancy Historic Resource Series No. 2. Department of Conservation, Auckland.

Parsons, M. 2025. Remembering Wai-Horotiu: Microhistory, public art, and indigenous environmental justice in Tāmaki Makaurau. *Kōtuitui: New Zealand Journal of Social Sciences Online*, 20 (4): 1348–71. DOI: 10.1080/1177083X.2025.2510600

Petchey, F.; Bickler, S.H.; Hughes, L.; Bunbury, M. 2022. The Aotearoa/New Zealand Radiocarbon Database Upgrade. *Archaeology in New Zealand*, 65 (3): 32-40.

Petchey, F.; Schmid, M.M. 2020. Vital evidence: Change in the marine ^{14}C reservoir around New Zealand (Aotearoa) and implications for the timing of Polynesian settlement. *Scientific Reports*, 10 (1): 14266. DOI: 10.1038/s41598-020-70227-3

Shakles, R.; Phear, S.; Bickler, S.H.; Mailhot, C.; Low, J.; Burnett, Z.; Clough-Macready, T. 2023. *Archaeological Investigations of The Ara Tūhono–Pūhoi to Wellsford Road (Stage 1 - Pūhoi to Warkworth*). Clough & Associates Monograph Series No. 28. Auckland.

Simmons, D.R. 1987. *Maori Auckland*. Auckland: The Bush Press.

Stone, R.C.J. 2001. *From Tamaki-Makau-Rau to Auckland*. Auckland: Auckland University Press.

Stone, R.C.J. 2007. *Logan Campbell's Auckland: Tales from the Early Years*. Auckland: Auckland University Press.

Tomlinson, S.; Lomolino, M.V.; Anderson, A.; Austin, J.J.; Brown, S.C.; Haythorne, S.; Perry, G.L.W.; Wilmshurst, J.M.; Wood, J.R.; Fordham, D.A. 2024. Reconstructing colonization dynamics to establish how human activities transformed island biodiversity. *Scientific Reports*, 14: 5261. DOI: 10.1038/s41598-024-55180-9

Wallace, R. 1992. Wood identification: Waihorotiu Creek bed (Appendix H). In Best, S., *The Queen Street Gaol: Auckland's First Courthouse, Common Gaol and House of Corrections (Site R11/1559).* Auckland Conservancy Historic Resource Series No. 2. Department of Conservation, Auckland.

Wallace, R.T.; Irwin, G.J. 2004. The wooden artefacts from Kohika. In Irwin, G. J. (Ed.), *Kohika: The Archaeology of a Late Māori Lake Village in Ngāti Awa Rohe, Bay of Plenty, New Zealand* (pp. 87–121). Auckland University Press.

Wilmshurst J.M.; Anderson A.; Higham T.; Worthy T.; 2008. Dating the late prehistoric dispersal of Polynesians to New Zealand using the commensal Pacific rat. *Proceedings of the National Academy of Sciences* 105:7676–7680, DOI: 10.1073/pnas.0801507105

Wilmshurst, J.M.; Higham, T. F. 2004. Using rat-gnawed seeds to independently date the arrival of Pacific rats and humans in New Zealand. *Holocene*, 14: 801–806. DOI: 10.1191/0959683604hl760ft

Wright, O. 1950. *New Zealand 1826-1827, from the French of Dumont D'Urville*. Wellington: The Wingfield Press.

Newspaper Articles (PapersPast.govt.nz)

Auckland Star, News of the Day: Foundations of Rock. Volume LX, Issue 128, 1 June 1929, Page 8.

Auckland Star, Queen Street Gully. Volume LXII, Issue 240, 10 October 1931, Page 8.

Daily Southern Cross, Auckland Twenty Years Ago. By an Early Settler. Volume XVIII, Issue 1681, 10 December 1862, Page 3.

Daily Southern Cross, The Old Supreme Court. Volume XXXI, Issue 5602, 31 August 1875, Page 1 (Supplement).

New Zealand Herald, Red Scoria Ash! Red Scoria Ash! Advertisements Column 3, Volume XXII, Issue 7383, 18 July 1885, Page 3.

New Zealand Herald, The Early Days of Auckland, Volume XXXIII, Issue 10025, 11 January 1896, Page 1 (Supplement).

New Zealand Herald and Auckland Gazette, Volume I, Issue 15, 9 October 1841, Page 2.

Thames Advertiser, The Theatre Royal, Auckland. Volume IX, Issue 2395, 16 August 1876, Page 3.