VICTORIA PARK TUNNEL, FREEMANS BAY, AUCKLAND: FINAL ARCHAEOLOGICAL REPORT

Prepared in fulfilment of NZHPT Authority 2010/103

For the Victoria Park Alliance

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EXECUTIVE SUMMARY

The Victoria Park Alliance (VPA) has constructed a multilane motorway in a tunnel known as the Victoria Park Tunnel (VPT), running through Victoria Park (reclamation site R11/2374) and the original location of the Birdcage Tavern, formerly the Rob Roy Hotel (site R11/2499), a heritage building dating to 1885-1886. The works were carried out under two archaeological Authorities issued by the NZ Historic Places Trust (NZHPT): 2010/206 relating to the Birdcage Tavern site, and 2010/103 in respect to the Victoria Park reclamation site R11/2374. The Authorities were issued conditional on archaeological monitoring and recording of any archaeological remains exposed by construction works. A final report on works affecting the Birdcage Tavern site under Authority 2010/206 has been prepared separately (Phear & Farley 2012). This report is the final report on the results of archaeological monitoring of the rest of the VPT construction works under Authority 2010/103.

Archaeological monitoring within Victoria Park (site R11/2374) and St Mary's Bay under Authority 2010/103 started in February 2010 and was completed in November 2011 in accordance with Condition 11 of the Authority. A number of interim progress reports were produced and submitted to the NZHPT and VPA. The works monitored included service and stormwater/sewerage realignment and installation, tunnel excavations and associated piling works, as well as initial ground clearance works. The areas monitored extended as far south as Napier Street, and as far north as St Mary's Bay reserve.

A number of archaeological deposits and features were recorded including reclamation layers, timber wharf structures, marine deposits, a road surface, additional on-shore fill deposits and two wells. Archaeological recording included plan and section drawings, photographs and records of materials as well as the sampling of artefacts as required. Analysis of the artefacts and wooden remains was undertaken by specialists, and conservation of both organic and metal artefact remains was carried out where appropriate.

The project has provided information on many elements of mid-late 19th to early 20th century Freemans Bay. Specifically, both reclamation deposits and structures have informed on fill origins and the processes of reclamation, with materials deriving from Acheron Point, dredged marine clay and shell layers, and additional soils containing 19th century artefacts. Temporary wharves were constructed to aid the infill process, and evidence of more localised dumping of rubbish was apparent in the upper layers of the reclamation.

The many artefacts recovered have provided evidence of the industries and businesses present prior to and during reclamation, and of domestic life in the area. Finds included a sack of bark probably originating in Australia, which would have been intended for use in tanning leather, and bottles and products produced by local businesses (such as mineral water, medicines, and preserves) or imported from Europe (such as dinner services, shoes and gin) and America (schnapps). One unusual item, a pistol made in Belgium, was recovered from a well and hints at the need for personal protection in this rather rough area of early Auckland.

Additional information on the development of infrastructure such as roading and drainage was obtained through the monitoring and recording of brick culverts and associated stratigraphy, and evidence of the different stages of reclamation and structural elements such as sea walls was also recorded, allowing insight into the development of the Freemans Bay area from a natural

streamfed bay in pre-European times to an increasingly urban area incorporating extensive reclamations throughout the bay and beyond.

While industries and large-scale landscape transformation were the overarching drivers in the expansion of central Auckland, as was apparent in the archaeological record, glimpses of the people who lived and worked in this changing landscape were evident in the artefacts discarded, in the shoes worn out and tossed away, and in the bottles of infant food and sauce bottles littering the reclamation and tossed into the wells. The project has added to our knowledge of colonial settlement and development in Freemans Bay, and Auckland generally, in the 19th and early 20th centuries.

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1. INTRODUCTION

1.1 PROJECT BACKGROUND

Auckland's infrastructure has long been the focus of development, from the earliest days when the town was established as the capital of New Zealand (1840-65) and as it progressed on to become the country's largest trading city. A fundamental part of this process was a sizeable reclamation programme proposed by the Auckland Harbour Board from the late 1850s that continued into the early 20th century. The transformation was significant, with the natural coastline originally characterised by bays and inlets framed by Maori pa and settlement sites permanently altered into a waterfront characterised by flat reclaimed land with long wharves stretching into the harbour. Auckland's bays were no longer separated by promontories and cliffs as demolition works forever altered the natural landscape in search of a Victorian ideal – a prosperous colonial settlement. Documenting the evidence of this large scale landscape transformation has been the focus of the Victoria Park Tunnel (VPT) project centred on Victoria Park in Freemans Bay, Auckland.

The VPT was a NZ Transport Agency (NZTA) initiative aimed at alleviating and improving traffic flow into and out of Auckland city (Figure 1 and Figure 2). The Victoria Park Alliance (VPA) has constructed a multilane motorway within the VPT, which runs through Victoria Park (reclamation site R11/2374) and the original location of the Birdcage Tavern, formerly the Rob Roy Hotel (site R11/2499), a heritage building dating to 1885-1886 (Phear & Farley 2012).

Two archaeological Authorities for the VPT construction works were granted by the NZ Historic Places Trust (NZHPT) conditional on archaeological monitoring and recording of any archaeological remains exposed: 2010/103 in respect to the Victoria Park reclamation site R11/2374; and 2010/206 in respect to the Birdcage Tavern/Rob Roy Hotel site R11/2499. A final report on works affecting the Birdcage Tavern site under Authority 2010/206 has been prepared separately (Phear & Farley 2012).

Archaeological monitoring of the construction works affecting site R11/2374 (historic reclamation) under Authority 2010/103 started in February 2010 and was completed in November 2011. This is the final report, which details the project within Victoria Park and St Mary's Bay, in accordance with Condition 11 of the Authority. A number of interim progress reports were also produced and submitted to the NZHPT and VPA (see Bibliography).

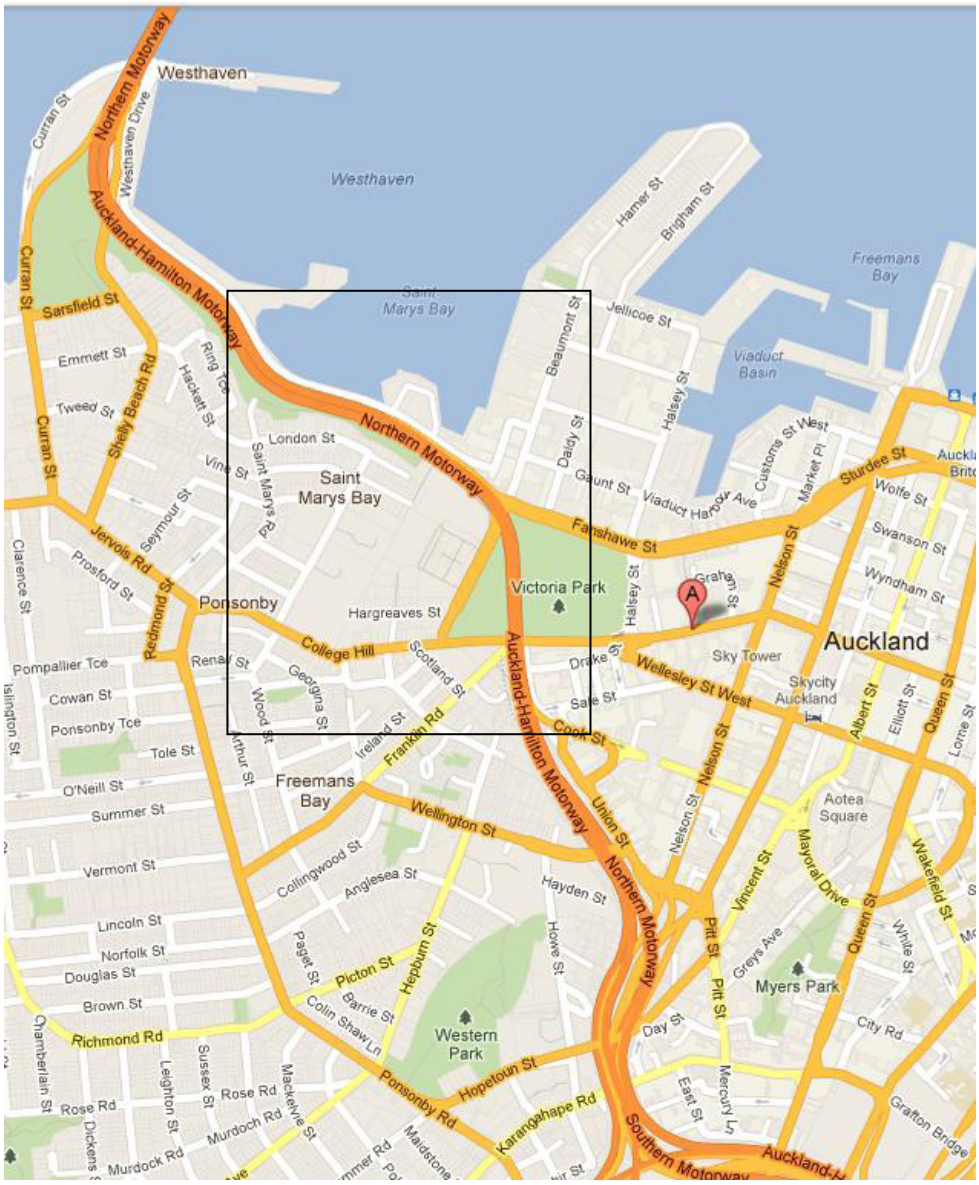


Figure 1. General location map (source: Google Maps)

Figure 2. The route of the Victoria Park Tunnel

1.2 HISTORICAL & ARCHAEOLOGICAL BACKGROUND

A brief historical and archaeological background for Freemans Bay and the heritage buildings in the vicinity of the tunnel route is presented here in order to give a broad idea of the settlement history of the area.[1] More detailed discussion of specific themes or events is provided within the chapters relating to the different areas of monitoring.

Freemans Bay

Freemans Bay was one of the earliest areas of settlement in the new capital city of Auckland established in 1840. Prior to European settlement in what today is Auckland's central business district, it formed one of the three main bays and was known by two Maori names: Waiatarau, meaning 'waters reflecting shadows' or Waikokota 'cockle water' (Simmons 1987). Two streams flowed into the bay, the western being known as Waikuta 'water-reed river', and the eastern Tunamau 'eel caught' (Figure 3). Pa sites occupied the headlands at either end of the bay – Te To 'the dragging up' (of canoes) was on the western side of Waikokota/Freemans Bay and Paritutu 'perched on the cliff' was on the cliff on the eastern side of the bay (ibid.).

Soon after the Tamaki isthmus was chosen as the site for the new capital, plans were drawn up for the new town. Colonial Surveyor Felton Mathew planned streets beside the shores of Commercial, Official/Mechanics and Freemans Bays (1841 plan; Platts 1971). The headland between Commercial and Freemans Bays was called Observation Point, then Stanley Point (after the captain of HMS *Britomart*) and later Smales Point, after Captain Smale of the *Chelydra*, who lived there. Point Fisher, later Point Acheron, was on the west side of Freemans Bay (Platts 1971; Macready & Clough 2012). Freemans Bay was earmarked for reclamation, but it would be many years before this eventuated.

The earliest European settler in the Freemans Bay area was Governor Hobson's secretary James Stuart Freeman, who built a house and established a farm from 1841 (Murdoch n.d.; Carlyon & Morrow 2008: 20) (Figure 4). In 1842 the Police census recorded only five houses present in the bay area, which had risen to 48 in 1848 (McLean 1989). Later a sea wall was constructed along the shoreline and the initial development and subdivision of the surrounding land took place. During the 1860s (the period of the New Zealand Wars) a military blockhouse was established along the foreshore on the first street in the bay, Drake Street, being part of a ring of blockhouses and stockades designed to protect the city of Auckland from attach by Maori (Rudd 2003). The blockhouse ceased to function in that defensive role prior to April 1865, when the Assistant Quarter Master General, Captain J.H.R. Harrison, publicly tendered the Hiring on Lease of four Auckland Blockhouses including the Freemans Bay post (*NZ Herald* 7/4/1865). It was reportedly sold for £40 by the City Council and demolished in 1877, although its bricks were said to have been in perfect order and were used in other constructions at that time (Lennard 1986: 211). The remaining block of land was leased by the Auckland City Council, which divided the block into 14 allotments in the first public leases undertaken in 1880 (Low & Clough 2006).

In 1863, Franklin Street (now Road) was the official western boundary for the City of Auckland (Carlyon & Morrow 2008). An advertisement placed in the *New Zealand Herald* noted the sale of land by proprietor J. Campbell, Esq. at Alma Place, Freemans Bay, by auction on 15 March 1864 (Figure 5). This property was divided into 152 allotments, encompassing the land between

[1] The historical background is derived from Clough & Mace 2009, Macready & Clough 2012, and from additional research.

Franklin Street, Scotland Street, College Street and England Street. The *Daily Southern Cross* noted later that month that '*the competition was so great that tip top prices were realised, as much as £4 7s. 6d. per foot having been given for a frontage. The total amount realised for this comparatively small block of land was no less than £9,481*' (*DSC* 31/3/1864:4). The article also noted that the land was predominantly sold to the working class. Development of these properties undoubtedly increased pressure on the public amenities in the area, leading to further developments.

The editor of the New Zealand Herald replied to correspondence dated 29 January 1864 regarding the state of Freemans Bay roads, stating that '*the Provincial Government are about to take measures at once to construct the sea wall at the foot of Franklin-street*' (*NZH* 9/7/1864). Notices for tenders for this and other work in building a culvert, embankment, and roading improvements were advertised throughout March and April 1864. This work must have begun shortly afterwards, as a letter to the editor from a resident in July of that year noted the contractor had halted work on the embankment due to inclement weather, but there was a complaint about the state of the roads. Of particular importance was the poor condition of Drake Street, which was the main thoroughfare for pedestrians and the only option for loaded drays (ibid.).

The 1866 Vercoe and Harding plan of Freemans Bay indicates the location of the shoreline at that time, although the sea wall is not illustrated (Figure 6). In the same year a delegation met to discuss reclamation of the bay on the east and south sides (*DSC* 10/4/1866: 5). The 1873 plan of proposed reclamation shown in Figure 7 is the first plan to show the sea wall drawn on the coastline. When the plans are overlaid it is clear that the shoreline had undergone some reclamation/infilling (Figure 8), presumably as part of the construction of the sea wall – the wall having been built, then the land filled in and levelled behind it.

The bay developed an industrial character from early on, with records from the 1850s indicating the presence of sawyers, brick makers and boat builders operating businesses by the water's edge. These businesses became more numerous as time went on and the foreshore was heavily built up by the 1870s. By 1883 street directories indicated that it boasted nine ship builders, three sawmills, a brass and iron foundry, glassworks, asphalt works and numerous coal and lime dealers.

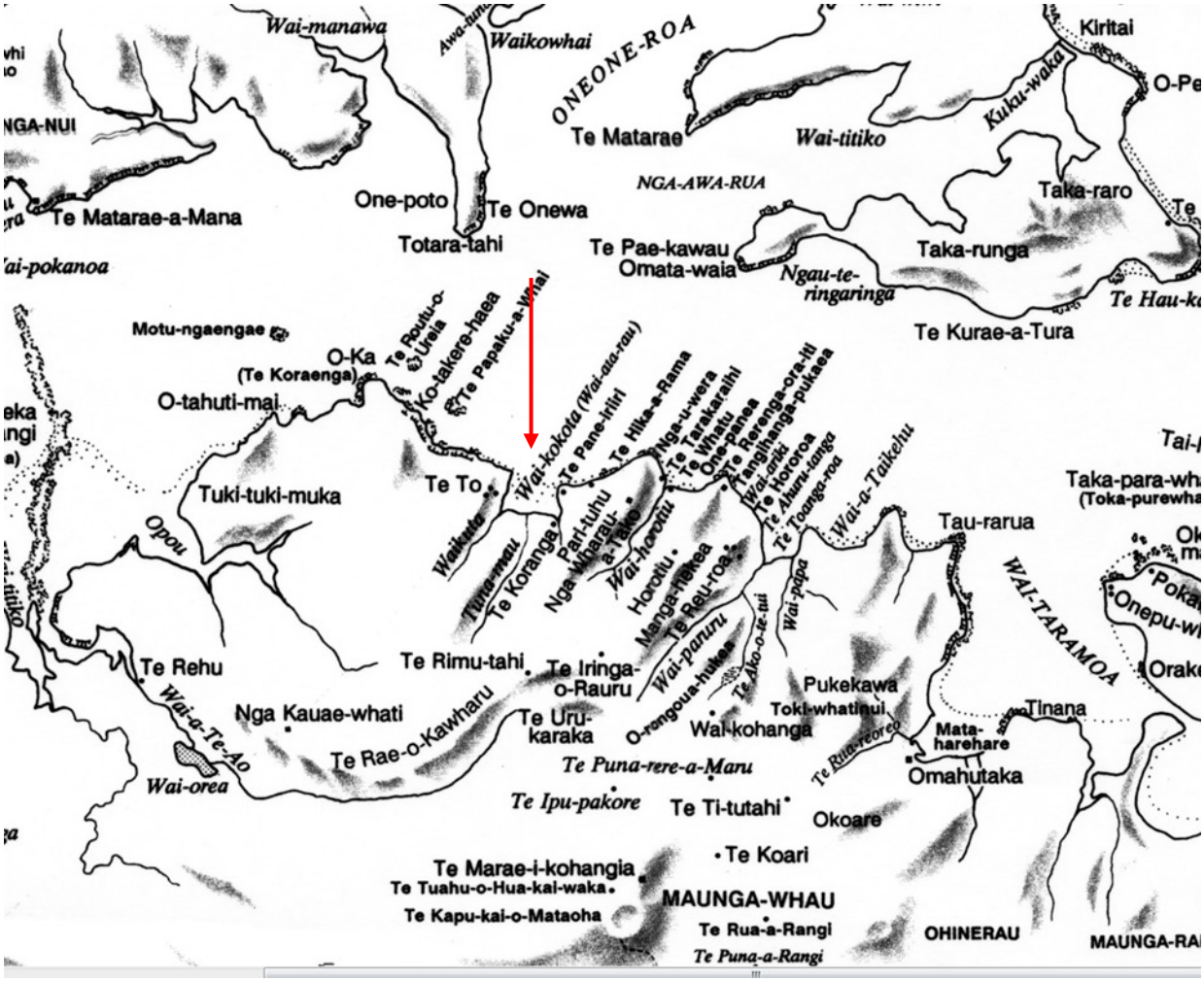


Figure 3. Maori place names with Freeman's Bay indicated by the arrow (detail from map in Kelly & Sturridge 1990)

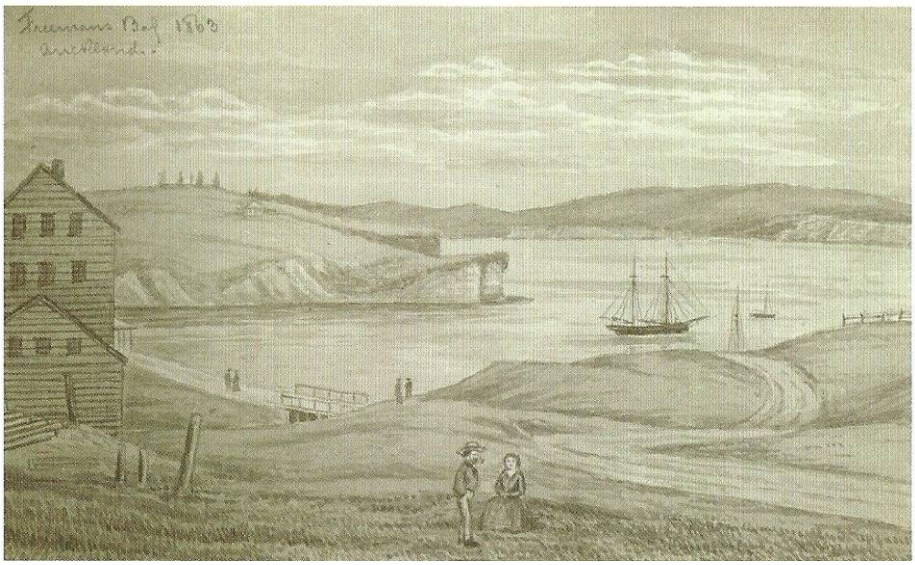


Figure 4. Freemans Bay captured in 1863 by James Eastward, with the Freeman's house drawn on the left (from Carlyon & Morrow 2008, figure 10)

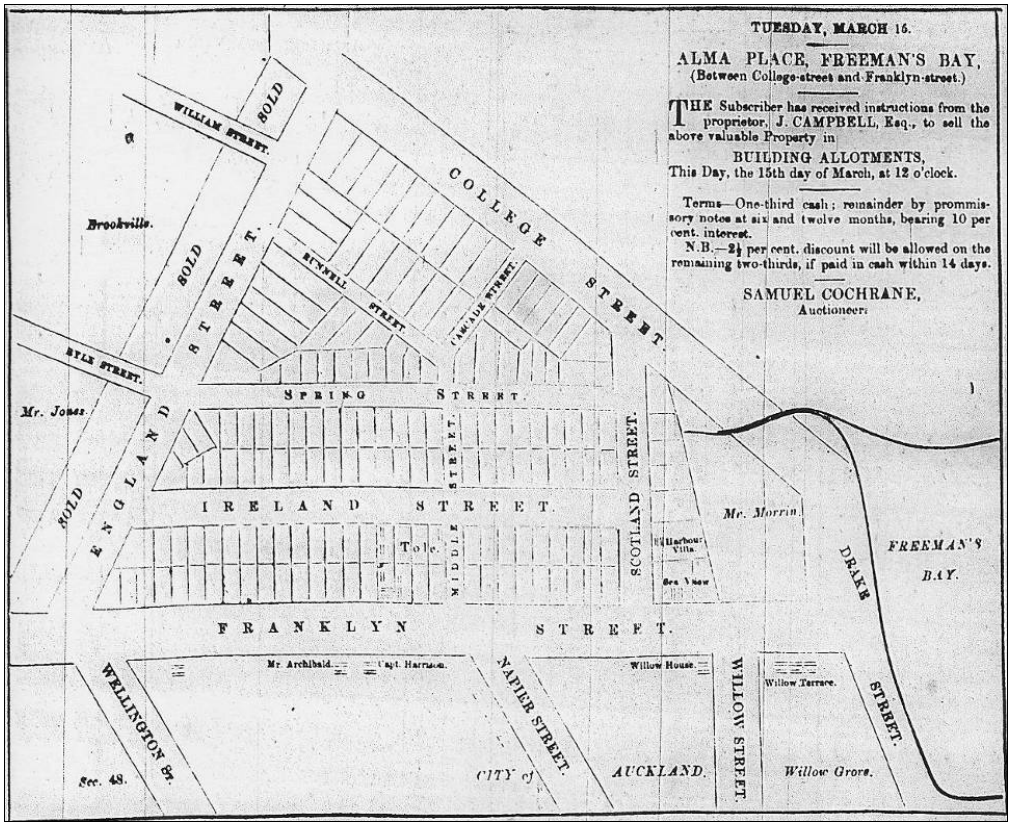


Figure 5. Plan of allotments for sale by auction, Tuesday 15 March 1864 (source: *NZ Herald*, 15 March 1864)

Figure 6. Vercoe & Harding's 1866 map of Auckland (detail) illustrating the shoreline of Freemans Bay at that time. The arrow points to Drake Street which also extended to the east (Sir George Grey Special Collections, Auckland Libraries, NZ Maps 18)

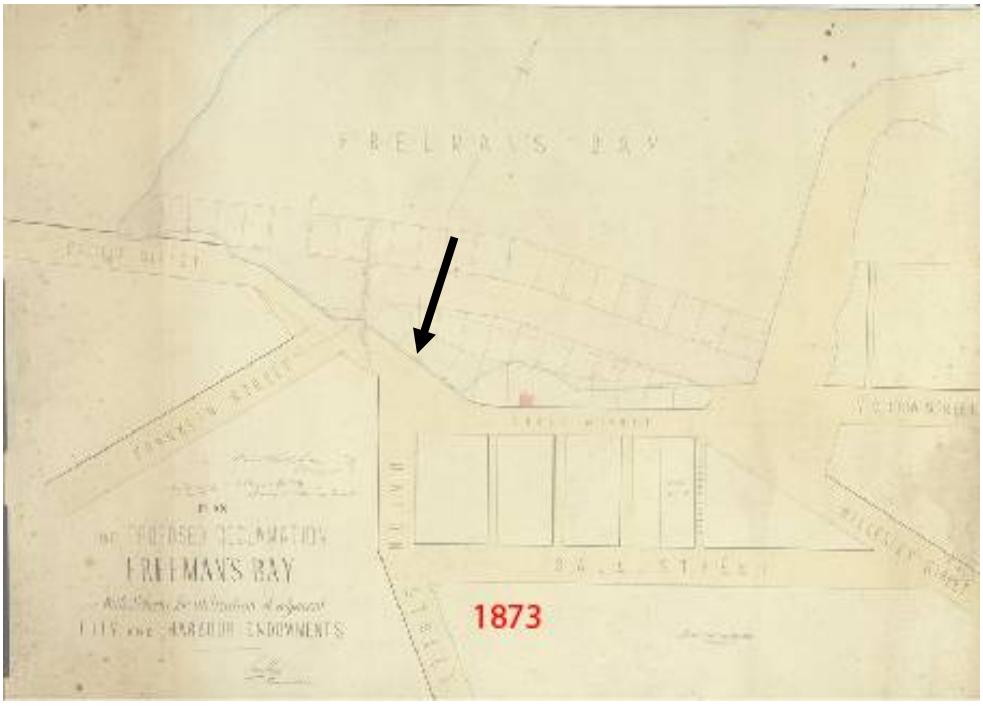


Figure 7. 1873 Plan of proposed reclamation, Freemans Bay. The sea wall has been annotated on the map and is indicated by the arrow (Auckland City Council, 1873. Sir George Grey Special Collections, Auckland Libraries, NZ Maps 4818)

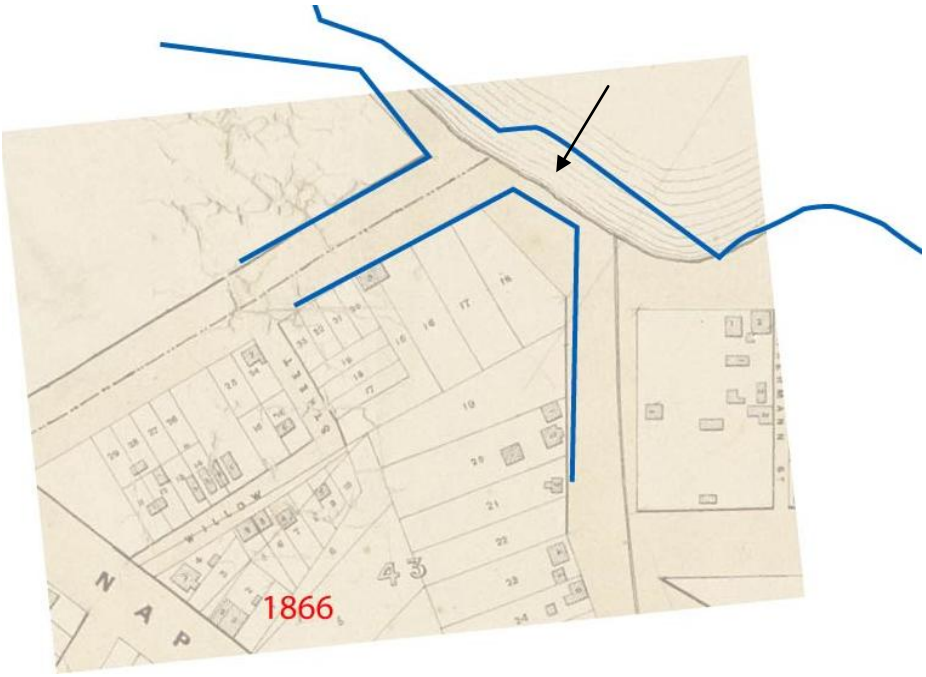


Figure 8. 1866 Vercoe and Harding map (detail) with shoreline, Franklin Road, and Union Street from the 1873 plan overlaid in blue. The overlay suggests that a small amount of infilling/reclamation had occurred when the sea wall was constructed, extending the Franklin Road/Union Street/Drake St corner (arrow) and pushing Drake Street further northwards (Sir George Grey Special Collections, Auckland Libraries, NZ Maps 18)

Reclamation

The landscape of the bay changed following the constitution of the Auckland Harbour Board in 1871. In 1873 a small reclamation was under way on the eastern side of the bay (no. 3 on Table 1, and Figure 9) and development of foreshore facilities would soon follow. Reclamation of the area between Drake Street and Patteson Street (also spelled Patterson Street, now Victoria Street West) was planned in the same year (Figure 7; note that the proposed allotments differ from the actual allotments developed later). While the Drake Street to Patteson Street reclamation had previously been reported as having occurred in 1886 (following Barr 1926), records indicate that it actually began much earlier in 1875 (Table 1; Figure 9). However, works were still being carried out in 1878, with an article in the *Evening Star* on 9 April 1878 stating:

> 'The important work of cutting down Drake-street, forming a beach road, and lowering Hardinge and Graham-streets to the Drake-street level, was begun by Mr Jones, the contractor, yesterday. About a dozen men are engaged cutting down the cliff in Freeman's Bay, on which the block-house formerly stood. The whole cost of the work will be £7,145, of which the City Council pays £6,075; the Harbour Board, £600; and the Ponsonby Board £470. The city portion of the work includes the continuation of Drake-street along the beach in almost a direct line from Dock-street towards College Road. The city carries the road as far as the bottom of Franklin-street, the boundary. From thence the Ponsonby district continues it to College Road…'

In 1885, the Auckland Harbour Board reported that further reclamation of Freemans Bay had begun, specifically the Auckland Gas Company and Beaumont Street reclamation (1885-1888), soon followed in 1886-1901 by the reclamation works that formed the land which would become Victoria Park. Stevens' 1886 bird's eye view of Auckland (compiled in late 1885 and early 1886) shows the area just prior to the Beaumont Street reclamation (Figure 11). However, an article in the *Auckland Star* dated 10 September 1889 (p.5) reports that infilling for the Beaumont Street reclamation began then, with the destruction of Acheron Point, which was to provide the bulk of soil for the fill. Another article in the same paper dated 6 June 1888 (p.4) discusses the '*complete working plans, specifications and quantities for reclamation of Freeman's Bay*', and that '*whenever the [Harbour] Board consider desirable, tenders may be invited for conveying and depositing the mud from dredger, as all the necessary information can now be supplied to intending tenderers*'. It appears therefore that the infilling for the largest reclamation did not begin until 1888, rather than 1886, although it is likely that that preparatory works such as sea wall construction would have begun prior to 1888. The responsibilities for servicing the reclamations between 1860 and 1900 also appears to have been unclear due to problems between the Auckland Harbour Board and the territorial local authorities over boundary issues (Winn 1973: 38).

An issue associated with reclamation in the Freemans Bay area concerned drainage. The issue of drainage was raised in 1886 in an editorial letter in the *Auckland Star* (11/8/1886:3), highlighting public health issues with diphtheria present in the area. The editor urged '*everyone who is interested in these urgent and necessary works to show less supineness, and take the matter up, so that by discussion the works may be a fait accompli at no distant date*'. Some brick culverts were built within the various reclamations to assist in the drainage of the surrounding watershed. One undated drainage plan (Figure 10) indicates culverts along Victoria Street West and Beaumont Street, with a proposed culvert heading north and emptying into the new shoreline next to Acheron Point. This plan must post-date 1888, as an article in the *Auckland Star* in 1888 by the engineer planning the reclamation states: '*I still have to direct the attention of the Board to the*

question of sewer extensions across the bay from Patteson Street to Acheron Point, and although this work is not included in the reclamation contract yet, the sewer must be constructed before reclamation can go very far'(6/6/188:4).

The Freemans Bay Stormwater culvert (over which the Rob Roy Hotel was later built), extending down from Wellington Street and draining into the bay, was constructed in the 1870s, as other culverts in the area were being installed. In the *Daily Southern Cross* it was noted during the formation of Napier Street in 1876 that '*a substantial stone culvert is being constructed at the bottom of the gully between Napier-street and its continuation on the western side of Hepburn-street*' (13/10/1876:2).

Table 1. Early land reclamation in Auckland (Freemans Bay reclamations in bold) (from Barr 1926 and Auckand Harbour Board plan E851/9)

No. [2]	*Date*	*Location*	*Area*
1	1859-6?	Fort St to Customs St East	9acres/3.64ha
2	1872-77	Mechanics Bay from Railway Bridge to Pt Britomart	18.5acres/7.39ha
3	**1873-74**	**Hardinge St to Patteson St**	**3.75ares/1.52ha**
4	1875-77	Queen St to Albert St	8acres/3.24ha
5	1876-77	Albert St to Nelson St	11.5acres/4.55ha
6	1875-77	Nelson St to Hardinge St	5.5acres/2.13ha
7	1878-79	Auckland Graving Dock	1acre/0.40ha
8	1879-86	Railway Station	18.75acres/7.59ha
9	1886	NZ Frozen Meat Company	6.75acres/2.73ha
10	**1875-1878***	**Freemans Bay: Drake St to Patteson St**	**6.25acres/2.53ha**
11	**1885-88****	**Freemans Bay: Auckland Gas Company, Beaumont St**	**3acres/1.21ha**
12	**1886-1901*****	**Freemans Bay: Victoria Park, etc**	**23.25acres/9.41ha**
13	1901-10	Mechanics Bay: Railway Embankment to Old Kings Wharf	16.75acres/6.79ha
14	1902-08	Hobson St including solid part of Hobson St Wharf	3.75acres/1.52ha

* The date is incorrectly given as 1886 by Barr, but as 1875-78 on the Auckland Harbour Board reclamation map (Figure 9).

** Note that there is some discrepancy with this date, with newspaper articles suggesting that the infilling did not begin until 1889.

*** Newspaper articles suggest that the bulk of the reclamation works for Victoria Park did not begin until after 1888.

[2] Numbers refer to Auckland Harbour Board Plan of reclamations of which Figure 3 is part.

In an undated photograph the Freemans Bay culvert is visible draining into the bay through the vacant site later occupied by the Rob Roy Hotel, emerging from the sea wall (Figure 11). This was the seawall along Patteson Street which was built following completion of the Drake Street to Patteson Street reclamation. An article in the *Evening Star* in 9 April 1878 discusses the wall '*...A substantial stone wall is to be carried right across the bay at a cost of £600, under a contract entered into by the Harbour Board with Mr Dempsey*', and this photo must therefore have been taken after 1878 but before 1882 when the Hickson plan shows Patteson Street and its sea wall completed (Figure 12). The stream/culvert can also be seen in Hickson's plan, and in Stevens' 1886 bird's eye view of the area up to Patteson Street (Figure 13). The latter plan also illustrates the recently constructed brick Rob Roy Hotel.

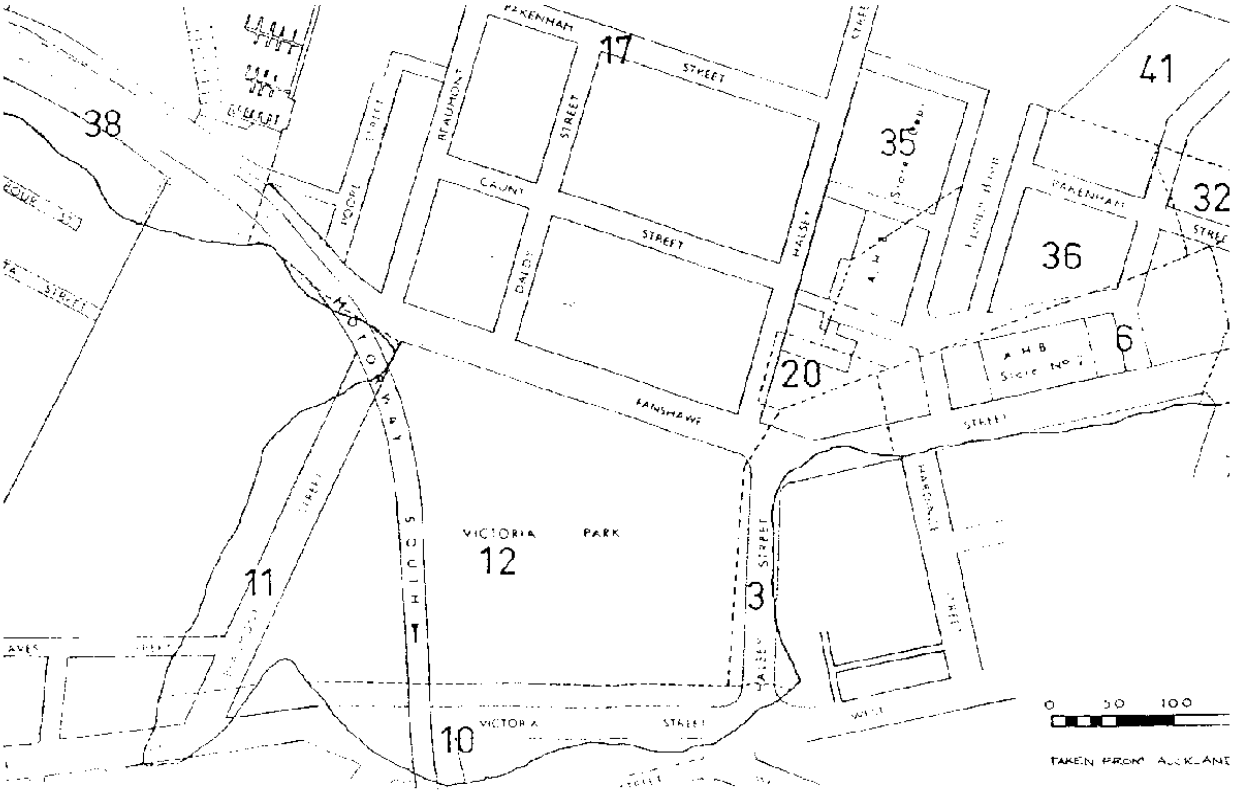


Figure 9. Auckland Harbour Board Reclamations (see Table 1) (source: detail from Auckland Harbour Board Map of Foreshore Reclamations E851/9 1985-1989)

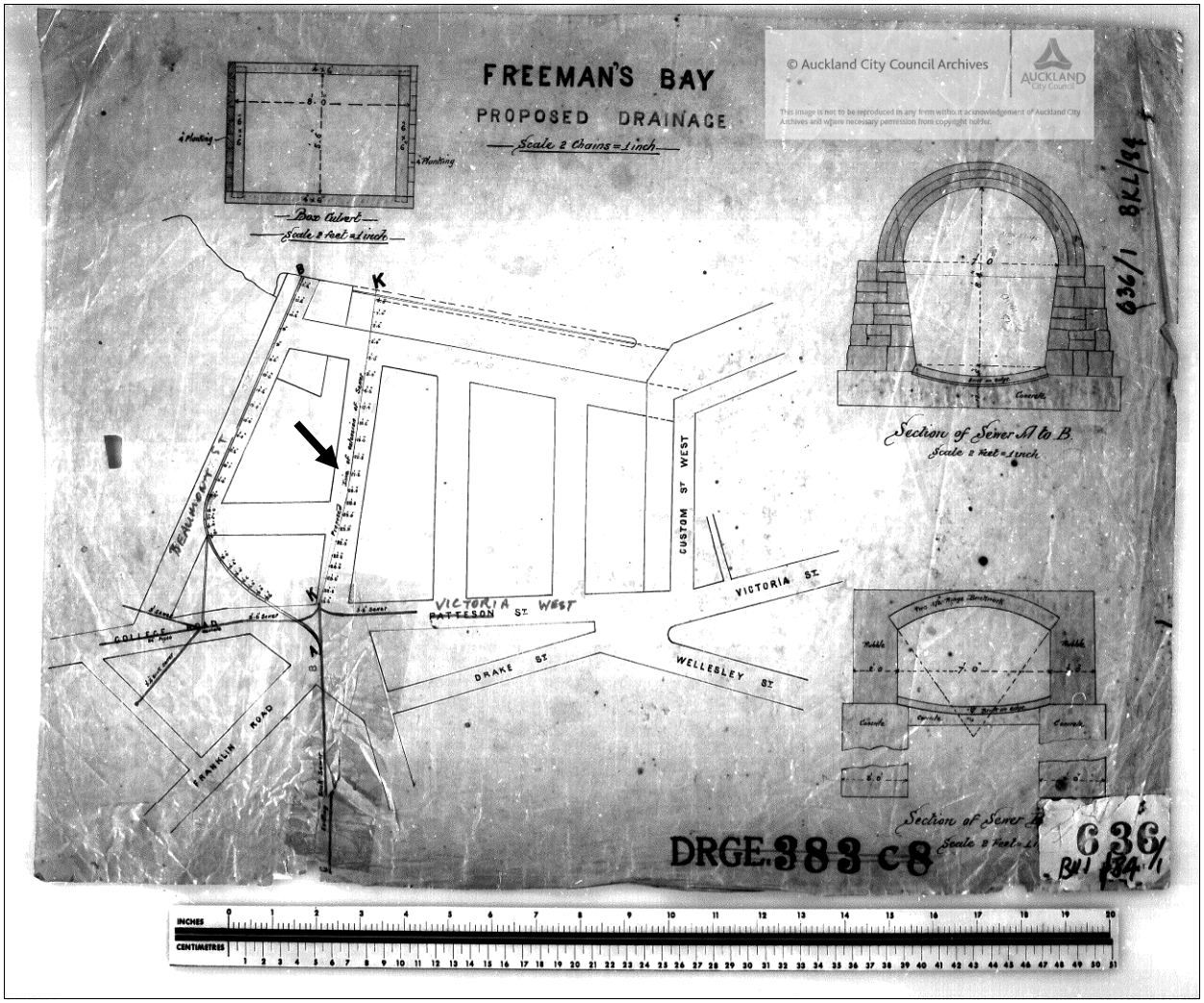


Figure 10. Plan of proposed drainage at Freemans Bay. The plan is undated. However, it seems that some of the drainage (on Beaumont St, Victoria St, and Franklin Rd) may have been already present, with only one section from K-K stated as a 'proposed line of extension of sewer' (indicated by the arrow). This suggests that the plan must have been drawn after the Beaumont St reclamation (1889) and prior to or during the Victoria Park reclamation infilling which began at or after 1888 (Auckland Council Archives 033, DRGE 636)

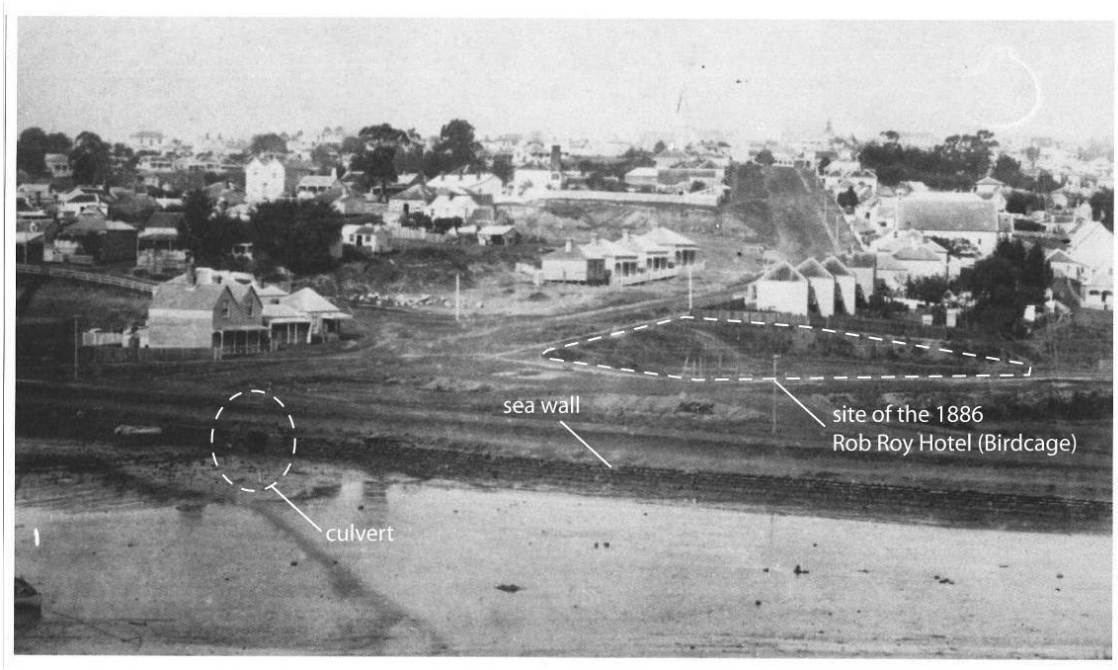


Figure 11. Undated photograph of Freemans Bay illustrating the sea wall and the culvert draining into the bay. The photo was evidently taken after construction of the sea wall (1878), but before construction of the Rob Roy Hotel (1885/1886) and presumably before 1882, when the Hickson plan shows the Patteson Street reclamation to be complete (Figure 12). The site of the Rob Roy Hotel is also indicated (photo: Broomhall, Auckland War Memorial Museum C16406)

Figure 12. Hickson's 1882 map of Auckland (detail), showing the area from Patteson Street to Wellington Street, and the line of the stream/culvert (arrow). The Drake Street to Patteson Street reclamation is shown to be completed, with a sea wall in place. (Sir George Grey Special Collections, Auckland Libraries, NZ Maps 91)

Figure 13. Stevens' 1886 bird's eye map of Auckland (detail showing Freemans Bay). Note the line of the culvert and the Rob Roy Hotel (arrow) (Sir George Grey Special Collections, Auckland Libraries, NZ Maps 4641)

The Social Landscape

The information in this section is taken from Mathews & Mathews (2003).

Freemans Bay had always been a predominantly working class suburb, and this was to continue well into the 20th century. With the expansion of Auckland City as seen through reclamation and subsequent developments, Freemans Bay took on an industrialized nature. Indeed, the area was cluttered with sheds, factories and timber shacks, with ill-formed roads that became rutted and muddy following rain. It was the lower part of Freemans Bay that was the most undesirable, perhaps summed up in the following comment by historian Paul Husbands: 'the lower parts of Freemans Bay were neither an image of arcadia nor a tribute to the triumphs of material progress' (Husbands 1992: 26). The area around Hardinge, Drake, Sale, Scotland and Middle Streets were amongst the least desirable areas in Auckland (Husbands 1992: 27) with Sale, Vernon and Centre Streets known for prostitution. The remaining working class residents had fled to the new suburbs by 1913, their void quickly filled by unskilled workers (Husbands 1992: 128).

A housing survey in 1935 by the Auckland City Council of slum areas including Freemans Bay identified 35% of dwellings as being unfit for habitation (Bland 1942:2,5). Significant improvements, however, were not seen until the 1950s and 1960s, with the area bounded by Union, Drake and Fanshawe Streets designated as an industrial zone leading to the 350 families living there having to move. The slums were cleared and new housing constructed in Phillips Street, Sheridan Square and Whitson Terrace (Bush 1971: 378-379). Following on from this, Freemans Bay became a more affluent area, culminating in the attractive inner city suburb as it is today.

Archaeological and Other Heritage Sites

There are six recorded archaeological sites in the vicinity of the VPT project area (Table 2; Figure 14). The two pa sites (R11/78 and R11/79) and the Gasometer site (R11/1478) have been destroyed. Of the remaining three sites, one falls outside the project boundaries (R11/1896), but two sites were directly in the route of the tunnel: the 19th century reclamation site (R11/2374) and the Birdcage Tavern/Rob Roy Hotel (R11/2499).

There are also three Maori Heritage Areas recorded in Freemans Bay and St Mary's Bay: CHI # 12767 (One Maru), 12769 (Ko Takerehaea), and 12696 (former shellfish beds).

Additional sites include historic buildings and structures (Table 2) and hulks, brief histories of most of which are presented below. Such examples of Auckland's history, whether extant, potentially surviving or now gone, are important when interpreting historical processes and developments both in Freemans Bay and Auckland City itself.

The Birdcage Tavern (Former Rob Roy Hotel) (R11/2499, CHI #2488) (Figure 15)

The Birdcage Tavern[3] is located to the west of the Victoria Park Markets, on the opposite side of Union St. It was originally known as the Rob Roy Hotel.

An earlier Rob Roy Hotel, built in 1865, was located closer to Victoria Street West. The site of the first Rob Roy Hotel in Freemans Bay was sold by the Crown in 1853 to spinster Catherine Marks for £74.[4] She sold it nine years later to William Morrin, making a tidy profit of £426.[5] In May 1862 the property was leased to land agent Michael Wood for a term of five years with a right to purchase.[6] By 1865 a wooden hotel, known as the 'Rob Roy' had been erected on the site and was being operated by James Rosie. Patrons could come to the hotel by road or water as the property was close to Freemans Bay shoreline. In 1867 the property was sold to merchant David Nathan. In 1881 the licensee was teetotaller William Regan, who would operate the business for the rest of the 19th century.[7]

[3] See Phear & Farley 2012 for a detailed report on the results of monitoring of the Birdcage Tavern relocation as part of the VPT project.

[4] LINZ, Auckland, Crown Grant 3G, p.1451.

[5] LINZ, Auckland, 13D, p.280.

[6] LINZ, Auckland, 8M, p.165.

[7] 'Drink up Please: A Guided Walking Tour of Nineteenth Century Inner City Hotels', 1986, held in Reference File 303, Auckland Public Library.

Table 2. List of archaeological and heritage sites in the vicinity of the motorway and tunnel route

CHI no.	NZAA site no.	Description	Comment
6815	R11/78	Pa – Te Routu o Ureia	Largely destroyed, though possible remnants between Sarsfield St and Pt Erin Pool.
6816	R11/79	Pa – Te Tou	Destroyed largely by 19th century reclamation and by the Assembly of God Church. No remains likely.
12696		Shell fishing grounds	Maori Heritage Area covering the former shellfish beds of Freemans Bay.
12769		Ko Takerehaea	Maori Heritage area
12767		One Maru	Maori Heritage area
11289	R11/1478	Gasometer site	Investigated and since destroyed.
12084	R11/1896	Historic residential	Some historic remains adjacent to McDonalds House in Wellington St. Was not affected by the project.
19357	R11/2374	Victoria Park	19th century reclamation.
211		Hulks – *Lady of the Lake, Kitty Fraser*	Remains under existing bridge approaches/motorway. Not affected by the project.
198		Hulk – *Huon Bell*	Exact location unknown but between Shipbuilders Slip and the Harbour bridge approaches. Buried under fill.
433		Shelly Beach Baths	Destroyed by construction of motorway.
580		Wharf	St Mary's Bay – destroyed by construction of bridge approaches.
2488	R11/2499	Birdcage Tavern/Rob Roy Hotel	Scheduled and listed historic building. Building moved out of tunnel route, then re-located near to original location.
12606, 2756, 2757		Destructor Chimney, Destructor building (and othe structures)	Victoria Park Market – scheduled and listed buildings. Not affected by the project.
12607		Campbell Free Kindergarten	Scheduled building which was modified and repaired as part of project.
12700		Auckland Gas Co. Administration	Refurbished. Not affected by the project.
19574		HMS Ngapona	Of some significance but not scheduled. Destroyed.
(no #)		Jacob's Ladder	Of significance but not scheduled. Access affected.

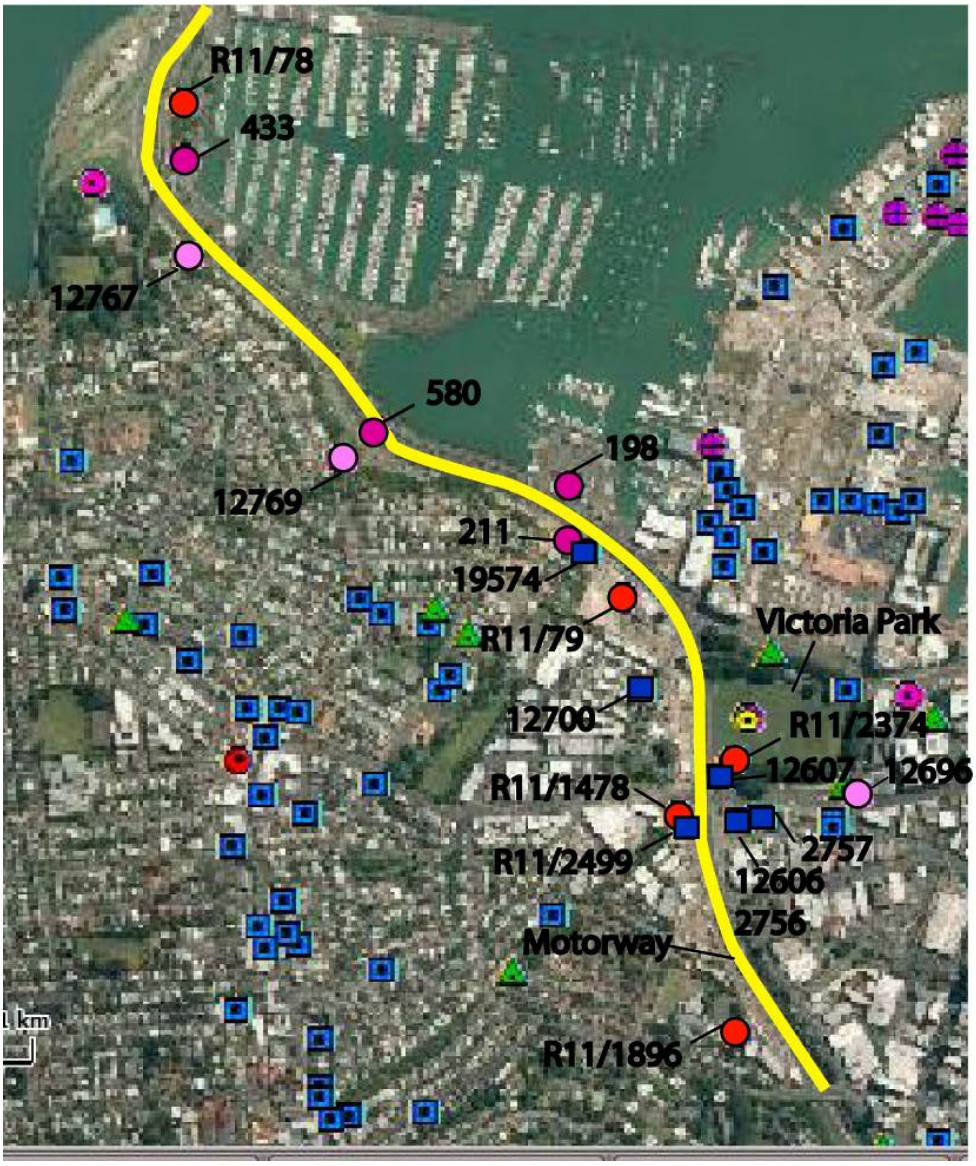


Figure 14. Archaeological and heritage sites located within the vicinity of the motorway and tunnel route. (NB. The numbers prefixed R11 are NZAA numbers; the remaining numbers are CHI numbers)

1885 saw great changes for the Rob Roy Hotel. In September it was sold to Samuel Jagger who made plans for a new Rob Roy Hotel on a new site.[8] The following month tenders were called by the architects, E. Mahoney & Sons,[9] and on 10 October 1885 the *New Zealand Herald* gave details of the new hotel which would soon grace the site.

> 'It will be three storeys in height, including basement, and constructed of brick, the basement storey of blue stone, with concrete foundations. The basement will be 7 feet 6 inches in clear, ground floor 14 feet, and first floor 12 feet 6 inches. It is intended to carry the present culvert right under the hotel and through the allotment, so as to have a perfect drainage system. The basement storey comprises kitchen, pantry scullery, store-rooms,

[8] LINZ, Auckland, R18/488.

[9] *N Z Herald*, 2 October 1885:4.

> beer and coal cellars and servant's dining-rooms. On the ground floor will be a bar (on street corner), three sitting-rooms, serving room – latter has lift from basement. A commodious staircase gives access to the first floor. There will be a large sitting-room on the corner with oriel window, and nine bedrooms, bath-room, linen closet, & c. The bar will be handsomely fitted up, and all the rooms on the ground floor have dados. The facade is to be in Italian style, pressed red brick with white stone facings, and the whole of ornamental design. It will be surmounted with a parapet with entablature.'[10]

By the end of January 1886 the hotel had nearly been completed by the contractors Cleghorn & Rosser.[11] It occupied a prominent corner site fronting Franklin Road and Drake Street. In 1969 the east wing was extended and the name of the hotel was later changed to 'The Birdcage'.[12] The hotel continued to serve the people of Auckland through the late 19th and 20th centuries, and into the 21st.

During the VPT project, the building was stabilised and moved c.40m up Franklin Road to accommodate the tunnel works, and then returned close to its original site and refurbished. As a registered and scheduled building, the works were guided by a conservation plan and detailed specifications (Mathews & Mathews 2003; Salmond Reed 2009). The removal work and investigation of the building's basement and surrounds was also was carried out under an NZHPT Authority (2010/206 – see Phear & Farley 2012).

Campbell Free Kindergarten (CHI # 12607) (Figure 16)

In October 1908 the Auckland Kindergarten Association was formed to provide free kindergarten services to the children of Auckland. The formation of the association was largely the result of efforts by Martha Washington Myers, wife of Leo Myers.[13]

The association sought a site close to the slums of Freemans Bay where there was a large population of workers' children. A 10m by 30m site in Victoria Park was subsequently vested in the association by the Auckland Harbour Board.

In January 1910 an approach was made to John Logan Campbell for assistance with the project. He was so impressed with the Auckland Kindergarten Association's project that he had plans for a kindergarten prepared to suit the site. He and his wife agreed to fund the erection of the building on condition that the Auckland Kindergarten Association would keep it open as a free kindergarten. Charles Le Neve Arnold designed the structure and had the materials for the furniture imported from San Francisco. On 19 October the building was complete and the keys were ceremonially handed over to L.J. Bagnell, Mayor of Auckland. The following year the children at the kindergarten were happily growing plants in the window boxes and enjoying the care the association provided. A mothers' club met fortnightly at the kindergarten and heard Plunket nurses speak about the care of children.

In 1938 a sun porch was added to the building and in 1945 the site was enlarged to provide more space in the playground. Further renovations followed in 1951.

[10] *N Z Herald*, 10 October 1885:5.

[11] *Auckland Evening Star*, 27 January 1886, p.4.

[12] New Zealand Historic Places Trust, Auckland,

[13] Information on the Kindergarten is taken from Draft Submission: Campbell Free Kindergarten Building, New Zealand Historic Places Trust, Auckland, file BDG 556, p.1.

In the late 1950s the Kindergarten Association moved the service to a new site and the kindergarten building was handed over to the Auckland City Council. After coming under council control it was used as the clubrooms for the Grafton Cricket Club and as a practice room for a pipe band, before falling into disuse and disrepair. The building was repaired by the VPA during the VPT project and part of the building is currently used as a control room for the tunnel ventilation.

Victoria Park Destructor (CHI #12606; NZHPT No. 7664) (Figure 17)

In 1900 the Auckland City Council, concerned about inadequate refuse disposal arrangements and the threat of bubonic plague, considered erecting a refuse destructor where rubbish would be sorted and disposed of. The council subsequently settled on a site opposite the recently opened Victoria Park and the Destructor was completed in 1905, with the capacity to process 10,000 tons of rubbish per year. In 1908 a boiler room, generator room and battery house were added and it began generating electricity, although the power generation facilities were shut down in 1913. In 1914-15 large brick stables were constructed and Municipal Depot buildings facing the Victoria Street frontage were added in 1918 (see Low & Clough 2006 and the NZHPT register no. 7664 record for a more detailed history of the Destructor).

In 1972 the Destructor was closed and was later redeveloped as Victoria Park Market. Recent monitoring of works to renovate the Destructor and Victoria Park Market were undertaken by Clough & Associates, and the final report is still in progress (Glen Farley, pers. obs.).

HMNZS Ngapona (Figure 18)

HMNZS Ngapona was the name of the headquarters of the Auckland Division of the Royal Naval Volunteer Reserve (RNVR). The headquarters and classrooms building, overlooking the approach to the harbour bridge, had been in use since 1926. It had access to the harbour prior to the reclamations for the harbour bridge approaches.[14] The buildings were constructed of steel and timber and clad with corrugated iron. They were removed during the VPT project.

Auckland Gas Company Offices and Workshops Buildings (CHI #12700) (Figure 19)

The Auckland Gas Company was formed in 1862 and was the first joint stock company in New Zealand and the first private services provider in Auckland (Clough & Mace 2009). With expansion in the company's business, the Gas Company looked for a new site in the 1870s. In 1878 land at Freemans Bay was purchased and initially used for storage space for gas. The Gas Company reclamation began in the late 1880s. The company engineer, Chenery Suggate,[15] drew up plans for new buildings on the site and supervised the excavation of the east-facing hill on the Freemans Bay site in 1898 and 1899. The spoil was used in the Freemans Bay reclamation works and, with the excavations complete, the site measured around 14 acres. The buildings fronting Beaumont Street were constructed in three stages. In 1902 the two storey offices of the company were built and around 1903 the workshops were erected. In 1924 a single storey addition was built to house the boilermaker and blacksmiths. The coal store and retort house were erected between 1901 and 1903 but these were demolished in 1990 (Clough & Mace 2009).

[14] *New Zealand Herald*, 7 March 1989, section 1, p.9.

[15] *The Cyclopedia of New Zealand [Auckland Provincial District]* accessed at http://nzetc.victoria.ac.nz/tm/scholarly/tei-Cyc02Cycl-t1-body1-d1-d57-d6.html.

In the late 1960s the cleaner cheaper natural gas from the Kapuni gas fields was piped to Auckland and the gas company became a supplier rather than a generator of gas. Many of the buildings on the Beaumont Street site associated with production of gas were demolished or converted to other uses during the 1970s.

The main administration and workshop building and the coal store remain, along with part of the purifier house. Some smaller structures have also survived.

Jacob's Ladder

Jacob's ladder is a 99 step walkway leading down from Waitemata Street in St Mary's Bay down the cliff face to the harbour. It was originally built from kauri in the 19th century. In 1968 it was replaced with a steel structure. Prior to the construction of the motorway the walkway provided access to HMNZS Ngapona and the foreshore.[16] The only access today is a pathway from Beaumont St running adjacent to the motorway on-ramp and by a new footbridge which has been built over the motorway.

Other Sites

Two destroyed sites and one other are recorded in the vicinity of the tunnel. The St Mary's Bay wharf (CHI #580) was destroyed during construction of the Harbour Bridge, and the Shelly Beach baths were destroyed during motorway construction. The sites of hulks (CHI # 211 and 198) remain under the existing bridge and approach to the motorway, but were not affected by the works.

Figure 15. Rob Roy Hotel, located on the corner of Drake Street, Union Street and Franklin Road, taken in the 1890s. (Sir George Grey Special Collections, Auckland Libraries, 7-A4942)

[16] *The Bay News*, July 2001, p.3 and Auckland Scrap Book, Auckland Public Library, December 1967, pp.89 and 203; December 1970, p.117.

Figure 16. Campbell Free Kindergarten on Victoria Street West (http://salmondreed.co.nz/sra.php/news/view/restored_campbell_free_kindergarten)

Figure 17. The rubbish and refuse destructor nearing completion, Freemans Bay (from the *NZ Graphic*, June 17 1905: 34, Sir George Grey Special Collections, Auckland Libraries, A14442)

Figure 18. View showing the start of the reclamation for the causeway to the Auckland Harbour Bridge, 1956, with HMNZS Ngapona shown on the upper left of image. Image from Carlyon and Morrow 2008:15, originally from the *New Zealand Herald*

Figure 19. Auckland Gas Company in the centre left (arrow) in the early 1900s, looking east along the newly created waterfront. (Sir George Grey Special Collections, Auckland Libraries, 1-W961)

1.3 ARCHAEOLOGICAL ASSESSMENT

The project involved extensive excavation of areas of 19th century reclamation, particularly through Victoria Park, but also to a limited extent in St Mary's Bay. As discussed above, reclamation in Freemans Bay took place from 1873 to 1901, with the edges of the bay undergoing reclamation first, followed by the area now defined by Victoria Park.

Excavation of three test trenches in the area of the proposed tunnel was carried out by the VPA on 28-29 September 2009 to provide information on soils and environmental conditions. These excavations were monitored by Clough & Associates and confirmed the potential for structures to have survived beneath the reclamation fill, as the southernmost trench (the closest to the original foreshore) revealed the remains of what could have been a jetty, boat ramp or some other structure related to the reclamation process itself. The reclamation fill comprised redeposited natural materials intermixed with deposits containing artefacts and waste relating to the industrial and residential use of Freemans Bay, with some material at the interface between the reclamation deposits and the original seabed. Other excavations in reclamation fill on Auckland's waterfront have also demonstrated the potential for archaeological remains, including Britomart and the

Viaduct Basin, where archaeological monitoring has succeeded in extracting some significant information relating to the history of reclamation and elements of Auckland's maritime history (Bickler et al. 2005).

While two pa sites were once located on the former ridgelines in Freemans Bay, and three sites on the former foreshore of Freemans Bay and St Mary's Bay are designated as Maori Heritage sites by the Auckland Council, it was considered unlikely that Maori archaeological remains would be present.

As in the Britomart project, there was a good deal of archival and historical documentation available to assist interpretation, such as street plans and photographs, drainage plans, and newspaper articles relating to events happening in the community.

1.4 MONITORING AIMS

Monitoring of excavations in the reclamation deposits was focused on the areas to the south and northwest that were closest to the original shoreline, and which therefore had greater potential for pre-reclamation structures and materials. While opportunities for recording were constrained by safety and construction requirements, which would not generally allow for the recording of exposed sections, the aim was to make records of the broad depositional sequence where possible in order to identify materials to be sampled and to record any in situ structures. The aim was to recover information relating to:

- The source and nature of the fills used in the reclamation
- Reclamation structures (sea walls, wharves, etc)
- Nearby industries (through analysis of any industrial waste and artefacts dumped in the reclamation area)
- Nearby residential occupation (through analysis of household rubbish dumped in the reclamation area)
- The construction of pre-reclamation waterfront features such as jetties and boat ramps
- Pre-reclamation materials and artefacts on the seabed (it was considered possible that the remains of boats that had sunk or been scuttled within the harbour might be exposed, as was the case in the Britomart project: Bicker et al. 2005).

The information recovered would then be integrated with results of the initial test trench monitoring and historic research to provide as detailed a picture as possible of the use and development of Freemans Bay in the 19th century. The results could also be compared and contrasted with information recovered from the Britomart project (Commercial Bay) to provide a broader understanding of reclamation processes used in late 19th century Auckland.

1.5 METHODOLOGY

The VPT project took place over 2010 and 2011 and encompassed areas located to the west of the motorway, beneath the viaduct extending through Victoria Park, the motorway on-ramp at

Fanshawe Street, as well as the land running alongside the motorway in St Mary's Bay (Figure 2). The areas monitored are shown in Figure 20.

Details of the specific methodologies used to monitor works can be found in each chapter. In general, however, the earthworks were undertaken by tracked machines using both toothed and smooth-edged buckets, and consisted of a range of trench sizes, from small drainage trenches to the large tunnel excavations. Excavation was halted when feasible to inspect and investigate archaeological deposits and features exposed by the works. As the excavations extended to a depth of 6m, and the tunnel excavations in particular to a depth of 10m+ in places, recording was restricted to section drawings, photographs and inspection of spoil from deeper deposits. In addition, the use of trench shields to protect the crew and prevent side wall collapse within some trenches obscured the trench walls, preventing detailed recording of sections in places.

Site engineering drawings were utilised when necessary to locate the excavations monitored (e.g. stormwater trench, tunnel excavation) and archaeological features. For further accuracy, several features were recorded by the VPA using mobile GPS and the timber piles were surveyed using a Total Station (Leica TCRA 1205).

Routine site inspections took place weekly to monitor the progress of works. As an archaeologist was not on site on a full-time basis, a procedure was in place for the VPA to notify Clough & Associates when suspected archaeological features and deposits were exposed so that an inspection could be made and any archaeology could be dealt with appropriately.

Reclamation Methodology

It was expected that monitoring of the tunnel excavations would be more intensive in the areas to the south and northwest that were closest to the original shoreline, and which had greater potential for pre-reclamation structures and materials. Opportunities for archaeological recording were constrained by safety and construction requirements, restricting recording of exposed sections. However, monitoring the removal of deposits allowed a broad depositional sequence to be established, materials to be sampled, and exposed in situ structures to be recorded.

Excavation Areas

The excavated areas monitored were split into those for service installation and relocation, and those for the main tunnel. There were a number of large trenches for the stormwater diversions, and smaller trenches for power and telecommunications, and for minor drainage works. The deepest and largest excavations were for the tunnel itself, which extended from Fanshawe Street through Victoria Park, across Victoria Street West, beneath the location of the Birdcage Tavern, terminating between Napier Street and the existing motorway (Figure 20). The excavation areas and a brief description of results are provided in Table 3.

Figure 20. The orange shaded area illustrates the total area monitored throughout the tunnel project. Numbers refer to the locations listed in Table 3

Table 3. List of excavated areas monitored, with brief description of the results (see Figure 20)

Type of works	*Location*		*Description*
Service Trenches - installation and relocation	1	Beaumont St – former Newton Rugby League Clubrooms	A cobbled alignment, 2 walls and upper reclamation fills recorded. Related to the post-reclamation development
	2	St Mary's Bay Reserve	Reclamation soils were observed in the service trench. The area of HMNZS Ngapona was also inspected after buildings had been removed; timber piles recorded; scarcity of finds. Information relating to the reclamation was obtained.
	3	Fanshawe St On-Ramp	A service trench was located on the motorway on-ramp, adjacent to the Victory Church. Part of the 20th century seawall, tramlines, concrete surfaces and a chamber uncovered. Related to the 20th century gasworks and wharf.
	4	Victoria St West - Drainage Realignment	Two trenches excavated beneath the motorway viaduct. Brick wall and wooden retaining wall identified relate to an early 20th century iron foundry located here. Also large quantity of dumped industrial iron materials and 19th century reclamation soils.
	5	Eastern Stormwater Diversion Trench	Located beneath the motorway viaduct. Features included the 1870s sea wall, intertidal deposits, late 19th century brick culverts, and 19th century reclamation layers. Also 20th century fill deposits likely from the Destructor.
	6	Western Stormwater Diversion Trench	Natural and intertidal deposits observed, part of the 1870s seawall, also a 19th century brick drain and former surface, reclamation deposits and timbers from a wooden wharf/jetty.
	7	Orakei Sewer Link	Layers forming made-ground exposed, and early 20th century deposits likely from the Destructor. Also some 19th century artefacts.
Tunnel Excavations	8	Victoria Park - main tunnel excavations	Initial works excavated the top 2-3m of materials & deep excavation was to a depth of 10m+ below the surface. Works began in the middle of the park and extended southwards and northwards. Majority of deposits related to reclamation with the upper 2m most variable in terms of stratigraphy and artefacts, with artefact lenses most common in the upper layers. Lower levels documented the sea floor and artefacts deposited here. Over 30 timber piles recorded related to a wharf/jetty. At northern exit six timber piles recorded from a wharf/jetty.
	9	Victoria St West and Birdcage south	Remnant foreshore and two wooden piles documented in front of the Birdcage; marine clays to the south.

Type of works	*Location*		*Description*
Tunnel Excavations (continued)	10	Freemans Bay Stormwater/sewer	Recorded around the Birdcage Tavern and to the south. Comprising stone blocks, brick and concrete.
	11	Southern extent - Well 1 (context 706)	19th century brick lined well excavated to base, cut through bedrock. Many artefacts including the remains of a pistol made in Belgium.
	12	Southern extent - Well 2 (context 709)	19th century well cut through bedrock. Mostly 19th century artefacts but some 20th century also.
Additional Works	13	Jacob's Ladder	Bottle/rubbish dump recorded on the cliff face, 19th and 20th century bottles and associated household rubbish recorded. Brought down in a recent land slip.

Sampling

Sampling of artefacts, deposits and structures took place throughout the project when possible, with a broad range of materials collected. This included artefacts related to residential, industrial, and commercial waste, as well as wooden structures such a timber piles and planking, and soil samples from reclamation fill layers. Stone and brick were also sampled when present. Samples were collected only when they were diagnostic (i.e. could be identified and provide useful information related to date, function, use and discard), and would assist interpretation of the settlement and industrial/commercial history of the bay, as well as reclamation processes.

Additional Research and Analysis

Additional archival research was carried out to provide a fuller context for the recorded remains. Such information when integrated with the archaeological evidence leads to a broader and more informated understanding and interpretation of the processes taking place.

Artefact analysis was undertaken by several specialists and a detailed catalogue of the artefacts recovered was compiled (see accompanying DVD). Analysis included artefact identifications, dating, materials analysis, and overall interpretation of artefact assemblages.

Conservation

Conservation of several items was deemed necessary, particularly of wood and textiles, as well as a pistol recovered from one of the wells. Items were then made available to the Auckland Maritime and Auckland War Memorial Museums for inclusion in their collections. Several artefacts were given to NZTA for inclusion in a display at the Birdcage Tavern/Rob Roy Hotel, and some of the wooden jetty/wharf piles were accepted by Ngati Whatua o Orakei and Ngati Paoa for carving. The pistol is currently held by NZTA and will be put on display in the Birdcage Tavern.

Project Personnel

The following table provides a full list of personnel involved in the project:

Name	***Responsibilities***
Rod Clough, PhD	Director
Sarah Phear, PhD	Co-director, oversight of report production
Glen Farley, MA (Hons)	Field Archaeologist and project manager[17]
Richard Shakles, BA (Hons)	Field Archaeologist
Barry Baquié, MA	Field Archaeologist
Ella Ussher, MA	Field Archaeologist
	Specialists
Jen Low, MA (Hons)	Artefact analysis[18]
Jaden Harris, MA	Artefact analysis[19]
Tania Mace, MA (Hons)	Historical Research
Zarah Burnett, MA (Hons)	Historical Research
Sarah Macready, MA	Editor
Ben Thorne, BA	Surveying
Rod Wallace, PhD	Wood identification
	Conservation
Dilys Johns, MA	Wood and textiles
Brigid Gallagher, BsC	Pistol conservation and analysis

Scope of Report

This reports details the results of archaeological monitoring of the VPT project throughout its duration. While the focus is on Freemans Bay, the results are also compared to the Britomart project in order to consider broader themes and developments in the history of Auckland, particularly in the late 19th to early 20th centuries.

Structure of Report

The report presents the results of archaeological monitoring largely based on the type of works monitored in specific locations, which by and large corresponded to specific geographical locations within the bay and on the foreshore/shore. When possible, the results are discussed within Phases, the date ranges having been derived from stratigraphic interpretation and dated artefacts. The artefacts are not discussed in full, but a selection is presented to highlight the types recovered and those used to date the layers and/or deposits.

Chapter 2 examines the results of monitoring in the Northern Area: Upper Beaumont Street/Fanshawe Street/St Mary's Bay/Jacob's Ladder. This chapter mainly addresses results related to the final stages of reclamation (around 1900) along with developments on the foreshore area such as seawalls, tramways, and buildings.

Chapters 3 and 4 are focused on results within Victoria Park and therefore within the former bay itself, from the central area southwards to the Birdcage and the original foreshore. Chapter 3

[17] Glen Farley also underook the analysis of the shoes.

[18] Jen Low undertook the bulk of the artefact analysis: Well 1 and 2, the tunnel excavations, partial Stormwater excavations , and Jacob's Ladder.

[19] Jaden Harris undertook artefact analysis of the stormwater and drainage trenches.

presents results of archaeological monitoring of the Eastern and Western Stormwater Diversion trenches, the Victoria Street West Drainage Realignment, and a smaller stormwater section. Chapter 4 examines the results of the main VPT excavation in Victoria Park through to the southern extent of the tunnel. Deposits and structures related to reclamation dominate both chapters, although the foreshore area also presented pockets of artefacts related to both residential settlement and industrial activities.

Chapter 5 examines the results from two wells located in the southern extent of the project area that were recorded during the main tunnel excavations, and includes an artefact report.

Chapter 6 looks at the VPT artefact assemblage as a whole, and includes comparative analysis with other Auckland sites, particularly the Britomart Project.

Chapter 7 is the main discussion chapter, looking at the major themes of the report:

- Early landscape and settlement
- Reclamation: materials and processes
- Urban expansion during the late 19th to early 20th century

The results are considered within the broader development of the city of Auckland, providing a wider stage for the project, and reflecting the value which evidence derived from archaeology has in informing and adding to our knowledge of the history of the city in colonial times.

Report DVD

A DVD accompanies this report providing supplementary material relating to the VPT investigations:

- PDF version of this report.
- PDF version of the Birdcage Tavern/Rob Roy Hotel report.
- The conservation report on the pistol recovered from the excavations (by B. Gallagher).
- Artefact catalogues.
- Additional artefact photographs.

2. THE NORTHERN AREA

Monitoring works undertaken in the northern area were located in reclaimed land in St Mary's Bay, alongside Jacob's Ladder, further east on the Fanshawe Street motorway on-ramp and on Beaumont Street (near the Fanshawe Street intersection) (Figure 21). Excavations monitored here were largely based on service trenches which exposed upper reclamation soils, a seawall, and structures linked to the Gasworks. Two bottle/rubbish dumps were recorded next to Jacob's Ladder and they are also discussed here. These works give some insight into the history of the northwest end of Freemans Bay as well as the shoreline of St Mary's Bay in the late 19th and 20th centuries.

Figure 21. The Northern area: 1= Beaumont Street; 2= St Mary's Bay Reserve; 3=Fanshawe Street On-ramp; 13= Jacob's Ladder

2.1 ST MARY'S BAY RESERVE

Monitoring of Telstra service trenches in St Mary's Bay Reserve (Figure 21) took place in April 2010 (Baquié & Clough, April 2010). Reclamation of the reserve and the motorway in St Mary's Bay were carried out during the 1950s during the construction of the motorway approach to the harbour bridge.

Brief History of St Mary's Bay

In pre-European times St Mary's Bay was associated with the pa site Te To [Te Tou] (R11/79), and with the name Ko Takerehaea ('the split canoe hull'), referring to the careless hauling up of a canoe on the beach which damaged it (Figure 3; Simmons 1989). The pa was located on the

headland separating St Mary's Bay from Freemans Bay, which was destroyed and used as fill for the reclamation of Freemans Bay in the late 19th century. The other pa site, Te Oka (R11/78), which was located on the western headland of the bay at Point Erin, is also now largely destroyed.

Photographic evidence shows that the St Mary's Bay area had a busy maritime coastal focus in early European Auckland (e.g. Figure 22, Figure 23). The foreshore of the Bay had various additions relating to the construction of boat sheds, slipways, the West End Rowing Club shown in 1898 (Figure 23) and the Ponsonby Cruising Club by 1914 (Figure 24).

In 1887 reclamation in the Bay was noted in the Plan of Subdivision 145 & Part of 144 of Lot 14 Section 8 Suburbs Auckland for J.H. Witherford Esq. (DP 561), on which timber breastwork is drawn in along the eastern end of St Mary's Road around the small headland (Figure 25). Another historic plan (DP 9389) also indicates that by 1914 a jetty extended into the Bay which, along with a boat house and associated structures, is also visible in Figure 24. Further reclamations are noted in 1939 with the rock walling extension of St Mary's Road into the Bay (Figure 26). The main phase of reclamation took place in the early 1950s to allow access roads for the construction of the harbour bridge.

The history of the area suggested therefore that there was a possibility of encountering early coastal jetty/wharf structures, or additional evidence of marine related activities such as slipways and sunken boats, and the possibility of Maori deposits and artefacts could not be discounted.

Figure 22. View from Acheron Point, 1878, looking east toward the entrance to Freemans Bay

Figure 23. The West End Rowing Club in St Mary's Bay in 1898

(Sir George Grey Special Collections, Auckland City Libraries, 4-1374 and 7-A291)

Figure 24. Jetty in St Mary's Bay with boat sheds and slipways, 1914 (Sir George Grey Special Collections, Auckland Libraries, 1-W811)

Figure 25. Extract from DP 561: Plan of Subdivision 145& Part of 144 of Lot 14 Section 8 Suburbs Auckland (1887), showing breastwork around the eastern headland at St Mary's Road

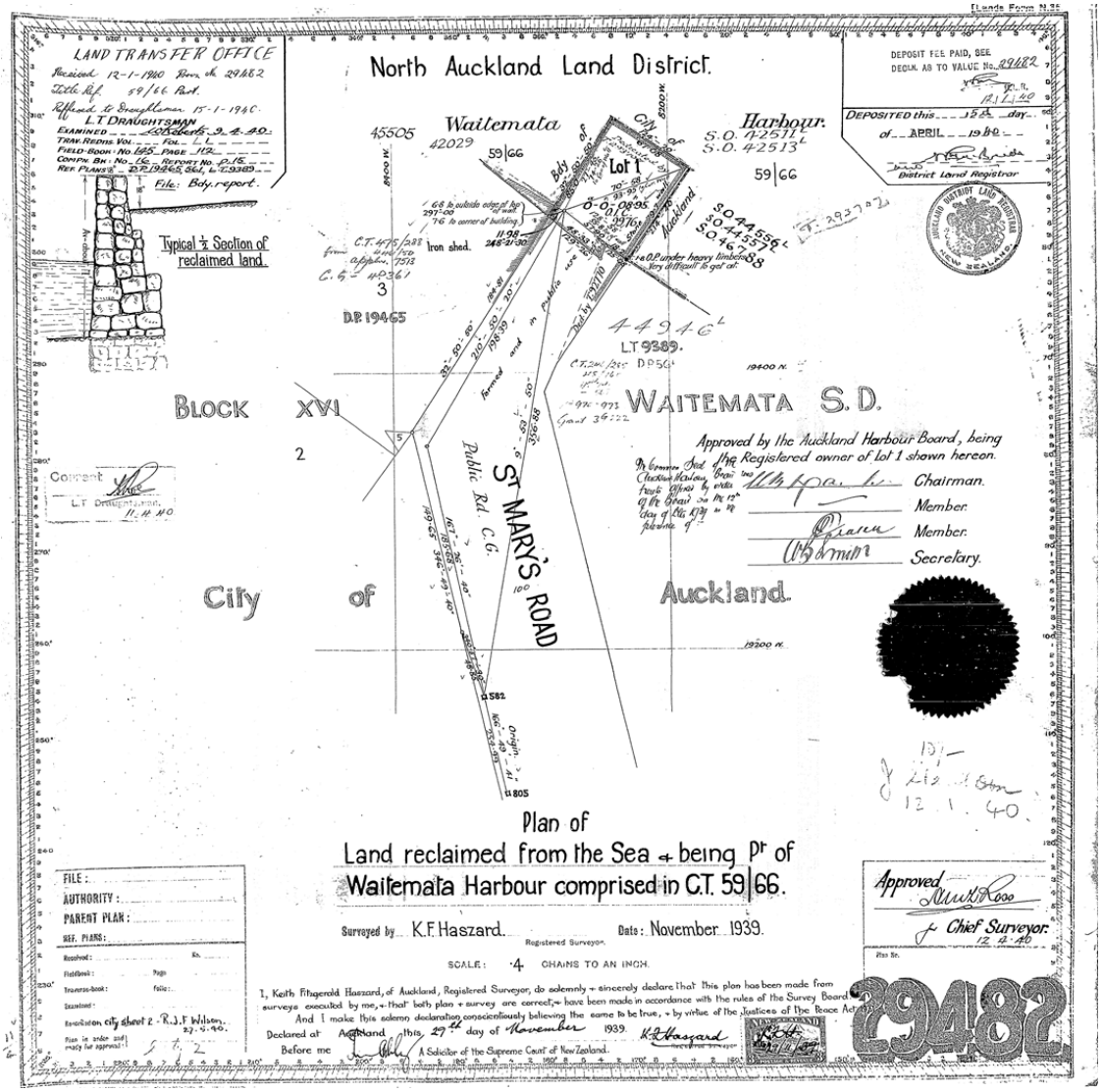


Figure 26. DP 29482: 'Plan of Land Reclaimed from the Sea being Pt of Waitemata Harbour comprised in CT59/66'. Note the cross section showing rock walling around the end of St Mary's Road

Monitoring Results

A 40m trench was excavated by machine to a depth of 1-1.2mbs and a width of 0.6m, with a further 0.5m benching in places. The trench ran roughly parallel to the existing motorway in order to upgrade services along the intended route of the tunnel and motorway.

Monitoring identified reclamation soils which were very consistent in make-up and largely consisting of a mixture of mostly light-yellow clay, stone, and soil. In places there was evidence that the reclamation soils had been disturbed (for instance a modern Coca Cola bottle was found in one area), and this is likely to have occurred during service installation in the 1980s. In places the reclamation fill was visibly on top of in situ marine sediments (Figure 27). Only one artefact was recovered from within the reclamation fill, the base of a thick black glass alcohol bottle. The base had indications of a bare iron pontil mark with a small central dimple suggesting a mid 19th century date of manufacture.

Photographs were taken of the area where buildings associated with the naval base HMNZS Ngapona, located at the eastern end of the Bay, had recently been removed as part of the VPT project (Figure 28, Figure 33).

Discussion

The trenching across the reclaimed land of St Mary's Bay showed that relatively clean fill was used for the containment of the Bay for the construction of the Auckland Harbour Bridge Motorway. Only one artefact, probably dating to the 19th century, was recovered during monitoring of the communications cable trench which was mechanically excavated across an area considered archaeologically and culturally sensitive.

While this area seems to have been a thriving maritime focal point for the local community in the 19th to mid 20th centuries, with Rowing and Cruising Clubs, boat sheds, slipways, boat building sheds, and jetty, little evidence was recovered from trench relating to such activities, and there was no evidence relating to earlier Maori occupation of the Bay.

Figure 27. Stormwater pipe located on top of marine sediments and below benched soil and clay layers. Facing south

Figure 28. The demolished remains of HMNZS Ngapona site at the eastern end of St Mary's Bay. Facing northwest

2.2 JACOB'S LADDER

Jacob's Ladder is located at the end of Waitemata Road, extending down the cliff face to the foreshore (Figure 29). It was originally made of kauri and built in the 19th century, but was replaced with a steel structure in the 20th century. Jacob's Ladder is visible on the 1908 plan, linked at that time to a footbridge that extended into St Mary's Bay (Figure 30).

Monitoring Results

The area around Jacob's Ladder was inspected in April 2011 after vegetation clearance had exposed a dump of bottles, ceramics, some iron and shells. The dump was 2m up the slope from the base of the cliff, and extended over an area roughly 2m in diameter. When looking up the slope it was evident that modern building construction was linked to erosion of the cliff face and the deposition of the dump of artefacts. The artefacts were most likely either originally dumped into a rubbish pit on the property above, or had been dumped over the top of the cliff, and had recently been brought down by a landslip. Therefore, they were in secondary deposition. Some bottles were also visible within tree roots near the top of the cliff (Figure 31), but that deposit could not be inspected to establish its full extent. As many of the bottles appeared to be 19th century in date, a sample was collected for analysis.

Figure 29. Aerial photograph illustrating the location of Jacob's Ladder and the stairway as it was prior to and during the VPT project (inset). (http://www.aktnz.co.nz/2011/08/25/jacobs-ladder-is-back/)

Figure 30. Detail from the 1908 plan of Auckland City. Jacob's Ladder is indicated by the arrow

Figure 31. Bottle and shell fragments visible within the tree roots further up the slope

Artefacts

A small collection of items was recovered from the dump eroding from the slope at St Mary's Bay. The material included ceramic items, stoneware, glass, iron objects and the remains of food items including shell and bone. The items recovered included items commonly found among household debris, including tableware, medicines, food products and alcohol bottles. Some of the fragments could be re-joined.

Ten pieces of earthenware and one piece of stoneware were collected representing at least one each of the following forms: candlestick holder, dinner plate, jug/ewer, preserves jar, teacup and teapot. Nineteen pieces of glass including four complete bottles were recovered. Some of the pieces could be re-joined providing a minimum number of 10 individual vessels. One item was identified as an alcohol bottle, two as food items, four as pharmaceutical items, two as general household items, and one could not be identified (Figure 32). Two metal items were collected from the bottle dump and several oyster and pipi shells were also recorded.

Several of the artefacts were types known to have been produced in the 19th century (such as the boot polish) and into the 20th century. As the dump incorporated artefacts from both centuries, it is likely that rubbish was dumped at the same location over a period spanning the late 19th and 20th centuries, and that the artefact assemblage became mixed as the dump eroded down the cliff slope.

Figure 32. Penfolds Wines bottle and portion of Champion's Vinegar (left), and Nubian Boot Polish and plain ink (right) from the dump near Jacob's Ladder

Discussion

The artefacts recovered from the dump date to the19th and early to mid 20th century. The range of artefacts seems consistent with a household dump rather than an industrial/commercial dump, with the presence of crockery, a preserves jar, glass bottles that contained vinegar, boot polish, ink, alcohol and medicinal products. This was further supported by the presence of a small number of shells which could have derived from a single meal, and two iron fragments that might have been from a gardening implement. They appeared to have derived from a rubbish pit or dump of artefacts located on a cliff top property above and to the west of Jacobs Ladder, but erosion had resulted in the redeposition of these finds at the base of the cliff. The mix of date

ranges suggests that the dump may have been used for many years, and what was recovered at the base of the cliff was a mixed sample of these remains.

The growth of vegetation along the cliff will in part help to preserve any surviving remains of the dump, although the tree roots did appear to have significantly disturbed the feature.

2.3 FANSHAWE STREET ON-RAMP

Monitoring of machine excavated trenches related to the realignment of services along the Fanshawe Street motorway on-ramp and adjacent to the Victory Church (Figure 20; Figure 33) took place during the night shift in late March 2010 (see Farley April 2010a). The excavation uncovered a section of the former seawall along with features related to the former Gasworks and tramlines.

Brief History of the Area around Acheron Point

Located to the immediate east of Jacob's Ladder, the area around Acheron Point and the northwest entrance to Freemans Bay is shown devoid of any structures, sea walls or jetties in a photo taken in 1878 (Figure 23, left). By 1908 it is clear from the plan of Auckland City that the reclamations to the east had extended north of Victoria Park, with a line running roughly north from what used to be Point Acheron (Figure 30). From the western edge of the reclamation an L-shaped footbridge continues to the west before turning to the south. This path then connects to a flight of stairs at the foot of the cliffs, which is Jacob's Ladder, and as discussed previously the HMNZS Ngapona was built alongside this footbridge in 1929. The footbridge appears to be constructed of timber, although the plan is not explicit. This structure does not seem to include a sea wall.

A photograph taken in 1931 from the cliff top looking northeast gives the narrowest of glimpses of the area in question (Figure 34). The lower left corner shows a wooden walkway running to the north of a building (the position of this structure would appear to be too close to the edge of the western reclamation to be HMNZS Ngapona, but it may be part of the gasworks facilities), and beyond this a rail track descends to the shoreline, probably forming some type of slipway.

By 1939 the dredging and reclamation to form St Marys Bay boat harbour (subsequently Westhaven Marina) was completed (Rose 1971:138). The majority of this work appears to have focussed on the construction of the breakwater, which extended north and then east from Point Erin, rather than on seawalls along the coastline.

Figure 33. Aerial view of the Fanshawe Street on-ramp. Approximate location of the sea wall within the trench indicated in red, and HMNZS Ngapona is indentified by the arrow

Figure 34. Looking northeast from the vicinity of the gas works to the Waitemata Harbour showing the western reclamation (Wynyard Quarter), Poore Street, (right centre), D. Goldie and Sons Limited, timber merchants, on the corner of Poore and Fanshawe Streets, Fanshawe Street (left to right foreground, not completely formed). 27 December 1931 (Sir George Grey Special Collections, Auckland Libraries, 4-4654)

Activities in the immediate area were linked to the Royal Navy Volunteer Reserve (RNVR), whose headquarters, established in 1929, later became known as HMNZS Ngapona (Farley April 2010a:5). In the early 1950s increases in naval personal saw the facilities at the HMNZS Ngapona expanded, with new buildings added (http://www.rnzncomms.org/navy/history/hmnzsngapona.html). The sea still reached close to the base of the structure at this time, as shown in Figure 35.

By 1958 work on the northern motorway resulted in major changes, the main building was moved to the south by several feet and the motorway causeway was constructed (ibid.). A photo in 1956 showing the start of reclamation for the motorway shows part of the sea wall adjacent to HMNZS Ngapona (see Figure 18), and this image gives a clear indication of the shape and structure of the sea wall at this location.

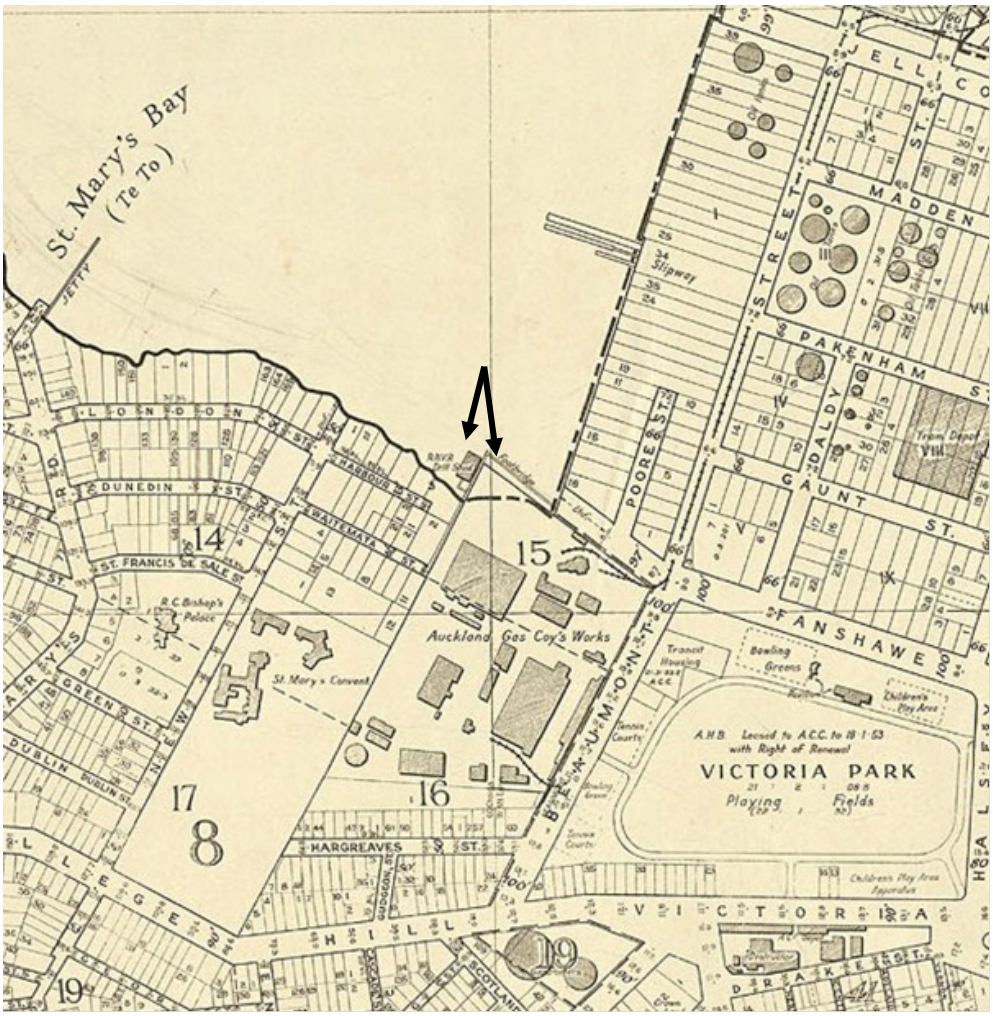


Figure 35. Detail from Auckland City Council Planning Map, 1950. Location of the footbridge and the RNVR drill shed arrowed (Sir George Grey Special Collections, Auckland Libraries, NZ Maps 3926)

Monitoring Results

The excavated service realignment trench measured c.30m in length, by 1.35m in width, and was excavated to a depth of 1.6m. The seawall ran through the trench, but extended beneath the unexcavated areas in places. Two blocks of concrete resembling stairs down the seawall were also identified, along with a stratigraphic profile documenting modern fill levels over the seawall.

Portions of the seawall were observed only due to the alignment of the trench (Figure 36, left). Also sections of the wall were missing as they had been demolished in the past during the installation of a concrete pipe which ran roughly parallel on top of the wall. The wall was constructed from a fairly loose fill of large chunks of concrete and cut stone. The exterior surfaces consisted of faced stone bonded with concrete; these faces were noted to be fairly smooth and regular in appearance. A flight of three concrete stairs descending to the sea front was recorded. The stair dimensions were noted, the width being 1m, and each step having a height and depth of 200mm (Figure 36, right).

The stratigraphy of the deposits beneath and covering the sea wall was recorded. The context descriptions can be found in Appendix 1. The stratigraphic drawings are presented below. These sections show that the wider area has been built up with a substantial amount of modern material (contexts 170, 174-180), which is variable in thickness and predominantly composed of gravels. Below this the upper surface of the sea wall (context 173) is capped with a concrete skin over a loose fill of cut stone and concrete. Section 2 (Figure 37) shows a particularly thick series of modern deposits, although this may be a result of the changing sea wall alignment, rather than any changes in wall height.

Section 4 (Figure 37) shows the east facing section. This was located at the western end of the trench. Again this section shows a number of thick, well compacted gravel based fill layers (172-174, 176). These are positioned over the re-deposited clay layer (177), which in turn is above the large stone and concrete fragments that make up the wall (173).

Additional monitoring works at the Fanshawe Street on-ramp took place alongside the Victory Church from May to June 2010. This was known to be a highly modified area as a result of the construction of the Gas Works in the early 20th century (see history in Chapter 1), demolition of the Gas Works in the 1970s, and development of the area into the modern car park and road.

Figure 36. View facing northwest showing the south facing section of the seawall. The seaward slope of the sea wall can be seen descending to the north, into the section. The reddish scoria material is derived from the fill around a concrete pipe just to the north. The concrete steps are shown in the right- hand photo

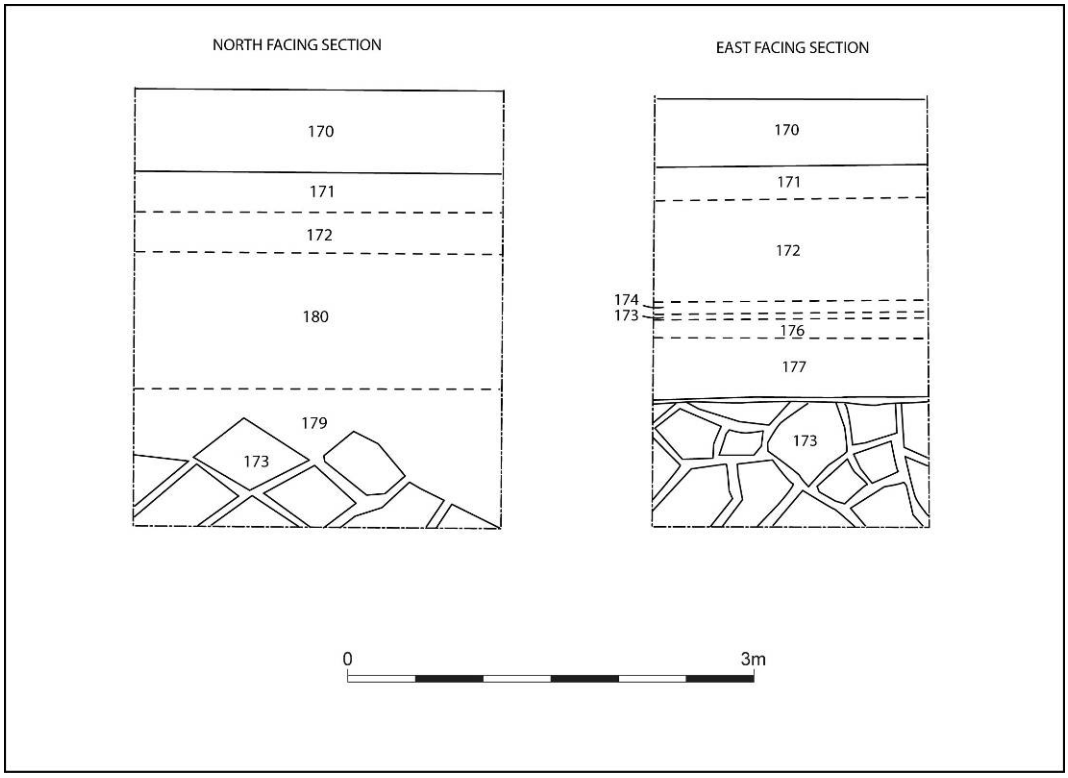


Figure 37. Section 2 showing north facing section (50cm grid) (left); Section 4 showing east facing section (50cm grid) (right)

The remains of concrete structures uncovered during earthworks in the area were inspected. These included what was thought to be a buried chamber, a large concrete surface, and several smaller concrete structures throughout the area. On inspection, these concrete structures were revealed to be modern as evidenced by the steel reinforcing and modern appearance of the concrete substrate. Similarly, the remains of steel tramways extending through the thick concrete surface were related to movement of goods from the wharf into the area, and were also of mid 20th century date (Figure 38).

Figure 38. Location of the tramlines (left), and the series of fill layers evident in section beneath the Victory Church car park (right). Several specific dump deposits are also visible in the foreground

A number of soil profiles were also observed in the carpark area both related to, and separate from, the concrete structural remains. The profiles indicated a high level of made ground in the area, composed predominantly of layers of brick and rubble, hydrocarbon stained soils, and redeposited yellow and grey clays (Figure 38). Cultural deposits and layers dating to pre-1900 were not observed (although natural bedrock was present).

Discussion

The evidence recovered for the seawall combined with the historic research indicates that the seawall was constructed in the 1950s, and the deposits above it therefore represent a modern phase of ground reclamation and levelling.

The 1908 map shows a footbridge, the alignment of which appears to have remained constant over time. At this early date the structure was probably made of timber; certainly the 1931 photograph shows the start of a timber walkway. From 1929 the RNVR headquarters, later known as HMNZS Ngapona, operated in the area and multiple developments were carried out. It is likely that these included the construction of a more substantial walkway and some form of protection from the sea. Many of the structural developments were made during the early 1950s as use of the facility for naval purposes expanded. However, this expansion of HMNZS Ngapona proved to be short lived as the construction associated with the Auckland Harbour Bridge significantly modified the foreshore of St Marys Bay.

Archaeologically the glimpse afforded by the service re-alignment trench provided only limited information. Additional monitoring in the area due to land clearance works over May-June 2010 identified several further features related to the modern history of the area. These included tramlines, a buried concrete chamber, and a concrete surface, which are thought to relate to the 20th century Gasworks and wharf, and modern reclamation fills.

2.4 BEAUMONT STREET

Monitoring was undertaken in the northern part of Beaumont Street at the former Newton Rugby League Football Clubrooms, close to the Fanshawe Street intersection in February 2010. Metro Water excavated trenches to install a water main and the area was also excavated to a depth of 1.4m in preparation for tunnel works (Figure 39). A cobbled alignment, two brick walls and upper reclamation deposits were recorded.

Historical Background

Acheron Point and Reclamation

The cobbled alignment was located to the east of Beaumont Street beside Pt Lot 5 DP 8709. This lot is located on reclaimed land in an area that would originally have been on the southeastern shoreline of Te To, the Maori headland pa which was later named Point Fisher, then Acheron Point. This central part of Beaumont Street (where it intersects with Fanshawe Street) was constructed during reclamation of Freemans Bay. The first plan identifying the proposed road (Beaumont Street) dates from 1888 (SO 5332) and shows it within what was to be Lot 5. This Lot, as well as the proposed Beaumont Street, incorporated part of the headland pa site Te To/Acheron Point, as shown in detail in DP 825 (Figure 40). The headland was destroyed during reclamation

in 1889, with an article in the *Auckland Star* dated 10 September stating '*Another familiar landmark was attacked by the relentless hand of progress early this morning, when a small army of navvies, armed with wheel barrows, picks and shovels, made a descent on Acheron Point, Freemans Bay…..their contract includes the cutting down of Acheron Point and the filling-in of Freemans bay on the western side so as to give a good roadway facing the Gas Company's property, extending from Acheron Point almost to the foot of College Road*.' (*Auckland Star*, 10/9/1889: 5). While Beaumont Street therefore crosses the original headland area, Fanshawe Street was constructed further north.

Victoria Park

Victoria Park was officially opened for public use in 1905 (Bush 1971: 170). At this time the outer boundaries of the park were defined by allotments which fronted the roads around Victoria Park, and were leased by the Auckland Harbour Board. In the vicinity of the cobbled alignment, these perimeter allotments in 1905 included Lot 5 on the north-western boundary and Lot 52 immediately to the south (now Lot 4).

A photograph taken for the *Auckland Star* in 1906 shows the condition of allotments 5 and 52 and the north-western corner boundary of the park at this time (Figure 41). A corrugated iron fence is clearly visible around the rear (or eastern boundary) of both allotments, separating them from the main park. Lots 5 and 52 have no discernible structures and appear to be disused, with dumped materials present on the site.

Annotations to the 1908 City of Auckland Map in 1919 show the subsequent removal of the corrugated iron fence from the north-western corner of the park on all sides except along Beaumont Street. Several small structures formerly present within the north-western corner (including within Lot 5), had also been removed by 1919 in an effort to further extend and open up the park.

In 1912-1913 the valuation roll for Beaumont Street gave the earliest description of the property on Lot 52, identifying brick stables. Lot 52 was noted to be owned by the Auckland Harbour Board and occupied by the Auckland Gas Company. The area of Lot 52 was given as 50ft (15.2m) frontage and 100ft (30.5m) depth. By 1924-1925 the valuation roll described the property as a brick garage, with room for about 18 cars. The owners and occupiers were unchanged at this time. The brick garage/stables and its immediate surrounds are visible in a 1931 photograph by James Richardson (Figure 42).

A 1945 map detailing the north-western corner of Victoria Park shows the position of Lot 52 (labelled Auckland Gas Co.) next to Lot 5, owned by the Auckland City Council, which had been earmarked for transit housing. Reports from the City Engineer's Office stated that:

> 'this Camp was established in 1947 from dis-used military buildings which were moved from the playing field on the park and established on a derelict tennis court area facing Beaumont Street, there being four major dormitory buildings and 3 ancillary buildings' (ACC 219 45/234).

These buildings were described as having wooden frames with fibrolite wall sheeting on the exterior, corrugated fibrolite roofs and fibrolite spouting. The foundations of these buildings were noted to be of concrete blocks. An Auckland City Council Planning map dated 1950 clearly shows the position of this transit housing within Victoria Park and the adjacent Lot 52 (with no structures detailed) and nearby tennis courts and bowling greens). Lot 5 was continuously utilised for transit housing until the camp was shut down in April 1959 (Bush 1971:376).

Figure 39. Location of the excavation of the former Newton Rugby League Football Clubrooms (yellow), with the location of the cobbled surface indicated by the arrow

Figure 40. DP 825 surveyed 01 April 1890 showing Part B [Pt Lot 5], almost all of which was to be located within the future reclamation of Victoria Park. Allotment 52 was immediately to the south of Pt Lot 5 (B)

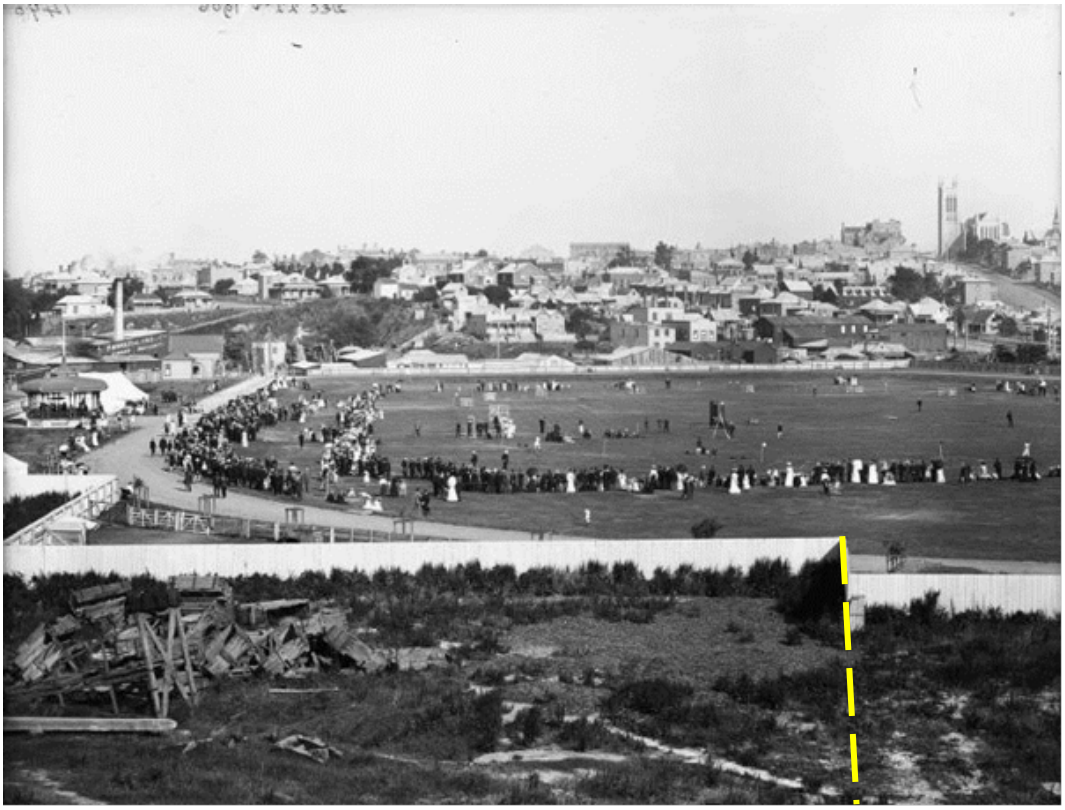


Figure 41. View facing east showing Victoria Park, during an athletics meeting, 22 December 1906. The dashed line indicates the northern boundary of Lot 52 (Reference number: 1/1-002781-G. Part of Auckland Star: Negatives (PAColl-3752). Alexander Turnbull Library)

Figure 42. Looking west from St Matthews Church tower across Freemans Bay towards Ponsonby with the stables on Lot 52 indicated by the arrow, situated in from of the Auckland Gas Company works. Also of note is Victoria Park (right), and the Auckland City Council Destructor chimney (centre). Taken 18 August 1931. (Sir George Grey Special Collections, Auckland Libraries, 4-4817)

Monitoring Results

The service trench excavated by Metro Water was 6m wide, and up to 1m deep (Figure 43). The exposed cobbled surface measured 3.5m along the trench, continuing beneath the footpath on either side (Figure 43). The cobblestones had been laid into a bed of concrete approximately 300mm thick and at the northern end several bricks had been included in this sub structure. The concrete did not contain any shell fragments in the mix, and was hard, suggesting a Portland cement mixture. The basal layer below the concrete was a mixture of yellow clay and stone typical of reclamation fill. The cobblestones were reasonably similar in size and shape (100mm x 100mm x 200mm), and made from basalt rock.

The stratigraphy of the wider excavated area revealed two brick walls overlying a number of fill deposits believed to date to the latter stages of reclamation in 1901. The range of fills included: clean clay and sand/silt stone, marine sand and shell, ash, coal and metal fragments among other industrial byproducts (Figure 44).

The remains of two walls were observed crossing the excavated area from east to west. These ran parallel, but were constructed of different brick materials, and on this basis were not considered contemporary, although both would have been built in the 20th century. The northernmost wall revealed six brick courses intact above the foundation (Figure 45, left). The southern wall ran the width of the excavation (16m x 0.42m), although it had already been removed when recording took place (Figure 45, right). As the demolished brick wall was still intact, an assessment could be made. A minimum of two courses of bricks fused with grey mortar were present over the concrete (depth c.0.30m). This wall is thought to be of fairly recent origin.

Figure 43. The cobbled surface

Figure 44. Views illustrating the variation in upper reclamation fill materials

Figure 45. View facing east showing the intact portion of the exposed west facing section of the northern wall (left), and the removed sections of the southern wall (right)

Conclusion

The cobblestone alignment was interpreted as part of a driveway into one of the sections along the eastern side of Beaumont Street (Pt Lot 5 or Lot 52) following reclamation of Victoria Park. It is possible that it may relate to use of the stables, but it could also date to later use of the property in the mid 20th century.

The two walls also relate to 20th century use of the land following reclamation. The measured distance between the walls (15.3m) matches accurately with that recorded as the frontage of Lot 52 (50ft or 15.2m). While it was thought the walls may have belonged to the stables, when compared with the 1908 plan, the alignment does not match. Therefore they most likely date to later use of the Lot in the mid 20th century.

The reclamation fills observed in this area were the upper layers (within c.1.5m of the ground surface) and probably represent the final fill layers in Victoria Park in 1901.

2.6 DISCUSSION AND CONCLUSIONS

Archaeological monitoring in the northern area of the VPT project (St Mary's Bay, Jacob's Ladder, Fanshawe Street on-ramp and Beaumont Street) revealed an array of largely 20th century features, with the 19th century only represented by upper reclamation layers and several artefacts in the bottle/rubbish dump near Jacob's Ladder.

Historical research into the history of the shoreline in St Mary's Bay and extending eastwards to Acheron Point and into the northern tip of Freemans Bay, indicated that few structures were present before reclamation activities began. The use of fills from the demolished Acheron Point in the reclamation of Freemans Bay was demonstrated in the soil profiles of near sterile clays observed around the former Point at the Fanshawe Street on-ramp and in Beaumont Street.

The bottles and crockery fragments found near Jacob's Ladder were the only artefacts representing the 19th and early 20th centuries, and as these were in secondary deposition little is known as to their original context. However, they were most likely dumped by residents located on the cliff top above, and therefore represent a common form of behaviour for the time – burying your rubbish in pits in the backyard or throwing it down a cliff into the sea.

The development of the waterfront area in the mid 20th century, while well documented in photographs, was not wholly visible in the stratigraphy. This in part was due to the location and small size of the trenches, which only afforded a small glimpse into the deposits below the ground, and also due in part to disturbance and modification of the shoreline during construction of the motorway and harbour bridge approaches. Demolition of the Gasworks in the 1970s and the construction of the Victory Church carpark similarly disturbed the ground on the corner of Fanshawe and Beaumont Streets, making the survival of earlier archaeological remains in this area unlikely.

3. STORMWATER DIVERSION & DRAINAGE TRENCHES

Excavations for the main drainage systems associated with the new tunnel were located to the west and east of the tunnel, at the southern end of the former bay, extending onto the former foreshore underneath the motorway viaduct and south of Victoria Street West. They included the two large stormwater trenches (called the Western and Eastern Stormwater Diversion trenches), and drainage trenches located underneath the viaduct (Figure 20 and Figure 46). In addition, a small section of new stormwater tunnels was monitored as it extended beneath the motorway viaduct to connect to Union Street, called the Union Street stormwater trench (Figure 46).

Excavations in these locations extended deep enough to expose intertidal deposits and part of a 19th century seawall, brick drainage features, reclamation soils and structures, iron remains related to an early 20th century foundry, and rubbish deposits associated with the Destructor.

Reclamation

As stated in Chapter 1, reclamation in this area took place in 1873-1874 from Hardinge to Patteson Street (now Victoria Street West), 1885-1889 at Beaumont St and the Gasworks, and the from 1886/1888 to 1901 in the main area of the bay, forming Victoria Park. The earliest representation of the shoreline of the bay after initial European settlement can be seen in Vercoe & Harding's 1866 map of Auckland (Figure 6, Figure 8), which indicates that the location of the Freemans Bay foreshore was beneath the site of the 1886 Rob Roy Hotel (Birdcage Tavern). Of additional interest is a report of the dumping of silt in the bay that occurred during and in between the major reclamation events. In 1885 in a story titled 'Muddling in the Harbour' the dumping of silt was reported with much disapproval from the public and the Harbour engineer, who argued that a rubble wall or at the least a wooden wall should be constructed extending out from Acheron Point to prevent the silt from being washed out of the bay every tide. The request was ignored, with the Harbour Board stating '*That pending the adoption of an extended scheme of harbour improvements, the silt be deposited in the south-west corner of Freemans Bay and along Patteson Street frontage'* (*Auckland Star*, 33/7/1885).

3.1 STORMWATER DIVERSION TRENCHES

The Western and Eastern Stormwater Diversion trenches were recorded and reported separately as part of the interim reporting process (Farley & Burnett May 2010; Farley & Phear Sep 2010; Phear & Farley July 2010). The results are combined here, and presented within broad phases from the 19th century through to the modern period. The phasing system was based on stratigraphic interpretation and the presence of datable artefacts within archaeological deposits/layers.

Methodology

The trenches were monitored during March-August 2010 in stages based on the schedule of works. The trenches measured c.6m wide, and were excavated to a depth of 4-5mbs. Concrete pipes were placed within the trenches along with rising mains and manholes. The pipes were laid

progressively[20] by 30 tonne diggers, the tarmac being removed with a toothed bucket and the subsequent deposits by a toothless bucket except where concrete was encountered. Excavation was halted to investigate archaeological deposits, when present, and these were inspected when possible. As the excavations extended to 5m deep in places, records were restricted to section drawings, photographs and inspection of spoil from deeper deposits. In addition, the use of trench shields to protect the crew and prevent side wall collapse obscured trench walls, preventing detailed recording in places.

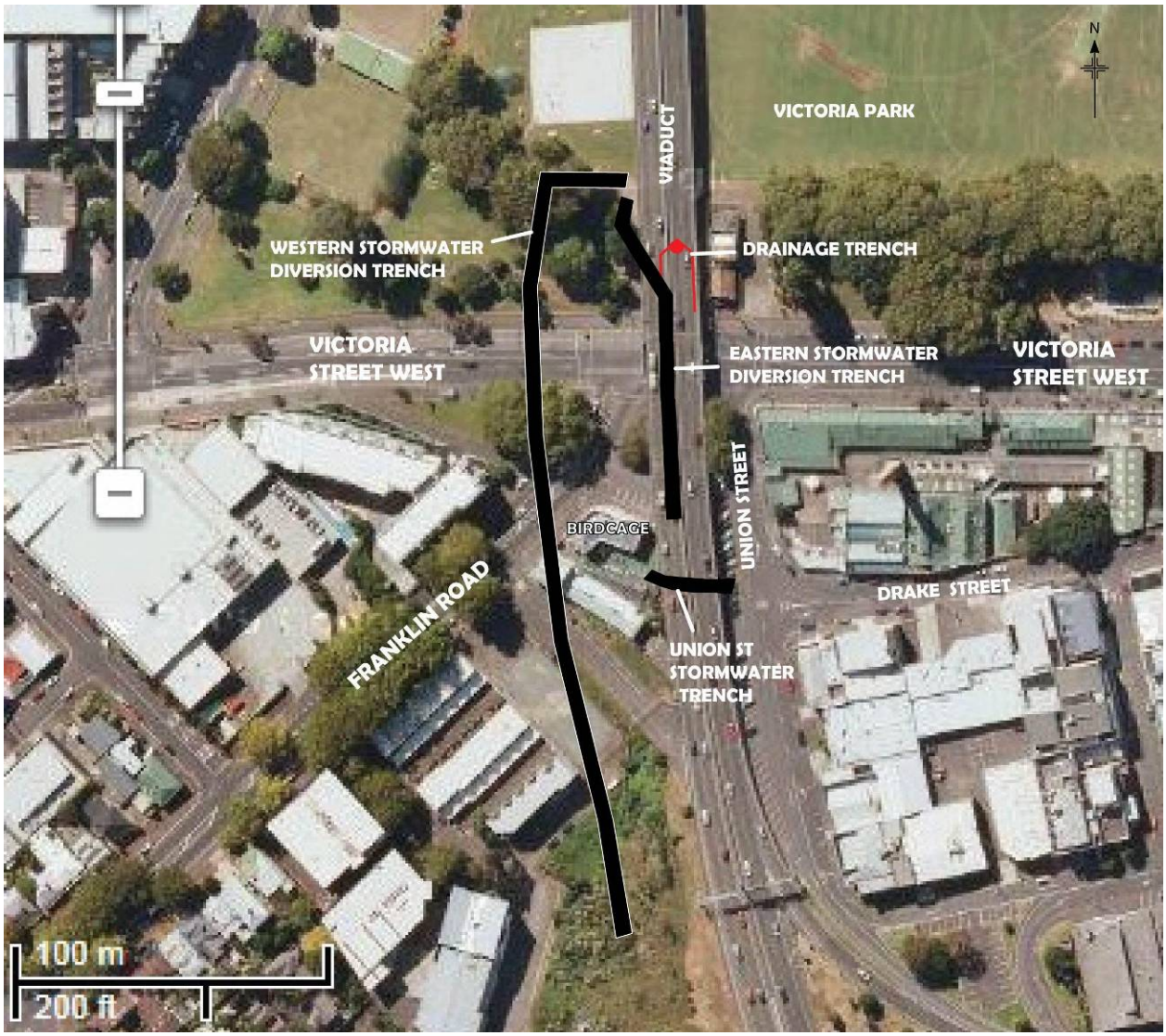


Figure 46. Location plan illustrating of the Western and Eastern Stormwater Diversion trenches and Union Street stormwater trench (black), and the drainage trench beneath the viaduct (red)

Records include plan and section drawings, context sheets, and digital photographs. Artefacts, including bottles and glass shards, ceramic fragments, leather and organic remains were collected

[20] Only the trench area required for the pipe was excavated, the pipe was then laid, and the trench backfilled before the next trench section was excavated and the subsequent pipe was laid and connected to the first, and so on until all sections of stormwater pipe had been laid.

and bagged appropriately. Isolated bricks were bagged as appropriate, and masonry and isolated worked stones were measured on site, and records made. Large timbers were recorded in detail once they had been removed and placed aside.

Monitoring Results

All fieldwork records were checked and cross referenced. Analysis was conducted through a combination of stratigraphic and artefactual analysis, allied to information derived from historical research. Context descriptions for the stormwater trench excavations are provided in Appendix 1.

To aid reporting, the Western trench was divided into four sections (Figure 47): a northern section within Victoria Park (1); a middle section that crossed through Victoria Street West and Franklin Road (2); a lower middle section that crossed through the allotments to the south of the Birdcage (3); and a southern section between the motorway and the Franklin Mews apartments (4). The Eastern Stormwater trench was also divided into three sections based on monitoring works: the northern section located within the park extending into Victoria Street West (5), the central section located beneath the viaduct (6), and the southern section located beneath the viaduct and running parallel to Union Street (7) (Figure 47). These are referred to as Areas 1-7.

Phase One: Maori/Pre-European

No archaeological remains were recovered that dated to pre-European settlement of Freemans Bay. However, natural deposits were recorded that pre-dated European occupation. The lower part of Area 2 and the southern two sections of the Western trench (Areas 3 and 4) were located on the original shore of the bay and the deposits recorded were primarily unmodified terrestrial clays identified at a deep level. The deepest deposit was context (511) located c.7m below the current surface in Area 2. It consisted of a dense layer of light yellowish brown clay. This is considered to be an unweathered natural deposit, as immediately above was an unmodified seafloor matrix consisting of a dark bluish clay (510) (Figure 48 and Figure 57).

In the Eastern trench the natural layers were primarily observed in the central and northern trenches (Areas 5 and 6), with the original marine clays being recorded as context 460 (Figure 49).

Phase Two: 19th Century to Early 20th Century

Sea Floor

In the Western trench (Area 1) a deposit (509) was identified which is believed to be the seafloor. It was c.20cm thick, decreasing in thickness as it extended to the west (Figure 54). This deposit was also recorded in the Eastern trench (no. 7) as context 414 (Figure 50) located 4.5 m below the current ground surface. It comprised a mixed greyish-black silty sand that contained occasional shell and organics, and also worked leather, small fragments of preserved wood and a piece of glass (see Chapter 6 Artefacts for further details). This deposit was recorded in the northern section (Area 5) as context 459 (same as 427, see below) (Figure 49), where it was up to 50cm thick, and also contained artefacts – glass, ceramics, animal bones, a leather shoe and scrap.

The sea floor deposit would have formed across the exposed mudflat surface of Freemans Bay prior to reclamation.

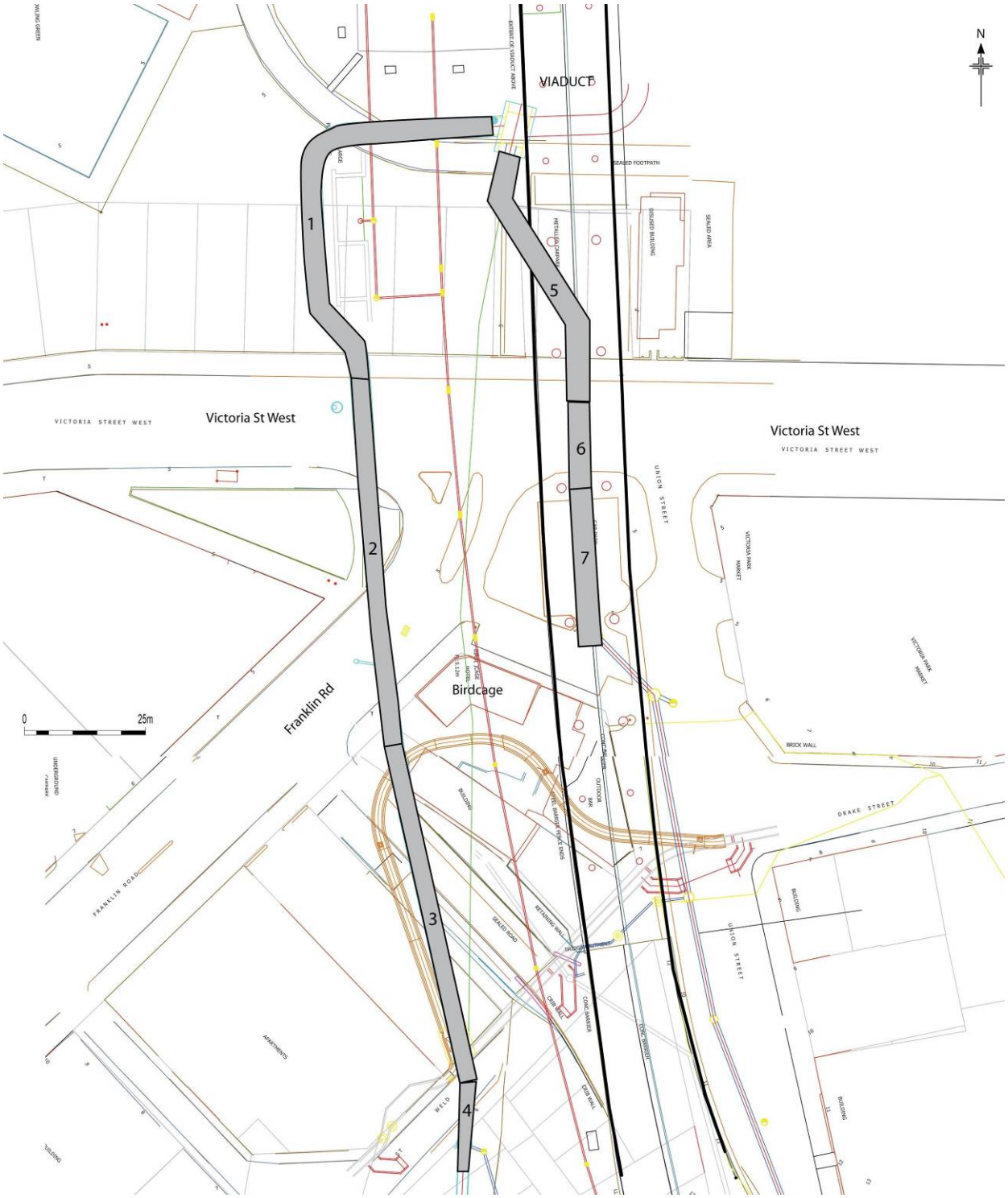


Figure 47. Areas 1-7 of the Stormwater Diversion trenches

Figure 48. View facing south showing exposed stratigraphy within the Stormwater Diversion excavations. The arrow marks the unweathered natural clay layer (510), Area 2

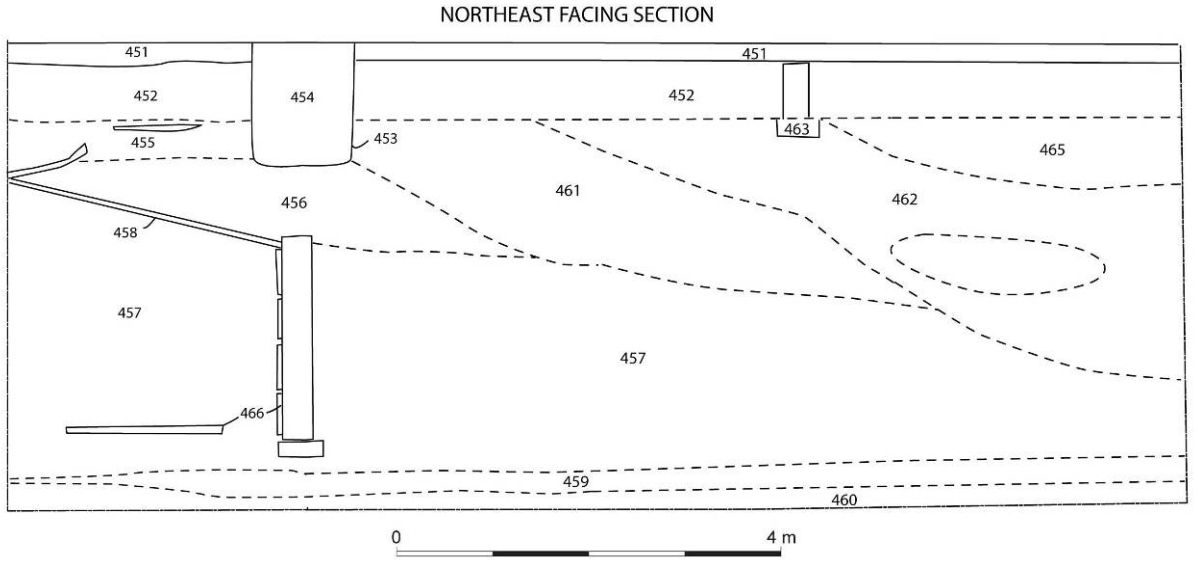


Figure 49. Section drawing from Area 5, Eastern Stormwater Diversion trench

Seawall and Associated Layers

In the northern half of Eastern trench Area 7 a stone wall (context 407) made from large worked basalt stones was observed, oriented roughly east-west (Figure 50–Figure 51). Situated 3.3m below the current surface, the wall extended to 4.2mbs. Context 406, a yellowish grey clay, was observed to the south of the stone wall. It contained small degraded sandstone fragments, and may have been used as fill behind the wall, representing the ground surface when the wall was built. To the immediate north of the wall a layer of stones similar to those in the wall was recorded (context 409; Figure 50 and Figure 52). The stones did not have regular spacing, but were laid at a similar level (3.8mbs) and consisted of one layer only. They were set in a dark bluish-grey clay (context 408) and no artefacts were recovered. This structure is considered to be an early seawall, and when overlaid with the 1866 and 1873 plans it appears to relate best to the 1873 plan (Figure 53). This suggests that the wall was built sometime between 1866 and 1873.

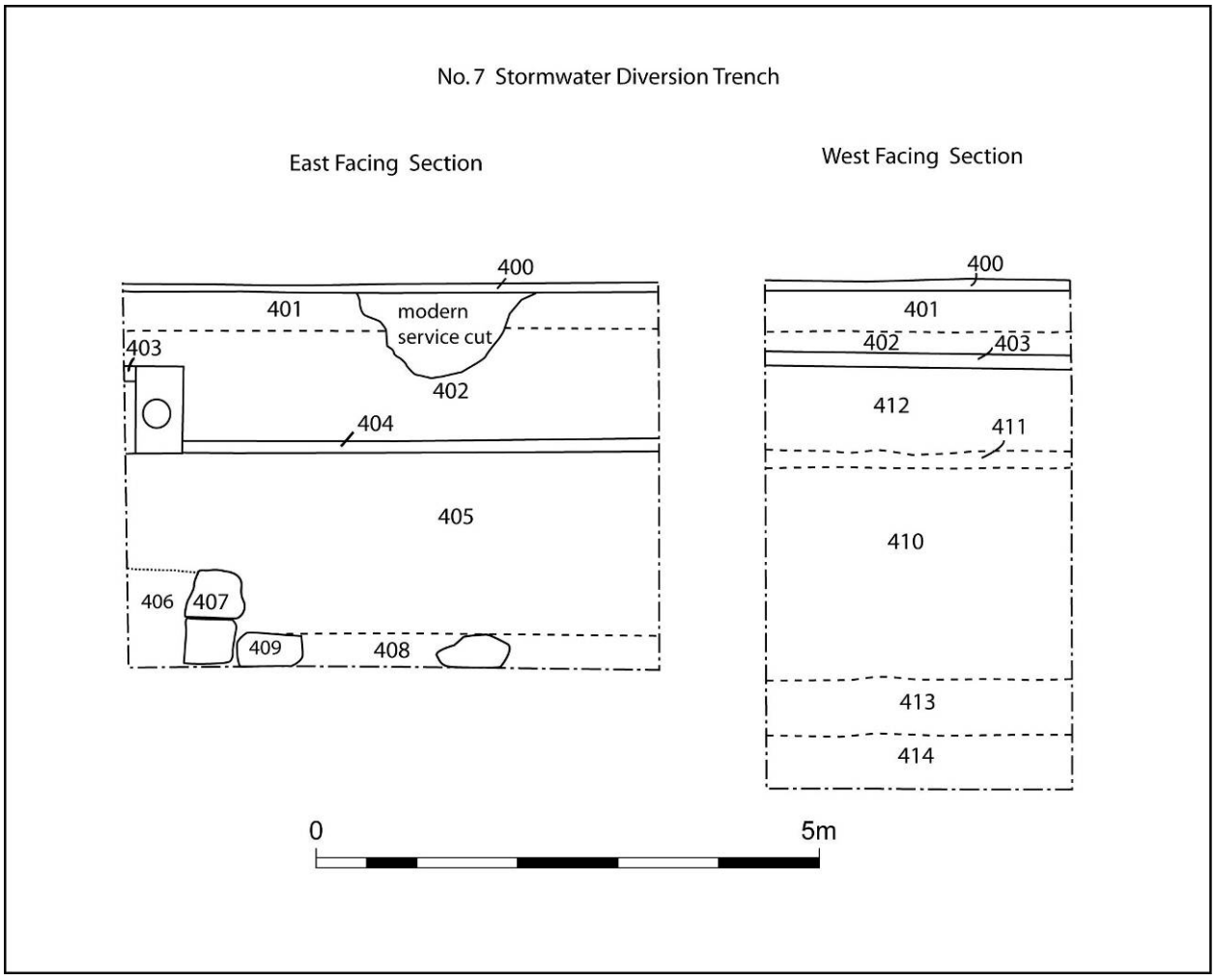


Figure 50. Section drawings of Area 7 (Eastern trench), illustrating the date range for the deposits based on artefacts and/or stratigraphic interpretation

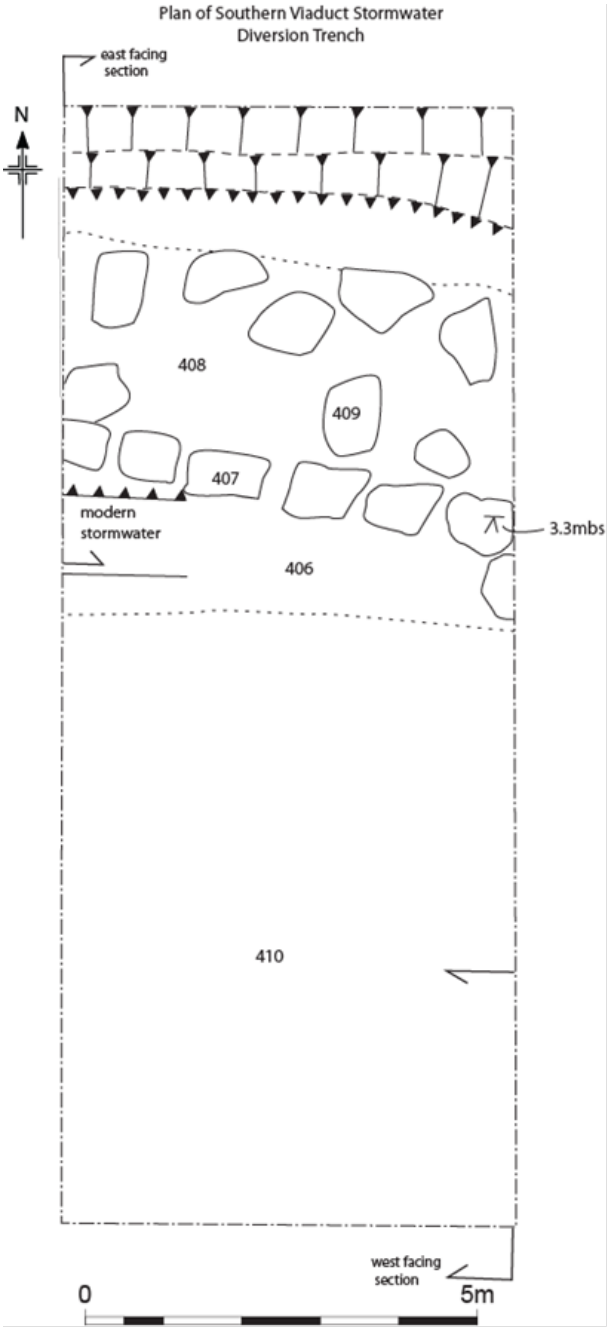


Figure 52. Plan of Area 7, Eastern trench illustrating the stone seawall and stone deposit (left)

Figure 51. Basalt block from the stone sea wall (407) (1m scale)

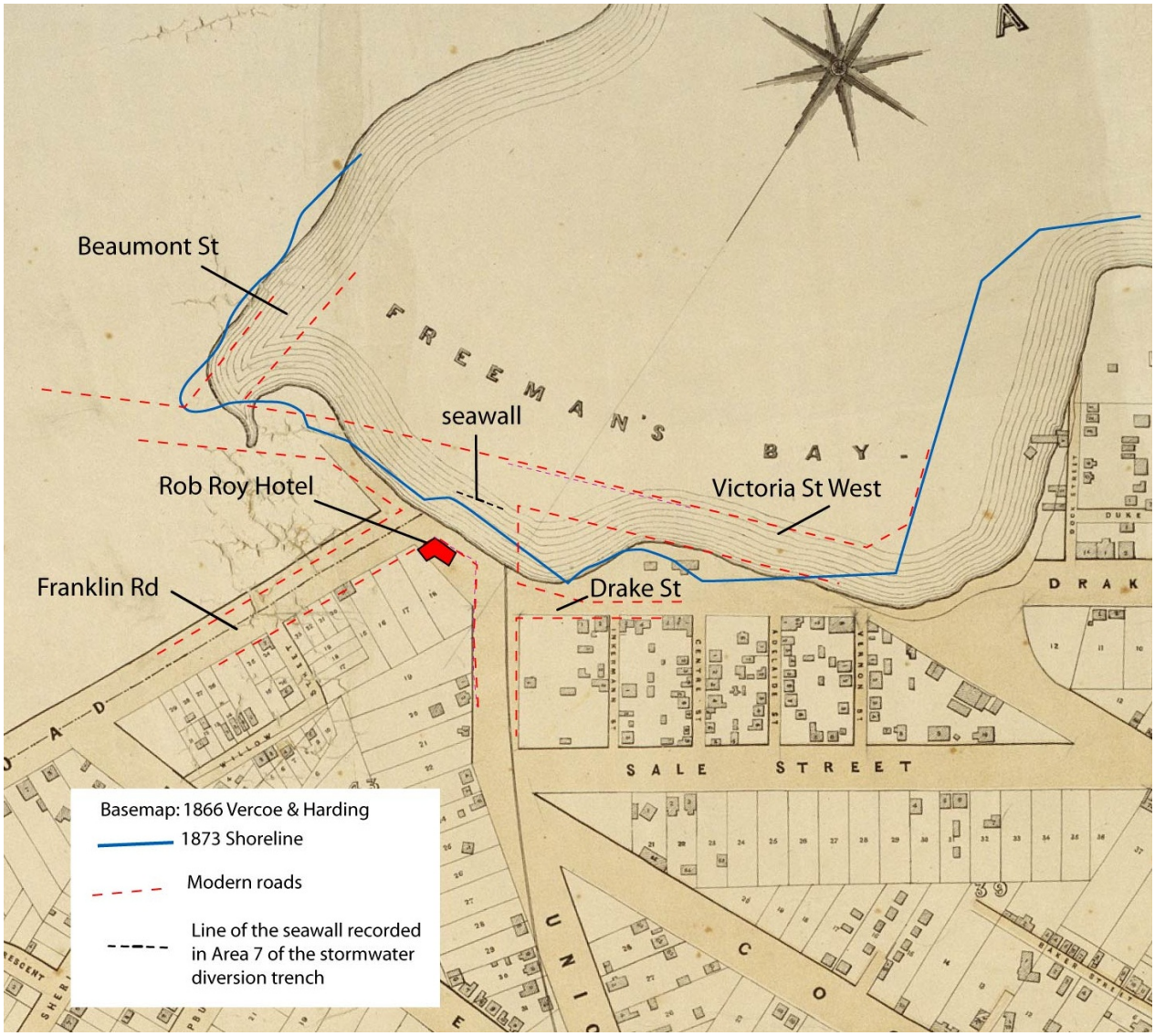


Figure 53. The location of the seawall has been overlaid with the 1866, 1873 and modern plans. While there is no exact fit, the wall is located very close to the 1873 shoreline and seawall (blue), and it is likely that the wall is one and the same

To the west in the southern end of Area 1 a series of large worked basalt stones was observed, which were deposited within layer (508) and were oriented roughly east-west (Figure 54–Figure 56), These were situated at a depth of between 3.5 and 4m below the modern ground surface. Many of the stones were thought to have been disturbed from their original context and those noted to be in situ were only a single layer deep. It is believed that these stones formed part of a sea wall, most likely the one that formed the seaward face of Victoria Street West (Patteson Street) following completion of the 1875-1878 reclamation (Figure 11), and the wall was subsequently disturbed when the main 1886/1888–1901 reclamation began.

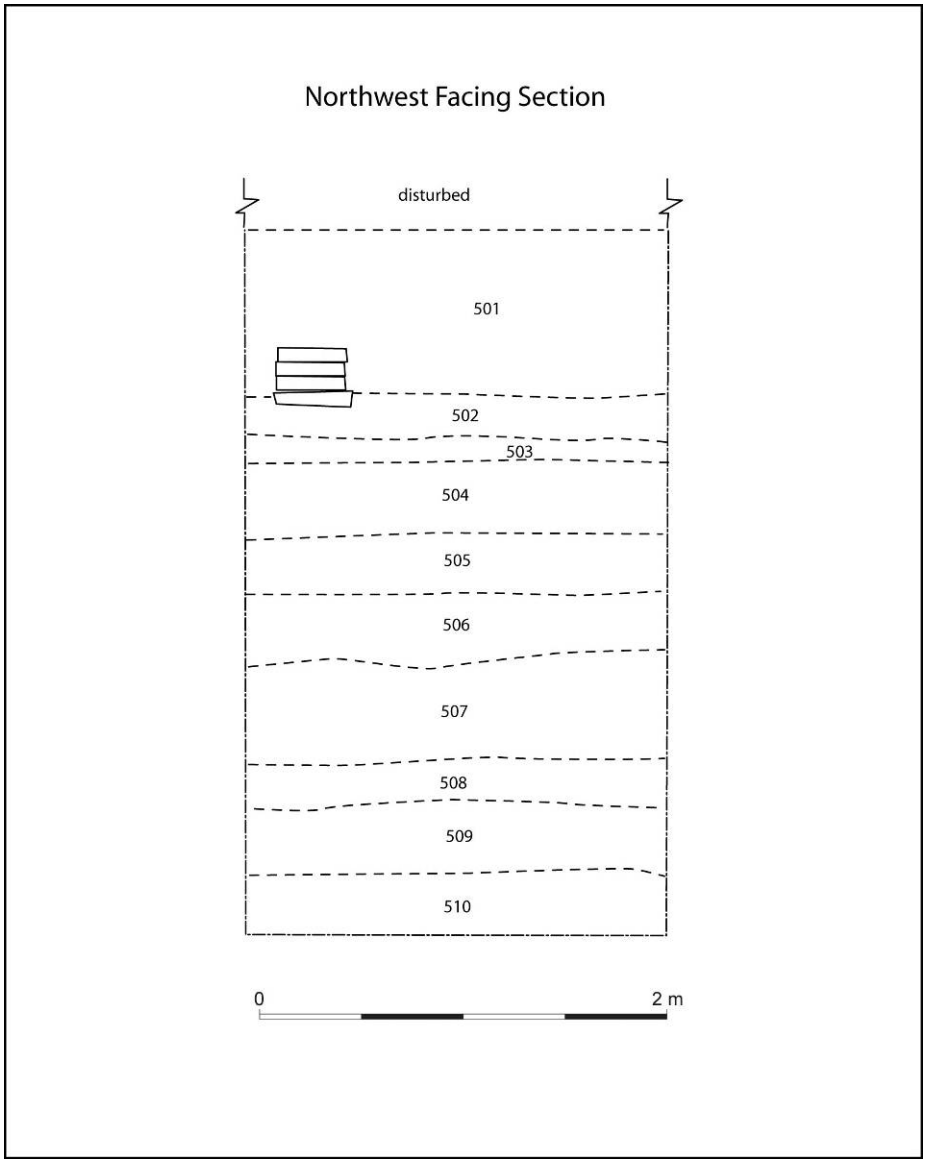


Figure 54. Section drawing of Western trench Area 1 illustrating the stratigraphic layers

Figure 55. Photo of the basalt blocks within Area 1 of the Western stormwater trench. The white arrow points to a block still in situ

Figure 56. One of the basalt blocks after it had been removed (30cm scale)

Brick Culvert

The dominant feature dating to the later 19th century recorded in the central part of the Eastern trench (Area 6) (and also observed in Area 2 of the Western trench) was a brick culvert (context 430), the top of which was located c.3mbs (Figure 57 and Figure 58). The culvert appears to have been constructed within a cut (429) which truncated the sea floor and marine clay layers (427 and 428). Associated with the culvert were at least nine small timbers (431) (Figure 58 and Figure 59) which would have been placed within the construction cut as sidewall braces while the culvert was being constructed. Note that it was not possible to enter this trench due to its depth. As such all recording was undertaken from the surface.

Figure 57. Eastern trench Area 6 with the brick culvert (430) and associated stratigraphy illustrated. Facing east

Figure 58. The brick culvert (430) with the timbers (431) still in place. Facing south

Figure 59. One of the timbers recovered from the culvert, with saw marks visible on the underside (left) (1m scale)

Reclamation Deposits and Structures

Eastern Trench

In the eastern trench (Area 5) the stratigraphic profile consisted of a series of reclamation fill layers dating to the late 19th century. Many of these, particularly at higher levels, exhibited characteristic tip line profiles (e.g. contexts 458, 461, 462 and 465). These can be clearly seen in the section drawing made for the northeast facing profile (Figure 49). These deposits comprised a range of materials with various silts, clays and sands indicating a variety of origins. Two of these fill layers were noted to have artefacts present (context 458 and 462). Context 458 was a thin lens dense with waste material, including several shoes and glass bottles and most notably hundreds of fragments of sheet tin (see Chapter 6 Artefacts). Context 462 was a substantially thicker deposit that consisted primarily of dumped building material and organics.

Below these layers was a thick layer of re-deposited marine sands and clays (context 456, 457; Figure 49). This material is thought to have been dredged from other parts of the harbour and dumped within the reclamation. This material is likely to have been initially quite unstable, possibly requiring some time to drain. Within context 457 two portions of timber retaining walls were identified (context 466) in the eastern and western walls of the East trench (Figure 49). These are thought to represent structures designed to aid the reclamation process and stabilise the fill. Both walls follow an east-west orientation, with the wall in the eastern trench situated approximately 2m to the north of that in the western (Figure 60). Six timbers were recovered from the structure, two of which were upright posts (one from each wall section, see Appendix 2), with the other four arrayed horizontally around the base of the western upright. Several planks that formed the walls of the retaining wall were observed in the section. Unfortunately due to the position of the structure none of these horizontal planks could be recovered.

Further south in Area 6, contexts 423-426 were reclamation layers comprising redeposited clays with no visible artefacts, with a similar deposit recorded in Area 7 as context 413 (Figure 50 and Figure 57).

In Area 7 (Figure 50) reclamation layers that were likely to have been deposited in the final phase of reclamation (early 20th century) were 405, present in the northern half of the trench only, and comprised a light brownish-grey yellow clay. Contexts 410 and 412 differed slightly in that the

clay was sticky/plastic, and bluish-yellow in colour, and both contexts were observed in the southern half of the trench only.

Western Trench

In the northern trench section (Area 1) excavations revealed a layer comprising re-deposited yellow clays (501) mixed with degraded sandstone nearly 2m thick (Figure 54). Within this layer a stack of timbers was noted (Figure 61). The base timber measured 158cm in length x 31cm in width x 5.5cm in height, with machine saw cuts visible, and was pine. Some of the other timbers from this stack were found to have rusted iron nails and attachments present. These materials are thought to represent an isolated deposit dumped within the fill.

Below the yellow clay a series of thinner mixed silty clays were recorded (e.g. 502, 503 and 504). These included a large number of organic/timber fragments along with artefactual material such as shoes, glass, ceramics and animal bones. Below these a series of layers consisting of varying proportions of marine clays was noted (e.g. 505-508). These were identified as dredged marine clays and represented the initial phases of the reclamation of Freemans Bay.

Timber Piles

A series of timber piles, some with intact cross beams, was discovered in the base of the northern end of the Western trench (Area1) where the Stormwater Diversion crosses over the tunnel. The structure is thought to be the remains of a wharf that ran north from the edge of Victoria Street West. The structure consisted of two parallel lines of piles positioned 3.5m apart, exposed over a distance of some 10m, although noted to continue beyond the excavation to the north and south. The wharf was situated at a deep level, with the upper end of the piles generally around 2m above the unweathered clay (511) (Figure 62 and Figure 63). Intact horizontal beams were found attached primarily to the western alignment, with only one layer present, which was probably the base layer of crossbeams. The structure was without decking. Selected photos of the timbers are illustrated in Figure 64 and Figure 65 and descriptions provided in Table 4 (drawings are presented in Appendix 2).

Some of the piles were noted to have multiple tack holes present around the upper end, with staining of the wood indicative of a metal covering, probably copper. Three of the piles were found to have lengths of rope wrapped around the top ends (Figure 65). The excavation crew had also removed what appeared to be a wheel, believed to be from the lower reclamation layers nearby (Timber no. 5: Figure 64). To the east of the wharf structure a quantity of heavily degraded timber fragments was noted within the lowest fill.

The timber piles were analysed in order to identify the wood (Figure 64 and Figure 65; Table 4). Six piles were Kauri, four were Totara and three were Eucalypt. The wooden wheel was also made of Kauri. Kauri was a sought after material in ship and boat building, as it was easy to work, light and resistant to rot in salt water. That it was used to build wharves is therefore not surprising. However, Totara piles were used for the new Queen Street wharf in the late 1850s (Bickler et al. 2005:39), although in 1871 the Auckland Harbour Board inspected the wharf and noted that the 'whole of the piles which are not coppered are in a very bad state of decay, but the copper piles in the outer T are quite sound'.[21]

[21] Auckland Harbour Board Minute Book, 1871-1874, AHB 1/1 National Maritime Museum, 8 June 1871, p.17.

There is no documentary evidence to suggest a wharf or jetty was erected in Freemans Bay prior to reclamation, nor are there any illustrations on 19th century maps or photographs. While it is possible that the wharf did exist prior to reclamation, it is considered more likely to have been erected to aid reclamation of the bay in the late 19th century, particularly when considered along with the additional wharf evidence recorded during the main tunnel excavations discussed in the following chapter.

Figure 60. Location of the two timber walls within the Area 5 trench : the red line indicates the location of the section drawing, the blue lines indicate the orientation of the two walls

Figure 61. View facing southwest showing a stack of timbers in the upper reclamation layers (Area 1)

Figure 62. View facing east showing the exposed timber wharf in Area 1 (left, arrow); view facing southeast showing the western alignment of the wharf and surrounding stratigraphy (right, arrow)

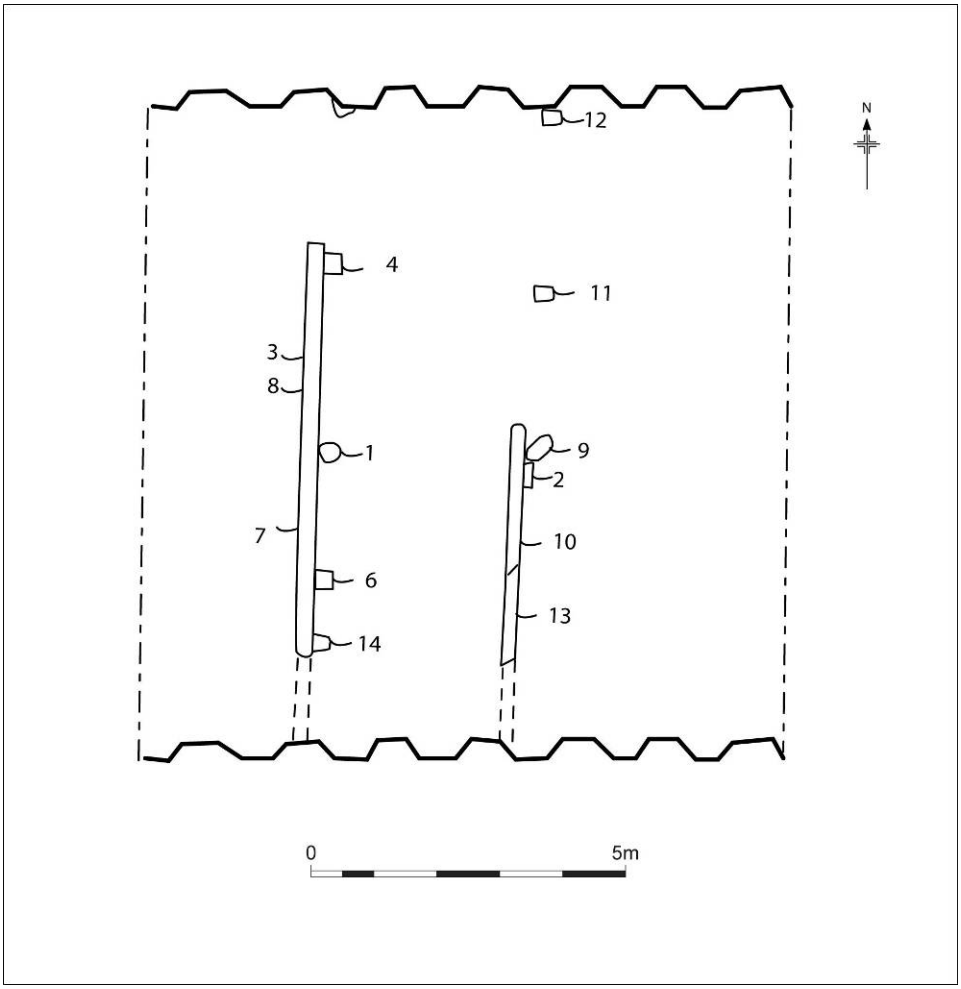


Figure 63. Plan of timber wharf, with the individual timbers numbered (see Table 5 and Appendix 2)

		
Timber 1	Timber 2	Timber 3
		
Timber 4	Timber 5	Timber 6
		
Timber 7	Timber 8	Timber 9

Figure 64. Selected photographs of the timbers found in the stormwater trench (see Appendix 2 for drawings)

		
Timber 10	Timber 11	Timber 12
		
Timber 13	Timber 14	
		
Rope: 2m long, 3cm diameter	Rope: 1.9m long, 3.5m diameter	Rope: 4.1m long, 3cm diameter

Figure 65. Selected photographs of the timbers found in the stormwater trench and sections of marine rope (see Appendix 2 for drawings)

Table 4. Types of wood identified and description of the timber piles and wheel recorded in the Western stormwater trench (Area 1)

Timber No.	*Wood Identified*	*Description*
1	Kauri	A circular pile with a smooth, well finished exterior. Tapered end trimmed by an adze, with four faces to the taper. A section of marine rope was wrapped around this pile – with fibres still stuck on the exterior following cleaning. A series of cuts into the pile marked joins and other connection points.
2	Eucalypt	A fragment of a long timber beam. Rough timber finish.
3	Eucalypt	Half boxed heart timber in average condition. Portion of a horizontal beam – originally joined with timber 8. A drill hole ran through the tapered end.
4	Totara	Boxed heart, with trimmed corners. Upper end of pile was clad with copper, numerous tack holes remained, c.20 on the vertical and 4 per face; several were also noted in the top end. The centre portion had clearly been exposed to the marine environment for some time and was heavily worm eaten. Slots cut into the timber at the base were filled with timber of a different type and attached with tacks or bolts.
5	Kauri	A kauri timber wheel with iron axle. Thought to have been recovered from the clay layer immediately above or adjacent to the wharf.
6	Kauri	Boxed heart with trimmed corners, timber in average condition with a smooth finish. Broken at upper end during the excavation process. Marine rope was situated around this pile.
7	Kauri	A rectangular section horizontal beam – broken at one end. Boxed heart with a smooth finish. A bolt hole ran through the timber – likely to have been part of the joint attachment. Multiple nails/bolts were present along one side.
8	Kauri	A portion of a rectangular beam. Uppermost surface was in good condition, but the underside was heavily worm eaten. Multiple cut slots along one side suggested this was reused.
9	Totara	A circular pile – basically a tree trunk, with the branches trimmed right back and the bark stripped. A stepped cut had been made at the narrower end.
10	Kauri	A rectangular beam of boxed heart, in good condition with a smooth finish. Broken at one end. A series of metal nails and a large spike ran through the timber. Part of a bolt ran through the timber at the attachment point.
11	Totara	A boxed heart pile. Rectangular with trimmed corners. Generally good condition with a moderate finish, some damage at top end. Tapered point had been trimmed by hand with an adze, with four faces.
12	Eucalypt	A boxed heart rectangular pile. Smooth finish. An iron bolt ran through the timber at the lower end. A rectangular shaped hole was cut out of the timber at this end. Several other holes and cut slots were present, including a central cut coated with tar.
13	Totara	A boxed heart timber beam. Originally a smooth finish but portions had been damaged by worm activity. Broken at both ends.
14	Kauri	A beam portion, broken at one end and burnt and broken at the other. Generally a smooth finish outside of the burning.

On the Shore – Layers and Road Surface

In the western trench within Area 2, two large deposits of mixed yellow and grey clays (519 and 520) were observed close to the Birdcage Tavern, overlying a 19th century road surface (521) (Figure 66 and Figure 67). Some substantial deposits of degraded sandstone were noted within this deposit, and a small collection of ceramic, faunal and glass artefacts were recovered. These deposits are believed to be later 19th century levelling layers introduced in order to build up the road level.

The road surface itself was a mixed scoria/bitumen/gravel compound (521). This surface was located between 1.6m and 2m below the modern surface, and was generally 6cm thick. This in turn overlay a well compacted layer of sub-rounded scoria basecourse (522) (Figure 66 and Figure 67). The bitumen surface is believed to be the same surface as that recorded during excavations at the Birdcage (Phear & Farley 2012). Beneath this was a light grey reclamation deposit (524) which is thought to have been introduced prior to the 1873 reclamation of this area.

Further to the south in Areas 3 and 4 the excavation techniques limited opportunities to examine the older deposits, particularly since these were generally deeper and the space more confined. The use of trench shields to protect the ground crew heavily restricted the opportunities to record the stratigraphic profile. However, what was observed was a particularly thick series of modern deposits (528) above 19th century yellow and grey clay deposits (529 and 530: Figure 67).

There also appeared to be several thick deposits that were introduced to level the area. In some locations (Areas 1 and 2) a thick black silty clay layer (531) was observed which is thought relates to the old stream (Tunamau) which was culverted in the 19th century to become the Freemans Bay Stormwater culvert. This is based on the observed high proportion of organic material within the layer; unfortunately closer observation was not possible.

Within the southernmost zone (Area 4) few 19th century deposits were examined within the trench excavated around the 19th century stormwater culvert (Figure 68). Here the excavation was more tightly confined, reducing the visibility of other layers.

Figure 66. View facing south showing the yellow and grey clay (520) (arrow) exposed within the stormwater trench crossing Franklin Road outside the Birdcage Tavern (left); the surface (521) and layer (519) located above it (right)

Figure 67. Section drawing illustrating the stratigraphy exposed in the trench through Franklin Road (Area 2) – 521 is the 19th century road surface and 522 the scoria base course layer

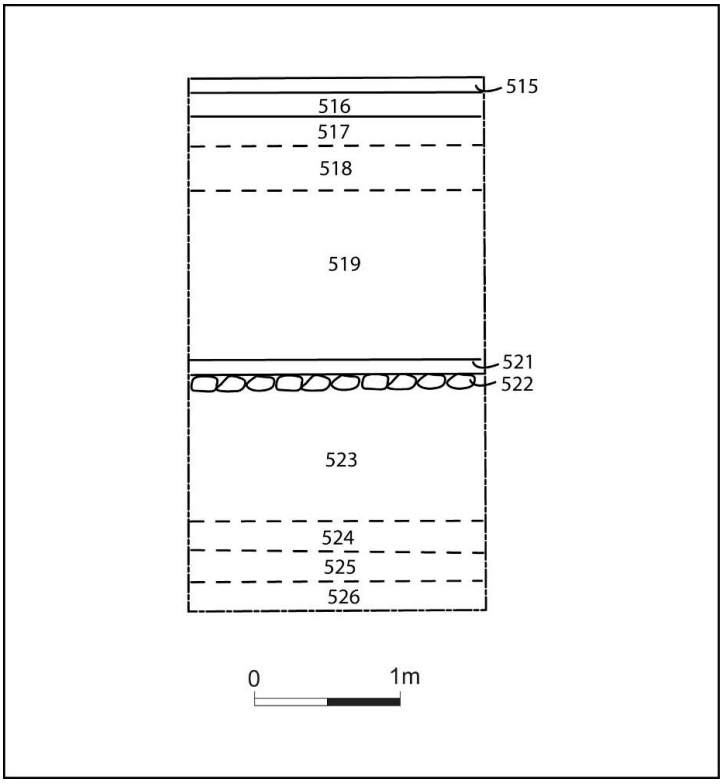


Figure 68. General stratigraphy in the Western trench Area 3 to the south of the Birdcage Tavern

Figure 69. View facing south showing the excavation of the 19th century stormwater culvert in the area behind Franklin Mews (southern section of Area 3)

Phase Three: Mid 20th Century

Eastern Trench

Within Area 7 two concrete surfaces (contexts 403 and 404) and a pipe encased in concrete were observed in the trench (Figure 50). The lower concrete surface initially appeared to pre-date the higher surface. However, it appears that all three were connected, both surfaces comprising similar concrete dense with aggregates, and connected by the concrete drain. The lower surface (context 404) was located in the northern half of Area 7, and the higher surface (context 403) in the southern half. The service pipe separated the two.

Two other deposits appeared to post-date reclamation. Context 411 was a band of light greyish yellow compact clay that may have been a surface, but this was not clear (Figure 50). Above this was context 412, a layer of bluish-greyish-yellow clay. This deposit did not contain any artefactual materials.

Further north in Area 5 a layer of mixed demolition fill (context 452) was found to cap the entire area. This fill was previously identified during shallow excavations for drainage re-alignment and recorded as context (306). This demolition material is thought to have originated from the early 20th century industrial structures present along the southern edge of Victoria Park. The demolition of these buildings was completed during the 1960s.

Western Trench

A number of deposits related to the infilling of land behind the Birdcage Tavern in the mid 20th century were observed in the stormwater trench, and are discussed in detail in the Birdcage Tavern final archaeological report (Phear & Farley March 2012). They basically consisted of a number of dumped deposits that were most likely rubbish layers from the Destructor.

Phase Four: Modern

Eastern Trench

To the south in Area 7 a mixed compact yellow clay layer (context 402) with occasional modern ceramic and glass fragments was situated above the concrete surfaces (Figure 50). It varied in thickness – up to 1m thick above surface 404, and only c.20cm above surface 403. Immediately above this was the hardcore deposit (context 401) laid in preparation for the bitumen road/car park surface (context 400). A small service pipe also truncated these layers.

In the central Area 6, contexts 420-422 were modern services and the tarmac surface. And in Area 5 modern deposits included hardcore (context 451), and the bitumen road surface (which had been removed previously). Modern intrusions included service trenches.

Western Trench

The modern elements primarily related to the installation of services and development of the roads. In Area 2 immediately below the modern Franklin Road surface, west of the Birdcage, a patch of granite cobbles was identified (517). This was bedded into a basecourse of scoria. The surface had previously been truncated by the installation of modern services, and as such it is thought to relate to either the mid or late 20th century (Figure 70).

Figure 70. The cobbled surface (arrow) beneath the modern bitumen road surface in Franklin Road (Area 2)

3.2 ORAKEI STORMWATER TRENCH

A new section of the Orakei Main Sewer trench was monitored as it passed beneath the motorway viaduct to connect with Union Street in April 2011 (Figure 46 and Figure 71). The trench measured c.7m wide and up to 4m deep. The exposed stratigraphy was dominated by mixed clay deposits and rubbish dumps that were most likely derived from the Destructor during the early 20th century (Figure 71; see Appendix 1 for the context descriptions).

While not obvious in the stratigraphic drawing (Figure 71), several layers were dominated by ash, charcoal and burnt rubbish with fused glass and ceramic materials (481 and 482). Above this was the dark yellow friable clay layer (480), which generally dominated the profile across the trench. Various thinner ashy deposits (479 and 477) were situated between the yellow clay and additional clay layers extending westwards (478 and 476). Several 19th and 20th century bottles were located within these clays, and a sample was collected for analysis. A series of quite friable soil and ashy layers were present extending to the surface (472–475), which was capped by the modern tarmac layer and basecourse (470 and 471).

The angle of the layers suggested tip-lines, whereby large deposits were dumped into the area in order to create made ground or raise the ground level. This was evident in excavations to the rear of the Birdcage Tavern, where a large number of deposits dominated by burnt materials were recorded in the Birdcage Relocation Trench (Phear & Farley 2012). Similar deposits were also observed in the Western stormwater trench (Area 4) as reported above. The origin of these materials would logically be the Destructor located on the opposite side of Union Street, which began operations around 1905.

Figure 71. North facing section of the Union Street stormwater trench, located beneath the motorway Viaduct. The grey concrete marks the base of the trench at c.4mbs

3.3 DRAINAGE REALIGNMENT TRENCHES

Modification of the existing drainage systems formed part of the tunnel project, and this included the realignment of the motorway viaduct drains. This work involved excavating two trenches to allow the installation of plastic pipes to connect to a new riser and manhole (Figure 72). During this activity a large number of iron artefacts and building foundations were uncovered. Identification of construction materials and historical research into this area has indicated an early 20th century date for the construction of the buildings and deposition of the remains. These trenches were located in what were formerly properties along the northern side of Victoria Street West, to the west of and immediately adjacent to the Campbell Free Kindergarten (Lots 24 and 25 of Deeds Plan City 37).

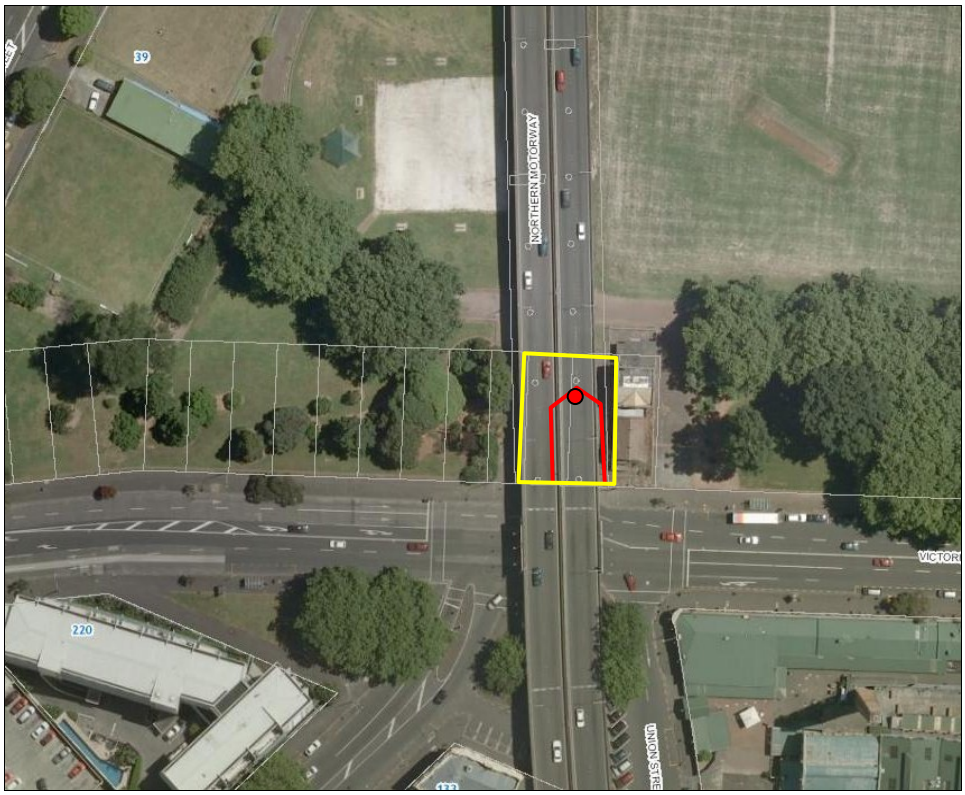


Figure 72. Aerial view of the southern section of Victoria Park, with the drainage realignment trenches marked in red, and the boundary of allotments 24 and 25 marked in yellow (source: ALGGi)

Methodology

Trenches were excavated below the motorway viaduct at the Victoria Street West end in order to realign services. Excavation, installation and backfill took place from 9 to 11 March 2010 and were monitored. The trenches were excavated by a mechanical excavator and were examined throughout the process in order to record the stratigraphic profile, and the type and quantity of fill present within this area. The monitoring involved in-trench examination of the deposits at intervals during the excavation. Photographs were taken of the excavation process and of the trench sections. Sketch sections, plans and context descriptions were also made.

Historical background research into the use of the allotments along the southern side of Victoria Park was conducted. Research was carried out on allotments 24 to 40 of Deeds Plan City 37; that is from the Lot immediately adjacent to and west of the Campbell Free Kindergarten to the corner of Victoria Street West and Beaumont Street.

Historical Background

Pt Lots 24-40

Originally north of the Freemans Bay shoreline, the 9.41ha of land which would later incorporate Pt Lots 24-40 was formed during Reclamation No. 12, entitled 'Freeman's Bay: Victoria Park etc' between 1886 and 1901 (Figure 9, Table 1).

Lots 24-40 were positioned between Patteson Street (later Victoria Street West) and the newly established Victoria Park. Further lots ran east of Pt Lot 24, and the intersection of Beaumont Street marked the western boundary of the corner Lot 40. With the exceptions of Lots 35, 36, 39 and 40, the dimensions of each lot measured 33ft (10.05m) (frontage) by 100ft (30.48m) (depth) (Figure 73).

The sale of leases for these lots was first advertised in the *Observer* in April 1903. Leases were set at a term of 50 years, and the price was noted to be '£1 per foot per annum' (25/4/1903:6). By March of 1904 none of allotments 24-40 had been leased, and the price was reduced to 10 shillings per foot per annum (ibid. 26/3/1904:18). A further advertisement in October 1905 reveals that these allotments were still unoccupied, and by December 1906 only Lots 24 and 25 had acquired lease holders (ibid. 7/10/1905:18; 8/12/1906:6). By July 1908 these remaining lots still had not attracted lessees, and an advertisement was taken out by the Auckland Harbour Board for the leases of 'Allotments No.s 23 and 26 to 40 Patteson Street' with the term of lease now reduced to 21 years (ibid. 25/7/1908:9).

It is clear from these efforts to lease that no structures would have been in place along Lots 24-40 prior to the first leaseholders in 1905/1906, and that the earliest buildings would have appeared on Pt Lots 24 and 25. This is also illustrated by the 1908 City of Auckland map (Figure 74 and Figure 75), which provides a detailed plan of ongoing construction on the Allotments between 1908 and 1919. The only structures visible on the City of Auckland Map in 1908 are within Lots Pt 24 and 25, along with a corrugated iron fence running the length of the northern boundary line of all the lots, serving to separate them from Victoria Park. All other structures detailed on the City map within Lots 26-40 are later annotations.

The Wises Auckland Street Directory lists businesses for Patteson Street, Freemans Bay, along the 'right side from Wellesley Street' from 1905 (p.168). However, since street numbers were not listed for this side of the road until 1933/34 it is difficult to discern which particular lots these early businesses occupied. Patteson Street was also first listed in Wises as Victoria Street West in 1933/34. The Valuation List for Patteson Street/Victoria Street West, which recorded lease holders on Lots 24-40 from 1912/13, enabled many of these businesses prior to 1933/34 to be placed. Occupiers between 1905 and 1907, however, remain the least well recorded and the hardest to situate, and they are therefore listed as they appear in Wises below.

1905 and 1906:

- Tobin, M., fruiterer
- Tobin, Miss Celia, dressmaker

- Auckland Gas Co.'s Works

1907:

- Tobin, M., fruiterer
- Tobin, Miss Celia, dressmaker
- Tobin, A. J., boat and yacht builder
- Auckland Gas Co.'s Works
- Collins [spelling error, should read Collings], A., iron and brass founder

The businesses that subsequently developed along Lots 24-40 throughout the 20th century reflect the industrial environment of Freemans Bay at the time. Galvanised iron-clad buildings were a predominant feature, and were used mainly as workshops and factories for foundries, manufacturing, garages and engineering. Tar reservoirs and tanks near the Beaumont Street intersection were also part of this cityscape until the 1950s. By the late 1950s the condition of many of the buildings on Lots 24-40 was considered poor, and following the demolition of any remaining structures in 1966, the land was eventually cleared and incorporated into Victoria Park.

Figure 73. Detail from a 1950s Auckland City Council Planning Map. Location of Lots 24-40 marked in red. (Sir George Grey Special Collections, Auckland Libraries, NZ Maps 3926)

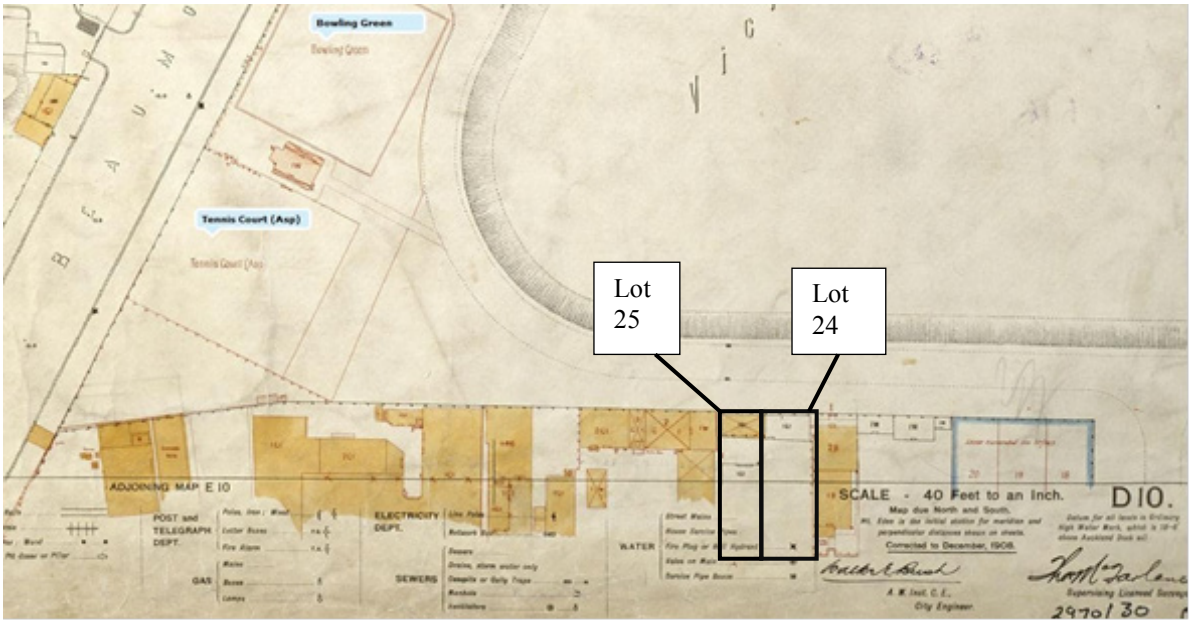


Figure 74. Detail from 1908 City of Auckland map, Map Sheet D10 (Auckland Council Archives, AKC 001 H12), showing the northern part of Pt lots 24, 25 and adjacent properties. Unfortunately the map sheets separate in the middle of the properties (see Figure 75 below)

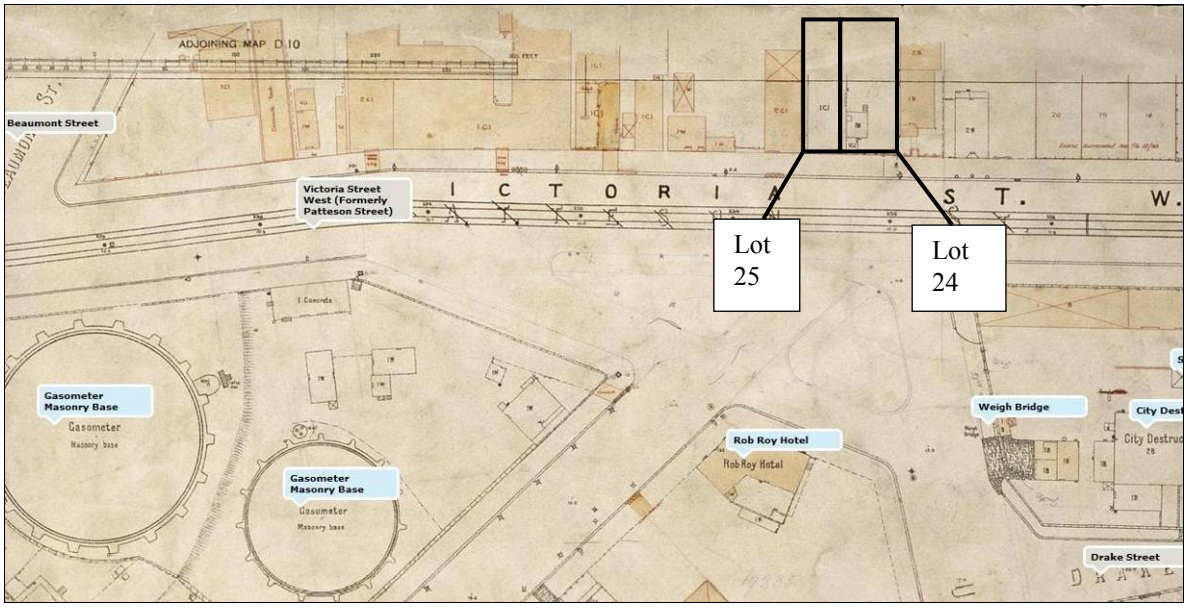


Figure 75. Detail from 1908 City of Auckland map, Map Sheet E10 (Auckland Council Archives, AKC 001 H12), showing southern part of Pt lots 24, 25 and adjacent properties

Pt Lots 24 and 25 (265 and 267 Victoria Street West)

The 1908 City of Auckland map details several early structures within Pt Lots 24 and 25. Three buildings are visible on Pt Lot 24, including a one storey galvanised iron structure running along the entire northern boundary line, and a one storey galvanised iron structure in the south-western corner (fronting Patteson Street) with a one storey wooden structure immediately behind. A corrugated iron fence is visible along the eastern boundary line with Lot 23, and partially along the southern boundary line (Patteson Street) in between the south-western corner building and a gate which can be seen in the south-eastern corner. These buildings occupied only a small portion

of Lot 24, and it is likely that the remaining land was used as a yard. Pt Lot 25 had one building by 1908, a one storey galvanised iron structure fronting Patteson Street. Annotations to the 1908 City map show that another one storey iron building was later erected along the northern boundary, but had been removed by 1919. No fences or other boundary markers are depicted between Pt Lots 24 and 25 on the 1908 or annotated 1919 City of Auckland map.

By 1912/13 the Valuation List for Patteson Street gives the lessee for Pt Lots 24 and 25 as Arthur Collings. The description of the property at this time is given as an 'iron foundry'. Arthur Collings first appears in the Wises Street Directory under Patteson Street in 1907. He is listed as an iron and brass founder. Owing to the lack of street numbers at this time, it is not clear whether Collings occupied Pt Lots 24 and 25 between 1907 and 1912, or if the Lots were leased separately and to other businesses. Collings continued to lease the Lots until 1934/35 when his son Francis Henry Collings took over. By 1933/34 the business was listed in Wises as 'Collings Arthur & Sons, ironfounders'.

Archibald Simpson, an iron moulder, acquired the leases of Pt Lots 24 and 25 from Collings in 1938/39 and established the 'Gem Iron Foundry' (listed in Wises at 265 Victoria Street West). This foundry was listed in Wises until 1942, when Simpson was listed alone, but then appeared again in 1946 as 'Gem Foundry Ltd'. It is unclear exactly how long Simpson held the leases for Pt Lots 24 and 25; however by 1956 it had passed back to the Auckland Harbour Board. Only two buildings remained on Pt Lots 24 and 25 at this time, and the condition of both buildings was described as 'poor' in the Valuation List (Figure 76).

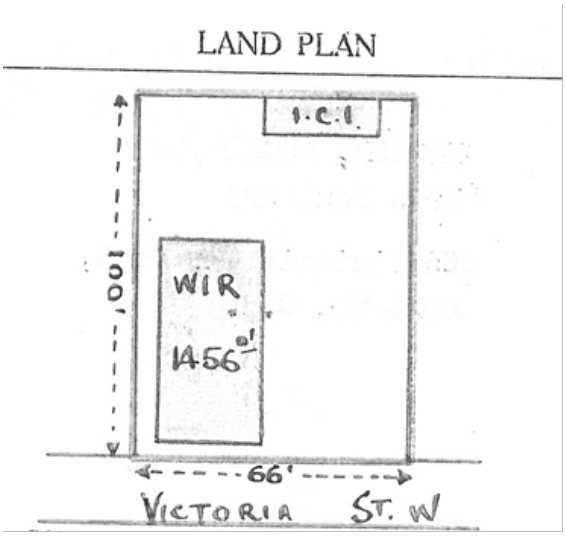


Figure 76. Valuation List plan of Lots 24 and 25. Shows one storey wood and iron foundry at front, and one storey iron lean-to shed at rear. Date is post-1945

Monitoring Results

The stratigraphy of the excavated area (Figure 77, Figure 78) revealed both deposits and structures relating to the early 20th century occupation and use of Pt Lots 24 and 25. These in turn capped a few deposits that formed part of the 19th century reclamation process (315 and 316; Figure 80). The southern end of the eastern branch of the trench was found to be modified by a large cut, and subsequent backfill, dating to the modern installation of drainage systems for the motorway. All recorded contexts are presented in Appendix 1 and a discussion of the artefacts is presented in the next section of this chapter.

Of particular interest were the remains of a brick foundation wall (313, 314), an iron and concrete foundation (308), a segment of a wooden retaining wall (312), and a dense cluster of iron artefacts (306) (Figure 77). These are all believed to relate to the use of the two allotments as an iron foundry in the early part of the 20th century.

Context (306) was found in both branches of the trench and was situated immediately above an iron slag surface (309), thought to represent the original surface of the foundry yard (Figure 78). Context (306) generally appeared to be a mixed dump of demolition materials with clusters of artefacts noted, particularly a concentration of iron materials. A cluster in close proximity to a brick wall (313) consisted predominantly of bricks, brick fragments and mortar. A second cluster of loose iron artefacts was identified in the area around the concrete foundation (308). Other material present within the deposit included large (up to 80cm diameter) chunks of iron/slag, rock, silt and clay. A large sample of iron artefacts from deposit (306) was recorded on site (listed in Chapter 6).

A concrete block with an iron beam (308) was recorded in the eastern branch of the excavation. A portion of this foundation was unusual in that it consisted of a large overturned iron mould. The foundation is thought to relate to the early 20th century foundry buildings on site, particularly those extensions situated near the southern edge of the allotments. As only a limited portion of building foundation was exposed, it is not possible to provide further information related to the origin of this structure.

A small section of a wooden retaining wall (312) was identified in the base of the eastern branch of the trench (Figure 78 and Figure 79). This east-west running wall was shallow, with a depth of c.40cm. The purpose of this structure is unknown but may have been part of an attempt to stabilise areas within the iron foundry yard. Deposits below the wall were found to be silty (311) and are thought to be part of the later stages of the reclamation.

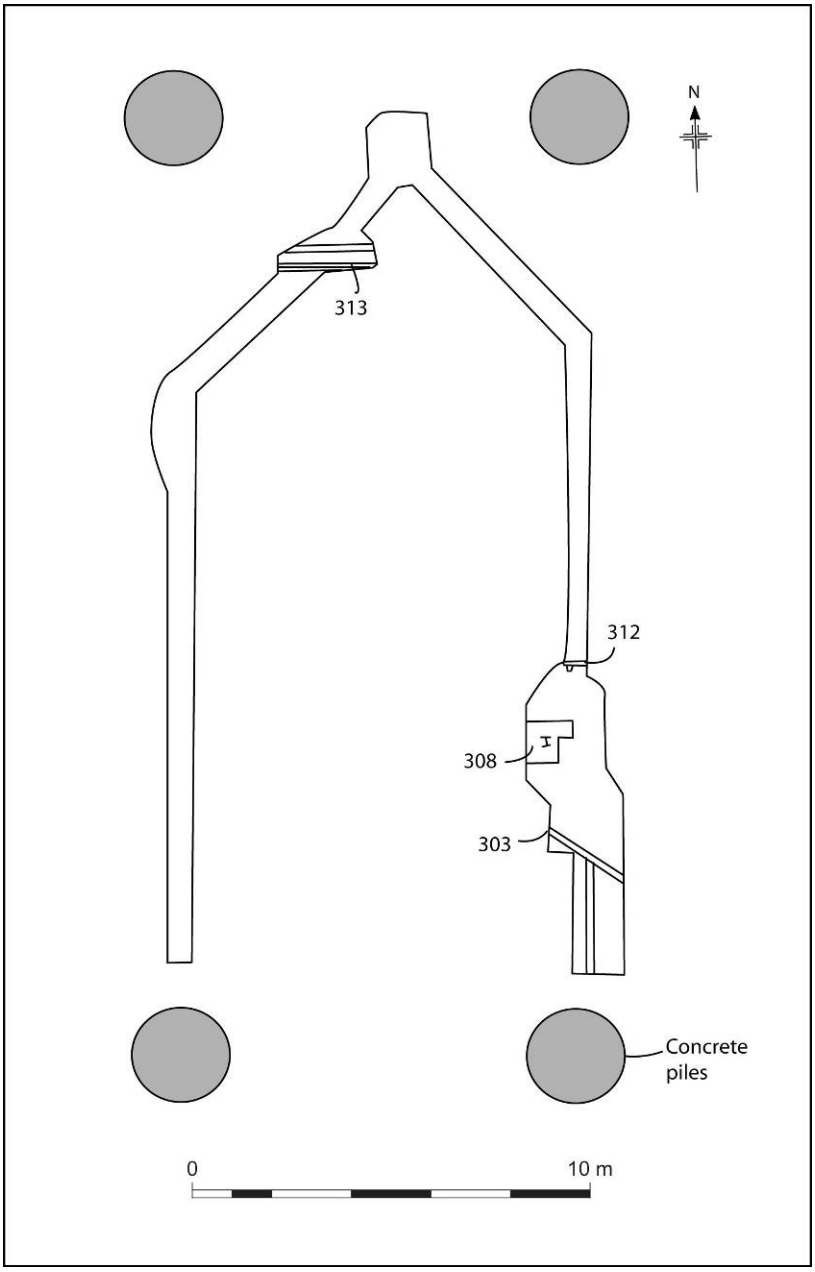


Figure 77. Plan of the trench excavation with contexts 303 (modern drain pipe), 308 (iron and concrete foundation), 312 wooden retaining wall and 313 (brick wall) marked

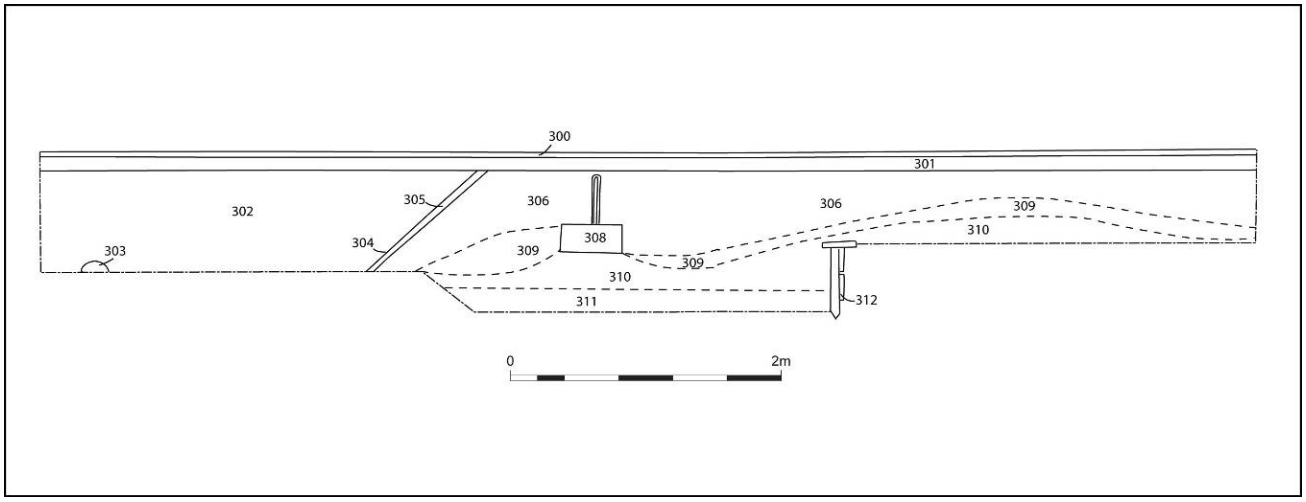


Figure 78. East facing section of eastern drainage realignment trench

Figure 79. View facing north showing the section of wooden retaining wall (312). Scale = 20cm

The brick wall (313), over scoria/concrete (314) was exposed over a short section (c.2.3m) where it intersected with the trench excavation. Both ends extended further into the unexcavated trench walls. An east facing section was sketched, with five brick courses noted to be intact above the scoria/concrete foundation (Figure 80). A short segment of copper pipe travelling through the wall was present at the eastern end of the exposed section. By comparing the wall location with the buildings as recorded on the 1908 city plan it appears that this segment of wall correlates with a building (one storey, galvanised iron) erected after 1908, but then demolished prior to the 1919 annotation of the plan.

If the brick wall (313) was indeed part of a structure demolished prior to 1919, then the cluster of bricks within (306) in this area was probably part of that same activity. Linking this evidence with the iron artefact and slag material thought to form part of the same deposit suggests that a levelling process occurred across Lots 24 and 25 during the 1910s. The use of a wide range of immediately available materials, such as iron, characterises this levelling deposit.

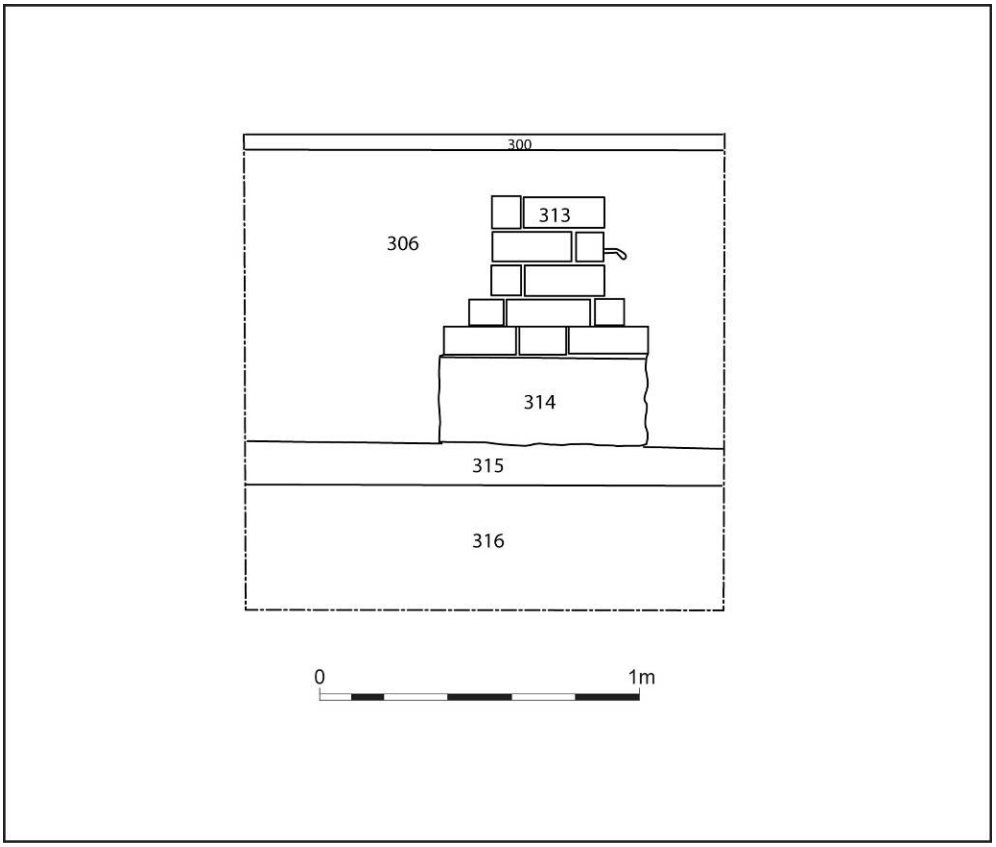


Figure 80. East facing section through brick wall (313)

3.4 ARTEFACTS

Some of the artefacts recovered from the stormwater and drainage trenches were derived from 19th century contexts: the sea floor (context 459) and reclamation layers (contexts 315, 458, 462, 504, 520). A large number of artefacts were also collected from the former iron foundry which date to the 20th century (context 306).

A summary of artefact types from the reclamation layers by MNI is provided in Table 5. The highest number of artefacts recovered were glass bottles and bottle fragments, followed closely by ceramics. Only a few artefacts were recovered from the sea floor layer (context 459), of which ceramic fragments were the most common (MNI = 11). The iron fragments collected from 20th century context (306) are not included on the table, but they were plentiful (MNI = 120), with other artefacts including ceramics and glassware present in much smaller numbers (see Chapter 6 for additional analysis).

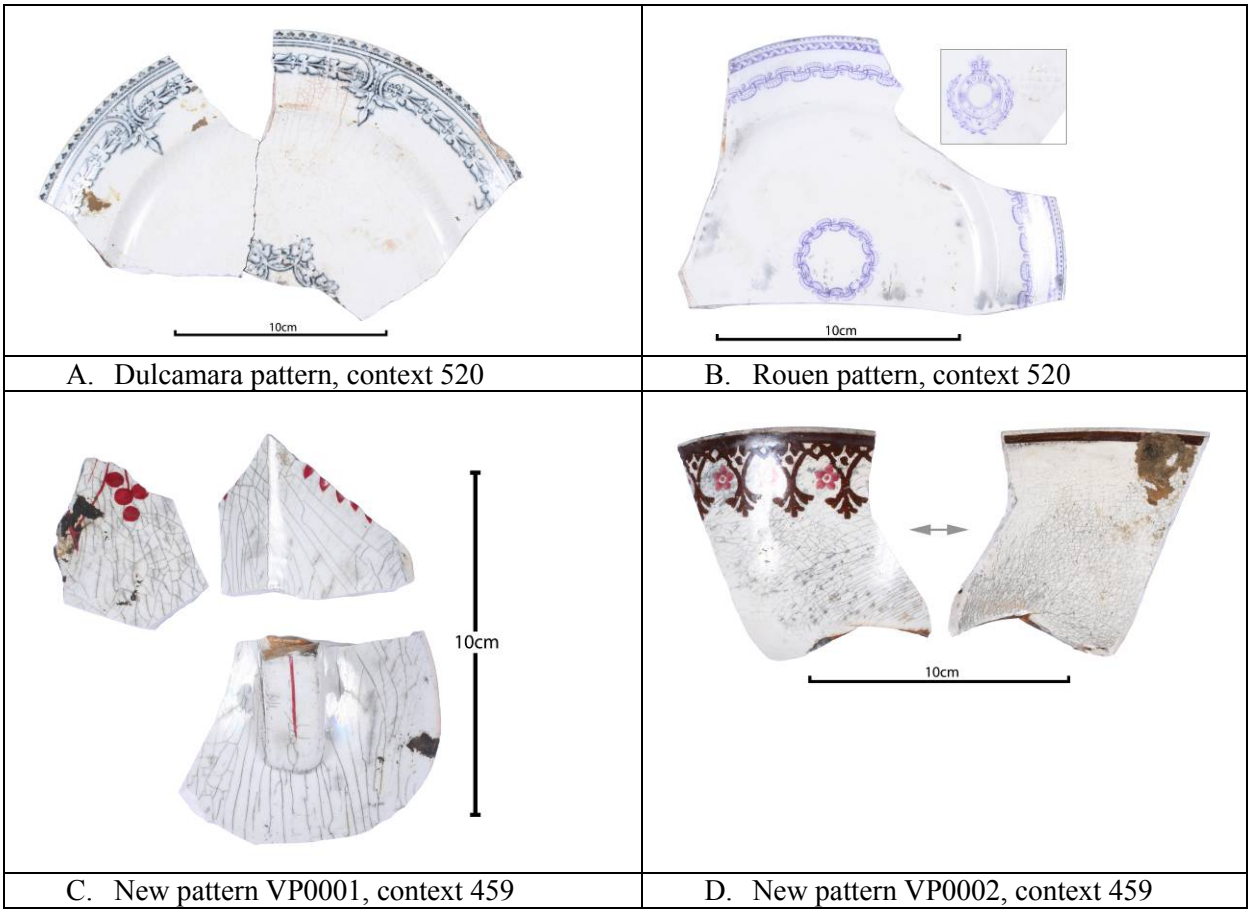
Table 5. Summary of artefact types recovered from the reclamation fill layers based on Minimum Number of Items counted (MNI)

Category	Sub-Category	Total
Building Material	Ceramic	1
Ceramic	Other	1
	Semi-Vitreous	5
	Stoneware	3
	Whiteware	18
Ceramic Total		27
Clothing Hardware	Footwear, fabric	8
Clothing Hardware Total		8
Faunal	Bone	0
Faunal Total		0
Glass	Bottle Glass	29
	Table glass	1
Glass Total		30
Grand Total		***66***

A range of different ceramic types were identified, most of them being of typical wares for the period – including Asiatic Pheasant, Willow pattern, banded wares, 'tealeaf' decorated wares, and the Rouen and Dulcamara patterns on Pinder, Bourne and Co. tableware (one of the commonly represented manufacturers in late 19th century historic sites in New Zealand) (Figure 81). Several new patterns were also identified on ceramics from context (459), the sea floor deposit (Figure 81), and are discussed further in Chapter 6.

Glass bottles were reasonably well represented and included mineral bottles produced by John Grey & Sons, Kia-Ora mineral bottles, and the Puriri Mineral Water brand which was owned by Ehrenfried Brothers. Out of the 22 alcohol bottles/fragments recovered, the majority were from champagne bottles, with the remainder black beer bottles. The remaining bottles were from condiments and pharmaceutical products, with some glass stopper and glass tumbler fragments.

Several leather shoe fragments from adult shoes were also recovered from context (459) and (458), as well as from reclamation layers in the drainage trenches.



A. Dulcamara pattern, context 520

B. Rouen pattern, context 520

C. New pattern VP0001, context 459

D. New pattern VP0002, context 459

Figure 81. Example of ceramics recovered during the stormwater excavations

3.5 DISCUSSION

The results of monitoring the stormwater trenches and the drainage realignment trench have provided evidence documenting many changes that occurred in the Freemans Bay area, from the pre-reclamation deposits, to reclamation deposits and structures, through to later episodes of made ground and the construction of buildings and businesses. Only a limited number of artefacts were recovered, however.

Pre-Reclamation

The increase in silt apparent between the deeper clay deposits and the silty-sand layers identified within the trenches as intertidal deposits are indicative of increased siltation. Two possible explanations may be at play here. Firstly, siltation may have increased following development of the surrounding environment for domestic and economic purposes. For example, James Freeman was farming the land from the early 1840s, and this could have led to the displacement of soils during wet periods into the bay. Also, some of the silt build up might be a result of the silt dumping that was complained about in 1885, as even though most of it would have been washed into the harbour with the tide, some silt is likely to have remained along the sea frontage. These deposits displayed good preservation capabilities, as evidenced by the excellent preservation of the timber wharf structure and ropes, and the leather fragments within the seabed deposits.

Development of Infrastructure and Reclamation

The remains of the stone wall located around 4m below the surface in the southern end of the Western trench (Area 1) is believed to be remains of the sea wall that was constructed on the frontage of what is now Victoria Street West. Another stone wall located around 3m below the surface in the Eastern trench (Area 7) replicates the wall angle marked upon the 1873 plan (Figure 7). The depths of both walls give some indication of the level of reclamation (and thus made ground) that has occurred since reclamation, although we cannot discount that some of the stone may have been robbed prior to reclamation, which would make the depth of the walls shallower. The stones located to the north of the second wall are likely to have been contemporary with the structure.

As discussed in the Birdcage Tavern report (Phear & Farley March 2012), the buried road surface in Area 2 could date to the mid–late 19th century, thus being one of the earliest surviving road surfaces in the area. The deposits placed on top of it would have been part of ground raising and levelling activities, the majority of which may have occurred in the late 1870s following the Drake to Patteson Streets reclamation: '*Union-street and Franklin-street junctions will be made an easy gradient….The road will also be a little higher here than it is now'* (*Evening Star*, 9 April 1878).

The brick culvert seen in Area 5 is shown on a drainage plan (probably dated to the late 1880s/1890s) and on an earlier photo (Figure 10, Figure 11). The culvert appears to have been built after the initial reclamation of Drake-Patteson Street (c.1875-8) and the survival of the timbers adjacent to it illustrates a low oxygenated burial environment.

The period 1885 to 1901 was one of dramatic change over the wider Freemans Bay landscape. The reclamation of the entire bay was completed during this period. Archaeological deposits relating to this phase were found in multiple sections of the stormwater trenches. Structures such as the wharf are believed to relate to the reclamation process, while multiple fill layers appear to identify two stages of reclamation. North of Victoria Street West structures such as the two timber retaining walls mark events within the reclamation process, while the multiple fill layers appear to identify two stages of reclamation, the first involving the deposition of dredged marine clays. Above this a series of smaller, thinner deposits was laid. The composition of these layers clearly derives from terrestrial sources, with a wide range of silts, sands, and gravels forming the greater portion of the matrix combining with all manner of building scrap and other property waste. Much of the scrap was dumped in clusters, with pockets of timber, brick and mortar, and vegetation all revealing different elements of the depositional history. Some of these materials may also have been dumped 'illegally' overnight, and therefore may not all have been intentional fill deposits. In contrast, the fill deposited close to and covering the former foreshore displayed markedly less evidence of multiple deposits during this period, with only a couple of reclamation fills documenting the land-filling activities.

From the early to mid 20th century, additions to the ground surface are readily apparent, along with the installation of a range of services.

Victoria Park and New Land for Businesses

The historical records indicate that following the completion of the reclamation for Victoria Park in 1901, the Auckland Harbour Board tried for several years to attract tenants along its boundary, without much early success. Among the first lots to be occupied were Pt Lots 24 and 25 next to

the Campbell Free Kindergarten on Victoria Street West, upon which Arthur Collings had established an iron foundry by December 1906. The drainage realignment trenches monitored as part of this project extended through these two lots, and several features and numerous artefacts were recorded which revealed some of the industrial activities that took place within the allotment boundaries.

The alignment of a section of brick wall and an iron and concrete wall foundation are consistent with information recorded on plans and valuation records for the area. A heavily compacted surface composed of iron slag was present across the site. The use of excess foundry materials to create this surface is thought to represent attempts by the lessee to provide a firm working/yard surface. Later deposition of materials across the entire site during the 1910s appears to indicate ground levelling activities contemporary with the demolition of a structure in the northwest corner of the site.

Archaeologically the excavation of trenches across Lots 24 and 25 provided a glimpse into the early utilisation of freshly reclaimed land parcels. While the material is predominantly of post-1900 date, it does provide us with additional information relating to the industrial activities that played an important role in characterising the Freemans Bay community of the early 20th century.

4. MAIN TUNNEL EXCAVATIONS

The main tunnel excavations were undertaken in Victoria Park, through Victoria Street West, and southwards towards Napier Street, and were located to the west of the SH1 motorway and motorway viaduct (Areas 8-12; Figure 82). Initial works for the tunnel were completed by July 2010 and this involved excavation of the upper 2–3m of material from within the tunnel and from around the exterior of the outer tunnel wall. Later in September following preparation of the outer tunnel wall and installation of ceiling beams, the excavation proceeded down to the base of the tunnel some 10m below ground level. Excavation began in this fashion in the middle of the park and extended southwards, with later points begun west of Beaumont Street and within Victoria Street West. Once the Birdcage Tavern had been removed, excavations continued southwards in February 2011, beginning with the removal of the Freemans Bay stormwater/sewer and followed by deep tunnel excavations.

4.1 VICTORIA PARK RECLAMATION DEPOSITS

Archaeological deposits were identified along the length of the tunnel excavation. The thinnest reclamation deposits were laid over the East Coast Bays sandstone formation extending northeast from the old headland west of Beaumont Street (Acheron Point). The upper 2m of fill exhibited the greatest variation in stratigraphy, and this stratigraphy was predominantly recorded during monitoring of service installation and realignment (Figure 83, and see previous chapter). The main stratigraphy recorded during excavation of the tunnel concerned the lower reclamation layers and natural marine clays (of the Tauranga Group) and bedrock (such as the East Coast Bays formation sandstone and its derivatives).

Reclamation Deposits and the Sea Floor

In the central section of Victoria Park the stratigraphy was fairly consistent from 2m below the surface to the base of excavation at c.10mbs, with some minor variation in layering and post-depositional processes forming some new soil horizons at the interface between the lower fill layers and the former sea bed. Here, the reclamation layers were characterised by redeposited marine clays, most likely derived from other parts of the harbour undergoing deepening and alteration (e.g. Commercial and Mechanics Bays) (Figure 84).

Figure 82. The tunnel excavations (Areas 8-12)

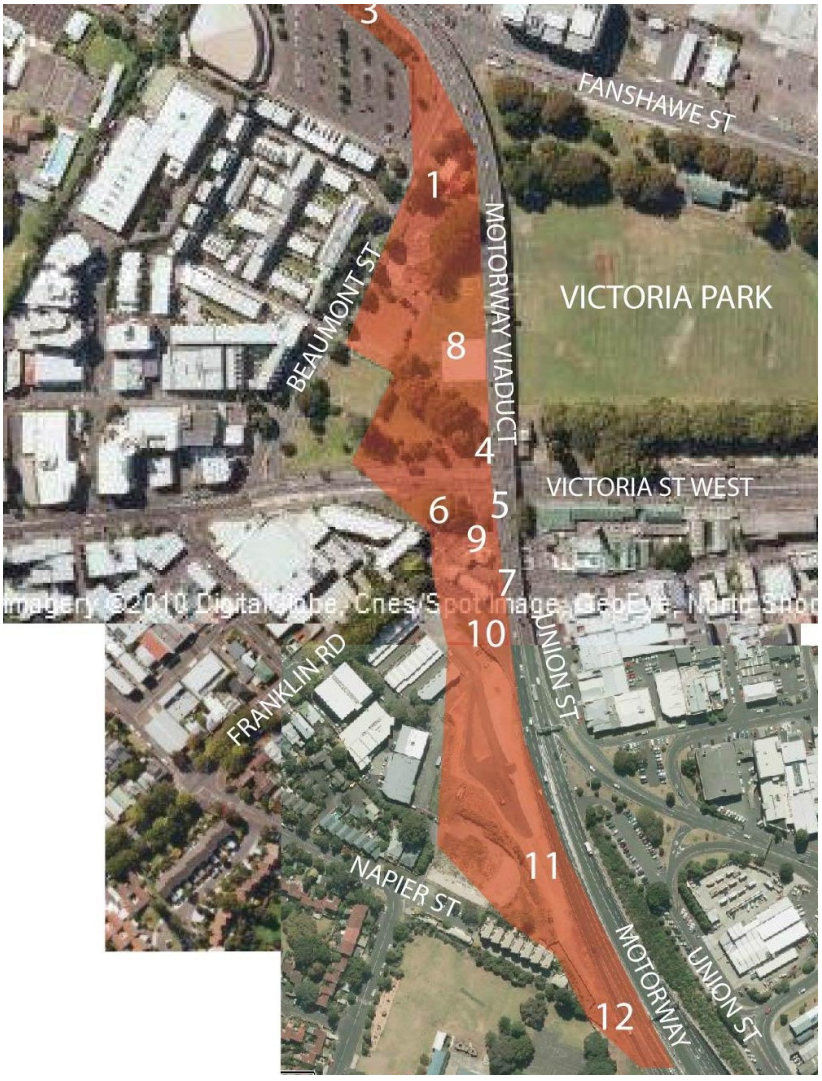


Figure 83. Variation in the upper 2m is seen on the left, with different deposits visible. On the right, the concrete beams are part of the roof extending across the tunnel (east-west). The arrow marks the ground surface level in the background, and the foreground illustrates the level after the 2m had been removed

Figure 84. Typical stratigraphy in the central area of the former bay/Victoria Park. The former sea floor (654) is obvious as the dark band (left) and some additional layering around the sea floor is visible on the right

The stratigraphy from 2mbs in the central section can be described as follows (and see Figure 85 and Figure 86 and Appendix 1):

A. At around 2mbs the lower reclamation fill layers were exposed. Layers (700-702) represent the redeposited marine clays, the variation in colours of these lower layers most likely due to post-depositional processes. Few artefacts were present in these layers.

B. Below layer (702) was the former sea floor (703), characterised by a dark blackish-grey colour and high silt content. Several artefacts were present within this layer, including small off-cuts of wood, but most notably a hessian sack of bark (Figure 87) that probably fell off a ship.

C. Below this substrate was a sandy silty layer with frequent marine shells (704), which sat above a thick marine clay deposit (705). At the base of the section profile the lighter clay layer (706) was observed, with frequent lenses of yellow clay.

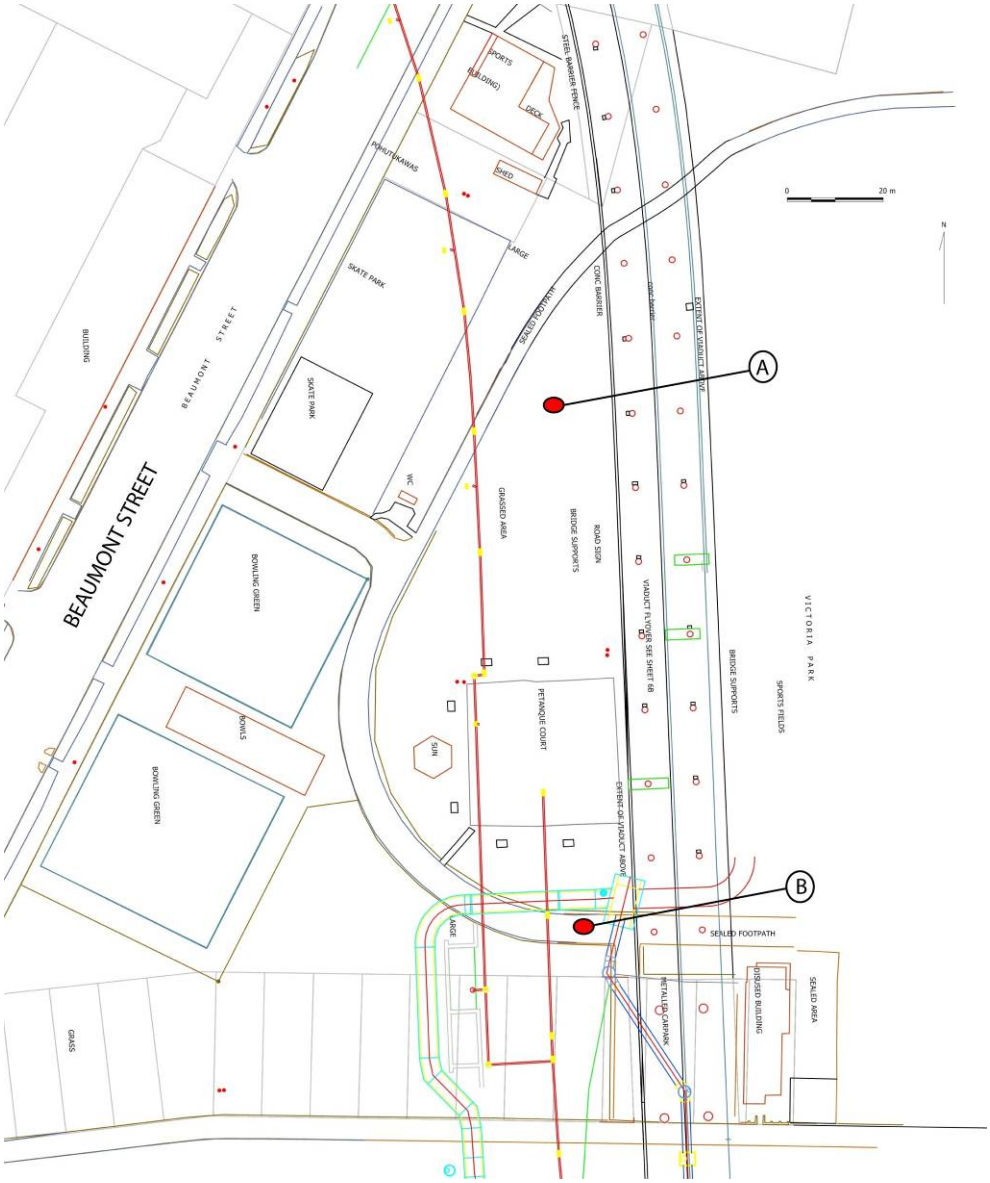


Figure 85. Location of the section drawings recorded during monitoring of the tunnel excavations, with 'A' being the northern section and 'B' being the southern section closest to Victoria Street West (Figure 86)

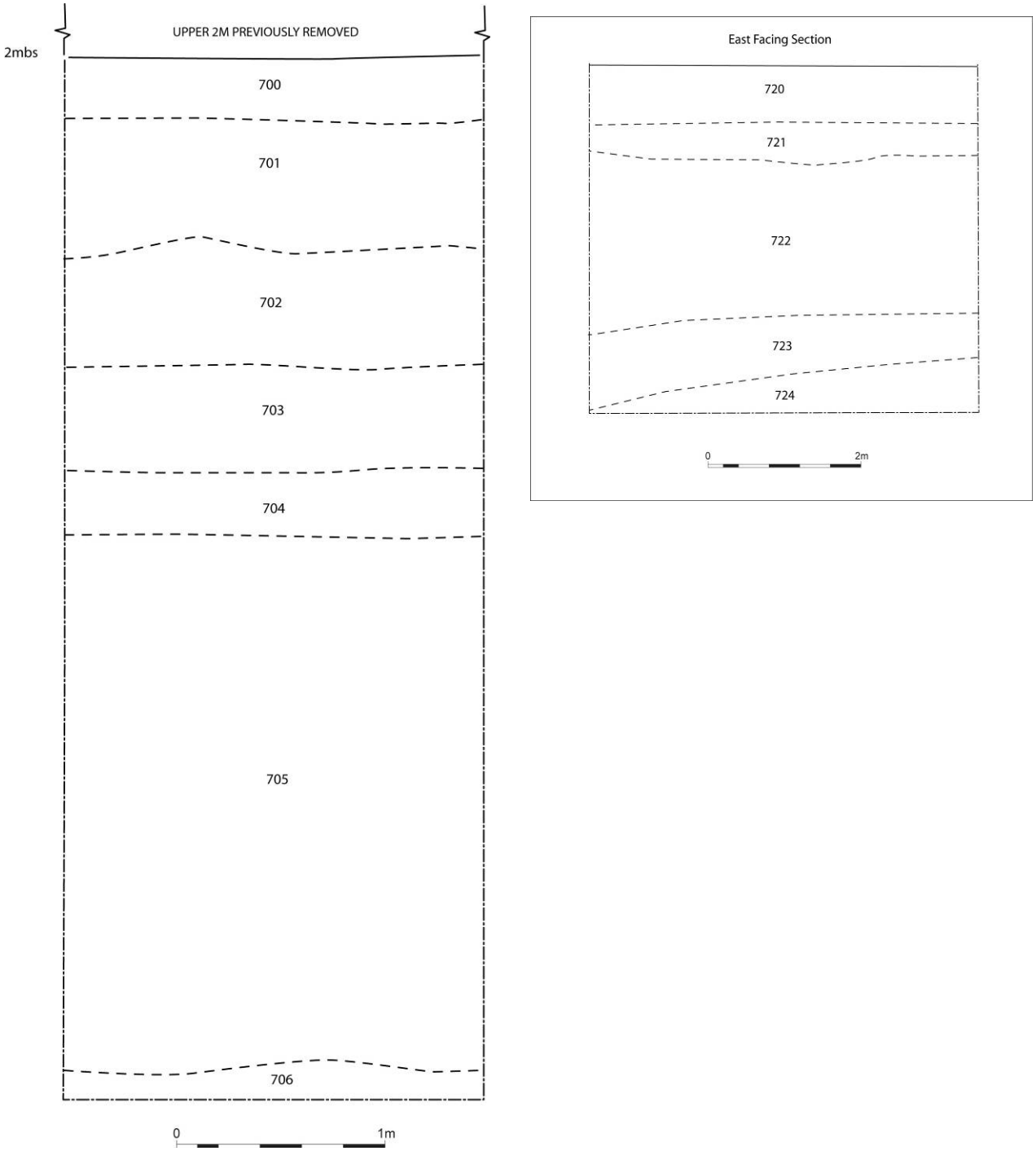


Figure 86. Left: section drawing of the stratigraphic profile in the central area of the Bay (location A on Figure 80), from 2m below the surface. Right: stratigraphy of the reclamation, recorded in the tunnel excavations close to the stormwater trench (B on Figure 80) (note that a number of artefacts were recovered from context 722)

Figure 87. Hessian sack full of bark found on the former sea floor layer (50cm scale)

Further north where the bay met Acheron Point (near the Victory Church carpark), the stratigraphy was shallower because the degrading East Coast Bays sandstone was closer to the surface (Figure 88).

Towards the southern section of the bay, the stratigraphy was recorded in the tunnel excavations near the stormwater trench (B on Figure 85). Here, the top layer (720) overlay weedmat, illustrating its modern age. Below this the stratigraphy consisted of several reclamation fills – a mixed clay and sandstone deposit (721) over a blackish brown silty matrix with many artefacts (722) (Figure 86). This sat above a mixed fill deposit including clay and dredged shells (723) and a brown gravelly layer with scoria (724), and the whole section measured c.4.3m deep.

Figure 88. The dark line (arrow) marks the base of the marine clay layer below the sea floor (left), and on the right the layers sit immediately above the East Coast Bays sandstone formation in the northern section near the former Acheron Point

4.2 TIMBER PILES: RECLAMATION STRUCTURES

Thirty timber piles running in a roughly north-south orientation through the tunnel were recorded during monitoring of the tunnel excavations. The piles appeared to form a structure that is thought to be the remains of a wharf that ran north from near the edge of Victoria Street West (Figure 89 and Figure 90). The structure consisted of two parallel lines of piles positioned 3.5m apart, exposed over a distance of some 30m. However, a few additional piles were also recorded, extending to the southwest and northeast of the structure, which might have been smaller jetties. All were recorded using a Total Station.

Samples of eleven timbers were sent for wood identification, and detailed records were made of each (Table 6, Figure 91 and Figure 92). The majority of piles were square in shape with only one recorded as circular. Many were boxed heart, with some evidence of copper sheathing, although the dominant method of waterproofing appears to have been through the addition of a tar coating. The range of wood varied, and included Kauri, Rimu, Totara, possibly Huon and one Eucalypt, all types of wood commonly used in wharves (Rod Wallace, pers. comm..). The timbers survived in varying condition, although there were no crossbeams or planking in place.

Figure 90 illustrates the location of this wharf in relation to the section of wharf found during the stormwater trench excavations. They appear to represent two different structures, with the stormwater trench wharf extending on an angle from the shoreline. The timbers, however, were similar in form and material. Two of the timber piles were on the same alignment as those recorded in the stormwater trench, and could be part of the same wharf structure (Figure 90).

Figure 89. Some of the timbers identified during the tunnel excavation: those on the left had been removed prior to recording, and those on the right were photographed in situ

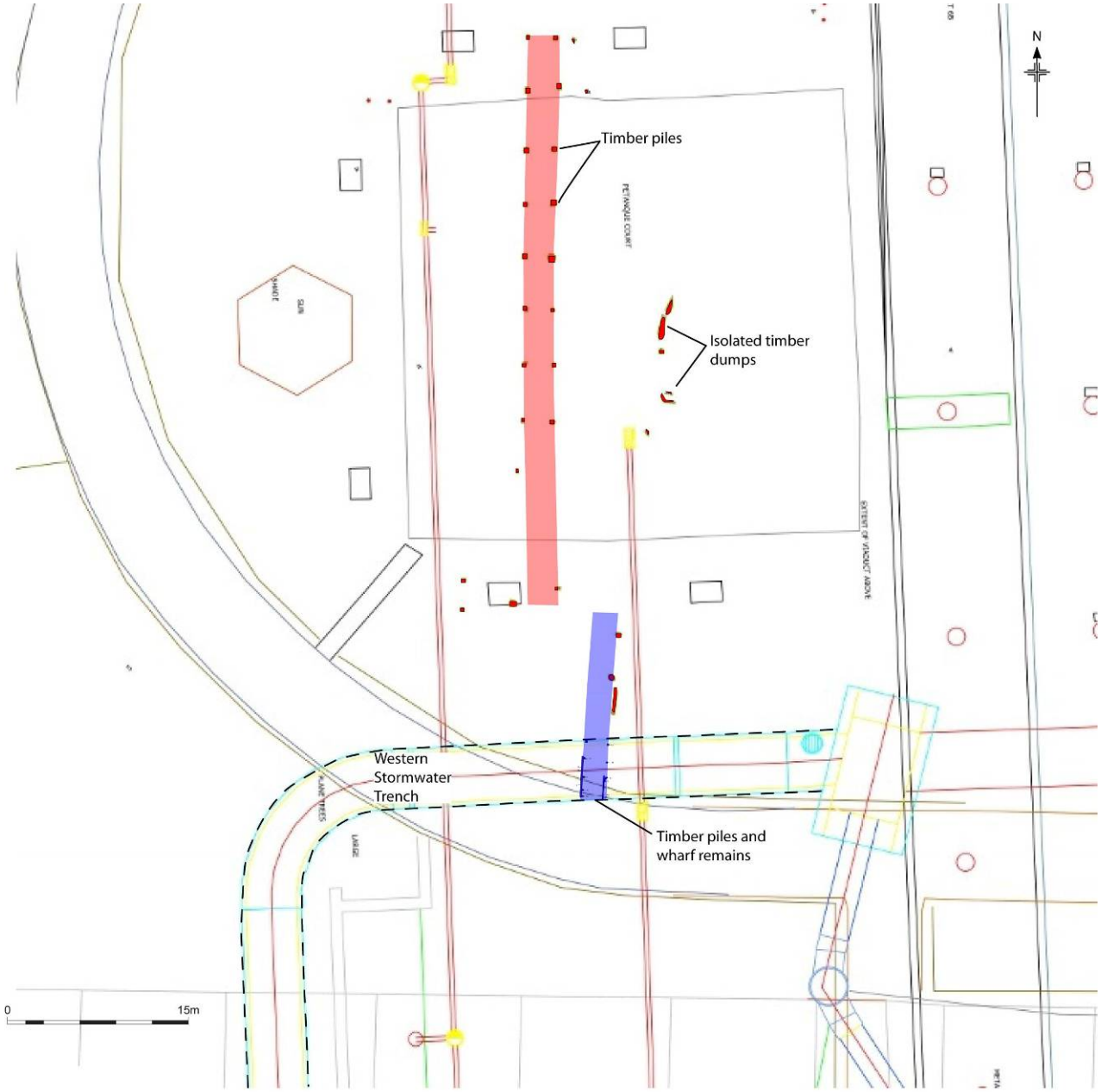


Figure 90. Location of the timbers and timber piles recorded during monitoring. The red piles are those recorded during the tunnel excavation, and the blue piles were recorded during excavations for the new stormwater (note the pink and blue highlighted areas are there as an aid for interpretation only)

Table 6. List of timbers recorded during the tunnel excavations, numbered 21-31

Timber No.	*Wood Identified*	*Description*
21	Totara	Squared timber pile. 2 drilled holes ran through the pile. At 25cm from the base end a hole was drilled right through the timber, 1 inch diameter. Squared hole situated at the base. Top end had rotted with a section broken off. Possibly adze finished – generally in good condition apart from the rot and break.
22	Totara or Huon pine	Circular timber pile. The lower 2/3rds was significantly thinner than the top end and also had the stumps of several branches present (possibly being the upper end of the tree). Two iron rods passed through the timber – one with a nut still in place (square 5cm). One was located right on the upper end – the other a short distance down the pile. Lower down a strip of wood was very well preserved and had probably been covered by a metal strip – the connecting rod was still in situ. In moderate condition at best – top end was quite rotted, while lower end appeared to be heavily eroded and worm eaten, but the base tip was in near perfect condition (adze finish).
23	Totara or Huon pine	Squared timber pile. The lower end was punctuated with a large number of small tack holes – 1 small copper nail was still present. This suggests that this timber was originally sheathed in copper – however it had probably been re-used. Each tack was located 4cm apart. An iron bolt head was present – 4cm sides. A section of timber had been cut out of one side – possibly for connecting with a horizontal beam. Base end had been adzed to a short taper. Condition was moderate – upper half was quite rotted and the wood very soft, while the lower half was in good condition with a fairly smooth finish.
24	Kauri	A squared timber pile. Boxed heart. Possibly this was originally a base plate. The timber was generally in good condition – with a little rot at the upper end – however the timber broke during removal. The break occurred at the point where a large cut out had been made into the wood. On the opposite side a shallow wedge-like cut had also been made. Parts of the surface appeared to have been painted with a tar like substance. Three large iron nail/rods were present in the timber.
25	Totara	Squared timber pile. Boxed heart. Generally in good condition with a smooth finish, some rot present near the upper end. Oyster shells were scattered across the lower 1.5m of the pile. 3 iron bolts were situated around the middle of the pile. At the base end the pile was slightly rounded.
26	Rimu	Squared timber pile. Boxed heart. Smooth finish with some rot situated at the top end. Oysters were present over the middle section of the timber. Three iron bolts were present near the lower end. Several circular impressions had been made in the wood near the base end.
27	Kauri	Squared timber pile. Boxed heart. Top end situated c.2m below ground level. Smoothly finished with some rot situated at the upper end. A tar like substance had been painted onto the timber in parts. The lower end had a sharp wedge-shaped taper. A nail was present on the lower half of the wedge. On the rear of the wedge a hole had been cut into the timber. A rounded rectangular slot was present near the top end.
28	Rimu	Squared timber pile. Boxed heart. No nails present.Timber was generally in good condition, with a smooth finish and some rot at the upper end. Some oysters were present in the lower to middle portion.
29	Kauri	Squared timber pile. Boxed heart. Pile in average condition – heavily worm eaten all over one side. Rot present at the upper end. A chunk broken off the opposite face. No nails, holes or oysters present. Possibly some staining at the bottom end.
30	Rimu	Squared timber pile. Boxed heart. Timber was in average condition, broke in half during excavation, some rot and worm holes present. Rot was present over the top 800mm. Oysters were present near the base end.

		Two nails were present near the base of the rot.
31	Ecucalypt	Squared timber pile. Boxed heart. Timber was in good condition although it appeared to have split along the length of the pile – possibly during the original ramming. A step cut had been made at one end (upper) – with a single nail present near the lower end. No rot to speak of although parts of the exterior were very spongy. The exterior appeared to be stained a very dark black.

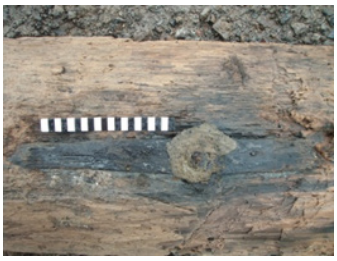
		
Timber 21		
		
Timber 22		
		
Timber 23		
		
Timber 24		
Timber 25 no photos		

Figure 91. Selected photographs of the 11 timber piles recovered during the tunnel excavations

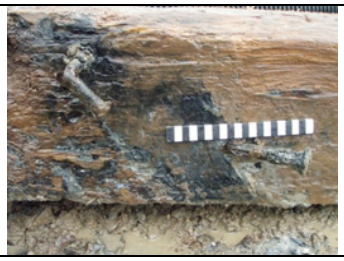
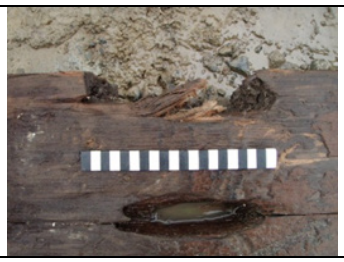
		
Timber 26		
		
Timber 27		
		
Timber 28		
		
Timber 29		
		
Timber 30		
		
Timber 31		

Figure 92. Selected photographs of the 11 timber piles recovered during the tunnel excavations

4.3 FORESHORE: BEACH DEPOSITS & STRUCTURAL REMAINS

On 5 April 2011 a 4.5m section of the former foreshore was observed in the main tunnel excavations near to the original location of the Birdcage Tavern (Figure 93). Six layers were recorded and in each were varying levels of sand and shell (Figure 94; see Appendix 1 for detailed context descriptions). The topmost layer (710) was the darkest in colour, being a dark greyish-black silty sand which also contained shell and scoria fragments. The dark colour and presence of scoria suggests it may have been deposited during a volcanic eruption in the harbour in the past. Below this was a series of sandy layers of varying colour and shell content (contexts 711-715). It is considered that these beach layers represent the former foreshore and represent the original geology in the area. Unfortunately, the stratigraphy above layer (710) was disturbed. It is likely that a series of clay layers would have been present, both natural deposits which might have formed after vegetation clearance of the slopes above following European settlement, and deposits added during early European settlement of the bay.

Also present in the area immediately in front of the original location of the Birdcage Tavern were two wooden piles. Unfortunately, the piles had been removed prior to the arrival of the archaeologist, and were not observed in situ. However, the smaller pile measured 2.3m long, 0.3m wide and 0.4m thick and the larger pile 3.8m long, 0.45m wide and 0.35m thick (Figure 95). Both piles were hardwood, but sampling was not feasible due to the extremely hard nature of the wood which would have required mechanical sawing. It is possible that the piles formed part of a wooden sea wall that may have been built in the 1860s when settlement began in the bay in earnest.

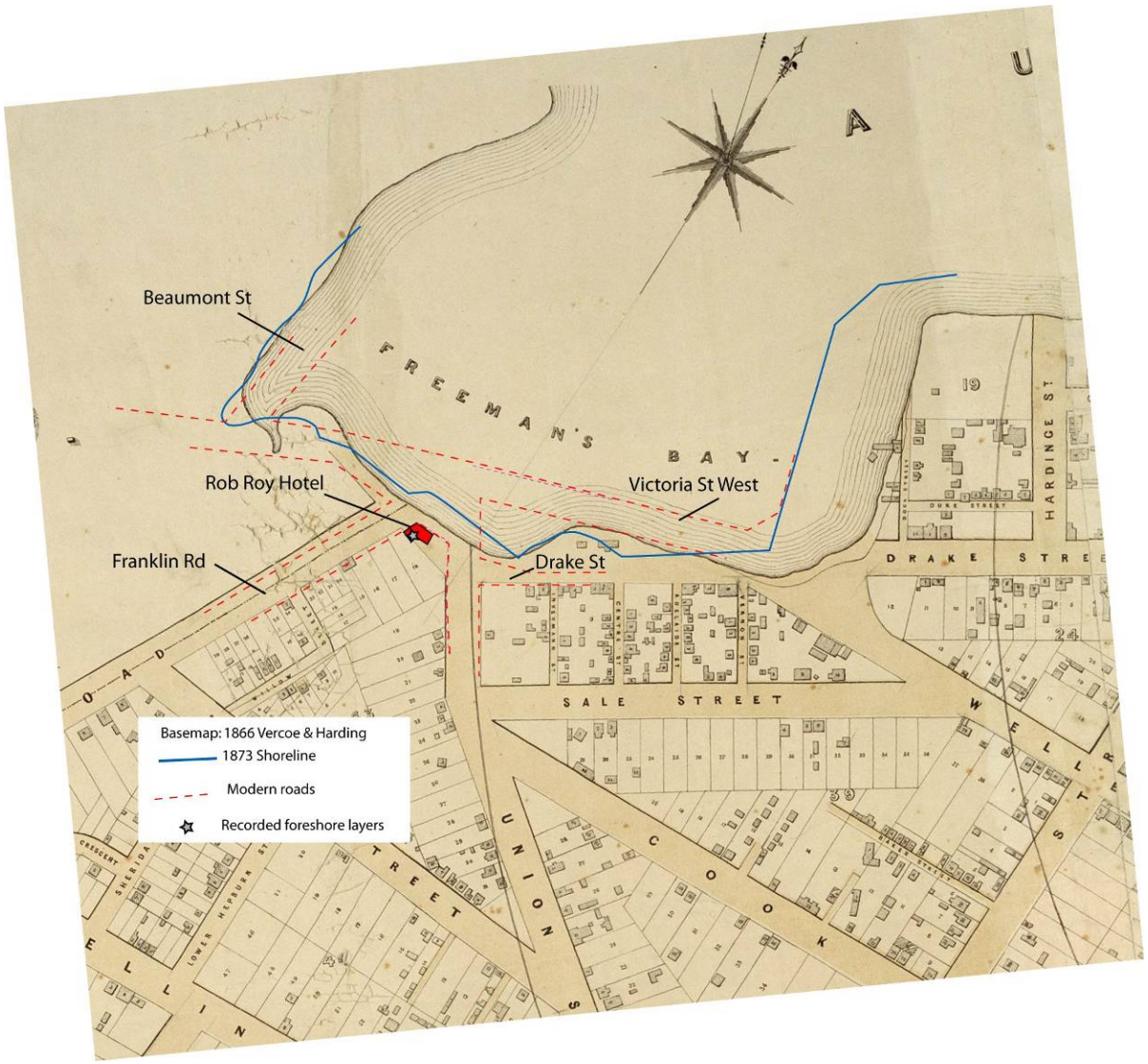


Figure 93. Location of the former foreshore layers as recorded during monitoring (star), located beneath the Birdcage Tavern/Rob Roy Hotel. The blue line indicates the 1873 shoreline, and the red dashed lines indicate modern roads

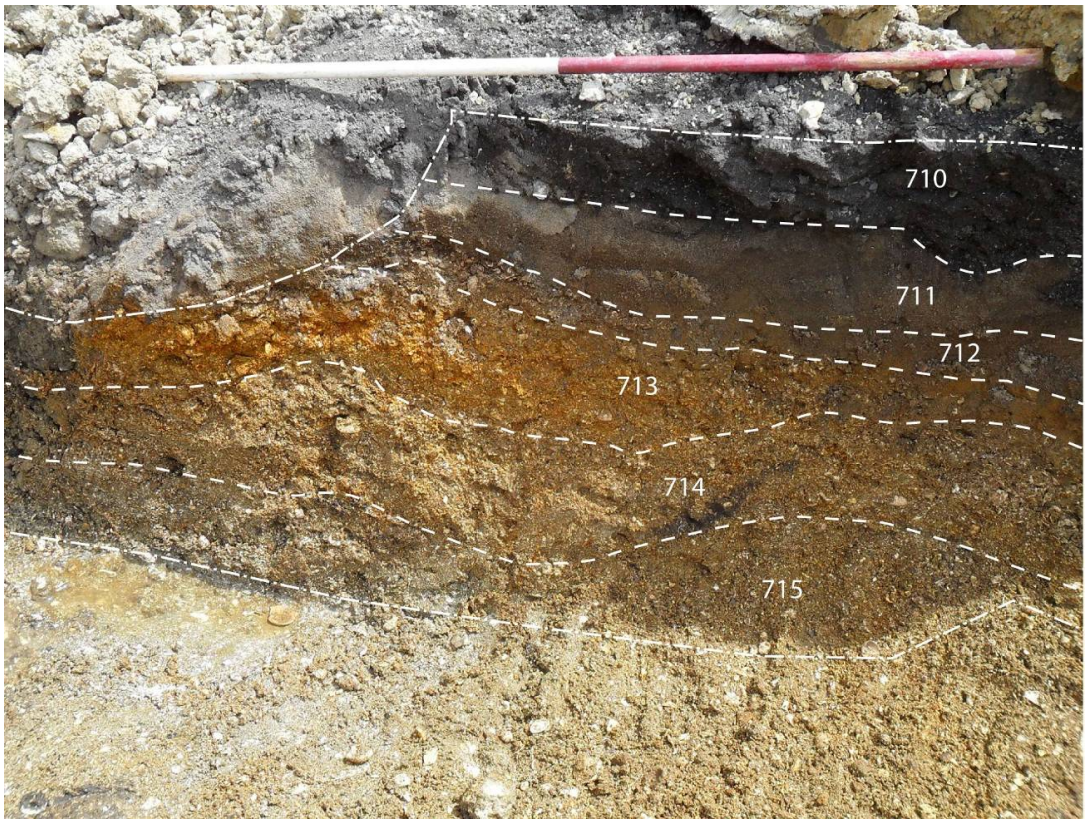


Figure 94. Photograph and stratigraphy of the foreshore layers (1m scale)

Figure 95. The two timber piles within the tunnel excavation just in front (north) of the original location of the Birdcage Tavern

4.4 FREEMANS BAY STORMWATER

The stormwater/sewer known as the Freemans Bay Stormwater extended from Napier Street down through the former foreshore, beneath the Birdcage Tavern, and into Patteson Street (now Victoria Street West), and a section of the sewer had to be removed (Figure 96). The culvert appears to have been constructed in the area occupied by the stream called Tunamau prior to European settlement (Figure 3). The stormwater culvert appears to have been constructed in the 1870s, and certainly prior to the start of construction of the Rob Roy Hotel (Birdcage Tavern) in 1885. The sewer is indicated on a drainage plan of proposed new sewers labelled as the 'existing brick sewer' (Figure 97). The plan is undated but was most likely drawn as part of drainage plan for the main Victoria Park reclamation which began around 1888.

A section of the stormwater culvert – from near Napier Street to Victoria Street West – had to be destroyed as it was in the way of the new tunnel. Monitoring of the sewer removal was restricted for the most part to observations and recording at a distance. This was due to health and safety concerns as much of the culvert still contained water (Figure 98), and in places where the flow of water had been halted the culvert was located at the bottom of a deep trench with room for a small mechanical excavator only (Figure 99). When possible measurements were made.

Monitoring Results

The removal of the stormwater culvert was observed to the south of the Birdcage: in the former yard of the tavern, and further to the southeast (Figure 98–Figure 100). The culvert was constructed out of several materials. In general, the arched roof was made of a coarse conglomerate concrete typical of the 19th century, and measuring 40cm in thickness (Figure 101). Below this the main walls were made of stone, apparently basalt blocks, which were faced on the interior surface and unfaced on the exterior surface (Figure 102). A limited view of the base of the culvert by the workmen only revealed that it was constructed of bricks, placed on end. This form of construction is similar to that of the Beaumont Street culvert profile shown on Figure 97 (top right). The culvert was c.1.9m wide and 2m deep.

However, the arch of the culvert beneath the Birdcage Tavern was in brick rather than concrete. The stormwater culvert was clearly visible in the yard of the Birdcage Tavern prior to its move (Figure 103). The building had been designed in part to accommodate the culvert, which required raised floors in some of the basement rooms (see Phear & Farley 2012). The arch bricks were aligned lengthwise, without any sign of concrete. This was also the only location where the stormwater culvert was exposed on the surface, as the remainder of the culvert was several metres below the surface.

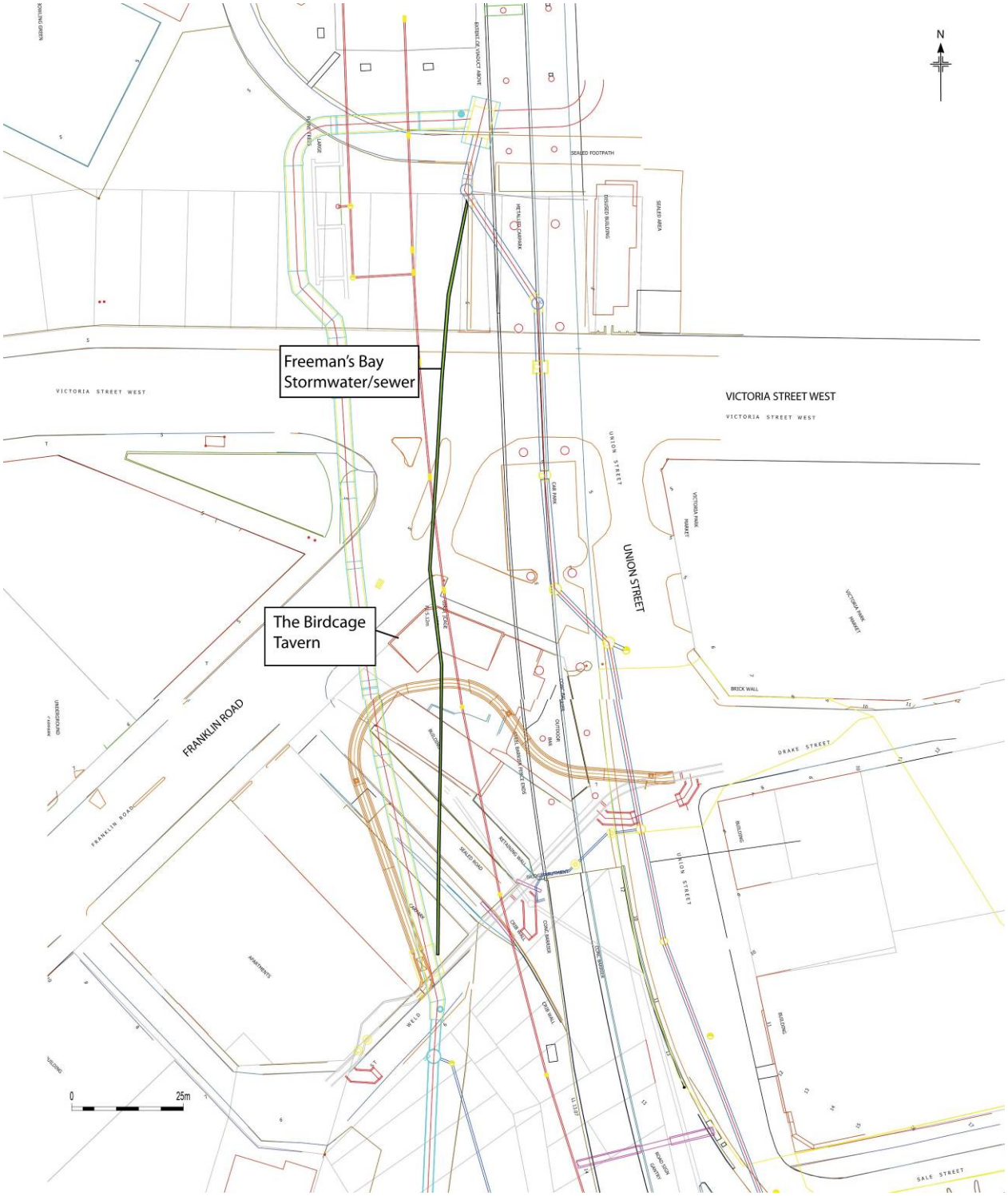


Figure 96. Location of the section of the Freemans Bay Stormwater/sewer that had to be removed in order to construct the tunnel

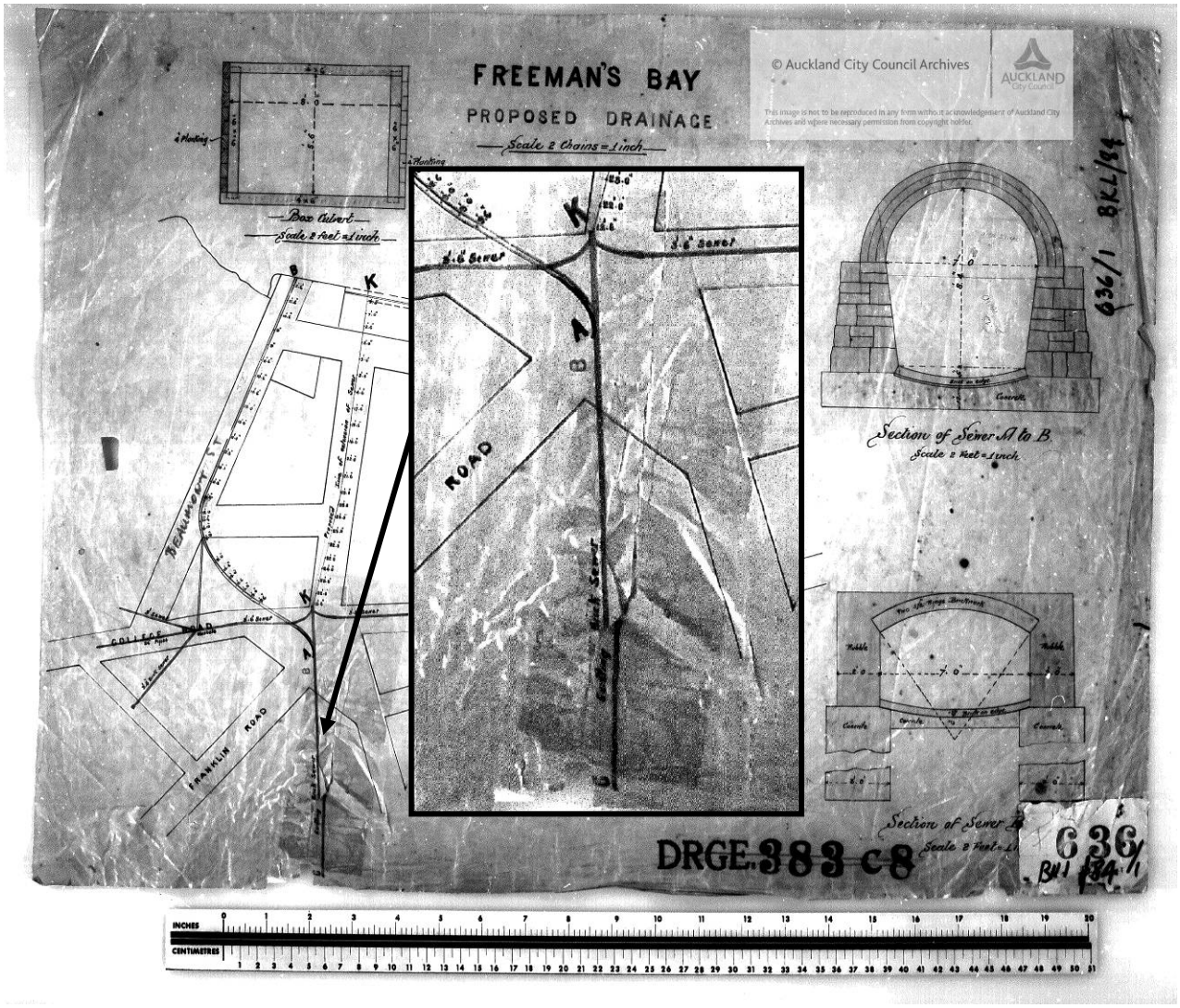


Figure 97. The drainage plan illustrating the Freemans Bay Stormwater/sewer as the 'existing brick sewer' (inset). The culvert profile in the top right corner was similar to that of Freemans Bay sewer (Auckland Council Archives 033, DRGE 636)

Figure 98. Demolition of the culvert with water visible (arrow), and the Birdcage Tavern in its temporary location in the background

Figure 99. Further south of the Birdcage the culvert was demolished within a shored trench. The mechanical diggers are slowly removing sections of the culvert here

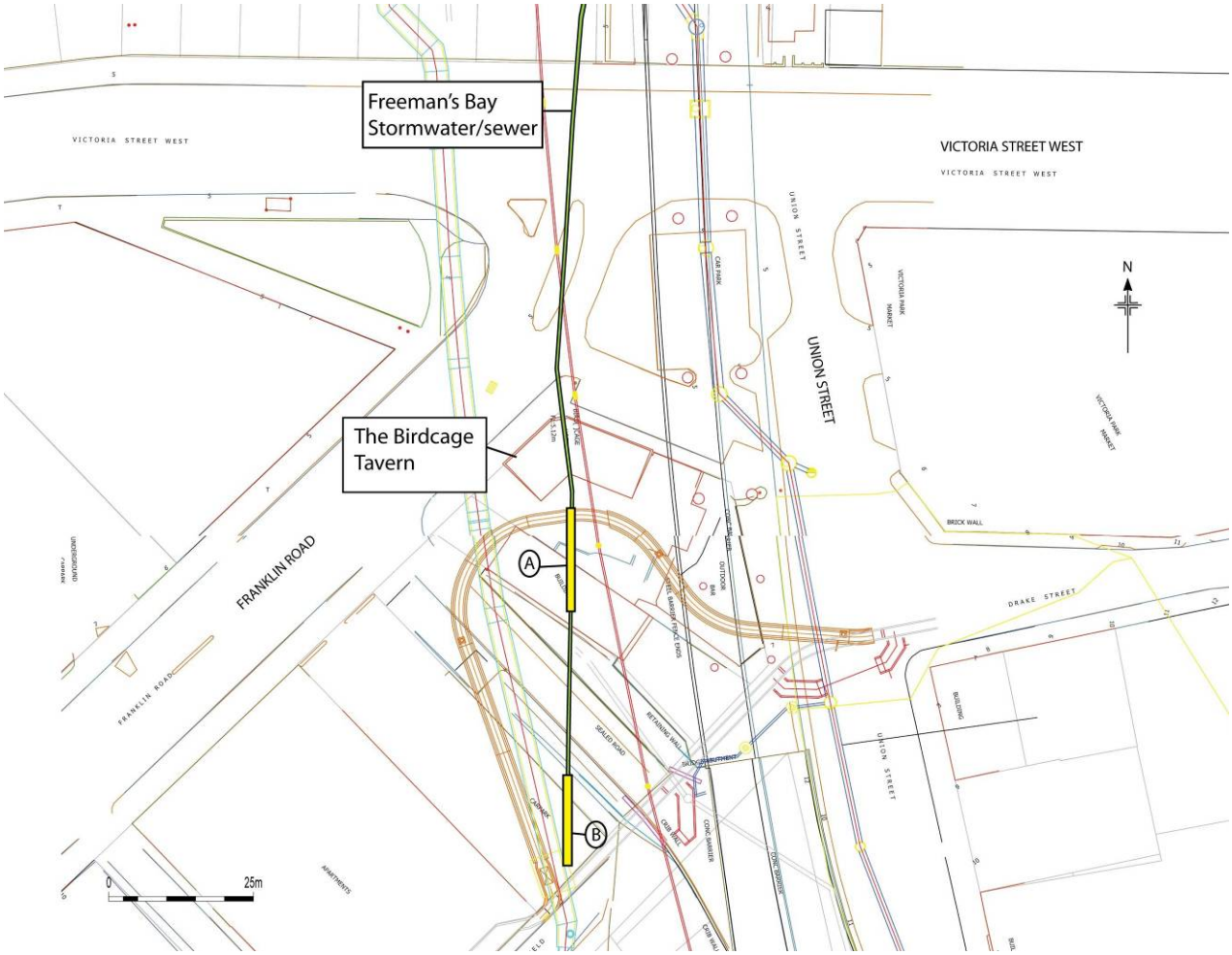


Figure 100. Location of the two main monitoring areas of the Freemans Bay Stormwater culvert removal: in the former yard of the Birdcage Tavern (A), and the southern extent of the section that was removed (B)

Figure 101. Photos of the top arch of the culvert illustrating the thickness and coarseness of the concrete (50cm scale shown)

Figure 102. The base of the concrete and start of the faced internal basalt blocks is indicated by the arrow (left), and the unfaced rough blocks on the exterior surface (right)

Figure 103. The top of the stormwater as it was exposed in the former yard of the Birdcage Tavern. Note the bricks in the top arch, in contrast to the concrete arch present to the south of this area

Conclusions

The Freemans Bay Stormwater culvert displayed some variation in materials. The drainage plan (most likely dating to the late 1880s: Figure 97) describes the drain as a 'brick culvert'. However, monitoring revealed that most of the culvert was in fact made of concrete and stone, with a brick base. The one area where the stormwater culvert did appear to be of brick was beneath the Birdcage Tavern and within part of the rear yard. This could be a result of different sections of the culvert being constructed at different times. As noted in Chapter 1, construction of the culvert at the Napier Street end began in 1876. However, in 1878, when discussing the Drake to Patteson Street reclamation, the editor of the *Evening Star* stated that the culvert on Franklin Road '*is to be much larger than the present one, and of greater length'* (*Evening Star*, 9/4/1878). He must have been referring to this culvert, which indicates that it would have needed to be modified and extended through the new road once Patteson Street (Victoria Street West) was completed. Therefore, the brick roofed section of culvert beneath the Birdcage Tavern and extending to the north is likely to be the 1878 section of culvert.

Indeed, the use of brick rather than concrete may have been due to brick being easier to modify for any required connections with new culverts in the area, rather than having to cut through thick concrete. Variation in materials and construction techniques was common in the brick sewers recorded during the Britomart project (Bickler et al. 2005), and in previous projects within the CBD (e.g. Best 1992; Clough & Prince 2001). In any case, the stormwater culvert proved to be extremely well built. It was extended during the reclamation of Victoria Park in order to empty into the harbour once reclamation was completed, although in 1898 it was obviously still dumping in the bay, causing much discomfort and posing a health risk to Freemans Bay residents:

'The Freemans Bay sewer is now emitting so hideous a stench that any person coming within a very long distance of it is in danger of death from typhoid or some malignant fever. Mr Goldie, the sanitary inspector, visited the locality a few days ago but kept a respectable distance……The outraged citizens of Freemans Bay have given Mr Goldie warning that some night he will be waylaid and choked in the sewer…It is observed that he occasionally summonses persons to the court for having a nuisance on their premises: why does he not take this course in respect to a nuisance which is greater than any other abomination in Auckland? Mr Goldie could only reply that if he summoned anybody about the Freemans Bay sewer, it would be the mayor of the city and the Chairman of the Harbour Board' (*NZ Herald*, 14/3/1898).

4.5 ARTEFACTS

Artefacts were recovered from the reclamation layers and from unstratified deposits (i.e. without context, because they were not removed by the archaeologists). The artefacts were collected during the duration of the tunnel excavation from the various reclamation fill layers and as such the majority of artefacts were not assigned specific context numbers. Such artefacts were grouped within three headings: 'lower reclamation fills', 'reclamation fills' and 'upper reclamation fills'. An assemblage of glass bottles was, however, collected from reclamation layer (722) and is also discussed below. Further analysis of the artefacts can be found in Chapter 6.

Artefacts recovered included ceramics (earthenware and stoneware), glass, leather, iron and pieces of brick and shell. Much of the material collected was fragmented, with few complete specimens recovered.

Ceramics

Sixty-seven individual ceramic items were identified among the material recovered from the reclamation fills (Table 7). The majority of items were tableware items such as plates, cups, and saucers, but there were examples of kitchenware and bathroomware. The more unusual items included a plate from a grocer's scales (Figure 104A), and a rice wine bottle from unstratified deposits. Almost all of the ceramics had a clear glaze with the exception of two teapots which were salt glazed, and the flowerpot which was unglazed. Transfer prints were present in blue, black, brown, green, red, purple, and polychrome, while handpainted examples were seen in blue, pink, gilt and polychrome.

Table 7. Minimum number of individual ceramic items present in the reclamation fill layers

Item	MNI	Item	MNI
Bowl	3	Chamberpot	1
Plate	9	Container	2
Side Plate	1	Candle snuff	1
Dinner Plate	4	Kitchen bowl	1
Saucer	15	Teapot	2
Teacup	13	Vase	2
Dish	1		
Milk Jug	1	Ointment Pot	1
Jug	4	Lampshade	1
Tureen	1	Flowerpot	1
Platter	1	Unidentified	1

Stoneware

Seven individual pieces of stoneware were recovered from the reclamation deposits and five were unstratified (Figure 105). Ginger beer bottles and crocks were the greatest contributors to the collection, and perhaps unusually there were no penny ink bottles.

Glassware

A minimum of 32 vessels were recovered from reclamation fills and 21 from unstratified deposits in the tunnel area (excluding layer 722 – see below). The majority of these were alcoholic beverage bottles with a minimum of 30 bottles present (Figure 106). Beer, wine and champagne were the largest contributors to this group of products. There was a minimum of 12 food product items across the assemblage, 4 pharmaceutical items, 3 mineral water bottles, and 4 were for household products.

Of the alcohol bottles, a complete COCA MARIANI, PARIS bottle was of interest. Angelo Mariani, a chemist, manufactured a tonic known variously as Coca Mariani, Vin Tonique Mariani, or Mariani Wine among other names, first selling the remedy in 1863. The product was supposedly a 'stomach stimulant, an analgesic on the air passages and vocal chords, appetite suppressant, anti-depressant, and treatment against anemia' (www.euvs.org). The presence of cocaine in the product probably helped it to become successful, but laws enacted after 1900 led to the complete withdrawal of cocaine from the product by 1910. The earliest advertisement located for the product in New Zealand was in 1883 (*Press*, 1/6/1883:4).

A. Portion of a dairy or grocer's scales with an image of Lady Justice

B. Polychrome jug (top), part of a candle snuffer (bottom)

C. Lid of toilet box

E. Ointment pot

Figure 104. Examples of ceramics recovered from the reclamation fills

Figure 105. Stoneware vessels recovered. From left: John Grey & Sons Ginger Beer, Stiff's (c.1843-1845) blacking jar and bottle made at The Fulham Pottery

Figure 106. Glass bottles recovered. From left: Coca Mariani bottle, Black beer bottle and an ink bottle

Glassware from Reclamation Layer (722)

All but one artefact recovered from context (722) was glassware. The assemblage included 7 complete items and 11 items considered almost complete. These items generally were missing only the rim, neck or a portion of the body. All categories (alcohol, food, water, pharmaceutical and household products) were represented in this assemblage (Figure 107). A minimum number of 36 items were identified with 15 of these being for alcoholic beverages, 5 food, 4 water, 5 pharmaceutical and 5 household items. Two vessels could not be identified within a category as the type of bottle was used across at least three different product categories.

Wine was the most common bottle type identified with an MNI of 9, followed by black beer bottles (n=4), and champagne bottles (n=2). A jam jar, two salad oil bottles, a vinegar bottle and an almost complete infant formula bottle embossed MELLIN'S INFANT FOOD / LONDON, with E.B.& Co Ltd on the base, made up the food products, and there were 4 mineral water bottles. The remaining bottles were pharmaceutical except for 5 items of glassware related to household use, such as an ink jar, glass tumblers and a cranberry coloured item in the shape of a flower.

A. Salad Oil bottle

B. Green beer and hock bottles

C. Tyler's Jam and Mellin's Infant food

D. Cranberry decorative item

E. Corrugated ink bottle

F. Pharmaceutical bottles

Figure 107. Glassware recovered from the reclamation fill context (722)

Leather

Evidence of at least four leather shoes was recovered from the excavations in the tunnel trench. Three of the shoes were women's shoes, all being for the right foot, and the other was a man's left shoe.

Iron

Three iron items were recovered within the upper reclamation layers. The items recovered were an iron spike with a square cross-section which appeared to have been hand forged; a hollow tube, one end of which had been rolled back on itself in finishing; and a pair of shears or hedge clippers. The blades were immovable when recovered, and the pin joining the two blades was still intact.

4.6 DISCUSSION

Pre-Reclamation

The tunnel excavations revealed the deeper natural stratigraphy of Freemans Bay, with the degrading East Coast Bays and Waitemata formations dominant. Also revealed was the former sea floor (marine substrate) which would have formed the muddy surface open to the air during low tides. Few artefacts were recovered from the former sea floor, although leather shoes and the sack full of bark attest to excellent preservation conditions.

The bark, identified as probably being black wattle (Rod Wallace, pers. comm.), was most likely en route to a nearby tannery when it fell into the sea. Ground-up bark provided tannin, which was vital for the leather curing process. In Mechanics Bay it was reported in 1864 that Messrs Ireland Brothers were crushing 7-8 tons of bark per week (*Daily Southern Cross* 19/6/1864:5). In New Zealand, the towai and white and black birch were initially the most commonly used barks, with black and other wattle barks imported from Australia until the trees could be established here (Clough, Macready & Bickler 2010: 46, citing Smith 1878) . So it is likely that this single bag of bark fell off a ship importing tanning materials from Australia. Other materials imported from Australia in the late 19th century included timber (such as the Eucalypt and Huon Pine used for timber piles: Table 6).

The Foreshore

In the foreshore layers identified during monitoring there was no evidence for either Maori or early European habitation. Coastal geomorphological processes would have influenced the deposition and erosion of the beach deposits over time, and without direct dating of each layer it is difficult to distinguish a time when they were most likely to have been deposited. However, the deposition of the layers does suggest that the foreshore extended south of the location of the Birdcage/Rob Roy Hotel prior to and in the early days of European settlement. There was a stream called Tunamau (see Figure 3) located close by prior to development of the land following European settlement. As such, the estuarine environment (where the stream met the sea) would have been dynamic here, with the shoreline altering many times in response to tide levels and water flow following heavy rainfall.

Reclamation Structures and Deposits

The lack of copper sheathing and the use of tar on the timber piles recorded in both wharves lends support to the explanation that the wharf structures were not meant to be in place for an extended period of time, and therefore were most likely only constructed to facilitate reclamation. The variation in pile types (circular and square) also lends support to this argument. Furthermore, the use of a range of timbers rather than a single type such as totara, which was used during one phase of the Queen Street Wharf (Bickler et al. 2005), suggests that the Freemans Bay wharves were constructed out of whatever timbers were handy or could be spared. The absence of planking and crossbeams also suggests that the wharves were partially dismantled as the reclamation level increased and the wharves were no longer necessary.

The reclamation layers were consistent with those identified in the stormwater diversion trenches, being redeposited dredged marine clays, and (closer to the surface) mixes of clays and waste. It was known that Acheron Point was destroyed in order to create Beaumont Street, the headland

being deposited into the fill to create the road. As the tunnel only clipped the northern part of Beaumont Street, there was not clear evidence of the headland clays in the reclamation fill.

Artefacts recovered in the fill deposits display a typical range of predominantly domestic products – alcohol bottles, household goods, and dinnerware.

Drainage

The Freemans Bay Stormwater sewer formed an important part of the early drainage system in the bay. Once the land parcels were sold and people built houses around Union Street, Napier Street and Franklin Road, it was more important than ever for the council to have adequate sewers in place. The sewer itself was built in a similar manner to those in other parts of the city, such as the sewer identified during the Britomart project. The use of bricks, concrete, and stone, in various combinations, attests to different additions to the sewer as the bay developed, reclamation extended northwards, and sewerage requirements increased.

5. THE WELLS

5.1 LOCATION AND METHODOLOGY

In the southern extent of the project area, where the tunnel joins SH1, the remains of two 19th century wells were discovered during ground preparations. Excavation of Well 1 (context 706) located at E 1756362 N 5920258 within the outside northbound lane of the motorway took place in January 2011. Excavation of Well 2 (context 709) took place in June 2011, and this feature was located further south, at E 1756426 N 5920144, again in land designated for use in the motorway (Figure 108).

The land in this area was being prepared for the entrance to the tunnel, which involved earthworks in the form of cutting and levelling (Figure 109). Generally, there was evidence that previous works associated with the motorway had truncated various layers. Only 1-2m of ground reduction was necessary in places for the tunnel entrance, particularly around the Napier Street area (Figure 110).

Both wells were excavated by machine as they were situated in areas that had to be lowered beyond the base levels of the wells. Excavation took place in stages, but time constraints did not allow for detailed excavation. During each stage of excavation, the machine driver placed bucket scoops of each layer on the ground, after which the archaeologist retrieved the artefacts contained within. Fine grained control over layer identification was therefore not possible, although several different layers were clearly identified within Well 1 with associated artefacts. Only one 'liquid' layer was identified in Well 2 due to heavy vertical truncation and a high water level.

A large number of artefacts were recovered from Well 1 from different contexts, including the remains of a pistol which was located at the base of the well. While a smaller number of artefacts were retrieved from the heavily truncated Well 2, those recovered still gave an interesting glimpse into life on the former house plot in the late 19th and early 20th centuries. All artefacts were collected and bagged according to context. A description of the artefacts recovered is presented in this chapter, while analysis of the artefacts is combined with the total VPT assemblage in Chapter 6.

Figure 108. Location of the two wells excavated during monitoring of the southern extent of the Victoria Park tunnel. Note that Napier Street originally extended eastwards, connecting with Union St, prior to construction of the motorway

Figure 109. The ground surface level is indicated by the arrow on the concrete piles (left) ner Well 1 (the well is located outside of this photo). The grey degraded mudstone layers dominated the stratigraphic profile

Figure 110. General stratigraphy around Well 2 (centre). The reddish brown deposits (arrows) indicate made ground/fill placed when the motorway was built. The bluish-grey silty clay is the degrading mudstone. Note how much higher the ground surface is here compared to the area in which Well 1 was located (Figure 109)

5.2 BACKGROUND: WATER SUPPLY IN AUCKLAND

Initial settlers in Auckland used the natural streams for water supply, but it soon became common for property owners to dig their own wells to have an immediately accessible water supply. This was generally supplemented by collecting rainwater from house roofs (Murdoch n.d). By early 1843 obtaining a reliable fresh water source, however, was becoming increasingly difficult, and a good well had become a sought after property feature, to the extent that the Real Estate columns of the major newspapers in Auckland featured wells and springs as a significant selling point until the construction of the first public wells a decade later (Murdoch n.d.).

With water shortages occurring in the late 1840s and 1850s and pollution of wells becoming an increasing problem, Auckland's water supply emerged as a major social and political issue in this period. However, the issue was further complicated by the dual municipal and provincial system of government at the time which hampered the planning, financing and implementation of public works (Murdoch n.d.). Several public wells were constructed during the 1850s, the first well being a bricked well and pump in Lower Queen Street, and the second was constructed in Shortland Street in 1854. By 1865 a system of 17 public wells had been established throughout the city. They were generally dug to a depth of around 50ft (15.24m), were 'steened' or brick lined, and

included a hand operated pump. The well located closest to Freemans Bay was situated on the corner of Victoria Street West and Hobson Street (Murdoch n.d.). All of the other outlying areas also relied on wells and streams for their water supply for many years.

Well Diggers

By 1841 there was seemingly enough work to keep several well diggers in permanent employment. Murdoch refers to one well digger, William Thompson, who advertised in the *New Zealand Herald and Auckland Gazette* in November 1841 that he had '*commenced to work at the above business* [well sinking]*, which he executes on reasonable terms'* (Murdoch, n.d.). By the 1860s the City Board was calling for tenders for the construction of both wells and water tanks, along with the deepening of existing wells.

The job of digging, 'steening' and deepening wells was considered to be a dangerous profession requiring skilled workers. Little information is known about these men except for their names. Murdoch states that a 'Thomas Brown and a Mr Richard constructed a number of wells in Queen Street and Albert Street as well as several water tanks. Two other well diggers were Oliver Ellis and Thomas Constable who built a well in Shortland Street as well as tanks in Fort Street and Upper Queen Street.' (Murdoch n.d.).

Town Water Supply Approved

Finally in July 1865, after much debate over the source and design of a town water supply, a plan supplying water from the Auckland Domain was approved. However, this was to be a temporary water source until a more comprehensive scheme could be constructed. In late January 1866 the Domain Scheme was finally completed (Murdoch n.d.). The permanent water supply came eventually from the Western Springs Waterworks in July 1877. However, while most of the city streets had water mains by 1880, only 640 consumers were actually connected to the supply, and it was not until 1883 that pipes were laid to Freemans Bay, along with Ponsonby, Karangahape and Grafton (Murdoch n.d.).

5.3 EXCAVATION RESULTS

Well 1

Recording of Well 1 (structure 706) took place following the initial scrape of the surface by the machine operator, which exposed the feature. The diameter of the well was 1.2m; it was brick lined without mortar, and 3.7m deep (Figure 111). Both frogged and unfrogged bricks were used to line the well, the unfrogged bricks measuring 22.2 cm long, 10.9cm wide and 7.7cm deep; the frogged bricks measured 22.3cm long, 10.7cm wide and 7.6cm deep (Figure 112). Six fills (701 – 707) were recorded within the well (Figure 113), full descriptions of which can be found in Appendix 1.

Context (701) was located immediately below the compacted road metal of the motorway alignment, suggesting that it had been truncated in the 1960s when the motorway was first constructed (Figure 111 and Figure 113). However, as a number of tree roots were observed nearby in the exposed clay, it is likely that context (701) was relatively close to the original ground surface. A mix of artefacts was recovered from this deposit. Immediately below this was

context (702), composed of rusted steel and corrugated iron (Figure 111 and Figure 114). It is thought perhaps to have been a cap used to cover the fill, possibly placed to reduce the odour that must have been emitted due to the volume of organic materials dumped in the well at greater depths.

Contexts (703) to (707) formed the main fill deposits of the well (Figure 111). Contexts (703) and (704) were composed of dark brown clayey silts, and contained a range of artefacts including glass, ceramic and iron/metal goods. The thickest deposit, which was also more waterlogged, was located below this (context 705). This dark black organic silt contained a vast range of artefacts, including fabric and leather items, often in thick lenses which suggested different episodes of dumping, although artefact analysis (see below) indicated that the well was likely to have been filled in a single episode. The bottommost layer was context (707), which was also the most waterlogged clay deposit. This formed the primary fill of the well, and included the remains of a pistol located at the very base (Figure 115). The base of the well was cut into the mudstone, and was only partially brick lined at this depth.

Damage to the well, most likely from the weight of motorway above and traffic over the last 40 or so years, is believed to have been the cause of the distortion on one side of the well, resulting in the bricks having been displaced (Figure 116).

Figure 111. Top of the well after initial ground removal by the mechanical digger (left), and after excavation of context 701 (right)

Figure 112. Brick types recovered from the well: frogged brick (left) and unfrogged brick (right) (5cm scale)

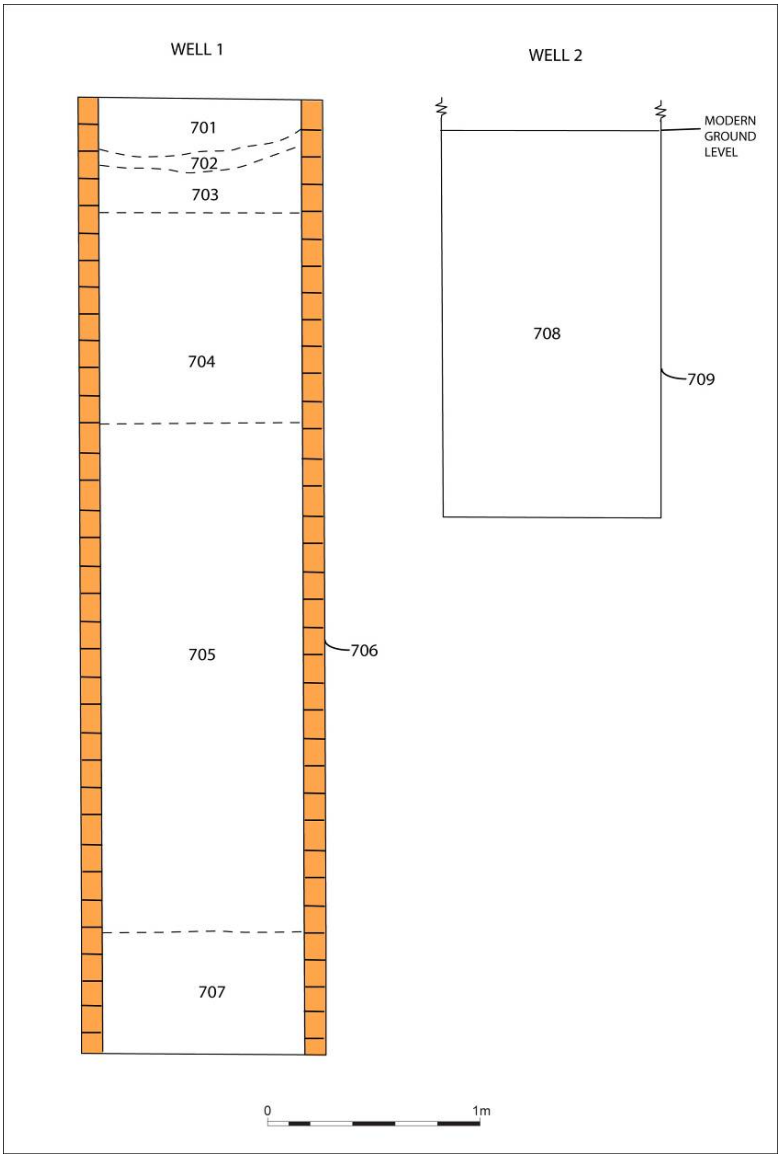


Figure 113. Section drawings of Well 1 (left) and Well 2(right)

Figure 114. Layer of metal within Well 1, context 702 (left) and with some of the ceramic sherds mixed in the deposit (right)

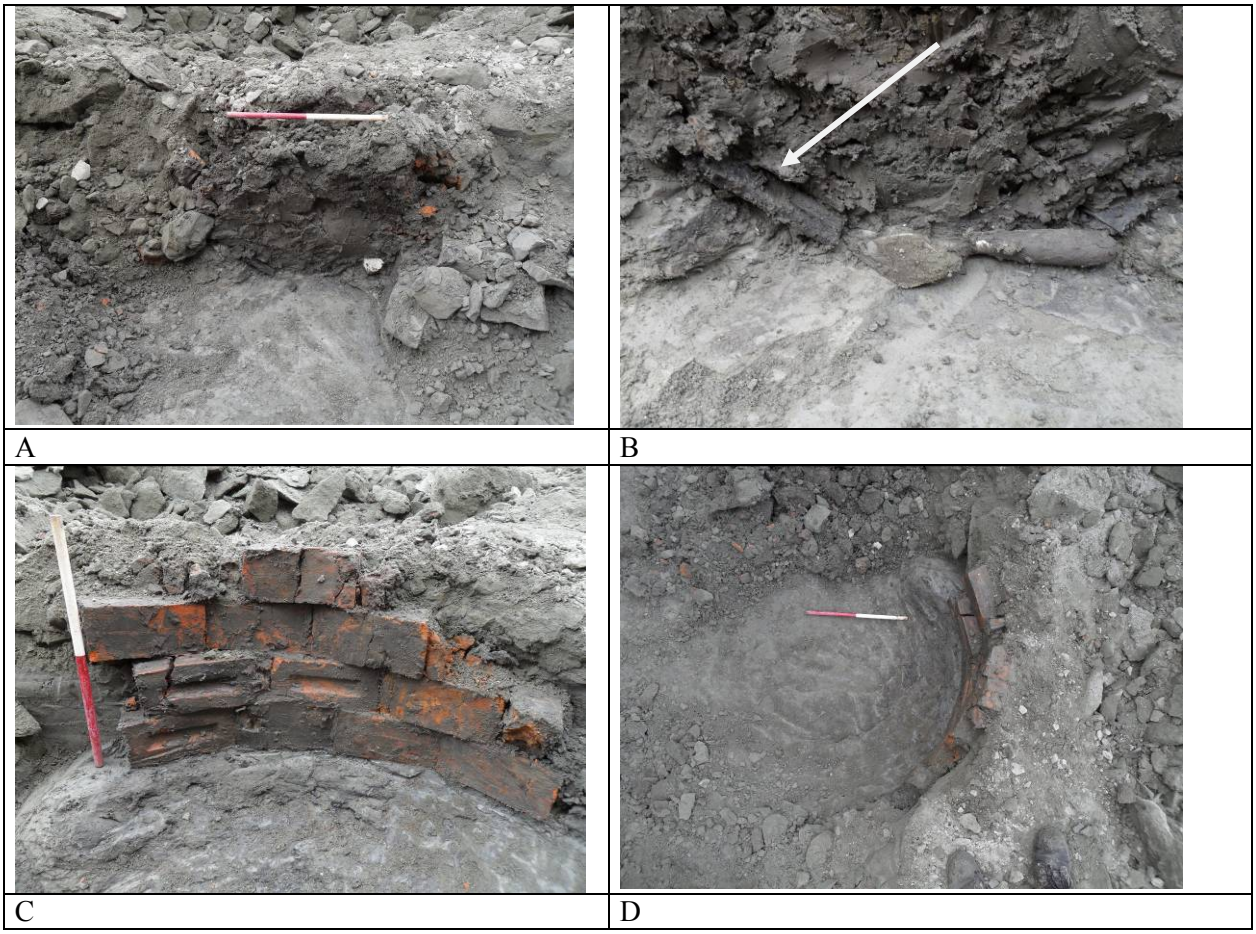


Figure 115. Base of Well 1. Half section of the well base and context 707 (A); the pistol located on the base of the well (B); the surviving brick wall against the mudstone (C); the mudstone base and surviving bricks (D) (50cm scale)

Figure 116. Displacement of part of the well wall visible near the top of the well (left), and further down it was more pronounced (right) as indicated by the arrows

Well 2

Well 2 had a diameter of 1.1m, and unlike Well 1 it was not brick lined. However, most of the well had been truncated during works to construct the motorway in the 1960s, leaving only 1.86m of the well surviving in place, cut into the mudstone. The well was full of water at the start of excavation, and it was discovered by chance by a construction worker who mistook it for a puddle (Figure 117). Excavation was carried out using the machine bucket in order to retrieve any artefacts and reach the base (Figure 117 and Figure 118). The watery nature of the 'fill' meant that only one context was recorded (context 708), a dark brown silt which for the most part was in suspension within the water, although a very thin deposit of the silt itself was present on the base. This context contained many artefacts including bits of wood, iron, glass bottles, and leather.

Figure 117. Well 2 as discovered during ground works (arrow) (left); after the first few bucket loads were removed (right)

Figure 118. The high water content in Well 2 was consistent throughout the excavation. The arrow in the left photo points to the rim of a bottle. The right photo was taken nearing completion of the excavation

5.4 ARTEFACTS

Artefact analysis was undertaken by Jen Low. The artefacts recovered are presented and discussed here, accompanied by photographs. The Well assemblages will also be discussed in combination with the main VPT assemblage in an analysis presented Chapter 6. Analysis indicated that infilling of both wells most likely began in the 1890s to early1900s.

Well 1

Ceramics

A large amount of ceramic material was recovered from Well 1 the majority of which was fractured into small pieces (Figure 8). Some of the material could be partially reconstructed to provide some details of transferware patterns or form shape. Analysis indicated there was likely to be no absolute stratigraphy within the well as some pieces recovered in one context often directly related to material recovered from another. It is likely that the material deposited in contexts 703-was 707 was deposited at the same time.

All of the ceramic material was glazed using a clear glaze with the exception of the tea pots, which were glazed with manganese. A large number of the ceramics were decorated with transfer prints or handpainted designs, generally hairline bands. Identified patterns included Asiatic Pheasant, Monroe, Olympia, Orient, and Tealeaf. Colours of transfer ware included brown, black, blue, green, purple and polychrome. Hand applied colours were also noted in red, pink and gilt. The majority of items were table ware items such as plates, cups and saucers, but there were also examples from the kitchen and bathroom.

Table 8. Ceramics recovered by context. It should be noted that items from one context may relate to those recovered in other contexts, therefore the number of individual items may be lower than shown

Item	701	703	704	705	707
Dinner Plate		4	4	1	
Side Plate		5	4		
Plates (unknown size)			1	9	
Saucer		3	5	9	
Mug		1			
Tea Cup		10	5	17	1
Tea Pot		1	1	2	
Platter				2	
Bowl		1			
Fruit Bowl				1	
Noodle/Rice Bowl					1
Sugar Bowl			1		
Jug/Ewer		1	1	1	
Drainer				1	
Mixing Bowl			1		
Egg Cups			1	2	
Cheese Pot		1	1	1	
Preserve Jar		1	1		
Dish Lid			1	1	
Candle Holder		1	1		
Childs Tea Set				2	
Toilet Box				1	
Washbowl				2	
Chamber Pot				1	
Container				1	
Flower Pot		2		3	
Marble	1				
Unidentified				1	

Context 701

A complete clay marble from an aerated water bottle was recovered from Context 701. The marble had a maximum diameter of 14.52mm.

Context 703

Three fragments of a saucer and one fragment of a teacup bore the Monroe pattern in brown print (Figure 119D; also Table 14 Chapter 6). The saucer had a potter's mark, Smith & Ford, which was used only between 1895 and 1898 (Godden 1991).

Four dinner plates bearing the same unknown pattern were identified from a number of pieces, some of which could be reconstructed (Figure 119A, B). Two were in black print with the remaining two in brown print. A single brown side plate with the same pattern was identified and calculated from three fragments.

One example each of a teacup, saucer and side plate were identified from seven pieces of ceramic bearing the Orient pattern (see also Table 14, Chapter 6). The side plate bore the mark of G. Bros, identified as Grimwade Brothers of Stoke on Trent, who manufactured under this name between 1886 and 1900. The registered number 233859 indicates the pattern was registered in 1894.

Two further teacups were noted bearing brown transfer prints (Figure 119C). Both were floral designs and remain unidentified. One teacup was identified from five pieces of ceramic bearing a pink edge band and a gilt hairline band.

A teacup with a black transfer print was produced on behalf of the Te Aroha Hotel (Figure 119E). The design shows a large structure in the background and in the foreground two women are playing a game of tennis (doubles). Gilt was applied to the rim, above the base, and from top to bottom in a wide scalloped vertical band, presumably separating the design from perhaps a second scene on the rear of the cup. The Te Aroha Hotel applied for a license to open a new house under the management of Edward Missen in 1879 (*Thames Star*, 4 March 1879:2). The Hotel was located at Waitoa in the Thames Valley and offered first class accommodation (*Waikato Times*, 6 November 1879:3). '*The proprietor of the Te Aroha Hotel, Waitoa, has lately greatly added to the comfort and appearance of the same by the erection of a very fine balcony and verandah to the front, and also to the side adjoining the branch road leading to the proposed railway station*' (*Te Aroha News*, 14/6/1884:2). The description of this building does not appear to match the building reproduced in the design on the teacup (perhaps indicating it predates the construction of the verandah and balcony in c.1884). It would appear that the teacup (along with a saucer) was given to those who stayed at the Hotel, indicating that at some stage the occupant of the property is likely to have travelled to Te Aroha and stayed at the Hotel.

Three partial teacup bases were identified which did not appear to relate to any of the cups already described. A fourth partial base had handpainted areas on the handle and on the body in red and black. A fragment of a body bearing blue and black handpainting may have been related to this cup. A fragment of a teacup contained a blue transfer print on the interior and exterior of the cup, but the pattern could not be identified. A partial mug was identified bearing a thick blue band at the rim and two hairline bands near the base. A portion of a saucer with a blue edge band and a separate hairline band was also noted.

Other wares identified included: a portion of a side plate decorated with a red edge band and a hairline band; a piece of a side plate bearing a gilt hairline band at the rim and a second gilt band above the well; a side plate with pink relief moulding (largely worn away) near the edge in a foliage pattern, an irregular scalloped edge and a gilt band located on the edge; and 5 pieces of a side plate with an unknown blue transfer pattern.

Fifteen small fragments of white ceramic were collected, deriving from various vessel forms, but probably related to items already described, and a portion of a plain white bowl was also identified.

A fragment of a vessel identified as a jug was of Asiatic Pheasant pattern. The shape was difficult to determine – it could have been used for milk or alternatively for sauces or gravy. A rim fragment of a vessel was identified as likely to have been a candlestick, and was decorated with a single gilt band. A fragment of the rim of a cheese pot was identified and probably related to other fragments found in contexts 703 and 704. A rim fragment of a preserves jar was noted and probably relates to a jar recovered from context 704.

Three handles were identified, one complete, one almost complete and one a small fragment at the attachment point. The complete handle was relief moulded and the shape at the attachment points suggested that the vessel was tightly curved and may have originated from a tureen. The almost complete handle was lightly relief moulded and probably originated from a chamberpot. The small fragment at the attachment point was shaped like a leaf and unfortunately it was not possible to determine the type of vessel it originated from.

A portion of a container lid which may relate to a partial container base in context 705 was identified. The lid had a single gilt hairline band on the top. Twelve pieces of a Brown Betty teapot with a manganese Rockingham glaze were identified and several of the pieces were reconstructed to form the lower portion of the pot and the spout. Pieces which could not be reconstructed included portions of the main body, the body rim and the handle.

Seven pieces of a candleholder were recovered and reconstructed to produce an almost complete example (Figure 119F). The design allowed for two candles to be held within a small candle base which was removable from the main holder. The holders stood on nine points on each side, with a shallow shell shaped dish at the front and evidence suggested there was a handle at the rear. The front was decorated with a polychrome floral pattern in purple, yellow and green with gilt applied in a stippled effect around the top of the holder and the edge of the shell shaped dish. Pieces of a similar candle holder were recovered from context 704.

Two tobacco pipe stems were recovered from context 703. Neither stem was marked with a manufacturer's name.

Context 704

At least one example each of a teacup, saucer, sugar bowl, side plate and dinner plate in the Orient pattern were noted. The sugar bowl contained a maker's mark on the base identifying the maker as G. Bros of Stoke on Trent. This was identified as Grimwade Brothers, who used this mark from 1886 to 1900 (Godden 1991). The registration number for the Orient pattern was given as 233859 and the registered number for the shape of the bowl as 231964. Both of these registration numbers were issued in 1894, and therefore the items dated from 1894 to no later than 1900.

At least two dinner plates were calculated from 16 pieces of ceramic bearing an unknown brown transfer print incorporating flowers. At least one side plate and a dish lid were identified bearing the same pattern. A dinner plate was identified from six pieces, all bearing the Asiatic Pheasants design. The rear of the plate included a Doulton maker's mark. Doulton & Co were in business from 1858 to 1956 (Godden 1991).

A side plate with a blue transfer print was marked on the rear of the plate with the registered design number 178062, which dates the registration of the design to 1891.Three pieces of a teacup and two pieces of plate bore a blue edge band and hairline band design. An edge fragment of a saucer bore a blue transfer print of alternating stylised designs and may have been chinoiserie.

Two fragments of a teacup and one fragment of a saucer bore the same brown pattern of Monroe. Although there was no indication of a manufacturer on these items it is known that Smith & Ford produced this pattern on wares, their mark being found on a Monroe pattern saucer from context (703). A second teacup had a brown printed pattern that could not be identified. A fragment of a teacup and a saucer also bearing a brown transfer print could have related to one of the designs already noted. A portion of a teacup and a portion of a saucer both had pink edge banding with two hairline bands beneath, and a fragment of a saucer with three hairline gilt bands was also noted.

Two portions of a candleholder were recovered from context 704, and matched an almost complete example recovered from context 703 (Figure 119F). The items in 704 were a part of the base and a part of one of the rims.

Other items included: 3 pieces of a small plain white kitchen mixing bowl probably used for mixing liquids such as sauces; approximately one half of the upper part of a plain eggcup; a body

fragment from a fawn coloured cheese pot; 3 pieces of a fawn coloured preserve jar or pot that may have contained products such as marmalade, relish, or piccalilli; a part of the upper section of an undecorated teapot; 8 body fragments and a handle from a jug or ewer decorated with hand applied and irregular gilt bands; and 11 plain white fragments originating from teacups and plates which probably related to items already described.

Context 705

At least two teapots were present in context 705 (Figure 119G). Most of the body of a plain Brown Betty teapot missing the spout and handle bore no manufacturer's marks but did have the marks of the tripod rack it was seated on when fired. The partial lid of a teapot did not fit the flange associated with the body, and therefore must have been associated with a second teapot. The upper portion of the lid was moulded.

A partial base and a partial handle of a container was noted, with the base marked Rd No 143193, which corresponds to the year 1890. It was not immediately clear what function the container may have had but it could have been used as a tea caddy or biscuit barrel. A yellow print appeared to have been applied to a portion of the body only, perhaps being a border for an item name.

Two oval brown transfer print platters were recorded from several pieces, some of which refitted. Twenty-seven pieces of ceramic originating from at least four plates bore the same design, as did a ring fragment of a teacup and a fragment of a lid from a container, teapot or serving dish.

Three pieces of a jug bearing a handpainted band and hairline band design were identified. The thick band around the centre of the vessel had two hairline bands below and two above with a further hairline band sited just below the lower margin of the spout.

Two teacups and one saucer bearing a pink band at the rim and two gilt hairline bands were noted from four pieces of saucer and four pieces of teacup including two handles.

One teacup and one saucer were identified from five pieces of ceramic bearing the Monroe pattern, and a teacup and saucer were identified from seven pieces of ceramic bearing the Orient pattern. A further saucer was identified bearing an unknown brown transfer print. Three pieces of a brown transfer print teacup of unknown design refitted. The handle was present and the design incorporated flowers and foliage. An edge fragment of an unidentified blue transfer print saucer was noted.

Five pieces of a blue transfer print saucer were identified as bearing the same unknown design, with traces of gilt overpainting on the edge. Two distinct teacups, both bearing unknown blue transfer prints, were identified. At least one teacup bearing the Tealeaf design was present, with at least two saucers. Another teacup was identified from a fragment bearing three hairline gilt bands near the rim. Twelve bases or part bases of teacups were identified, only one of which carried a potter's mark – Smith & Ford, Monroe, England. Godden (1991) includes only one entry for Smith & Ford, who were located at Burslem in Staffordshire and produced wares with this mark from 1895 to1898 before changing their name to Samuel Ford & Co. (it is not immediately clear whether this was the same company). Three body fragments originating from teacups bore portions of blue transfer prints which have not been identified.

Two pieces rejoined to form a portion of a dinner plate with a thick blue band at the edge and a hairline band below. A plate of unknown size had three blue bands and a further piece of blue banded plate may have been associated with it. At least two saucers bore the same blue banded

pattern although one of the plates was decorated in a paler shade of blue. A fragment with a thick blue band could not be identified to a form type.

Sixteen fragments originating from at least two plates bore the Asiatic Pheasant design. It was not possible to determine the number or sizes of plates, but differences in print colour suggested at least two were present. A relief moulded plate was identified from an edge fragment. There may have been some gilt associated with areas of relief. At least two further plates with blue transfer prints were identified from small fragments.

Five fragments of a large bowl bearing a dark blue transfer print were identified as likely to have originated from a fruit bowl. The exterior of the bowl was moulded in curved spines and was printed with flowers. The print was also present on the interior face of the bowl.

Two eggcups were noted, one of which bore a single gilt band. It is not clear whether the second example had a gilt band previously. A fragment of a cream coloured jar was likely to have contained cheese. A small lid with an aperture for a spoon is likely to have been the lid of a sugar or honey bowl, but the size suggested it might have been part of a child's tea set (Figure 119H). The base of a polychrome painted teacup was likely to have originated from this child's tea set also. A small fragment of a drainer was identified with a part of the larger finger hole and two drain holes present.

Other items included: 5 pieces of ceramic with a thick blue band and a single hairline band either side of the band, originally part of a washbowl; a second plain white washbowl, but with a relief moulded interior of flowers and foliage; 2 pieces of ceramic bearing the same pattern which rejoined to form part of the lid from a toilet box (Figure 104C; Table 14, Ch. 6) (used to store items such as toothbrushes and shaving implements); a portion of a chamberpot bearing the purple Olympia pattern (Figure 119, I); and a partial handle with some gilt still extant which probably originated from either a chamberpot or washbowl.

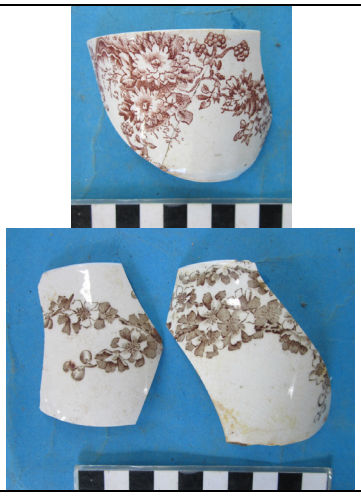
Twenty six fragments of plain white ceramic were collected and originated from various items such as cups and plates.

Context 707

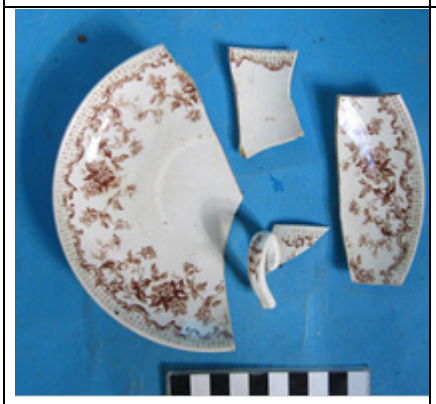
The partial base and body of a noodle or rice bowl was recovered from the base of this context. The bowl was decorated with at least two handpainted bands around the body and was likely to have had further decoration. Also recovered from this context were the base of a teacup with no decoration noted and the handle of a teacup with an unknown dark blue transfer print. The handle was not curved but rather had a 90 degree turn at the top end and the same at the bottom which then curved downward toward the lower part of the cup. The base of the teacup was marked with blue paint that was also identified on other items recovered from the well.

A. Unknown black transfer print pattern, context 703

B. Unknown brown transfer print pattern, context 703



C. Two teacups with unknown brown transfer print patterns, context 703



D. Monroe pattern, context 703

E. Te Aroha Hotel cup, context 703

F. Candle holder, context 703

G. Partial Brown Betty Teapot, context 705

H. Lid from a child's tea set, context 705

I. Olympia chamberpot, context 705

Figure 119. Examples of ceramics recovered from Well 1

Stoneware

Approximately one half of a hot water bottle stopper was recovered from context 703. The stopper had a peg attached previously which was likely to have had a thread, and a moulded rope design.

Six complete stoneware vessels (Figure 120) and two partial vessels were recovered from context 705. A complete bottle standing 113mm high with a base diameter of 63.48mm was likely to have contained either blacking grease or ink. A second partial example of this type of bottle showed dark interior staining which may have been ink or blacking grease.

Two complete penny ink bottles were recovered. Both stood 51mm high with base diameters of 48.03mm and 46.98mm and were coloured light brown and brown respectively. Neither bottle showed a manufacturer's mark.

A complete cream coloured container standing 55mm high with a base diameter of 45.17mm was recovered. The container may have been used to store toothpicks or matches. A partially reconstructed fruit preserve pot stood 95mm high with a base diameter of 86.37mm (Figure 120B). The pot had a black transfer print which is identified as belonging to R. Furness, Fruit Preserver, Auckland, New Zealand. Robert Furness established his company in 1889, and Henson (n.d.) notes that the transfer printed jam jars were imported from Maling of Newcastle upon Tyne.

A complete brown bottle bearing the stamp of DOULTON LAMBETH was not identified to a particular use but it is possible the bottle contained some form of pharmaceutical preparation (Figure 120C). A complete cream coloured bottle was stamped POWELL BRISTOL and stood 144mm high, with a cork still embedded in the neck of the bottle and a very strong smell of disinfectant suggesting it was likely to have contained this preparation (Figure 120C).

A complete blacking jar was recovered from context 707. The bottle stood 133mm high with maximum base diameter of 61.97mm and was coloured in various tones from fawn to brown. There was no manufacturer's mark on the bottle and it was glazed on the exterior (with the exception of the base) and the interior upper rim only.

Terracotta

Fragments from two terracotta flower pots were recovered from context 703. One was orange and the second was a cream colour.

At least three terracotta flower pots were recorded from context 705 and all appeared to be of different sizes. The base of one flower pot was complete and measured 123mm. Five pieces of a second pot rejoined, but the base could not be measured. The pot stood 130mm high. A third flower pot was identified from two pieces of rejoining ceramic, and was no more than 108mm high.

A. Blacking or ink, two penny inks, toothpick or matchstick holder

B. R. Furness Fruit Preserver

C. Powell bottle (left) and Doulton bottle (right)

Figure 120. Examples of stoneware recovered from Well 1

Glassware

A large sample of glassware was recovered from the well (Table 9) and included some complete examples. Alcohol bottles, which are commonly recovered in large numbers and often make up the larger part of any late 19th/early 20th century assemblage, were not represented in large numbers in this collection. The majority of items identified related to pharmaceutical products and household consumable items. The presence of a dental filling component suggested that a dentist or home practitioner of dentistry may have resided on the property at some point.

Table 9. Shows the items identified from each context, but it should be noted items from different contexts may be related

Item	701	703	704	705	707
Black Beer			1		1
Modern Beer	1				
Case Gin	1	1			
Brandy		1	1		
Wine	1		1	3	
Whisky		1		1	1
Pickle		1		1	
Jam			1	1	
Vinegar	1			1	
Water	1	3		1	
Castor Oil			1		
Medicine	3	4	7	3	1
Poison	1		1		
Dental		1			
Perfume/Toilet Water	2	6	1	1	
Beef Supplement			1	1	
Infant Food	1				
Oil Lamp Chimney		1		2	
Lampshade	3	1		1	
Oil Burner				1	
Vase		2		1	
Ink	1	3	1	1	
Glue	1			5	
Spectacle Lens		1			
Drinking Glass		1	1	2	
Leather Treatment			1		
Sewing Machine Oil				1	
Soap Container				1	
Stopper				2	
Serving Dish	1	3		5	
Mirror				1	
Window Glass	P	P	P	P	
Unidentified	2	2	1	1	

Context 701

Seven fragments of body glass from a case gin bottle were identified. A portion of a neck was identified as originating from a wine bottle. Three fragments from a modern amber beer bottle were recorded and contained partial embossing: THE…LIMITED…19… Amber beer bottles did not appear until at least 1915 and the embossing confirms a 20th century date (context 701 was right at the top of the well).

A fragment of a Champion's Vinegar bottle was identified. Three pieces of glass comprising the rim, neck and partial body of a MELLIN'S INFANT FOOD bottle were recovered. Mellins' Infant Food was first manufactured in England in 1874. The powdered food was mixed with hot water to dissolve it, then added to milk. It was intended for short term usage but became a widely used substitute for breastfeeding (www.foodtimeline.org). A complete plain aqua stopper was likely to have been associated with a food product vessel. The overall length of the stopper was

34.43mm with the peg being 28mm long. The width of the peg at the joint with the top was 12mm.

A small fragment of a cobalt blue poison bottle was identified, with evidence of the ribs used to warn the visually impaired that the bottle contained a poison. A partial base from a clear bottle was likely to have contained some form of dispensed or patent medicine. Three fragments of a clear glass cylindrical bottle were also likely to have contained some form of medicine. The base and partial body of a toilet water bottle were also noted. A large fragment of a vessel appeared to be circular in shape and was identified as likely to have contained perfume. The upper portion of the vessel had moulded ribs with rounded ends. A complete clear glass bottle standing 143.97mm high and embossed 6 OZ on the base was likely to have contained a pharmaceutical product, but it is not known whether the contents were medicinal or preventatives such as disinfectant or similar. The rim of the bottle was irregularly shaped with a portion of the molten glass having slipped into the neck of the bottle.

A rim and neck of a mineral water bottle was identified as originating from a Lamont patent bottle, but had no indication of a manufacturer.

Three pieces of glass from a lampshade, ranging in colour from cranberry to clear, were recovered from context 701 (Figure 121D). The lampshade had an acid etched foliage design and matched pieces recovered from contexts 703 and 705. A fragment of a milk glass lampshade also had a thin inconsistently applied layer of pink coloured glass on the interior. An edge fragment of a serving pressed glass dish lid was identified, with a design of alternating double ribs with stylised flowers between the rib sections. A part of a footed bowl or dish was identified, the foot being moulded as a tree with bark, with an overlaid blue glass on the top of the foot. A portion of a possible amber oil lamp chimney matched that recovered from context 705.

A complete octagonal ink bottle stood 56.92mm high and had a shear lip. No markings identifying manufacturer or maker were evident. A complete clear glass gum or ink bottle stood 63.41mm high with a base diameter of 46.18mm. The bottle had an external thread with a shear lip which had worn down but not been ground.

Five pieces of window glass ranging in thickness from 1.76mm to 3.4mm were recovered along with one piece of plate glass 6.33mm thick. Five pieces of clear bottle glass four pieces of aqua glass could not be identified to particular products.

Context 703

Two body fragments from a case gin bottle were recovered from context 703. The partial neck and shoulder of a pale green bottle was consistent with a brandy bottle. The shoulder portion and a lower body portion of an aqua vessel were identified as a coffin flask whisky bottle.

The base of a round pickle was noted, the base embossed with the letter P, but it was not clear which particular glassworks this may have related to as several used this mark. A partial base of a clear jam jar was also noted.

An almost complete mineral water bottle missing only the rim was recovered from context 703 (see Figure 154C, Chapter 6). The bottle had a base diameter of 59.93mm and was embossed AUCKLAND AERATED WATER CO / VANE'S'S PATENT STOPPER/ KBC 4251. Auckland Aerated Water Co. was George Gledhill's wholesale business operating between 1881 and 1888, and the Vane's Patent Stopper was granted in 1884 (Rusden 1979). KBC was the mark used by

Kilner Bros, the letter C referring to their Conisbrough plant (Toulouse 1974). This particular bottle therefore appears to date between 1884 and 1888.

A partial neck and a body fragment containing embossed letters ..LEY/…RED and a portion of a cannon was likely to be that of W. Handley who operated a mineral water manufactory in Wellington Street from 1889 (Cyclopedia Company Limited 1902) which was amalgamated into the Auckland Aerated Water and Cordial Manufacturers in 1917 (Rusden 1979).

A complete cylindrical bottle standing 54.88mm high with a maximum base diameter of 9.68mm would originally have contained small pills (Figure 121). A complete bottle standing 68.06mm was embossed on a recessed panel with EDSON AUCKLAND and probably contained dispensed pills (Figure 121). John Edson established his business in Queen Street in 1859 and was still operating it after 1900 (Cyclopedia Company Limited 1902). A complete tincture bottle stood 86.48mm high with a surviving spout (Figure 121). Tinctures were generally prepared by chemists and druggists and often contained additives such as opium or laudanum. The spout enabled careful management of the amount of liquid used. A fragment of a bottle was embossed DIREC…/IN TH…/PAMPHL… and was identified as a Barry's Tricopherous for the Skin and Hair. This particular product was primarily used to prevent hair falling out and to restore colour. Street (1917:24) notes from a 1907 analysis of the product that it contained '82.5 per cent of alcohol, 7.27 per cent of a fixed oil, and colouring matter'. Three pieces of a blue aqua bottle were likely to have originated from a medicine.

A complete CAULK'S MATERIALS with FILING in a diamond stood 70.15mm high (Figure 121C). The product was used by dentists as a component part of constructing tooth fillings.

Three perfume bottles were recovered (Figure 121B), two of which were complete examples. The first example was missing the rim and partial neck and was embossed on the base with a rudimentary anchor. The edge of the front and rear panel were decorated with raised nipples. The two complete bottles were almost identical in size, both embossed on the front (or rear) with the letters RC or CR one over the other. Two almost complete toilet water bottles were recovered (toilet water being a less potent form of perfume and therefore less expensive). A rim may have related to one of these toilet water bottles.

Eleven fragments of a lampshade were identified (Figure 121D). The lampshade was coloured cranberry at the base of the globe which faded to clear at the top. The lower rim of the globe was crimped and the glass was frosted with a pattern of leaves and buds. An almost complete oil lamp chimney measured 19.4cm in existing length; the lower portion which covered the burner was no longer extant. The chimney was acid etched with BEST FIREPROOF TIGER BRAND Made in Silesia with the depiction of a tiger (Figure 157, Chapter 6). Silesia was a Polish territory until the 14th century and was returned to Poland in 1945, but in the 19th and early 20th centuries was under the control of Prussia. Three fragments of a milk glass lampshade were identified.

Two complete ink bottles were recovered, both having shear lips. The first bottle was 65.75mm high and carried no markings. The second bottle was a type known as a boat ink and stood 56.04mm high, marked on the base with Tate & Co. The shoulders of the bottle were recessed to allow pens to be rested there. No information could be located regarding Tate & Co. A complete plain round ink standing 82.17mm high had a base diameter of 38.27mm.

Fragments from two vases were recovered: one in yellow glass and a second in blue glass with milk glass splashes. The yellow vase had a crenulated edge with small flowers (half) protruding

from the vase at a 90 degree angle. The fragment from the blue vase had a rough exterior with milk glass splashed on the exterior.

A round pressed glass dish lid missing the knob was recovered (Figure 121E). The glass had been pressed into a mould creating a smooth exterior and raised relief on the interior of the lid. The interior width of the lid was 130mm. A lower portion of a clear glass pressed dish probably had a rectangular or square shape (with rounded corners).

A complete small oval shaped spectacle lens was recovered, with a maximum length of 33mm and a maximum height of 24.5mm. It did not appear to be a bi-focal lens. Three pieces of a clear drinking glass with a panel shaped lower portion were noted, and six pieces of window glass ranging in thickness from 1.69mm to 2.92mm.

A complete bottle with a metal lid was recovered from context 703. The bottle was 87.30mm high with a base diameter of 52.21mm and had an external thread. The bottle was identified to a particular product as it might have contained a number of products, such as glue or ink. Four clear fragments, three aqua fragments and one fragment of emerald glass could not be identified with any particular product.

Context 704

The base of a black beer bottle with a diameter of 75.36mm was recovered from Context 704, the kickup formed by a shallow tool. The base and partial body of a wine bottle had a base diameter of 72.94mm. The base and partial body of a brandy was also recovered, having a base diameter of 77.1mm.

The base and partial body of a plain round oil bottle was noted, the base being embossed with the number 4. Three portions of a jam jar were noted with partial embossing ..ATRIC.. It is likely that this related to Kirkpatrick's Jam, which owned the K Brand. S. Kirkpatrick & Co began preparing jams in 1881 (www.teara.govt.nz).

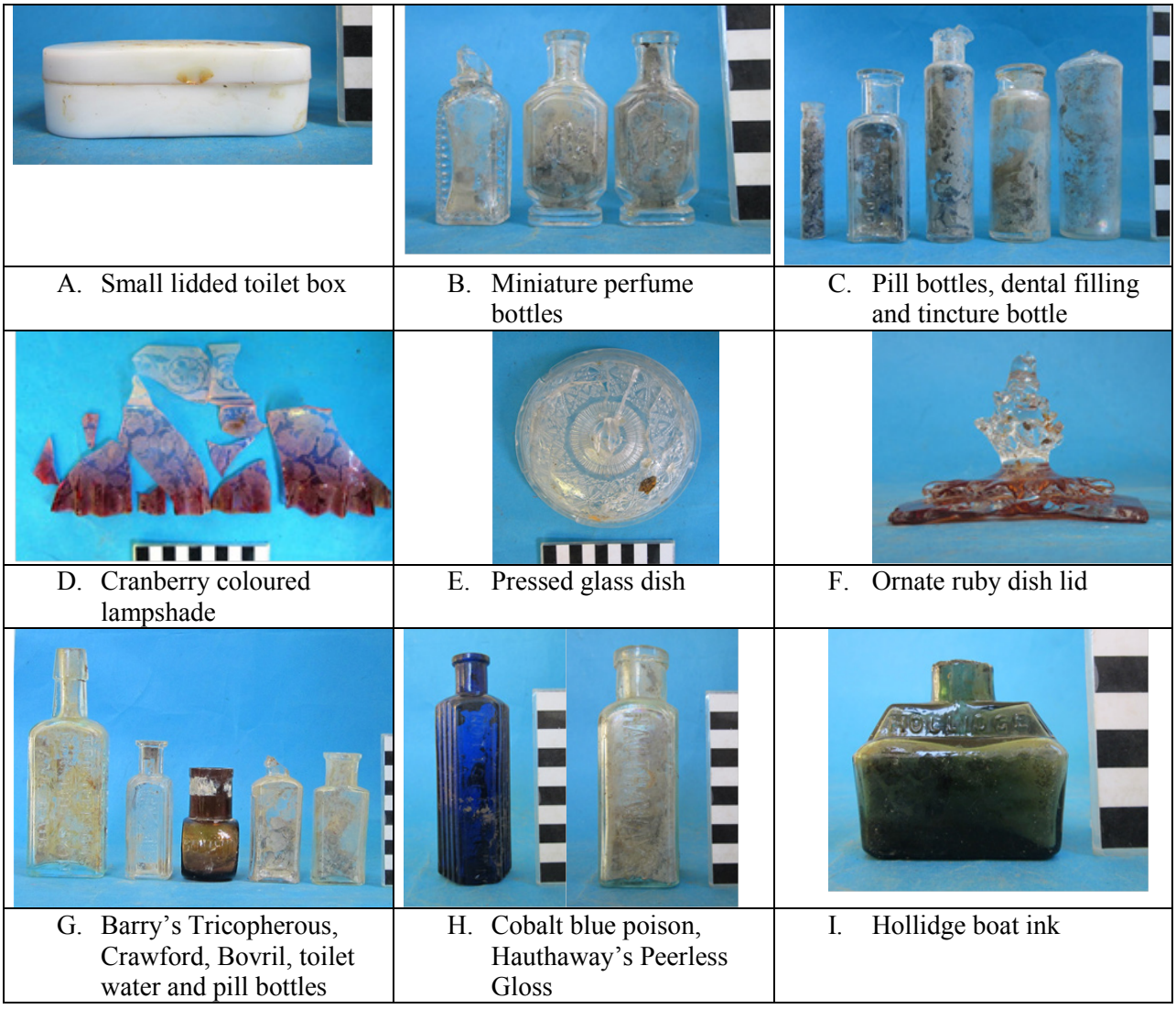
A blue aqua medicine bottle missing the base was embossed BONNINGTON'S IRISH MOSS CHRISTCHURCH. George Bonnington began selling the Irish Moss cough syrup from his Christchurch store during the 1870s (www.nram.org.nz). Although no published formula for the remedy has been located, Martyr (2002) notes the presence of morphine. A complete BARRY'S TRICOPHEROUS FOR THE SKIN AND HAIR was identified (Figure 121G). A complete clear bottle embossed CRAWFORD PHARMACIST NEWTON AUCKLAND NZ stood 95.13mm high and was manufactured by W T & Co USA (Figure 121G). The WT & Co mark represents Whitall Tatum & Co, a company with a long history. The mark was used from c.1848 to 1935. Crawford's Pharmacy was located in Newton from at least 1880 (*Observer,* 30/10/1880:51). Later advertisements included the initials of T.A. Crawford (*Observer*, 23/1/1897:10). Crawford advertised a number of remedies, the majority of those imported patent medicines. A complete amber BOVRIL bottle was recorded (Figure 121G). Bovril was created by John Johnston, who was contracted by Napoleon to provide canned beef to his troops; at the time canned beef was not viable and Johnston created the fluid beef (http://en.wikipedia.org). By 1889 the Bovril Company had been formed and the product is still available today. An almost complete aqua bottle with no embossing was likely to have contained pills (Figure 121G).

Three pieces of amber glass forming the rim and partial body of a bottle did not contain any embossing, but the shape was similar to bottles often seen bearing the Kepler name (e.g. Best et al. 2003). A rim and neck of a cobalt blue bottle was likely to have been a castor oil. An almost

complete BEETHAM'S GLYCERINE & CUCUMBER bottle missing the base was noted. The preparation was advertised to preserve the skin and complexion from the effects of frost, cold winds, and hard water (*Otago Witness*, 14/1/1894).

A complete cobalt blue poison bottle standing 123mm high was marked NOT TO BE TAKEN and had ribbed panels either side of the embossing as a warning for the visually impaired (Figure 121H). The base of the bottle was marked 3oz. An almost complete toilet water bottle was noted (Figure 121G), but had no embossing. A complete aqua HAUTHAWAY'S PEERLESS GLOSS bottle standing 125.7mm high contained a leather treatment product that was marketed for use on women's and children's boots and shoes (e.g. *Ashburton Guardian*, 20/09/1892:1). (Figure 121H). A complete green boat ink with a shear lip standing 50.33mm high was embossed HOLLIDGE (Figure 121I). No information regarding Hollidge was located. The shoulder of the ink had two recessed portions in which pens could be rested.

Other items included: the base and partial body of a 13 panel drinking glass; a fragment of a clear glass lampshade with a frosted design; 4 pieces of window glass between 1.43mm and 2.02mm thick; and the base and partial body of a square aqua bottle that could not be identified to a particular type of product.



A. Small lidded toilet box
B. Miniature perfume bottles
C. Pill bottles, dental filling and tincture bottle
D. Cranberry coloured lampshade
E. Pressed glass dish
F. Ornate ruby dish lid
G. Barry's Tricopherous, Crawford, Bovril, toilet water and pill bottles
H. Cobalt blue poison, Hauthaway's Peerless Gloss
I. Hollidge boat ink

Figure 121. Examples of glassware from Well 1

Context 705

One partial and one complete wine base were recovered from context 705 and probably contained a red variety. The rim of a pale green wine probably containing a white wine had not been opened and the seal appeared to be intact (although much degraded). Some lettering was visible on the seal (...CROS...), but the rest was too degraded to read. The rim of an aqua whisky was noted.

An almost complete large CHAMPION'S VINEGAR with no embossing on the base to denote a bottle manufacturer was noted. The rim, neck and shoulder of a pickle bottle was recovered alongside a rim, neck, shoulder and base of a jam jar. The shoulder of the jam jar was embossed ...ICK'S JA... indicating Kirkpatrick's Jam.

A mineral water bottle embossed E. BREFFIT & CO LD MAKERS LONDON had a base diameter of 59.80mm (see Figure 154B, Ch. 6). There was no indication of the mineral water manufacturer and it is likely this bottle would have carried a paper label. Breffit produced glasswares from 1832 to 1913 (Toulouse 1971).

A complete pill bottle standing 65.29mm was embossed W T & Co on the base. This is the mark of Whitall Tatum & Co., the mark being used until 1935 (Toulouse 1974). A partial bottle with some embossing was identified as Barry's Tricopherous. A partial base of an aqua bottle was noted and was likely to have contained some form of medicine. Two pieces of a 2oz BOVRIL bottle were recovered.

A complete perfume or toilet water bottle was recovered from context 705. The bottle stood 86mm tall and was 44mm x 23mm at the base. The cork was still firmly wedged in the neck of the bottle but no contents remained.

A complete bottle embossed THE SINGER MACHINE CO was identified as sewing machine oil, suggesting that the occupants of the property may have possessed a sewing machine. However the oil produced by Singer could be used on a number of items including bicycles and hinges. Isaac Singer and Edward Clark began manufacturing sewing machines in 1851 and it was not until 1863 that the company became known as The Singer Manufacturing Company (www.parks.ca.gov). One glue bottle with an external thread was identified, embossed W T & Co. on the base. The base and partial body of a drinking glass was noted, the lower portion of the vessel having a cut glass appearance. A second drinking glass base and partial body had a 14 panel design. An almost complete small oil burner was identified, the lower portion comprising the legs being of clear glass and the body containing the oil being of amber glass. A hole in the top of the burner provided access for a wick. It was a decorative piece and probably would not have emitted much light.

The base and part of the body of a footed serving bowl were recorded. The bowl was of pressed glass and had scalloped edges around the rim of the bowl and the edge of the foot. A portion of a cut glass bowl with a scalloped edge was also noted. A partial lid for a serving dish was recorded, the body being a diluted ruby colour, achieved by placing a thin sheet of red glass directly onto the main body manufactured of clear glass (Figure 121F). The handle or knob was rough with many blunted protrusions of glass. Seven pieces of a cut glass bowl could be partially rejoined. The bowl had an uneven crenulated edge and the cut glass pattern was on the external side of the bowl.

A complete milk glass container with lid was 85.97 long and 25.39mm high and was probably used to store a small bar of soap in the bathroom (Figure 121A). Nine fragments of a milk glass

lamp globe were recovered from context 705. A piece of clear glass was identified as originating from an oil lamp chimney. An amber coloured bulbous glass tube may have been part of an elaborate lamp chimney. A piece of a lampshade in cranberry to clear glass was consistent with that recovered from context 703, and a fragment of a blue vase with milk glass splashes was also consistent with a piece recovered from context 703. Two stoppers were recovered from context 705; one an aqua likely to have been associated with a food product, and the other a more elaborately designed stopper likely to have been associated with a perfume bottle or elaborately decorated pharmacy bottle. The corner of a probable mirror with some clear glass still embedded in the metal corner piece was recorded. The corner was a thin sheet of decorated metal; the backing which provided the mirror finish being no longer present. The rim of a shear lip ink was noted, and a fragment of window glass 1.80mm thick. A handle possibly from a clear glass jug had an overlay of green glass and milk glass near the attachment point; probably the body of the vessel. The base of a vessel in cranberry glass with a ground smooth pontil scar could not be identified as to type.

Context 707

Context 707 contained two partial alcohol bottles. The base and partial body of a black beer bottle had a maximum base diameter of 80.45mm; the kickup was formed by a tool and had left a snap mark. The second alcohol bottle was identified as a whisky bottle. It had a maximum base diameter of 70.98mm, and the base was embossed S 18, but this could not be attributed to a particular bottle manufacturer with certainty.

An almost complete cylindrical medicine bottle was recovered from context 707. The bottle was of clear glass standing 102.42mm high with a maximum base diameter of 25.95mm and a pressed lip. There was no embossing on the bottle and it is likely to have contained pills.

Miscellaneous Finds

Non-Metal Implements

A broken stylus was recovered from context 701, broken at one end and rounded at the writing end. The marks made by the tool which shaped the end could still be seen. Part of a wooden utensil handle was also recovered from this context and appeared to have had some carved decoration associated with it, although the wood was much degraded.

The bone handle of a table implement was recovered from context 704 (Figure 122), with an overall length of 94.30mm. It appeared to be decorated on both sides. The decoration was difficult to see but may have included stylised flowers.

Context 705 produced two items related to writing – a portion of a slate stylus and a length of a graphite lead. An item identified as a brush was recovered from context 705. The frame and handle were constructed of wood, and the brush was tightly bound into the frame by a thin wire which had been overcoated in an unknown substance to bind the wires in place. The brush was probably used in a fireplace.

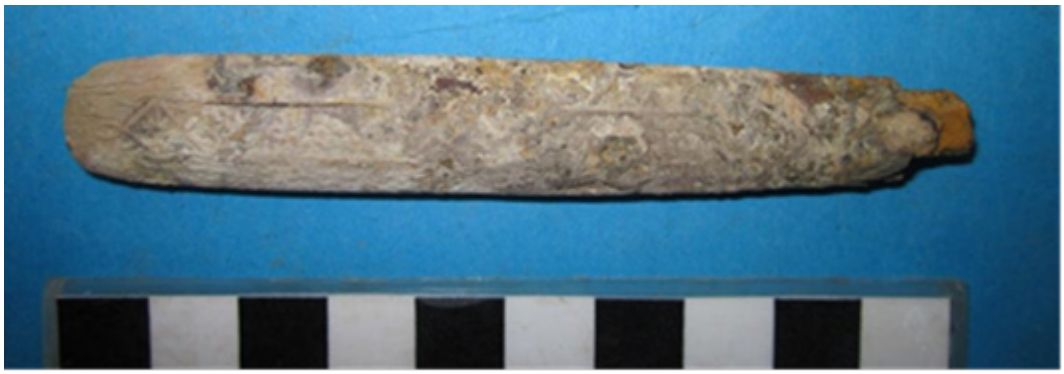


Figure 122. Part of a decorated bone utensil handle

Food Remains

One half of a peach pit was recovered from context 701. Four Auckland Rock Oyster (*Saccostrea glomerata*) shells were recovered from the same context, one of which was a small size. Alongside the oyster shells 11 pieces of periostracum were recovered (the skin-like outer surface of the shell).

Context 704 produced a single pumpkin seed. The seed had split and had an approximate length of 19.92mm.

Six peach pits, 6 pumpkin seeds, 2 possible pistachio nuts, 1 hazelnut and 1 almond were also recovered from context 705, along with one coconut rind and two pumpkin rinds (Figure 123).

Fifteen shells identified as Auckland Rock Oyster were also recovered from context 705. Nine of the 13 shells were cemented together in four lots while only four of the shells were individual. One of the shells bore traces of blue paint which may have been deposited in the well at or close to the time some of the shells were deposited. Single examples of cockle (*Austrovenus stutchburyi*) and green mussel (*Perna canaliculus*) were also identified.

Shoes, Textiles, Leather, Cork

The toe portion of a shoe inner sole was recovered from context 701. The leather had shrunk and curled, not allowing an accurate measurement to be taken. Fourteen nails were still in place near the edge of the sole indicating that the piece originated from a fully constructed shoe as opposed to a section discarded before use.

Several shoes and shoe fragments in varying condition were recovered from contexts 703 and 705 (see Chapter 6 for further discussion). Twenty-two partial shoe fragments were recovered, with 7 near complete shoes recorded. Eight shoes were women's and 4 men's based on Best's (1992) measuring system (see Chapter 6) (Figure 123). A leather satchel was also recovered from context 705 (Figure 161, Chapter 6), along with 7 indeterminate leather fragments. Eighteen fabric fragments were also identified, of both coarse and fine weave, one with a nail attached and one with a piece of tin and 10 fibre fragments, some of which were likely to have been felt (Figure 123). Other items were 3 wooden cotton bobbins (Figure 123), and two halves of a cotton reel fashioned from a piece of wood complete with a hole through the length of the reel were identified. The reel had a maximum height of 25.56mm with the space provided for the cotton no more than 12mm.

Two fragments of shoe leather also from 705 were identified with both portions showing evidence of the small nails used in constructing the lower portion of the shoe. Strands of rope, a nylon brush or broom strand, a rectangular swatch cut from a wool fabric and mix of fabric strands and a possible feather consistent with the small thin feathers used in a boa were noted, also from this context.

Two corks were identified from Context 705, one partial and one complete. The complete cork measured 40.49mm and evidence at one end suggested it had been removed using a corkscrew. One cork had been compressed into a curved shape, probably beneath a heavy object.Two wooden pegs were also recorded.

A strip of leather was also noted from context 704. There were no associated holes through which a buckle might be fastened and it was not immediately clear what the piece related to.

Context 707 contained a cut of fabric, identical to that recovered from context 705. The fabric was tightly woven from wool and was likely to have been used for a shirt or trousers. The material appeared dark in colour but this may have been discolouration from items located in the well.

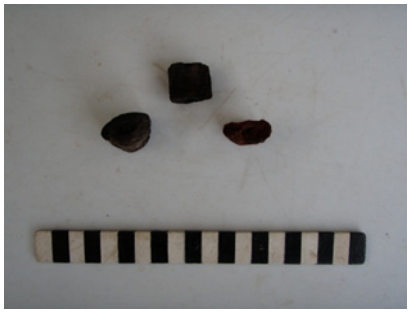
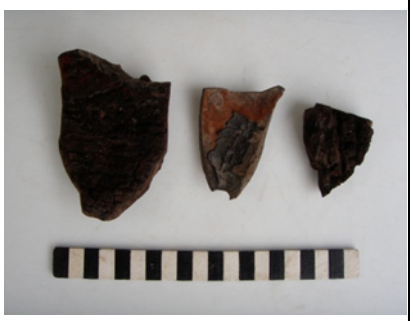
		
Degraded cotton bobbins	Adult man's shoe in the Derby style	Probably adult woman's shoe
		
Twine and felt	Rinds – coconut and pumpkin	Fabric fragments, with the bow at the bottom

Figure 123. Examples of leather items, fragments of fabric and other organic finds recovered from Well 1

Brick, Stone, Slate, Coal, Wood and Charcoal

One fragment of cream coloured brick was recovered from context 701. The brick was well mixed with no large inclusions noted. Evidence on the visible exterior of the brick suggested that it was wire cut.

Five pieces of brick were recovered from context 705, two orange coloured and two cream coloured. The cream coloured brick was salt glazed with one piece showing evidence of being over salted during firing forming a thick glaze on the surface. As the pieces were fragments the size of the bricks could not be determined. The fifth piece of brick appeared to have been split along the length and perhaps used as a paver, but this was uncertain. The width of the brick was 102mm, but the length and depth could not be measured. The brick was not salt glazed so would not have been waterproof and had a rough finish to the faces. It was manufactured in a wooden mould.

Context 701 produced five pieces of slate. The thickness of the slate combined with the roughness of the exterior faces suggested the slate was originally used for roofing tiles as opposed to writing.

Four pieces of coal and four pieces of dark scoria were recovered from context 705. Two rocks were recovered from context 705, one of which had what appeared to be a green glaze-like or crystalline surface in places. The second rock contained blue crystals, but the type of rock has not been identified. Three pieces of scoria were noted whose shape appeared characteristic of a cooling lava flow.

Thirty-seven pieces of wood were recovered from context 705 and included cut pieces, the end of a cut branch, and a length of wood cut from a trunk which still had some bark on the exterior. Many of the pieces of wood had traces of blue paint which was likely to have been deposited in the well at or near the time the wood was placed in the well. One offcut piece of tongue and groove flooring was identified. The floorboard would have been approximately 21.75mm thick with the tongue having a maximum thicken of 5.60mm.

A fragment of red scoria and a portion of a dark grey coloured brick were recovered from context 707. The brick appeared very well mixed with no large inclusions and had one over salt glazed face which had produced a thick glaze on the surface. A piece of curved sand-based cement was also recovered. It is likely that this cement was used to seal a joint in a ceramic drain.

Two complete bricks (although now fractured) and one partial brick were taken from the well lining at the base (Figure 124). One was orange coloured and well mixed and had been shaped in a wood mould. This stock brick measured 225mm x 107mm x 74mm and scrape marks levelling up the top face of the brick during moulding were evident. The brick had been coated with sand prior to drying to prevent sticking. There was no frog mark associated with this brick. A fragment of a red-orange brick suggested that it had also been sand coated and manufactured in a wood mould. The second complete brick was pale orange in colour and also a stock brick measuring 225mm x 105mm x 74mm. The brick was sand coated on four of the faces with the upper face (during manufacture in a wood mould) being left uncoated. The opposite face to this had a rectangular frog mark with sloping sides. One end face of the brick had been over salt glazed during firing which had produced a layer of glaze.

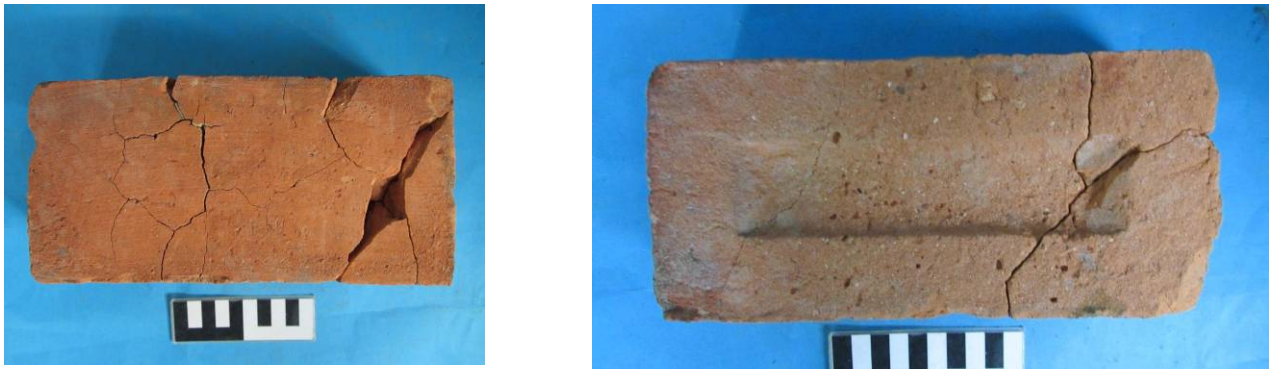


Figure 124. Bricks recovered from the lower part of the well. Frogged brick on the right

Brass

A piece of a circular cross-section of brass recovered from context 701 may have originated from a pair of braces or similar. The ends of the item were bent at slightly less than a 90 degree angle from the main length of the brass and could have been part of the adjustment mechanism. A pressed brass decorative piece cut and pressed in a floral pattern was identified (Figure 125A), but its was not ascertained. The item had a wide hook bent over the back which suggested that it would have been hooked over a wire. It had a maximum height of 53mm. The hook was stamped with what appeared to be a name, but was too corroded to establish what this was.

Several brass items were recovered from context 705. At least 16 pins were collected, one ball headed pin, one hook and two eyes, one safety pin, and one unknown decorative piece, suggesting that some form of dressmaking, tailoring or mending was occurring on the site (Figure 125B).

Three buttons and one rivet were recovered from context 705 in the well (Figure 125C). Two of the buttons and the rivet would have been from trousers, and the remaining button would have been from a shirt. One button was stamped G McBRIDE AUCKLAND. McBride is known to have had a store in Customs Street East in 1888 (*Auckland Star*, 1/10/1888:4) prior to moving to Queen Street in 1890 (*Thames Star*, 23/7/1890:2), where he advertised as an importer, manufacturer, merchant tailor, and naval and military contractor.

A wall mount, or more correctly a picture hanging frame, was identified from context 705, the hook still attached to a partial frame. An unidentified circular object was recovered with a central hole, with two smaller holes to either side which could have housed screws or nails. It is unclear what the item was used for, but it possibly covered another object (like a casing) and was screwed into a wall.

Other Metals

Context 701

Two pieces of copper wire were recovered from context 701. One of the pieces of wire was in fact two strands that had been twisted together at one end. Twenty-six iron nails were recovered and were of varying sizes. All appeared to have been used and discarded. Other iron objects included a bolt and nut, a probable second bolt with a ring of iron around the main length now heavily corroded, a hook, a half round bracket, a length of bar, four piece of heavily corroded wire, and two unidentified items. Two pieces of a tin can were identified along with one end and partial side of what was likely to be a matchbox. An object similar to half a bowl was manufactured of lead and was well formed at the rim. Although slightly misshapen and missing some areas due to

corrosion the object had probably been perfectly round. The use of the item was not identified but it may have been used as a mixing bowl for paints or other preparations.

A sample of solidified clay which was likely to have been shaped by a can was also recovered from context 701. The base of the sample was perfectly flat and there were small traces of tin on the sides of the clay.

Context 705

The outside edges of 8 tin can rings were recovered from context 705, but it was not possible to determine whether the rings were from the top or bottom of the can. Six tin cans were identified with the height from top to bottom still intact, although in all cases much of the can had degraded (Figure 125D). The cans all measured between 86.20mm high and 115.17mm high, and had no markings visible to determine possible contents. A tall rectangular cross-section can standing 117mm high could have contained a number of different products, including tea. A section of a large can and the base of a heavy can or pot were recovered with a portion of a ceramic plate embedded in the corroded metal. It was not certain whether the two pieces related to each other. The lid of a large tin can was recovered intact, although one portion was bent back over on itself. The maximum diameter of the lid was 180mm and it may have originated from a paint tin. An iron hanging handle was recovered with the ends bent back on themselves to form a void through which hooks could pass. The handle could have been used in a number of locations, including a kitchen or tool shed.

Five pieces of a flat sheet of tin folded at one edge were recovered. Although it was not immediately clear what the purpose of the tin sheet was, it is possible the item was a sign or similar. Two pieces of frame possibly manufactured from steel were identified, both with two hanging brackets riveted to the rear of the frame. The width of the frame matched the width of a portion of a discoloured area on the possible sign and may have been related.

The blade of a steel table knife was recovered intact, although with some corrosion. The blade was marked CJ (in a flag) JOHNSON WESTERN WORKS and WARRANTED GOOD formed in a circle (Figure 125E). Christopher Johnson's works were situated in Portobello in Sheffield (www.silvermakersmarks.co.uk) and were still producing tanged utensils as late as the 1960s. The bowl of a steel spoon was also recovered. There was no trace of its handle, although it is possible that the bone utensil handle described above was associated with this item.

A twisted length of copper wire was recovered from context 705 along with one flat head nail and three round head nails. A bag of iron flakes was collected, but little information could be gained from them. Three lengths of twisted steel wire were identified. One length of steel was noted and had been rolled in a spiral manner to form a pipe-like item. The object could not be identified but may have been used to protect cabling or similar from moisture. Three steel strips were noted, two of which had holes drilled through presumably to allow screws to attach the strip to another item. Two pieces of tin, one of which had small rivet holes, may have been associated with a small tin such as a matchbox or similar. A complete flange possibly manufactured from steel was noted. The central void was 12.24mm wide and there were two small holes either side of the void presumably for screws to attach the item. An unidentified item manufactured from cast iron was of unknown use – it appeared to be a handle or lever of some kind and was decorated at one end.

Twenty-six pieces of lead offcuts were identified, all appearing to have been cut using a tool similar to that used for cutting fibrolite. A single lead seal was identified and may have originated from a bottle. The seal was too corroded to determine whether any name was stamped onto the

surface. Two pieces of lead almost lattice-like in appearance were recovered, but their purpose was not identified.

A portion of a cast iron bar was recovered. It was rounded at one end and mould lines (unfiled down) could be seen along the sides and at the end.

Eleven nails of various sizes were recovered, two of which were bent almost at a 90 degree angle suggesting they had been removed from wood prior to disposal. A single 19th century brad nail was recovered. The brad nail had a distinctive L shaped head and would have been used in flooring, trimming, cabinetry or furniture. It is likely this particular brad was associated with flooring given it length. Brads in the 19th century bore little resemblance to those of today. A complete screw with thread measuring a total length of 63mm was recovered. The thread portion of the screw measured 35.5mm and the head was slotted, requiring a flat head screwdriver.

A complete horseshoe was recovered from this context and would have been the right size for an average sized horse rather than the larger horse breeds such as Clydesdale. A portion of a second horseshoe was also recovered, again suggesting a small to average sized horse. A portion of flat curved iron was noted and may have originated from part of a tool handle.

An item tentatively identified as a needle was recovered from context 705 and was probably made of steel. It had two holes through which thread could have passed: one 2.8mm long and the second approximately 10mm long. The item had a rounded end (not sharp) and did not appear to be similar to needles commonly designed for sewing machines, tapestry, tatting, or sacks. The item was decorated on both sides of the length with incised lines and asterisks.

Two items of similar design remain unidentified (Figure 125F). One was encased in a lead tube similar to one already described. The unencased example was a length of steel which was bent around at one end to form a handle, and was similar in appearance to a large can opener, but had no slot at the end or thread to suggest it could have been used in a screwing fashion. Research identified a similar item – an interchangeable dental key. When complete the shape of the item would appear similar to a traditional looking key which would be used to twist a tooth from the jaw. This is only one possible explanation for its function, but it is noted that a bottle containing Caulk's Materials used by dentists for tooth filling was also found in the well (in context 703, see above).

Two lengths of metal springs were also recovered, but their use has not been determined.

Context 707

Two portions of tin can were recovered from this context, one of which still had much of its silver colour. This particular piece also showed the join of the can on the exterior. The second portion of can had more of a copper colour to the tin on the exterior but retained some of the natural silver tin finish on the interior. A partial tin can ring was identified along with three pieces originating from a rectangular shaped can or box.

Eight pieces of tin, seven originally flat pieces and one piece of the edge appeared to have originated from a thin tray. The thickness of the metal sheet was 0.82mm. The edge was formed by the sheet being folded back over itself.

A badly corroded steel knife blade and handle was recovered. The tip of the blade and the cutting edge was no longer extant. The handle had been broken off leaving less than 5cm remaining. The top edge of the knife was on a continuous line from the handle to the tip of the blade, while at the

cutting edge the blade was curved near the tang. It was not possible to determine whether the cutting edge was straight or serrated.

Five pieces of steel wire were identified, almost all having a curve as though they were coiled. One piece was twisted. Six pieces of steel strap or flashing were identified, one of which had been nailed onto the surface of another item at some point with nail holes still visible.

Three pieces of a steel strap appeared to have been used as a binding, as two of the pieces showed evidence of metal placed at a 90 degree angle. The straps were curved, indicating they had probably been wrapped around a round object.

Also recovered from context 707 was the bowl of a teaspoon. The spoon appeared to have been silver plated, but no hallmarks were present. These would have been located on the underside of the handle if the spoon had been silver plated.

A. Pressed brass item

B. Dressmaking items

C. Buttons and a rivet

D. Portions of tin cans

E. A knife blade

F. Possible can openers or dental tools

Figure 125. Examples of metal artefacts recovered from Well 1

The Pistol

Of particular note was the partial remains of a pistol recovered from the very base of the well in context 707. The pistol was analysed and conserved by Brigid Gallagher, and the following is derived from the conservation report. The full conservation report is included on the accompanying DVD. The pistol is now in possession of the NZTA.

The firearm is an example of a Belgian proofed Percussion Cap Breech Loaded Boxlock Pistol (Figure 126). It has two smooth bore turn off barrels in a side by side position. There are notches in the barrel ends in which to insert a key, to load, clean and assemble the pistol. The barrels are

steel, probably Damascus, and the boxlock is iron. The barrels may be composed of de-carbonised steel, as was becoming common in the middle of the 19th century.

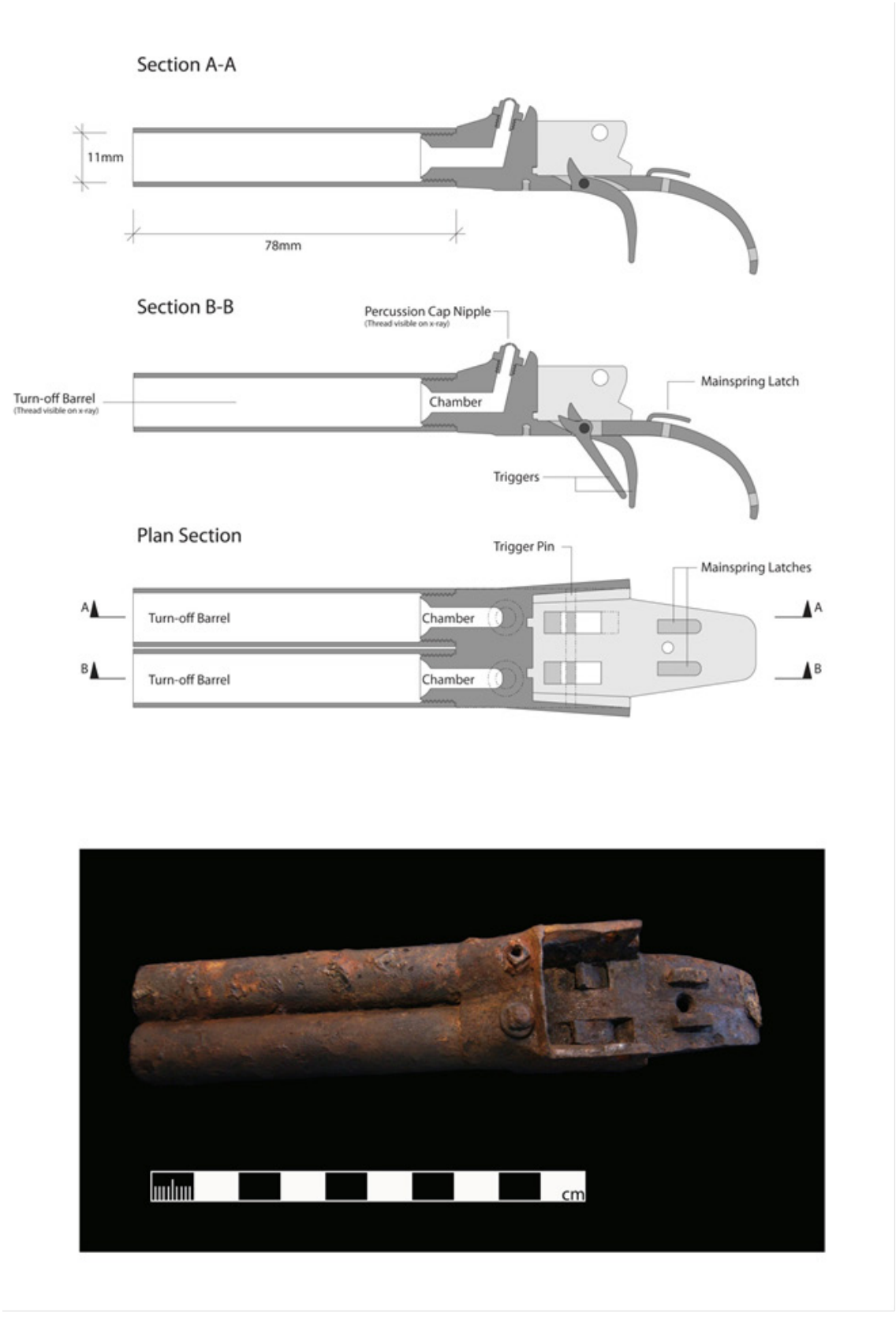


Figure 126. The Boxlock Pistol components recovered during excavation (drawings by R. Al-Kubaisi)

This pistol is in three parts only. It consists of two barrels (side by side) and a boxlock with triggers remaining. There are two triggers, one for each barrel, situated one behind the other and slightly offset to enable firing of each barrel separately. They are corroded in place. The pin holding the triggers are visible in the x-ray image only.

The pistol is breech loaded due to the method of turning off the barrels to clean them and put the shot ball into place. The charge or black powder is poured through the nipple into a tube or chamber ready for firing with the hammers (Figure 127).

The handle (wooden or ivory), trigger guard and top plate (tang) and corresponding fixings are missing. The top plate would have covered the internal mechanism, consisting of four springs and two hammers which are also absent. The barrels are 'turn-off' or screw barrels (the threads are visible in the x-rays). The screw-on nipples are still present for the percussion caps (x-rays again show the threads). Figure 128 shows the parts of the pistol that were excavated, and those that should have been present if the pistol was complete.

The pistol is approximately 0.41 calibre, with an approximate internal barrel diameter of 11mm. The barrels are approximately 78mm long (3 1/16 in.). A Belgian proof mark was visible, post-conservation treatment, on the side of the boxlock providing an initial date range of 1810-1893.

Pocket Pistols

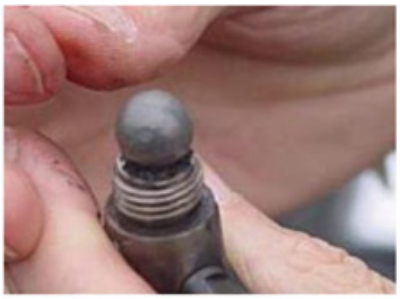
Pocket pistols such as this one were in use during the 19th century, and reached the height of their popularity from c.1840 to 1860 in Europe. They were used for personal and home protection, by both men and women, for close range shooting. Examples ranged from the high end to the easily affordable, allowing a wide cross section of society to own one. The pistol from the well is similar to those in Figure 129, and a fairly cheap style.

Pocket pistols are also described as boot or coat pistols for men, or purse or muff pistols for ladies. Typically 5-9 inches (12.7–22.9cm) in length, they were designed to be carried in a coat pocket (hence the informal name), although this extended to trouser pockets and ladies' garments. The Boxlock pistol was the preferred style, with its internalised mechanism offering fewer external components to snag on clothes when the pistol was being drawn, and its relative safety. The pistol could be carried loaded.

Calibres varied from the small to preposterously large, but in general most were made with the largest possible bore while maintaining ease of use and the relative restrictions of the 'average gentleman's overcoat pocket'. Due to their use as a personal protection these weapons were designed to be fired at close range (5-7 feet). Pocket pistols generally had no sight, as this was made redundant by the proximity of the target and the position of the hammers. Recorded tests of firing show that these pistols were a relatively effective weapon.

Predominantly made in Belgium (Liège), they were produced in their thousands for the European and colonial market. There are examples produced in England and America. The 'Derringer' pistol was an American evolution of the European pocket pistol.

Grooves in the end of the barrel, used in conjunction with a tool to release and engage the barrels



With the barrel removed powder is poured into the chamber before the shot is pushed into position. The barrel is then screwed on, securing the shot and powder in place

Percsusion caps are placed over the nipples. The mercury fulminate provides the spark to ignite and discharge the weapon.

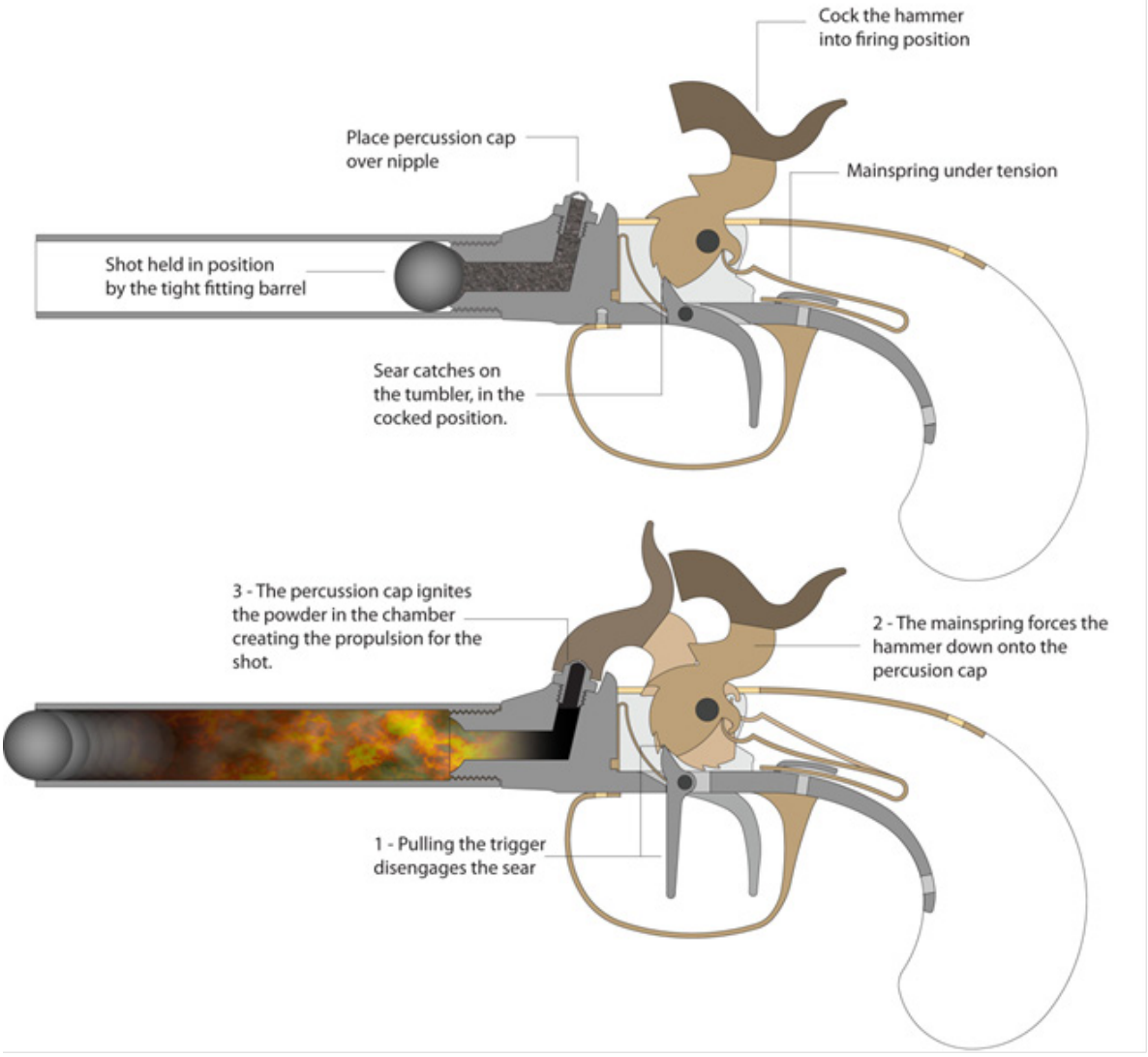


Figure 127. Firing components of the pistol. Top left, the notches on the barrels for turning; top middle, the position and method for loading the shot into the barrel before firing; top right, the copper alloy percussion caps. The bottom two schematic drawings (by R. Al-Kubaisi) show the firing action of the pistol. Images taken from www.NPS.gov

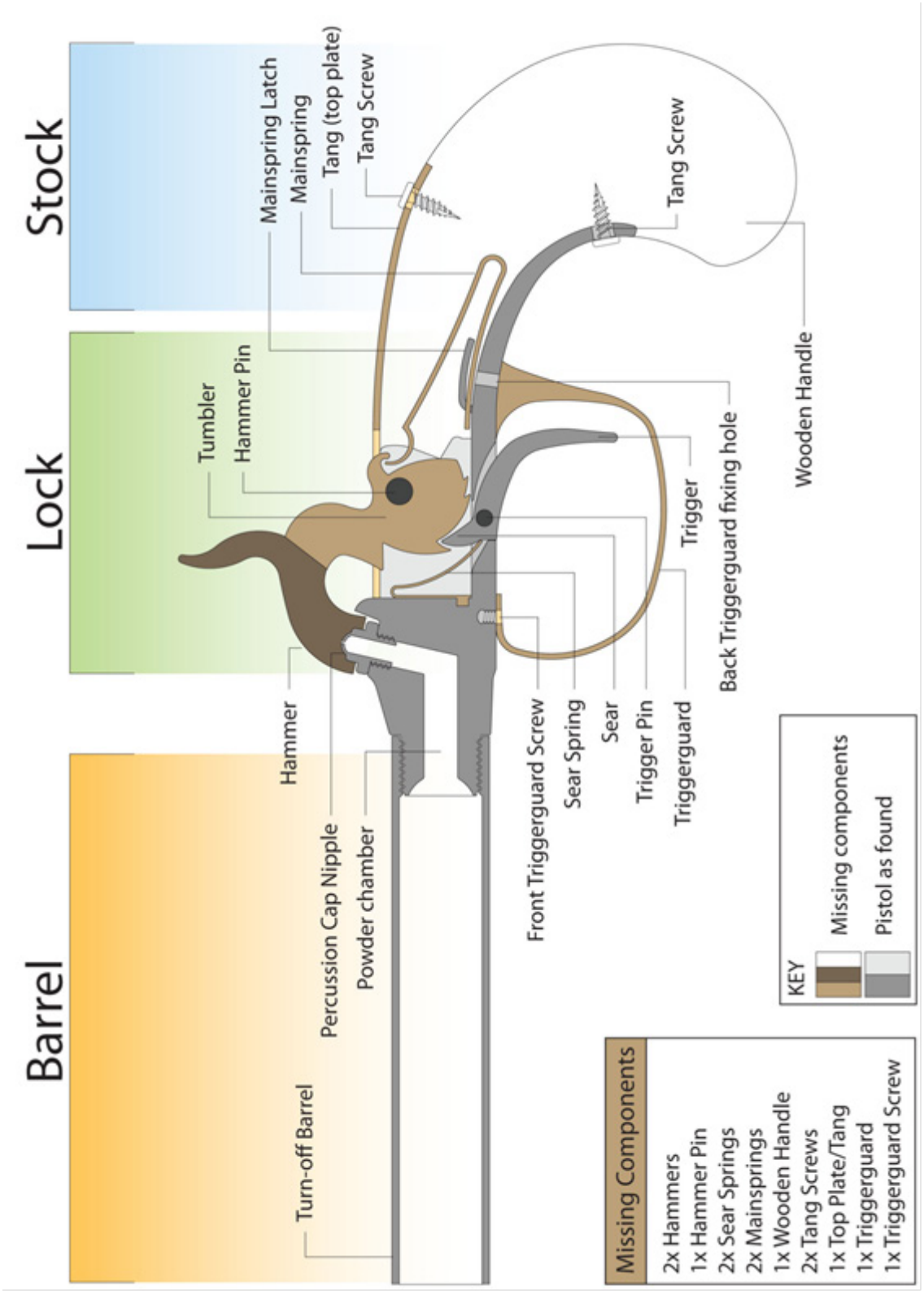


Figure 128. A schematic drawing of the pistol (grey) with the addition of the missing elements (brown). (Drawn by R. Al-Kubaisi)

Figure 129. Similar pistol to the VPT pistol. Source: www.muzzleloadingforum.com

Boxlock Pistols

Boxlock refers to the method in which the firing mechanisms are housed in a box, and is typically associated with rifles. It evolved from standard sidelock style, where the hammers and pins, etc were exposed. As internal boxlock technology was perfected, with its centrally mounted cock and mechanism contained within a pistol's metal frame, it became an increasingly popular arrangement for small handguns, particularly those kept on a person or in a pocket or coat.

The *lock* is the engine of any gun or pistol (double pistols and guns will have two). The parts of a lock mechanism usually include *springs*, *sears*, *pins*, and *hammer*. On pulling the *trigger* a sear is typically released and the compressed *leaf* (V) or *helical* (coil) spring energy powers a hammer/striker mechanism, driving a hammer down or firing pin forward. This detonates the primer in the percussion cap or back of the cartridge, igniting the powder (charge) to discharge the pistol.

This type of firearm has the lock or ignition mechanism enclosed in the centre of the weapon with the firing mechanism mounted centrally on the stock, and usually with the cock or arm on top. It has the advantage of making the weapon more compact and reducing the chances of moving parts catching on obstructions.

Flintlock boxlock pistols first became popular in the middle of the 18th century. These were superseded by percussion cap boxlock pistols that reached their height of popularity in the mid 19th century.

The phrase 'Lock, Stock, and Barrel' originates from gun and pistol technology. It refers to the most basic parts of a firearm; *the lock* containing the firing mechanisms, *the stock* being the handle, and *the barrel*, down which to aim and fire. This pistol no longer has its *stock.*

Percussion Caps

Flintlocks (c.early 17th century to early 19th century) were replaced by a lock and ignition system called the percussion cap. The percussion caplock pistol was easier to load, more weather resistant and more reliable. The mechanism used a percussion cap that was struck by a hammer to set off the main charge, rather than using a piece of flint to strike a frizzen. The cap was generally made from steel, then later copper or brass.

The percussion cap was made possible by the discovery of a chemical compound called mercuric fulminate or fulminate of mercury. Its chemical formula $Hg(ONC)_2$ is a compound of mercury, nitric acid and alcohol.

Mercuric fulminate is extremely explosive and shock sensitive. A sharp blow causes it to detonate. By putting a small amount of mercuric fulminate in a pre-made cap and affixing the cap to a nipple and tube or chamber leading into the barrel, the cap can ignite the gunpowder in the barrel by sending the main charge down the chamber or tube when the trigger is depressed. To prevent the nipple from being blown off during firing, the hammer is shaped to strike and cover the cap on the nipple.

The transition from flintlock to percussion cap is very minor, and many flintlocks were converted. The percussion lock mechanism is the same as the flintlock with both having a mainspring, hammer, tumbler, sear and sear spring. The hammer in a percussion cap pistol also has uncocked, half-cocked and fully cocked positions, as does the flintlock.

A danger of the earliest form of percussion cap results from mercuric fulminate instability when there is simply too much pressure on it. It was only generally applied to the British military musket (the Brown Bess) in 1842, a quarter of a century after the invention of percussion powder and after an elaborate government test at Woolwich in 1834. The percussion cap, introduced around 1830, was the crucial invention that enabled muzzleloading firearms to fire reliably in any weather.

Screw Barrels

Screw barrels or turn-off barrels was a design concept that dated back to the early 1700s. Used in all manner of handguns, and later developed for use in small artillery pieces, they benefited from the ability to get a tight fit of ball to bore, creating a truer flight and hence significant accuracy. Early versions were characterised by tapering barrels and muzzle rings similar to cannons.

Unlike muzzleloaders that needed ramrods to push the standard patch and ball home, screw barrels were streamlined by removing the need for the ramrod pipes and channel. These pistols and guns were loaded by unscrewing the barrel, pouring powder into the chamber to its capacity, then placing the ball on top before rescrewing the barrel (hence also known as breech loaders). Due to the tightness of ball in the barrel, the weapon could be carried safely loaded with little chance of displacing the ball and charge in transit.

The barrel was unscrewed using a key that either fitted into the end of the barrel or slid over the barrel engaging a slot in a stud at the breech (see Figure 127).

Damascus Barrels

Damascus barrels are a style of barrel making that twists metal together to create a very strong metal through which to fire. The technique is very old and derives from the technology known as pattern welding which was employed in sword manufacture from about 500 AD (Damascus-Barrels.com). This involved folding or twisting plates or lengths of metal together and hammering between heating. It typically creates very strong metalwork and was used by Vikings, Japanese and Middle Eastern cultures in the ancient past.

X-ray analysis did not reveal patterns associated with Damascus steel barrel making, but areas where the original surface has broken do show a stringer effect beneath, particularly visible on the boxlock.

In the mid-19th century the use of decarbonised steel for barrels became common in the United States, as this exhibited greater metal hardness. Barrels are known to be made from English twist steel (an inexpensive barrel metal), Bernard Steel (French Damascus), Whitworth Fluid Steel (Brit) and Damascus (ogca.com).

Proof Marks

Conservation cleaning revealed the pistol's definitive black powder proof mark (Figure 130). Identifiable by its form, the stamped proof mark on the left side of the boxlock is an oval on its side with an 'E L G' and a small star beneath, inside the oval.

This is a Liège (Belgium) mark, and was in use in the period 1810-1893 (see Appendix 1 of the conservation report, on the DVD). The marks were stamped onto a firearm following production, and validated the safety of the weapon.

If the pistol dates to after 1853 and before 1877 the pistol should also have Belgian proof or inspectors' marks on the outside of the barrels, near the threaded ends. Following cleaning possible proof marks on the barrels were observed, most complete on the left side (Figure 131 and Figure 132). This stamped mark appears to be a capital letter 'D'? or 'O'?, with a crown? above. These are faint and possibly incomplete marks, which is common (see Figure 133). These inspectors' or proof marks relate to the safety of the barrels themselves, and it is not uncommon for pistols of the mid 19th century not to have any at all.

Figure 130. Liège (Belgium) mark revealed following cleaning (drawn by R. Al-Kubaisi). Source of the star/ELG image: www.manions.com

Figure 131. Photograph of proof marks on the left side of the boxlock and barrel, post-cleaning

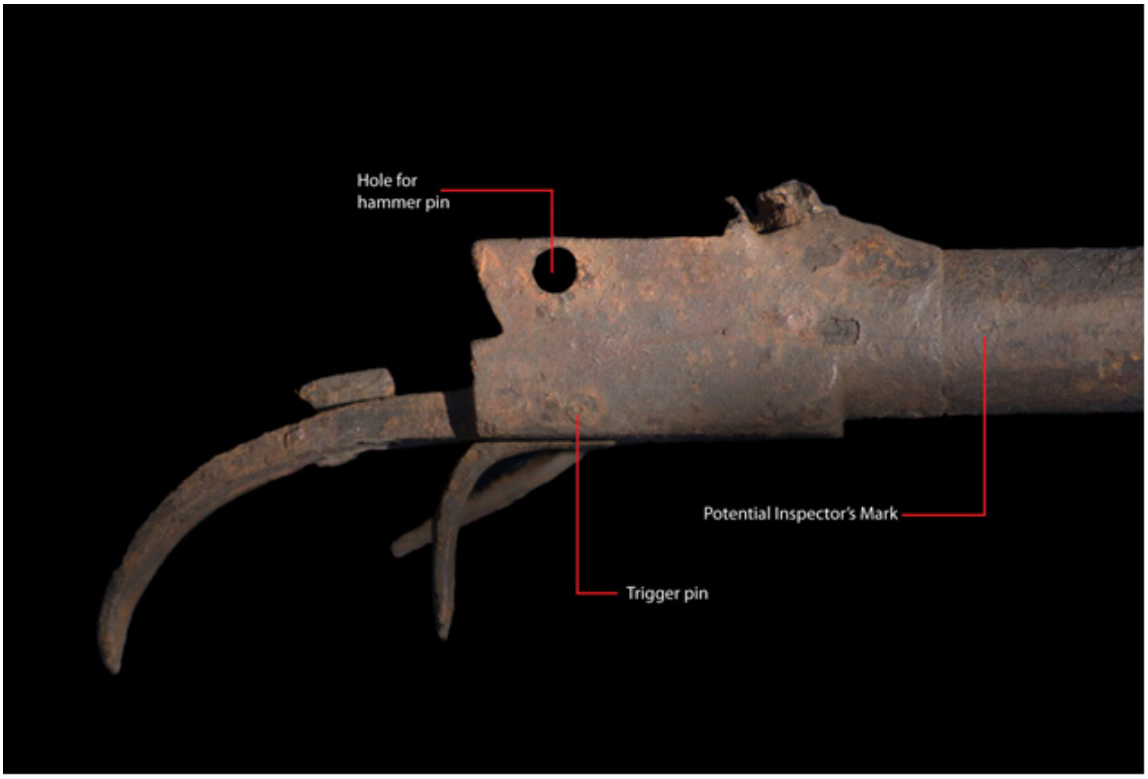


Figure 132. Technology and possible proof mark on the right barrel

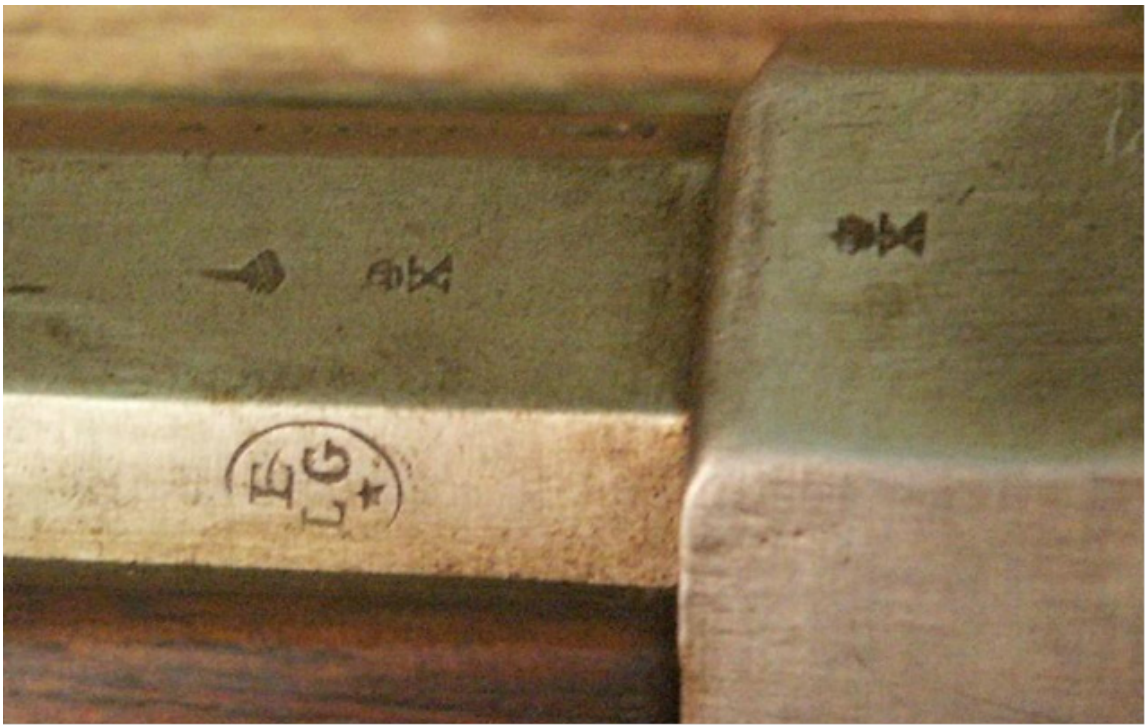


Figure 133. An example of various proof marks, and their general incompleteness. Note the size of the definitive proof mark 'E, L, G, star' compared with the 'crown over letter'. This is similar to the VPT pistol. Source: www.littlegun.be

Conclusions

The pistol recovered from Well 1 is a small personal weapon, likely to have been held on the person, possibly concealed, for defensive purposes. The Belgian origin should not be considered unusual, as the majority of European pistols came from this country during the mid 19th century. How the pistol came from Belgium to New Zealand is not known. As Belgium manufactured the majority of these pistols at this time, it could have been acquired by an American, European/British or a New Zealander.

Based on the proof mark interpretations, the pistol is likely to date from 1853 to 1877. If the pistol came through Britain, it is possible that the pistol dates from 1853 to 1861 as the pistol was popular throughout Britain at this time.

The lack of decorative elements on the boxlock suggests that this is an example of a cheap, mass manufactured pistol, and would not necessarily have been owned by a member of the middle classes of 19th century Auckland. Evidence of possible bluing on the barrels suggests that this gun was cared for prior to disposal in the well.

This investigation suggests that the pistol was stripped of all extraneous elements prior to deposition. Given the burial environment, survival of an organic handle (such as wood or ivory) in some form would be expected and visible. Given the condition of the metal, the missing boxlock elements such as springs, hammers and tang/top plate should have also survived well. However, none of these elements were recovered during the excavation of the well.

The condition of the pistol also suggests it was stripped prior to disposal. The position of the pistol in the well has contributed to its condition, and corrosion has fused the parts of the pistol together. This most likely reflects the position it landed in the well. The corrosion patterns seen on the pistol suggest that any springs associated with the triggers should have also corroded into position and therefore this investigation concludes that the pistol was not fired on one barrel shortly before disposal in the well. The different positions of the triggers are likely to be fortuitous as they were not held in place at the time of disposal.

Well 2

A collection of material including glass, ceramic, stoneware, and terracotta was collected from Well 2. Much of the glass material was recovered intact with a number of whole bottles being recorded. Some of the medicine jars and bottles still contained the original preparations. Some reconstruction of the ceramic material was possible.

Ceramics

No intact examples were recovered, but two pieces of ceramic did refit to produce one complete example of a saucer. The remainder of the ceramic material suggests that the well was not the location of primary deposition but is more likely to have been the location where material lying on the surface was deposited in a clean-up episode.

Thirteen pieces of a large white relief moulded fruit bowl were rejoined to produce approximately 80% of the vessel (Figure 134A; Table 14 Chapter 6). The bowl had a plain exterior with relief moulded alternating wicker and flowers/foliage on the interior. The maker's mark of Robert Cochrane & Co. of Glasgow on the base of the foot also identified it as ironstone china. Robert

Cochrane & Co. produced wares in Glasgow between 1846 and 1896 but did not begin producing ironstone until 1856. The absence of Scotland in the mark may suggest the vessel was manufactured prior to 1891.

Five pieces of plain white ceramic refitted to produce approximately two-thirds of a chamber pot. Two further pieces of plain white ceramic refitting to form a portion of a handle were likely to have been associated with the chamber pot. There was no decoration or maker's mark associated with this item.

At least five Chinese ginger jars were identified, with four being traditional partly glazed and decorated earthenware and the fifth being a western stylised variety (Figure 134B–D). Of the Chinese manufactured wares two were partially decorated in green and two in blue. Both examples contained evidence of the coloured glaze being allowed to run with areas of thick pooling seen in places at the base. Two of the items carried a manufacturer's mark on the base, and although probably the same mark the placement on each was in a different location. Both examples had a central nipple on the base. A diamond with concave sides was positioned so that the nipple was at the centre and was enclosed by a raised circle (Figure 134C). The second example also had the raised circle and diamond, but it was sited to one side of the vessel suggesting the central nipple was perhaps not part of the manufacturer's mark but rather associated with the manufacture of the vessel itself. Several Chinese makers' marks references were consulted, but this mark was not included and may represent a small localised manufacturer as opposed to a large scale manufacturing enterprise. The fifth ginger jar was a white relief moulded earthenware vessel. The design incorporated a plant with the leaf being made up of six segments. Although part of the base was extant there was no evidence of a maker's mark. This particular vessel was glazed both internally and externally in contrast to the above mentioned ginger jars.

At least three saucers were present among the ceramic material recovered from Well 2, including one which was reconstructed to produce an entire example. This was decorated with the Tealeaf design with the gilt flower at the centre of the saucer and two gilt bands, one at sited at the brink and the other at the rim. The second saucer was represented by a rim-brink portion containing three gilt bands. The third saucer contained two red bands near the rim. None of the saucers contained identifying manufacturer's marks.

At least two bread or side plates were noted. Two pieces of blue transferware Asiatic Pheasants pattern were likely to have originated from the same plate, although they did not refit. The second bread or side plate was decorated with the Tealeaf design.

Two items were identified as plates as their fragmentation did not allow closer identification, although they were both likely to have been dinner plates. One rim fragment of a plate carried the Asiatic Pheasants design but was not associated with the previously identified bread plate due to the much greater thickness of the form. A second fragment probably came from the central base of a dinner plate and carried a blue transfer design incorporating a floral design which was not identified. Three plain white portions of ceramic were noted and may have been related to any of the plate sizes or items previously described.

At least two teacups and possibly three were identified. The partial base, side and rim of a plain white teacup bore no visible markings. A plain white handle with a gilt stripe along the length of the handle was noted, but it was unclear whether the handle was related to the previously described teacup. The second teacup contained evidence of a gilt band and was perhaps the Tealeaf design, although this was not certain.

One bowl, probably a breakfast or desert bowl, was identified. The fragment contained a grey transfer pattern of unknown name and incorporated floral and foliage motifs and a series of bands. One fragment of a fawn coloured vessel could not be identified with any certainty. It was possibly from a plate, serving dish or bowl.

Two pieces of a candlestick holder were present and it is possible although not certain that the two pieces were directly related (Figure 134E). The holder was decorated with a floral and foliage motif, coloured in pink, green and brown. A fragment of an unknown decorative vessel was noted. The item may have been a vase, ornament or highly decorated bowl. The exterior was relief moulded with a flower and foliage and overpainted with brown and green paint (Figure 134F). The interior was only partially glazed.

The partial spout of a brown coloured teapot was recovered. There were seven strainer holes between the body of the teapot and the spout and the holes were not located centrally. A portion of a terracotta flowerpot was also noted.

		
Fruit bowl	Blue glazed Chinese ginger jar	Maker's mark on the ginger jar
		
Stylised and relief moulded ginger jar	Portions of a candlestick holder	Portion of a relief moulded and painted vessel

Figure 134. Example of ceramics recovered from Well 2

Stoneware

One example of a cheese jar was present missing a large piece of the body running from the rim to just above the base (Figure 135A). The jar was cream coloured with a recessed closure point (for

wired cork or similar lid). The jar stood 93.2mm high and was undecorated. One portion of a sewerage drain was also noted.

Glassware

A substantial collection of glass was recovered from Well 2 with 40 complete examples: 5 alcohol, 14 food, 17 pharmaceutical, and 4 household products.

Six pieces of frosted window glass with a pattern containing butterflies (or moths) and long grasses ranged in thickness between 1.66mm and 1.85mm (Figure 135B). These decorative panes may have been used in windows but are equally likely to have been used in door or cabinet panels.

Ten pieces of aqua window glass were noted, 9 of which originated from regular glass panes, and ranged in thickness between 1.49mm and 2.50mm. One piece had a rounded edge, and extrapolating the circumference indicated a diameter of 6 inches, suggesting the glass may have been used in a porthole-type situation such as in a commercial kitchen door or within a circular picture frame. The tenth piece of glass had a thickness of 6.69mm, suggesting it may have been plate glass, perhaps from window on the road frontage.

Six champagne bottles were represented in the assemblage, five of which were complete examples. Two of the complete bottles were large, standing 304mm and 305mm (Figure 135C; Figure 152, Chapter 6). These bottles had remnants of the lead seals around the circumference of the rim and neck. Three complete vessels were small champagnes standing 241mm, 250mm and 253mm high. The remaining vessel was another large bottle represented by a partial base. All the complete champagne bottles had a ring seal finish and a sixth ring seal rim and neck portion was noted.

Three whirly style salad oil bottles were complete, one still with a cork. This particular bottle also contained remains of a fatty food product, possibly the salad oil itself after a century buried within the well. The corked bottle stood 236mm high with a base diameter of 48.14mm. The base was embossed with the initial M which may have been related to a number of glass manufactories including the Melbourne Glass Bottleworks, part of the AGM works from the late 1880s. The two other complete bottles stood 238mm and 244mm high, one being embossed on the base with the number 5 and the other with no markings. A fourth whirly salad oil was represented by the lower portion of the bottle which was embossed with three raised nipples and the number 5 on the base.

One pickle bottle was recorded within the assemblage (Figure 135D), 197mm tall with a base diameter of 74.92. The bottle was a plain round variety and likely to have had a paper label. An aqua capers bottle stood 173mm tall with a base diameter of 48.79 (Figure 135D). One complete green capers bottle standing 173mm tall with a base diameter of 48.72mm still had a cork and partial lead seal where ‘guaranteed genuine’ could be read (Figure 135D).

Two fruit jars were identified (Figure 135G), both complete examples. The first was a Thompson & Hills Auckland aqua jar with a rolled rim, 144mm tall with a base diameter of 75.12mm. Thompson & Hills had a manufactory in Freemans Bay from 1897 and used the Oak Brand name (www.historicbirkenhead.com), packing a variety of fruit preserves and jam. The second fruit jar was clear glass (Thompson & Hills jars are usually aqua) and stood 135mm tall with an unembossed base 76.37mm in diameter. One complete preserves jar (Figure 135G) standing 116mm tall with a base diameter of 58.11 was constructed of aqua glass and bore no manufacturer’s markings, although the base was embossed 5oz, identifying the capacity of the vessel.

Two complete Mellins' Infant Food London bottles were recovered from the well. Both stood 135mm high but with slightly differing base diameters: 64.08mm and 65.76mm. Mellins' Infant Food was first manufactured in England in 1874. The powdered food was mixed with hot water to dissolve the powder then added to milk. It was intended for short term usage but became a widely used substitute for breastfeeding (www.foodtimeline.org).

One Codd patent mineral water bottle missing the rim was embossed John Grey & Sons Auckland with the Kilner Bros mark of KBC on the base. The C denoted the Conisbrough plant. This particular design, with intertwined letters, was used from 1870 (Toulouse 1971). Removal of the Codd bottle rim was commonly seen archaeologically because the marbles inside the closure were often extracted to be used as toys.

At least five castor oil bottles were present within the assemblage, including three complete specimens, one base and partial body and two rim and neck portions. The three complete specimens ranged in colour from cobalt blue to translucent blue (Figure 135E) and were between 212mm and 231mm high. One example still had part of the lead seal intact, while another still had a cork. Of the two separate rims, one had a shear lip and the other still had a cork.

Three Maltine bottles were recovered from the well (Figure 135), all amber coloured but each a slightly different hue. All three bottles were embossed The Maltine Manufacturing Coy Limited London. Maltine was introduced in 1875 by John Carnrick and the Maltine Manufacturing company was established in 1878 (Fike 1987). Fike (1987) notes there were at least 14 variations of Maltine. The company was sold in the 1890s and retained the name through further sales until 1952, when it became part of the Chilcott Laboratories (Fike 1987). The product contained malted barley, wheat and oats, fortified with alcolohol and other ingredients such as cod liver oil, and was marketed as a cure for various ailments (http://bottlesboozeandbackstories.blogspot.co.nz). Associated paper labels did not survive and it was not possible to determine the particular variation of Maltine used by occupants of the site.

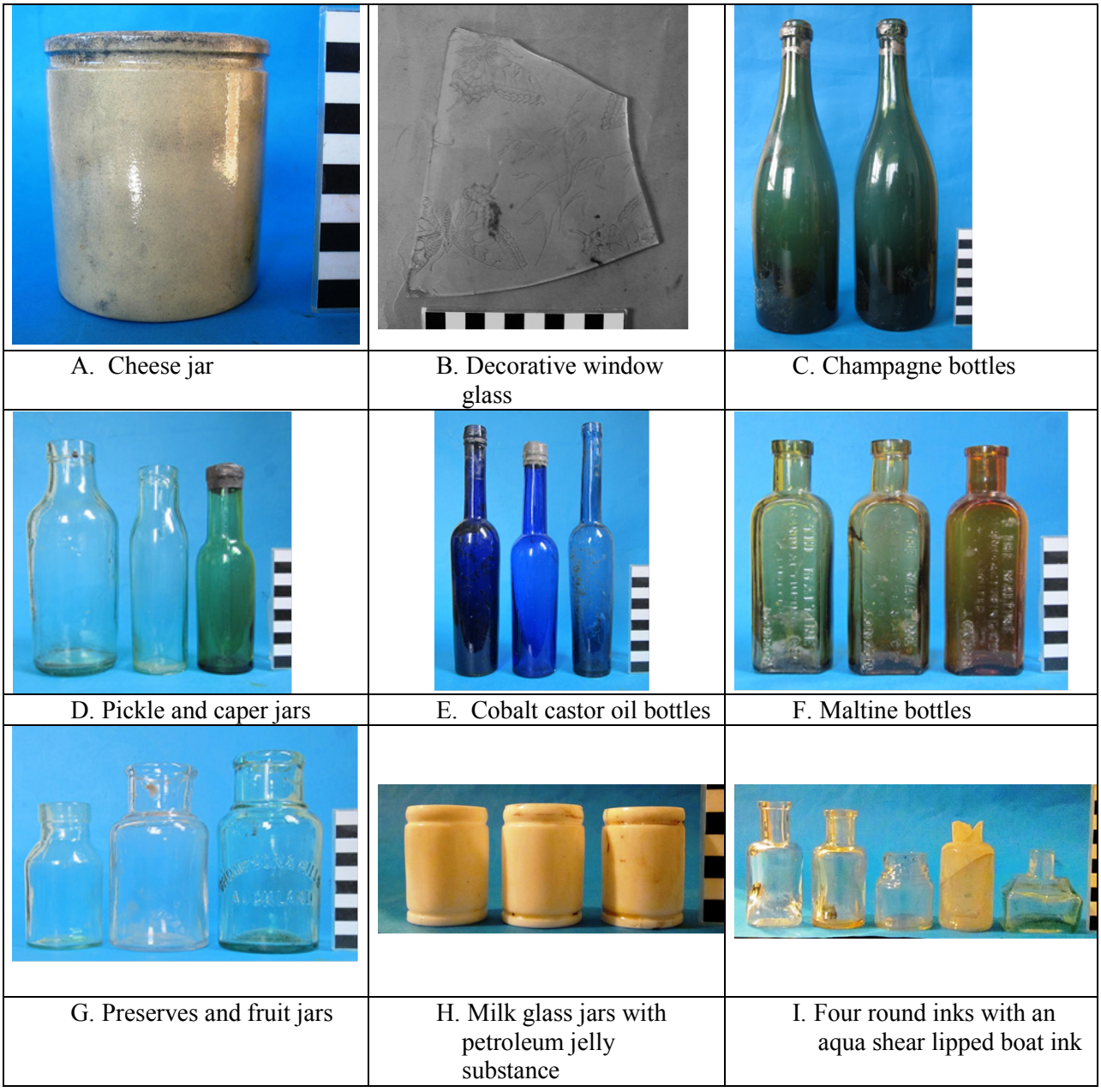
A complete blue aqua bottle standing 135mm high was embossed C Henderson Chemist Auckland. Henderson's business was situated at the junction of Queen Street and Grey Street from at least 1880 (*Auckland Star*, 13 May 1880:3). In 1900 Henderson took Stephen Barclay into partnership and the business was thereafter known as Henderson & Barclay (*Observer*, 4 August 1990:9). Therefore it is likely that this particular bottle predates 1900.

A complete rectangular bevelled blue aqua bottle stood 147mm high and was embossed Taylor on the base. Toulouse (1971) does not include Taylor as a bottle manufacturer and the name may relate to either a bottle manufacturer or a product manufacturer. If the latter, Taylor may refer to Dr James Taylor, who marketed a number of remedies in the late 19th century and into the first decade of the 20th. Taylor's remedies included Mandrake Pills, Liver and Stomach Corrector, Spanish Catarrh Cure and Cherokee Remedy, a cure for children's coughs, croup, asthma, whooping cough and consumption (glswrk-auction.com).

A complete hexagonal blue aqua medicine bottle standing 161mm high contained no embossing to identify a product or manufacturer. The wide mouth suggested that the medicine within may have been tablets or salts. An aqua bottle 145mm high was missing part of the base and side. The interior of the neck was frosted and it may been closed with a pegged stopper. Two rims and neck portion, both of aqua glass, were likely to have originated from pharmaceutical bottles.

Two identical complete bottles in clear glass standing 112mm high with base diameters of 46mm x 24mm were embossed Crawford Pharmacist Newton Auckland NZ and W T & Co USA on the

base. The WT & Co mark represents Whitall Tatum & Co. and this mark was used from c.1848 to 1935 (Toulouse 1974). Crawford's Pharmacy was located in Newton from at least 1880 (*Observer,* 30 October 1880:51). Later advertisements included the initials T.A. Crawford (*Observer*, 23 January 1897:10) which were found on a third Crawford bottle in aqua glass standing 117mm high with base diameter of 34mm x 16mm. Crawford advertised a number of remedies, the majority imported patent medicines.



A. Cheese jar | B. Decorative window glass | C. Champagne bottles

D. Pickle and caper jars | E. Cobalt castor oil bottles | F. Maltine bottles

G. Preserves and fruit jars | H. Milk glass jars with petroleum jelly substance | I. Four round inks with an aqua shear lipped boat ink

Figure 135. Examples of stoneware and glassware found in Well 2

A complete blue aqua rectangular cross-section bottle standing 125mm high was not embossed. The bottle had a recessed panel for a paper label. A complete oval shaped bottle in aqua glass standing 79mm high is likely to have contained a medicine, but could equally have contained a form of perfume, cologne or toilet water. A complete square shaped bottle standing 78mm still had the remains of a dark coloured contents suspended in well water. Three identical jars, round in

cross-section, stood 52mm high and were both embossed Registered 30 on the base (Figure 135H). The jars were all of milk glass and one contained some of the original contents. Visually and texturally the contents were consistent with petroleum jelly or Vaseline and there was a strong petro-chemical scent associated with the product. A complete hexagonal bottle standing 94mm high probably contained a form of cologne, perfume or toilet water.

Five ink bottles were identified (Figure 135I), four of which were complete examples and one was missing only the rim. Four of the bottles had a round cross-section while the fifth was a boat ink. The boat ink had a shear lip and stood 56mm high. One of the round bottles was 51mm high and had a basic external thread.

Other Artefacts

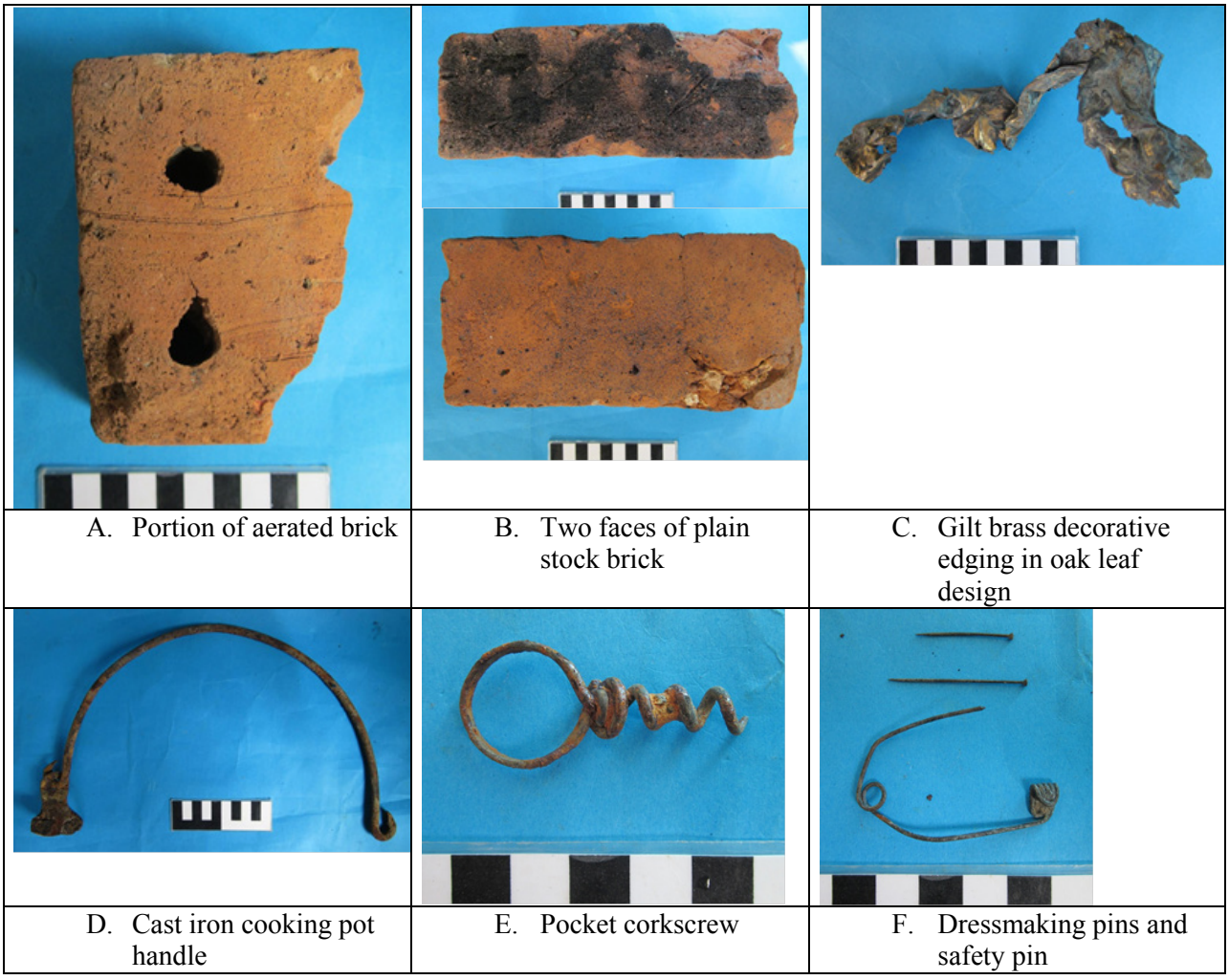
Two bricks were recovered from within the unlined well (Figure 136A–B). One was a partial aerated brick, orange in colour, with two complete holes and evidence of another two. The holes were irregularly shaped. A complete stock brick showed evidence of some large and small inclusions in the brick. One face of the brick had a dark discolouration but the origin of this discolouration could not be determined.

Several iron and brass artefacts and a single lead artefact were recovered. The overall general preservation of the metal remains was quite high and many of the pieces could be identified with some certainty.

Iron artefacts included a cast iron handle with one hinge which would have originated from a large cooking vessel that could be suspended over an open fire (Figure 136D). It appeared that the hinge would have been riveted onto the cooking vessel in two points at the base of the hinge. A very thin sheet of iron was folded over at one edge and it is possible that this item was a cooking tray or part of a coal range that had deteriorated substantially. Two nails with blunt ends were noted; both nails had square heads which had been hammered into shape and both were bent and appeared to have been removed from a structure before being discarded. A portion of a third nail had the tip intact but the head was missing. Two items, possibly chain links, were noted. One of the links was complete with an overall length of 67mm and width of 30mm. A complete ring with a concave exterior face possibly originated from a pulley-type system for a rope or a rubber strap.

One ball of thin crumpled lead was probably the remains of unused lead flashing. A thin length of pressed copper covered with gilt had become twisted but may have been used as a decorative edging (Figure 136C). The design appeared to be oak leaves. A complete if rudimentary corkscrew was identified and had some impressed letters (...WNSEND..S..R...) around the large ring (Figure 136E). The name could be Townsend, but no reference to such products produced by a Townsend was found. Another strikingly similar product was located, however: the Pocket Cork Screw patented by C.T. Williamson was included in their catalogues dating 1883 and 1887 (http://www.corkscrewnet.com). The Williamson corkscrew had an associated sheath and presumably this particular pocket corkscrew would also have had a sheath to protect the carrier from injury.

A complete but bent safety pin recovered, along with two small brass pins (Figure 136F). The safety pin appeared similar to a modern example, but without the protective covering at the pin end. The pins measured 21mm and 32mm in length.



A. Portion of aerated brick

B. Two faces of plain stock brick

C. Gilt brass decorative edging in oak leaf design

D. Cast iron cooking pot handle

E. Pocket corkscrew

F. Dressmaking pins and safety pin

Figure 136. Examples of other artefacts recovered in Well 2

5.5 DISCUSSION

The wells would have been built in the 19th century prior to the establishment of an effective public water supply in Auckland city, during expansion into this area following land sales which began with Crown Grants in the 1840s. These initial land grants were to wealthy land owners and speculators, and were followed by numerous resales and subdivisions in the later 19th century and into the 20th. The filling in of both the wells appears to have been in the late 1890s to early 20th century based on the artefactual evidence.

Land History

The locations of the wells were recorded using GPS and located on modern plans (placing them beneath the motorway – Figure 108, Figure 137). Originally, Well 1 was located on a Union Street property and Well 2 on a property at the eastern end of Napier Street. The land was acquired by the Government in the 1960s and 1970s, and this included the original Union Street (1960s) and the eastern extent of Napier Street where it joined Union Street (1970s). Upper Union Street was

retained, although moved to accommodate the motorway, whereas Napier Street became cut off by the motorway.

A map regression exercise was undertaken in order to establish which Lots the wells were located on in the 19th century. The first maps investigated were the historic aerial photographs from the 1940s accessed on the Auckland Council's GIS viewer. As expected, the wells were located in the rear gardens of two properties (Figure 138). The properties are also shown at an earlier date on the 1908 plan of Auckland (Figure 139).

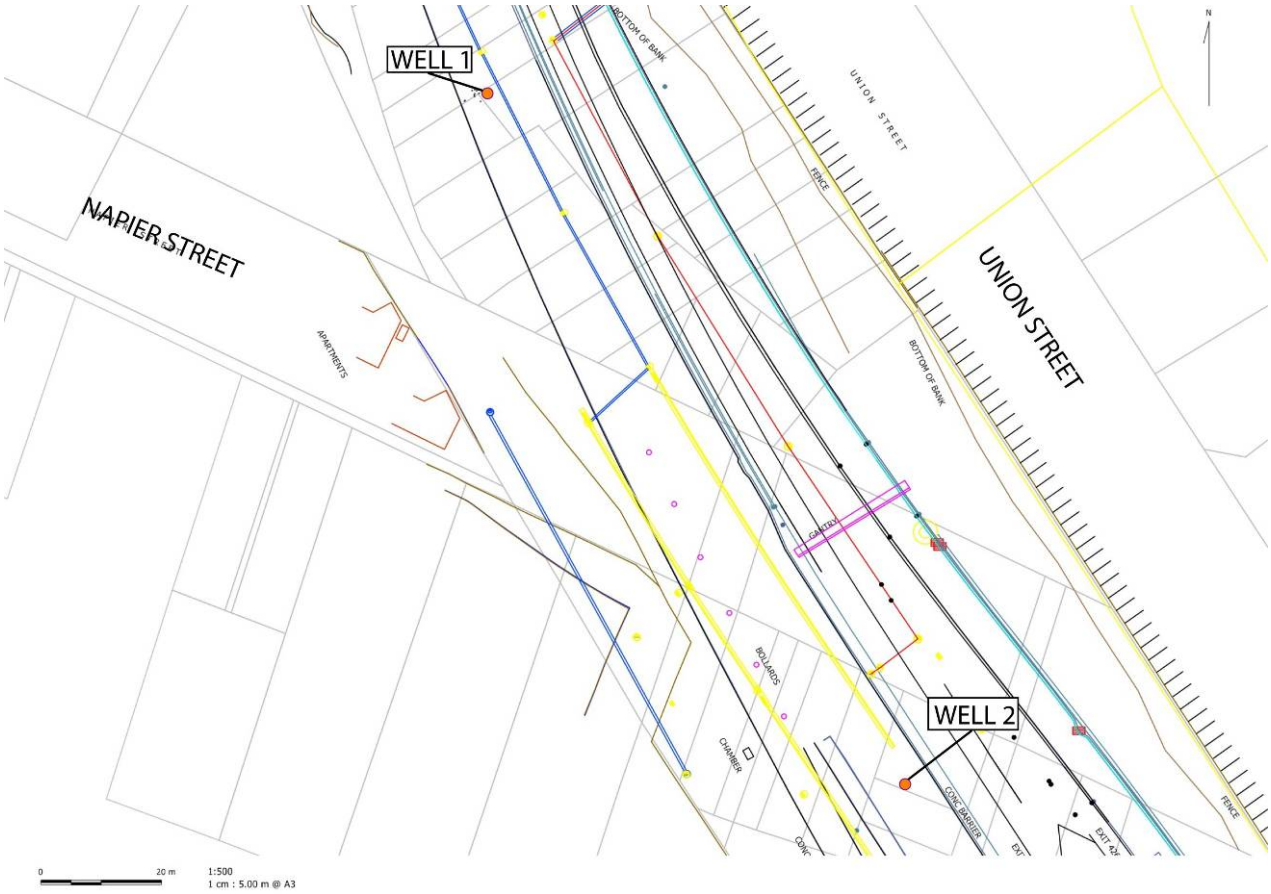


Figure 137. Location of the wells as surveyed on the VPT plans

Figure 138. Location of the wells on the historic 1940s aerial photograph accessed via the Auckland Council's GIS viewer

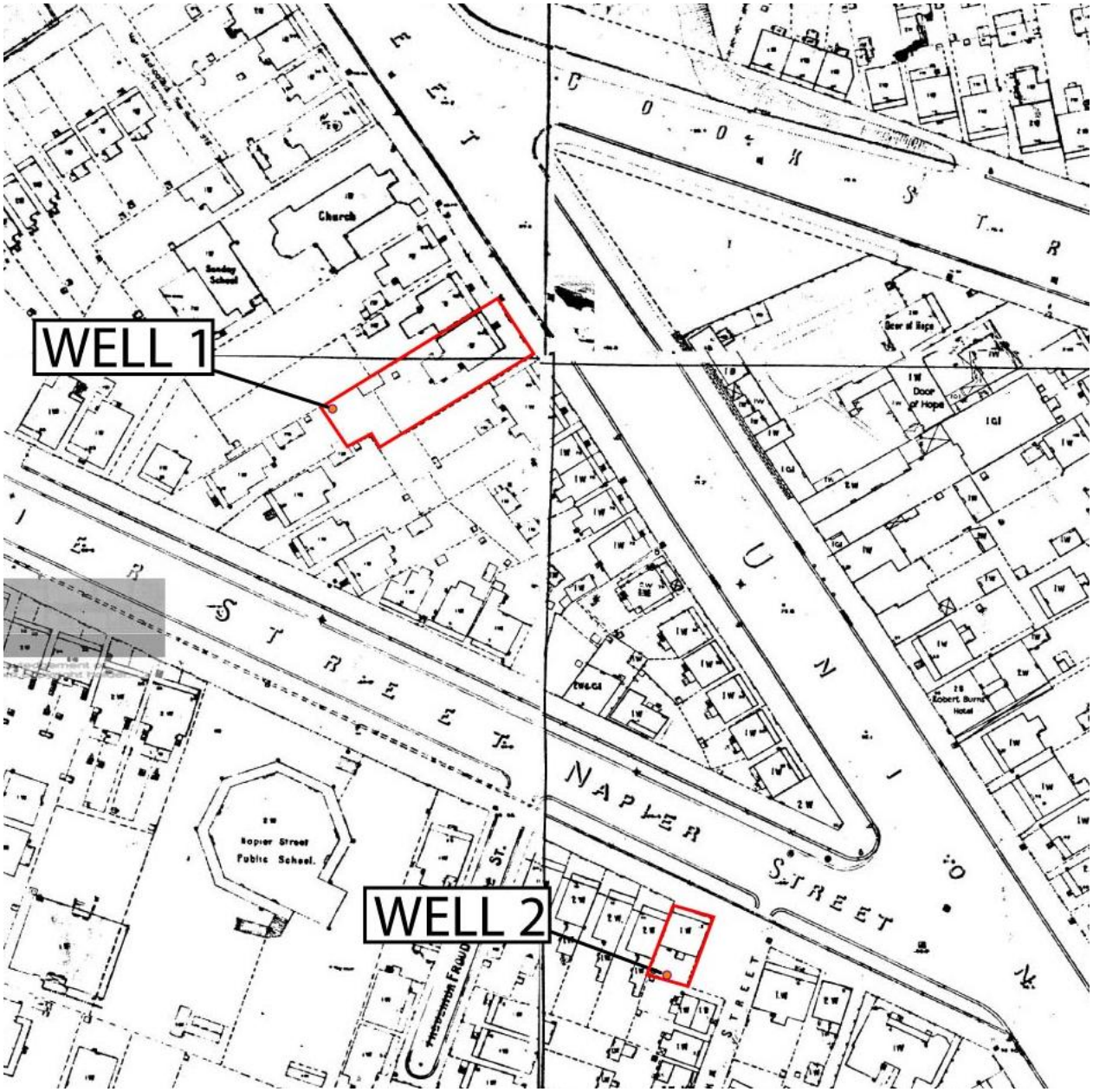


Figure 139. 1908 Plan of Auckland illustrating the locations of the two wells

Well 1

An initial search of early plans identified the well as being on Lot 5 of a subdivision of Allotment 28 of section 43 of the Town of Auckland, as shown on DP 19171 dated 1924 (Figure 140). The Land Title Deed records the owner in 1926 as one 'James O'Meara of Auckland wharf labourer'.[22] Additional research into the land title deeds was undertaken to establish a history of ownership of the property.

The first record of Allotment 28 of Section 43 is the Crown Grant dated to 8 December 1845 to a G. Gimbel. Gimbel then sold the land to a Hannken in the same year, who subsequently sold the land to a Rooney on 15 June 1850. An auction of land for sale on Union Street was advertised by S. Jones Esquire, Brunswick Auction Mart, dating to Tuesday 23 May 1871, and the plan

[22] Deeds Index 16A.423, Vol. 5/71

illustrates Lot 28 and a well, which would have made it desirable property (Figure 141 and Figure 142). The records indicate that William Morrin purchased Allotments 27 and 28 on 22 July 1871. On his passing in 1872, the land was then subdivided and the allotments sold to Bruce on 13 July 1874, with the subject property now being Lot 1.[23] Bruce then sold the land to the Meara family (most likely the same family as the O'Meara who owned the property in 1926) in June of 1875. In 1898, the land immediately south of Lot 28 was transferred[24] from Meara to Meara (Figure 143). This plan also illustrates that Lot 28 had been reduced to half its original size, most likely during the subdivision in the 1870s. From 1901 to 1926 the land passed from the Mearas to the Hibernian Australasian Catholic Benefit Society a few times, before G. Meara died in 1924 and James O'Meara took ownership in 1926. The land was then taken for 'better utilisation' in 1965.[25]

It would seem likely that the house fronting Napier Street as seen in Figure 140 on Lot 1 could only have been built following subdivision of the triangular parcel of land (ref. 17A752) by the Mearas in 1898, as the house shown on the 1908 and 1924 plans (Figure 139 and Figure 140) is aligned with the eastern and western lot boundaries and it spanned the former boundary with Lot 28 as shown in Figure 143.[26] It is not known when the Union Street house (on the part of the original property that included the well) was first constructed, but as it was not drawn on the 1871 allotment plan (Figure 142) it must have been built after this date. Certainly an article in the *Evening Star* in 1875 suggests that many houses were constructed at that time:

'A great improvement has recently been made in Union Street, City West, by the erection of a number of new houses, some of them being of weighty appearance. We notice however that the majority of them are awaiting suitable tenants, still the buildings are increasing week by week in the hope that occupiers will come in their own good time' (*Evening Star*, 18/1/1875)

The house shown on the 1908 plan is a one storey wooden property, but most likely with a basement area. It appears to be larger than most of the houses adjacent extending up Union Street, and the property also had a substantial rear garden. This would have sloped to the south due to the natural topography. Although it was a common pattern in the area for properties to be leased by their owners to tenants working in Freemans Bay, the (O') Mearas may have lived in the Union Street house as the Burgess Rolls list one William O'Meara, a carpenter, on Union Street in 1883-84,[27] 1890-91,[28] and in 1892.[29]

[23] Ref. 16A 423

[24] Ref. 17A 752

[25] Gazette Notice A98801; Deeds Index 16A.423, Vol. 5/71

[26] Ref. 17A 752

[27] ACC 396/1c/15

[28] ACC 396/1d/25

[29] ACC 396/2a/24

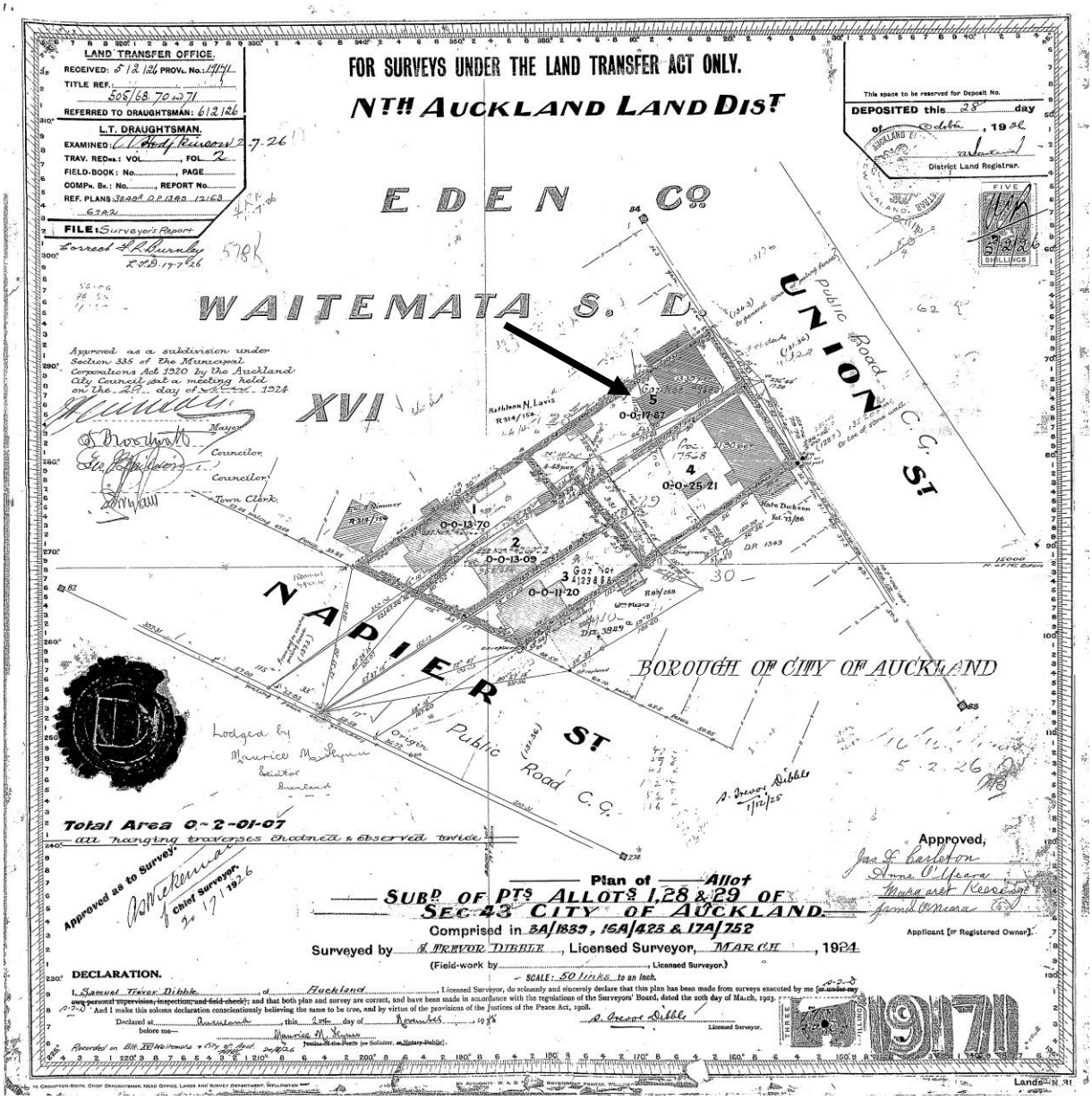


Figure 140. Map of Lot 5 of a subdivision of Part Allotment 28 of Section 43, Town of Auckland (DP 19171) (arrow), dated 1924. The well appears to have been located in the rear garden of Lot 5

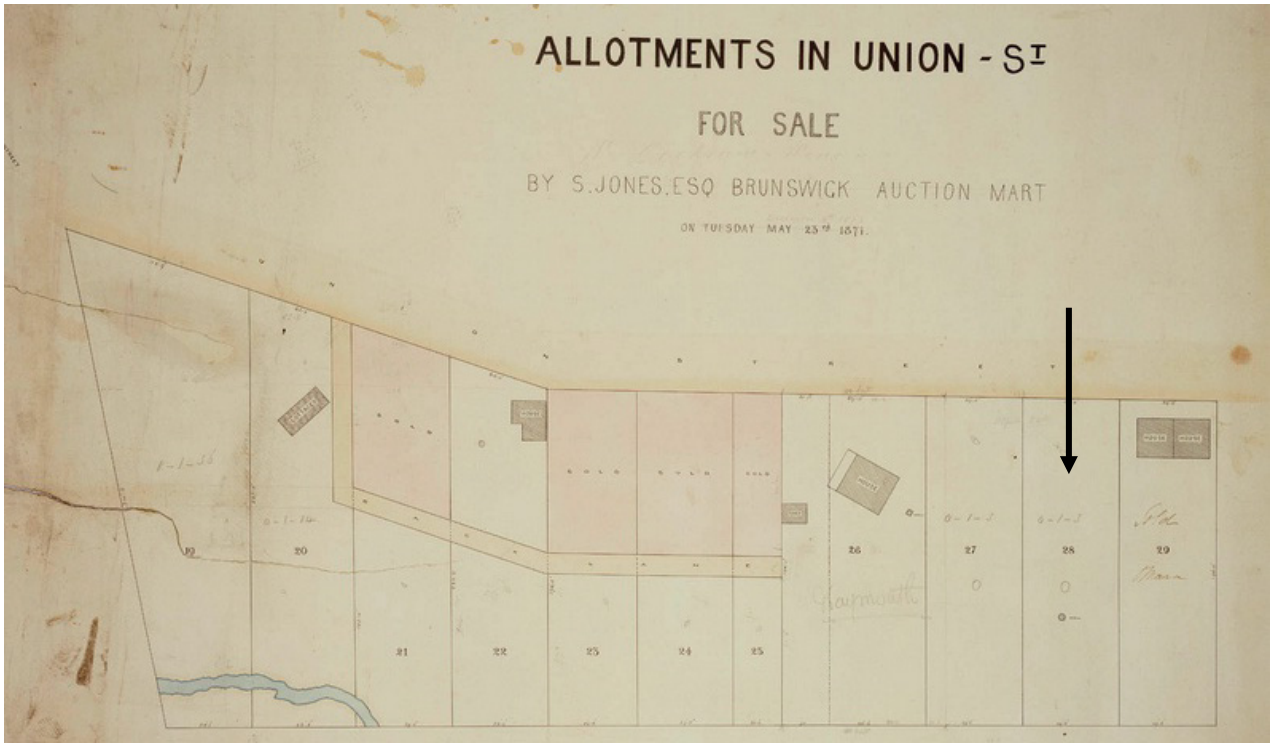


Figure 141. Allotments for sale in Union Street dated Tuesday May 23rd 1871, with Allotment 28 shown (Sir George Grey Special Collections, Auckland Libraries, NZ Map 4122)

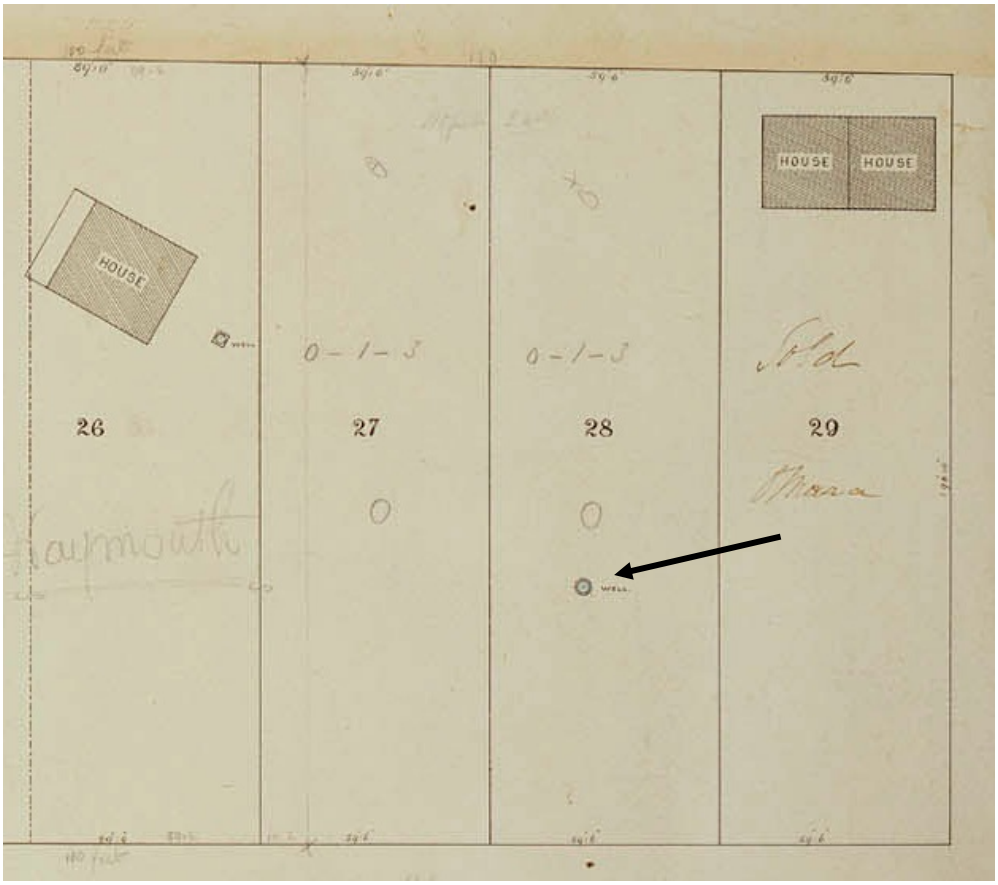


Figure 142. Detail from the 1871 plan (Figure 141) showing the well on Allotment 28, but no house or other structures. A boxed well is also shown on Allotment 26

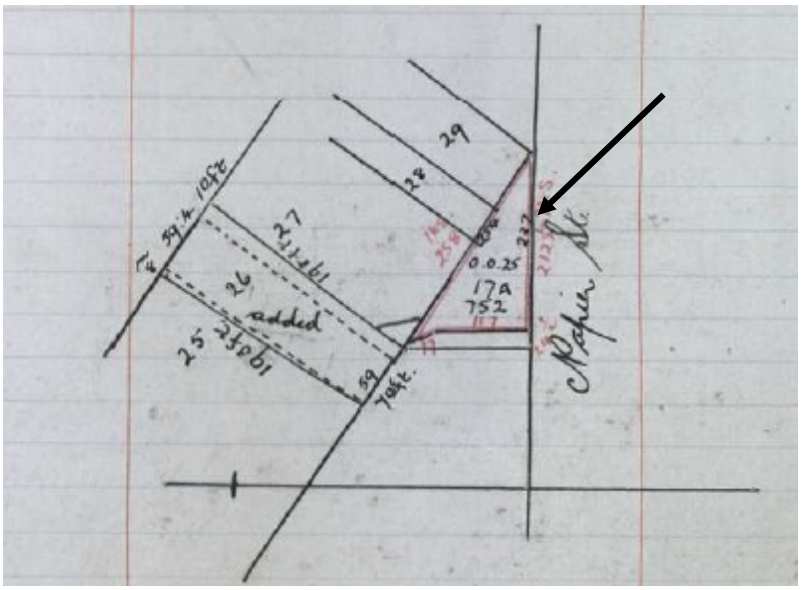


Figure 143. Lot 28 with the triangular section Ref. 17A0752 (arrow) fronting Napier Street, part of which became part of Allotment 28 in 1898 (visible in Figure 138)

Well 2

An initial search of plans identified the well as being part of Allotment 11 of Section 44 of the City of Auckland, as shown on the Certificate of Title in 1937 (Figure 144).[30] The owner was one Francis Rowe, a Collector. Additional research into the land history was undertaken.

Allotment 11 of Section 44 was first sold by Crown Grant on 2 May 1846 to Woolly and Grante. The land then passed through many hands including Dacre (1847), Macky (1855) and Mills (1859). A plan of Allotments 10 and 11 in 1859 shows the initial subdivisions, but no indication of a well (Figure 145). In 1861 the land was subdivided into Lot 1[31] and Lot 2.[32] The well would have been located on Lot 2, although it is not identified here (Figure 146).

The property had a number of owners before Francis Rowe in 1937. In 1864 it was sold by Mills to McClean, who sold to John William Bustow in 1875. Following the death of Bustow in 1875, the property was then sold to Jack in 1876.

A Thomas Jack, Carter, was registered as living on Napier St from 1882 to 1884[33] and from 1890 to 1892.[34] Jack held on to the property until 1895 when the mortgage was transferred to MacKechnie, a wealthy solicitor. Edmund Augustus MacKechnie died in February of 1901, the property (among others) then falling into his wife's ownership until her death in 1902. The couple appeared to have no living relatives, and left some significant public bequests such as MacKechnie's personal library to the Auckland City Council, £2000 to the Auckland Institute, and £2500 bequeathed to the Society of Arts to build an Art Gallery.[35] The title was transferred to Edward MacKechnie's business partner Mr O. Nicholson on 2 February 1903, then from

[30] Deeds Index 10A.898 and 11A.333, Vol.596/235

[31] Ref. 10A 898

[32] Ref. 11A 333

[33] Burgess Roll ACC 396/1b/10

[34] ACC 396/1d/17; 396/2a/16

[35] *Auckland Star,* Vol. 33, 265, 7 November 1902, p.5.

Nicholson to Norton, and from Nicholson to Norton to Rowe several additional times until Francis Rowe took ownership in 1937.

The 1908 plan (Figure 139) shows the house on the lot to be a one storey wooden house, detached, and slightly wider than those extending west along Napier Street. As on Union Street, many houses along Napier Street were also rented rather than lived in by the owners. The owner at the time the well was filled in, in the late 19th to early 20th centuries, was Edmund MacKechnie, and he was registered as living in Grafton in the 1880s and 1890s.[36]

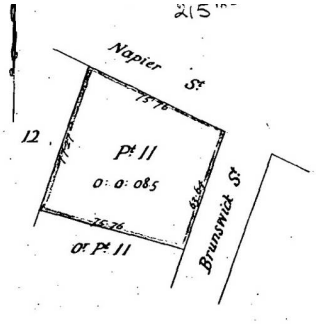


Figure 144. Part of Allotment 11 of Section 44 on which the Well 2 was located (Deeds Index 10A.898 and 11A.333, Vol.596/235)

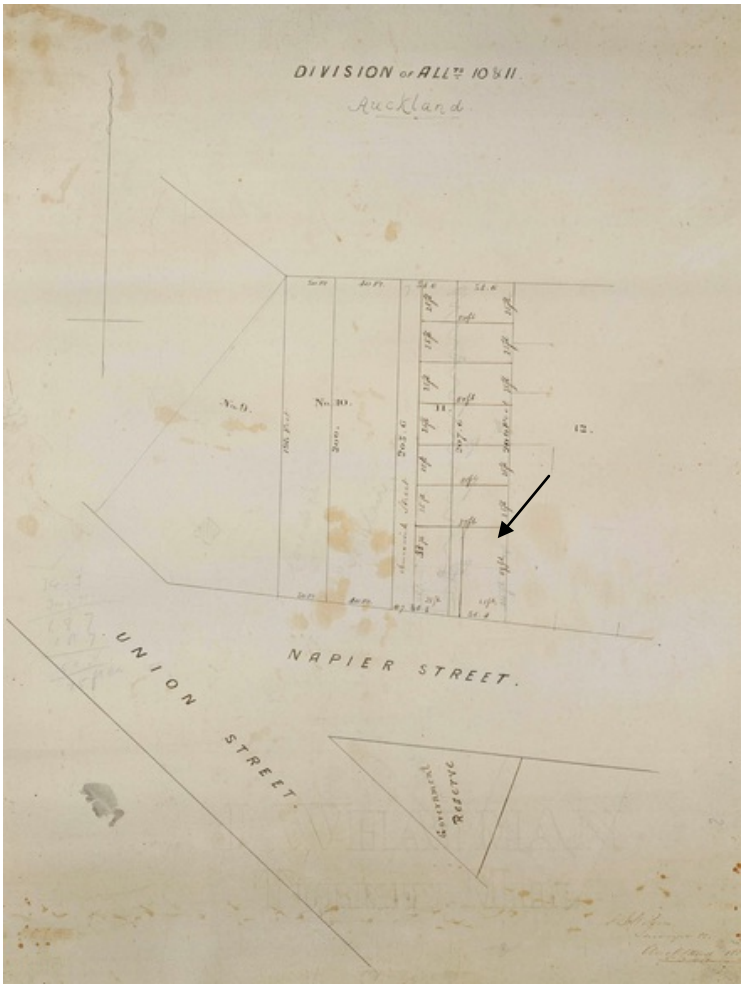


Figure 145. The Subdivision of Allotments 10 and 11, 1859. The arrow marks the location of the well (Sir George Grey Special Collections, Auckland Libraries, NZ Maps 4127)

[36] *Burgess Roll* ACC 396/1c/5.

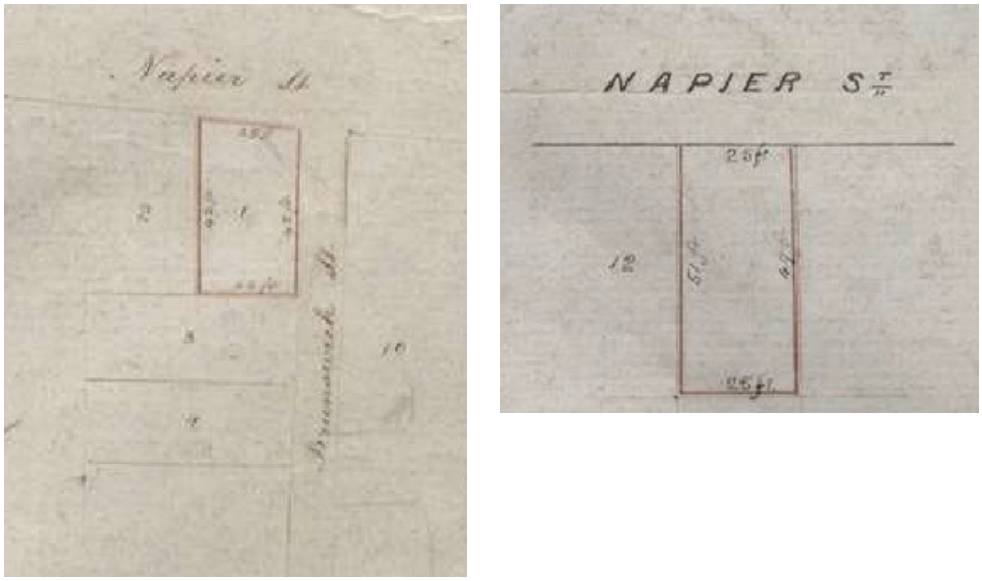


Figure 146. Subdivision of Allotment 11 Section 44 into Lot 1 (ref. 10A898; left) and Lot 2 (11A 333; right). Lot 2 is the property that housed the well (Deeds Index 10A.898 and 11A.333, Vol.596/235)

Evidence of Domestic Life and Use of the Wells

Well 1

It is possible that Well 1, located on the property on Union Street, was dug quite early in the history of Allotment 28, and was certainly built before the allotment was sold in 1871 as it appears on a plan of that date. The well would most likely have served many settlers in the area, as the closest public well in 1865 was located on the corner of Victoria Street West and Hobson Street. However, this is likely to have changed once the subdivisions began in the 1870s and more houses were constructed. An increase in population would have put pressure on the water supply and additional wells are likely to have been built on the new properties.

The pistol was one of few artefacts located at the very base of the well buried in silt. This suggests that it was discarded while the well was still in use, certainly prior to the filling in of the well. The low number of additional artefacts on the base could also indicate that the well was in use for a long period of time, with little rubbish discarded into the source of fresh water. The pistol was probably manufactured sometime between 1853 and 1877, and most likely arrived in NZ in the possession of an immigrant during this time. That many of its component parts were missing could indicate that the pistol had ceased functioning, and after an unsuccessful attempt to fix it, it was discarded down the well. The high humidity could have contributed to the rusting of parts, or perhaps the pistol got damp at sea on the trip to Auckland. Alternatively, the pistol may have been dismantled on purpose, its component parts discarded off in different locations following a criminal act. The full story will, unfortunately, never be known, but the pistol does attest to the at times dangerous and potentially life threatening environment of the new colony, certainly in the eyes of the new settlers.

The artefacts located in the main fills of Well 1 give a fascinating glimpse of life of the inhabitants of the property in the late 19th and very early 20th century, which was when the well was filled in based on its contents. The impression is one of a family life, the presence of children

firmly documented by the leather shoes, pieces of a child's tea set, and the Mellins infant formula bottles. None of the artefacts can be considered high status items, but neither were they cheap. For example, the perfume bottles, the decorated lampshade glass, and many of the domestic ceramic wares were of good quality and indicate a comfortable lifestyle. The presence of needles, pins, felt and fabric, and the sewing machine oil suggests that some dressmaking was taking place, and this would have been a normal pastime for woman of the period.

The high number of bottles containing pharmaceutical and household goods was of interest, as this stands in contrast to the usual high number of alcohol bottles found in the 19th century deposits. Pills and potions suggest a household with similar concerns to ours today, and the bottles of Barry's Tricopherous suggest that the man of the household was possibly balding and desperately trying to prevent it! The dentist's filling bottle is unusual as well, and could relate to home dental treatment. The low number of alcohol bottles could mean the inhabitants of the property in the late 19th century were infrequent drinkers and perhaps Temperance supporters, as the Temperance movement was strong in Freemans Bay in the late 1880s. This was evident in newspaper reports when residents were trying to prevent the licensing of the new Rob Roy Hotel built on the corner of Franklin Road and Union Street in 1886 (see Phear & Farley 2012). Certainly, the house was located only two houses away from St Thomas Church, and the land ownership passed between the H.A.C.B. Society (Hibernian Australasian Catholic Benefit Society) and the O'Mearas several times in the early-mid 20th century.

Interestingly, while the public water supply was brought to Freemans Bay in 1883, it seems the well was not abandoned until much later. This suggests that the water supply in the well may have been of particularly good quality, and/or that it was still a valuable back up to the new reticulated system, which was not without problems in the early days of its existence.

Well 2

The date of construction of the well on the Napier Street property is not known, and no maps were found that illustrate the well, or any nearby. The fact that it was not shown in the earliest plan located (1859) does not mean that it was not present at this time, as early plans were often confined to property and road boundaries rather than showing buildings and wells on the properties. The date of the well cannot therefore be confirmed, but it was most likely following subdivision of the allotment, when houses were first being constructed in the 1860s and 1870s.

While only a small number of artefacts were recorded in Well 2, this is not surprising considering that only one 'fill' was recorded, which was predominantly water with a silty suspension. It is also unclear just how much of the original well had been removed in the past during motorway construction. Certainly, it can be speculated that at least a metre had been truncated, and that this would most likely have been the brick lined or 'steened' section of the well. The high water table in the well may be due to the depth it extended into the bedrock, resulting in a higher level of water percolation.

In any case, the small snapshot of the lives of the inhabitants of the Napier Street property when the well was infilled in the late 19th and early 20th centuries does differ from that on the Union Street property, although there are similarities in the ceramic assemblage. We know that the house and allotment were smaller, that the property was rented, and that the wealthy owner himself was living in Grafton. In terms of ceramics, there were similarities in the domestic wares recovered, including fragments of plates, cups, bowls and teapots. However, the presence of the five ginger jars is of interest. These jars were often used for storing spices and cooking products once the

ginger was used, so it is unclear whether the owners had acquired them with ginger or simply for storage purposes. The candlestick holder was similar to that found in the Union Street well.

Even fewer stoneware pieces were recovered than in Well 1 – only a cheese jar fragment and part of a sewer pipe; no ink pots or greasing jars were present. One clear difference was in the number of alcohol bottles present in Well 2 compared to Well 1. However, they were all champagne bottles and could represent a single celebratory event in the household, such as the birth of a baby or a memorable birthday. The two Mellins infant formula bottles recorded indicate that the family occupying the property had a baby, although no other artefacts were found suggesting the presence of children. Another item of interest was the iron corkscrew which again suggests that alcohol was consumed more on this site than at the Union Street property. As in Well 1, however, many of the bottles were from pharmaceutical and food stuffs, such as pills, maltine, pickles and jam. The three petroleum jelly bottles are of interest, along with several castor oil bottles. A few glass ink bottles were recovered also.

Surprisingly, many metal artefacts were recovered which were in good condition despite the high water content of the deposit. Iron implements and many nails were recovered, along with some lead flashing. The brass pins and safety pin can be most likely linked to sewing, although the safety pin might also have been used to secure cloth nappies.

Conclusion

In sum, the artefacts recovered from both wells provided a good illustration of domestic life in the Freemans Bay area in the late 19th and very early 20th centuries. The presence of a wide array of household products, pharmaceuticals, along with children's items reflect a lifestyle not so far removed from that of a family household today. The one exception was the presence of the pistol in Well 1, an item hinting at the potential dangers of life in the new colony.

6. ARTEFACT ANALYSIS

The artefact analyses were undertaken by several specialists – Jaden Harris, Jen Low, Brigid Gallagher and Glen Farley. The results have already been discussed in the preceding chapters in relation to specific excavation areas. The main aim of this chapter is to consider the VPT assemblage as a whole and make some useful comparisons with other sites in the Auckland area, particularly the Britomart reclamation area. In addition, the range of artefacts recovered will be discussed including details of the different products, and any additional information of interest.

Artefacts recovered from the wells dominated the assemblage, with only c.40% of the assemblage having been recovered from the reclamation deposits. The combined artefact assemblage, however, displayed a range of materials used and discarded in the 19th and early 20th centuries. Artefacts from domestic life were the most common, and would have either been discarded by individuals as they passed the reclamation works on their way to and from the city centre, or dumped by the cartload among the various soil layers brought in to fill the bay. Industrial artefacts were less common, with the largest deposit of iron artefacts dating to the early 20th century. It is also important to bear in mind that many artefacts may in fact be in secondary deposition, having been disposed of in other parts of the city and then brought in with soil to dump into the bay. It is difficult to distinguish such artefacts archaeologically within the reclamation fills. Many bottles and ceramics were manufactured over a 20-50 year period, so determining the exact date of deposition of individual items in their primary context is not always possible. However, the period of infilling for the reclamation can be securely dated from historical records to 1888-1901.

The artefacts recovered from two wells relate to two households – one located on Union Street and the other on Napier Street, and the artefacts reflect the domestic context from which they were derived. Analysis suggests both wells were infilled in the late 19th to early 20th centuries. The small assemblage recovered near to Jacob's Ladder in St Mary's Bay also incorporated artefacts from the late 19th and 20th centuries.

6.1 CERAMICS

The ceramic analysis followed the methodology generally used in analysis of historic ceramics (e.g. Bickler et al. 2005; Plowman 2000; Clough & Geometria 2004), with materials identified according to fabric, decorative technique, decorative pattern, colour, function, form and size. A subsample of ceramics was photographed, and some new patterns were assigned new numbers (prefixed VP). Comparative analysis was undertaken using similar information derived from other artefact reports (see below).

Fabric

Earthenware was the most common fabric type and this is consistent with the general pattern through historic period New Zealand (Bickler et al. 2005). Table 10 shows that 83% of the VPT ceramic assemblage was earthenware, which is similar to Britomart (75% of the assemblage). Other sites such as the Albert Barracks and His Majesty's Theatre had a higher proportion of earthenware ceramics and this is likely to be due to the fact that in those cases people were living and discarding materials on site, whereas the reclamation at VPT and Britomart contained material from a variety of different sources.

Interestingly the VPT assemblage has a higher percentage of stoneware vessels recorded compared to Britomart, Albert Barracks and His Majesty's Theatre, with the majority coming from the reclamation (rather than the wells). This may reflect the use of the reclamation for dumping of blacking and inking jars and alcohol vessels made of stoneware compared to burial of such vessels at living sites.

Table 10. VPT ceramics identified by fabric compared with four other Auckland assemblages.[37] The figures in brackets indicate the number within the total that derived from the wells

Fabric	VPT	Britomart Reclamation	His Majesty's Theatre	Fale Pasifika	Albert Barracks
Earthenware	259 (147)	364	1604	66	829
Hard paste porcelain		1			
Porcelain	3 (2)	2	1		4
Ironstone china		26		1	
Semi-vitreous china	13 (3)	76	15	4	18
Stoneware	29 (10)	9		12	48
Terracotta	7 (6)			1	7
Unidentified	2	3			
Total	313	481	1620	73	858

Decoration

Transfer printing was the most common type of decoration in the 19th century, and this is reflected in the VPT assemblage with around 50% transfer printed. Interestingly, this is the same percentage as in the Britomart assemblage (Table 11), but compared to the other sites, the percentage is somewhat low. Plainware is the next most common type at 29% followed by handpainted ware at around 15%. In comparison, the next most common type at Britomart is edgebanded/hairline ware at nearly 16%, followed by plainware at around 12%. Plainware appears to be the second most type of ceramic in three other assemblages, the exception being Fale Pasifika which ranks edgebanded/hairline as the second most common decorative type (but that is a less statistically significant assemblage). Bickler et al. (2005:134) suggest that in the

[37] Data obtained from His Majesty's Theatre (Plowman 2000), Fale Pasifika (Clough, Mace et al. 2004), Albert Barracks (Clough & Geometria 2004), and Britomart (Bickler et al. 2005). It should be noted that plain and whitewares are generally under-represented as they are often not diagnostic and not fully sampled.

Britomart case the high percentage of banded ware may be related to the close proximity of establishments such as restaurants and hotels, which may have preferred plainer more standardised wares. The VPT assemblage has a higher percentage of handpainted wares (15%) than the other assemblages (Britomart = 12%; His Majesty's Theatre = 4%; Fale Pasifika = 1%; Albert Barracks = 8%) which is of interest and may reflect the residential nature of Freemans Bay in the mid to late 19th century, with a preference for more decorative dinnerware services.

Table 11. Decorative types found at VPT and in the four other assemblages

Technique	VPT	Britomart Reclamation	His Majesty's Theatre	Fale Pasifika	Albert Barracks
Appliqué		12	8		3
Colour glazed (marbling)					
Colour glazed/slip coloured	1		75		17
EBHL/Hand painted		33		1	6
Edgebanded/hairlined	4	75	9	7	
Hand-painted	44	12	41		61
Marbled			16		2
Outline transfer print with overglaze handpainting		2			
Plainware	90	6			90
Plainware/whiteware		55	187		
Relief moulded	13	20	9	1	19
Relief moulding with hand painting		6			
Rouletted					2
Shell-edged			31		2
Slip glazed	4	7		2	20
Slip glazed with hand painting		1			
Slip glazed with hand-painting & appliqué		1		1	
Slip glazed with relief moulding	1	10			
Slip glazed-banded		4			22

Slip glazed-mocha ware					16
S prigged	2				
Sponged		1	38		23
Stamped/ handpainted		1	2		
Transfer with EBHL		1			
Transfer print	143	224	1100	52	560
Transfer print marbled		2			8
Transfer-print with hand-painting		1	17		
Transfer-print with relief moulding		3	73	1	5
Transfer printed with additional misc. decoration			4		
Unidentified	2	1	10	1	2
Total	**304**	478	1620	66	858

Form and Function

The most common ceramic form in historic assemblages is tableware, and the VPT assemblage is consistent with the other four sites in this respect (Table 12). Where it differs is that the next most common wares represented are kitchen/utilitarian wares at 13%, followed by decorative wares at 7%, then bedroom/bathroom wares at 5%. In the Britomart assemblage the bedroom/bathroom wares were the next most common at 10%, followed by kitchen/utilitarian wares, and decorative wares formed only 1% of the assemblage. The slightly higher percentage of decorative wares at VPT may be explained by differences in the ceramic analysts between the classification of wares as decorative and/or part of the bedroom/bathroom categories, and perhaps the sherds were more highly fragmented in the VPT assemblage making it difficult to identify the original vessel type.

Table 12. Form and function of the VPT assemblage compared to the four other assemblages. The figures in brackets indicate the number within the total that derived from the wells

Fabric	VPT	Britomart Reclamation	His Majesty's Theatre	Fale Pasifika	Albert Barracks
Bedroom/ bathroom	15 (6)	45	76	19	20
Decorative	21 (9)	5	6	1	1
Kitchen/ Utilitarian	38 (17)	29	39	3	3

Other	7 (4)	4	39		9
Tableware	213 (105)	383	1333	47	598
Tableware?		3			
Unidentified	10 (5)	14	127	3	227
Total	**304**	**483**	**1620**	**73**	**858**

Patterns

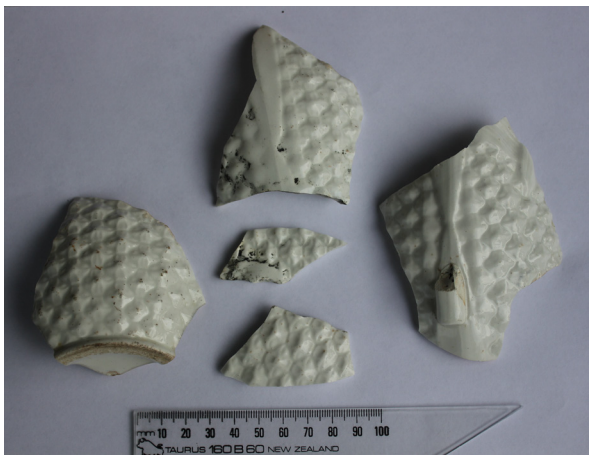
A number of patterns were identified in the VPT assemblage and these are listed in Table 13. Like Britomart and most 19th century assemblages, Asiatic Pheasants is well represented, as is the 'tealeaf' pattern. Eight new patterns were identified and have been given the prefix 'VP' (Figure 147, Figure 148); a large number of unknown or unidentifiable patterns were also recorded.

Table 13. The different patterns identified on the ceramics at VPT (BH = Bloomfield House, Russell; BR = Britomart; WF = Westney Farmstead, Mangere)

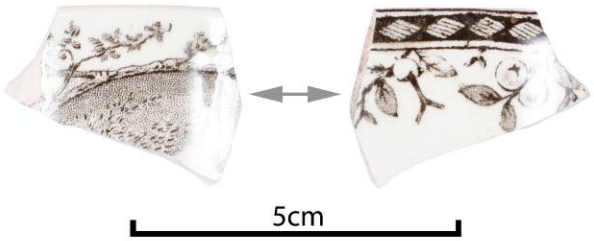
Pattern	MNI	Pattern	MNI	Pattern	MNI
Asiatic Pheasants	19	Orient	11	VP 0005	1
Bainbridge Brothers	1	Queen Mary	1	VP 0006	1
banded	13	Relief	13	VP 0007	1
BH 0150	1	Rouen	1	Waiwai	1
BR 0007	1	sprigged	2	WF 0046	1
BR 0008	1	Springfield	1	Willow	1
Chinese style	1	tealeaf	14		
chinoiserie	1	triple banded	6		
Dulcamara	2	unknown	121		
Justice	1	undecorated	20		
J.T.Morton	1	VP 0001	1		
Monroe	6	VP 0002	1		
non-diagnostic	19	VP 0003	1		
Olympia	1	VP 0004	1		

VP0001

VP0002

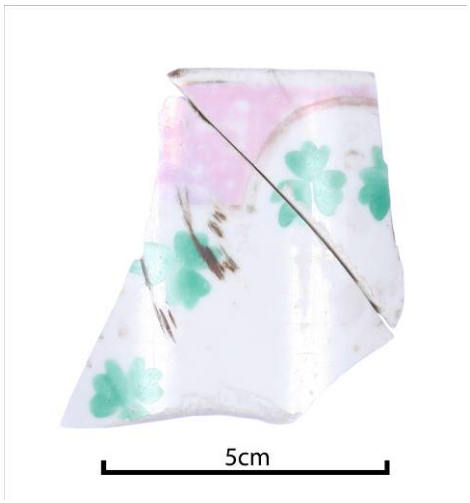


VP0003

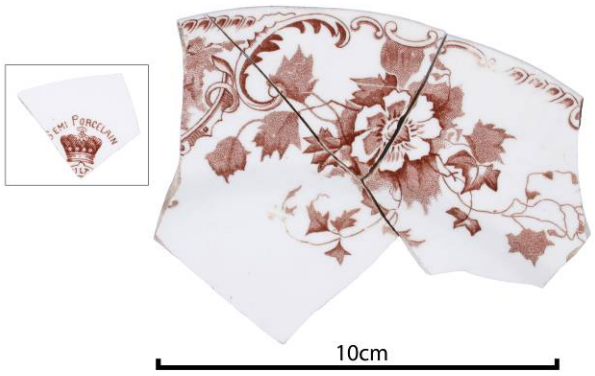


VP0004

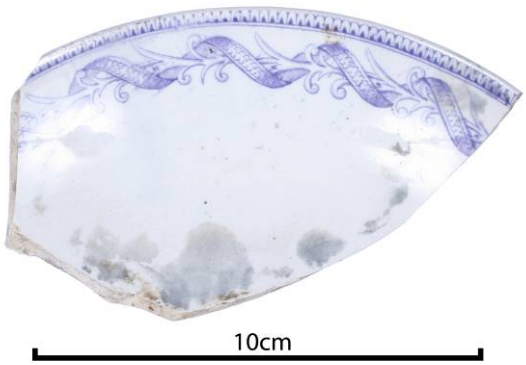
Figure 147. Newly identified patterns in the VPT assemblage



VP0005



VP0006



VP0007

Dulcamara

Figure 148. Newly identified patterns in the VPT assemblage, and the Dulcamara pattern (VP0008 came from the Birdcage excavations: see Phear & Farley 2012)

Tableware

As already stated, tableware provided the highest number of ceramic sherds found in the VPT assemblage. It is known that Victorian households placed great emphasis on the display of status and wealth, and displaying one's ornate dinner service was one way of drawing attention to this. As such, the high number of sherds from decorative dinner services is of no surprise in 19th century deposits. However, Bickler et al. (2005) point out that the high number of decorated sherds is partially the result of sampling strategy and reporting by archaeologists, who tend to focus on patterned wares rather than plain and unpatterned wares. As such, a bias is introduced into the analysis.

The analysis here has completed MNI counts in order to produce quantifiable data for comparative analyses but does not analyse details such as plate sizes and diameters. Instead, the focus is on some of the notable pieces recorded including patterns and ceramic types.

Dinner services were complex and consisted of a number of different pieces including matching sets of bowls, platters, tureens, stands and other forms, and could be ordered to include pieces of variable quality (Bickler et al. 2005). Tea services generally consisted of teacups, saucers, cream jug, slop basin and 'bread plates' and larger services had coffee cups and small plates. Breakfast services were similar and included eggcups and sugar bowls (Bickler et al. 2005).

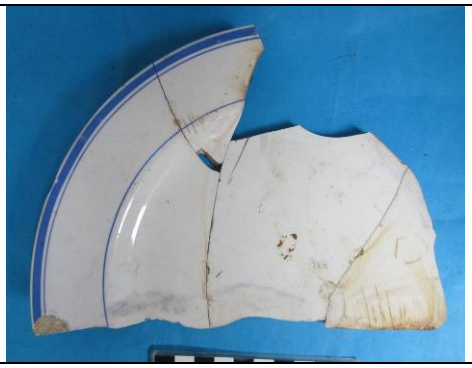
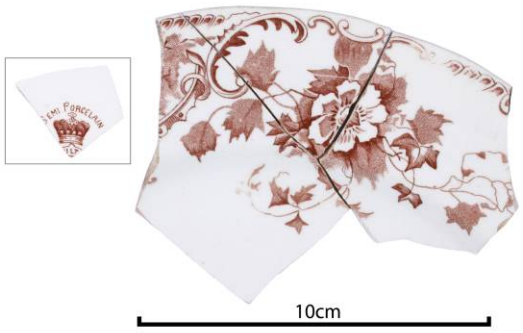
Pieces from a range of service types were represented in the VPT assemblage, and those that were identified by maker's marks are listed in Table 14. This indicates that at least 12 different dinnerset manufacturers are represented in the assemblage, although as a high number of pieces did not have discernible maker's marks it is possible that this is only a partial representation of the tableware manufacturers.

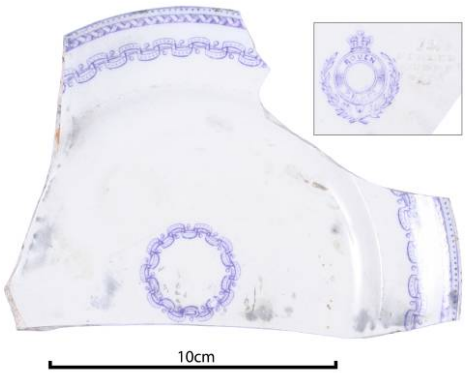
Tablewares from Staffordshire in the Midlands of England are well represented, and this is of no surprise considering the dominant role of the Midlands potteries in producing all manner of ceramics in the Victorian period. Also represented are pieces from Scotland and Germany, although the German manufacturer was not identified.

In general, it is difficult to accurately date the disposal of plates and bowls from dinner sets as they are often kept for many years before they break or are discarded. The dates do serve, however, to indicate a broad date range, and when combined with other artefacts found in the layers and stratigraphic information the archaeological features and deposits from which they are derived can be dated. Several of the datable ceramics cannot have been manufactured before the 1880s or mid 1890s, and one example from an unstratified context dates to not before 1906.

Table 14. List of pottery maker's marks, the patterns associated with the marks and the production years on examples identified in the VPT assemblage

Maker's marks	Production years represented	Associated patterns	
A. Bullock & Co, Staffordshire, England	c. 1895-1905	Transfer print	

Burslem Pottery Co.	1894-1933	Blue triple band	
Doulton & Co (Ltd), Burslem, Staffordshire	c. 1882-1902	VP0006	
Doulton & Co.	1858-1956	Asiatic Pheasants	
Grimwade Brothers, Stoke on Trent, England	1894-1900	Orient	

John Edwards, Staffordshire, England	c. 1885-1900	Keswick	
John Maddock & Sons, Burslem, England	1906-	Banded and geometric patterns	
Made in Germany	?	Polychrome	
Pinder, Bourne & Co., Burslem, Staffordshire	1861-1882	Dulcamara, Rouen	
Ralph Hammersley & Son, Burslem,	c. 1860-1905	Asiatic Pheasants	

Robert Cochrane & Co., Glasgow	1856-1896	Relief mould	
Smith & Ford, Burslem, Staffordshire	1895-1898	Monroe	

As in the Britomart assemblage and many other 19th century historic assemblages, plates are the most common pieces in the VPT assemblage, with side plates and dinner plates at 36%, teacups at 25% and saucers at 22%. Like Britomart, bowls were underrepresented (3%). The high number of tea cups indicates that tea was also enjoyed in this working class part of town, and tea pots, lids, milk jugs and a sugar bowl were also recovered. (Coffee may also have been popular judging from the bottles of coffee and chicory essence – see glassware, below).

Other Domestic Ceramics

Ceramic vessels for other parts of the home, such as the bedroom/bathroom, were represented by chamber pots, toilet boxes and lids and washbowls. Toilet boxes were used to store items such as toothbrushes and shaving implements (Figure 149).

Figure 149. Toilet box recovered from Well 1

Kitchen/utilitarian items included candle holders, containers, a plate from kitchen scales, a cheese pot, fruit bowl, preserve jar and five ginger jars.

Ginger jars

At least five Chinese ginger jars were identified, four being traditional partly glazed and decorated earthenware and the fifth being a western stylised variety (see Figure 134B–D). Of the Chinese examples, two were partially decorated in green and two in blue, with the coloured glaze being allowed to run and pool at the base. Two had similar manufacturer's marks on the base, but in different locations, and both had a central nipple on the base enclosed by a diamond with concave sides within a raised circle (Figure 134C). The central nipple may have been associated with the manufacture of the vessel itself rather than being a maker's mark. The mark did not appear in any of the references consulted and may represent a small localised manufacturer as opposed to one of the larger enterprises.

The fifth ginger jar was a white relief moulded earthenware vessel (Figure 134D), the design incorporating a plant with a leaf of six segments, glazed both internally and externally in contrast to the Chinese examples. There was no evidence of a maker's mark.

Clay pipes

Only two clay tobacco pipes were recovered, which is in strong contrast to the Britomart collection where 450 pipes were represented along with other smoking paraphernalia such as metal matchboxes. The obvious absence of clay pipes is of interest. The explanation might lie in the way in which clay pipes were smoked and discarded in the 19th century, often in hotels and bars, being discarded in the ashes in the hearth. Over 500 pipes were represented in the Victoria Hotel assemblage (Brassey & Macready 1994), including what appeared to be many unused pipes that were probably on sale in the hotel before it burnt down in 1865. Dense ashy deposits with a large number of clay pipes and fragments were recently recovered from excavations in Fort Street (S. Phear in prep.), and have been found in other locations in the city. No such ashy deposits were found during the VPT project, but this does not mean that clay pipes are not present in other parts of the reclamation not excavated in the VPT project. The absence of clay pipes in the wells could simply mean that the people living in the households did not smoke.

6.2 BOTTLES AND GLASSWARE

The bottles and glassware have been grouped together for comparison with the Britomart assemblage. It is apparent that the Britomart assemblage was twice as large as that from VPT, but it is useful to look at the percentage of artefact types found between the two sites (Table 15). Alcohol bottles clearly dominate at around 30% for both assemblages. This is followed by pharmaceutical bottles in the VPT assemblage at 22% compared to Britomart, which has a high percentage of unidentified bottles (29%); however, of the identified types the next highest category is condiments at 22% and then aerated water bottles. In contrast, household and condiment bottles are around 15% each for VPT, with aerated water bottles only at 5%. One possible explanation for the differences in the percentages of condiment and pharmaceutical items could be a higher number of condiments being used at restaurants and hotels in the central city area compared to home pharmaceuticals being used in the more residential area around Freemans Bay; and a high proportion did come from the wells rather than the reclamation.

Table 15. Bottle and glassware types in the VPT assemblage compared to Britomart. The figures in brackets indicate the number within the total that derived from the wells

Form	VPT	Britomart Reclamation
Aerated Water	19 (5)	72
Alcohol	101 (22)	212
Condiments	52 (28)	153
Household	62 (53)	6
Miscellaneous	17 (11)	
Pharmaceutical	77 (60)	54
Table glass	8 (4)	5
unidentified	13 (7)	212
TOTAL	**349**	**714**

Alcohol

A range of alcohol bottles were present in the assemblage, with champagne bottles dominating, followed by wine, black beer bottles, then green beer bottles (Figure 150, Table 16) As the black or greenish black beer bottles are normally the most common in European sites in Auckland (Bickler et al. 2005), it is of note that champagne bottles and wine bottles both number higher. However, 'beer' bottles were also known to have been used for wine, whisky or ginger beer (Brassey & Macready 1994:88) so it is perhaps advisable not to place too much emphasis on the alcohol type thought to dominate the assemblage. In fact, champagne bottles were also commonly used to hold other liquids. The ring seal 'champagne' bottles were imported on a large scale from France during the 1870s-1910 due to a shortage in black beer bottles (Bickler et al. 2005:167). They were used to bottle beer, but also for condiments such as sauces and additional alcohol products.

Table 16. Type and MNI of alcohol bottles recovered in the VPT assemblage

Alcohol Type	VPT
beer	5
black beer	13
brandy	2
case gin	2
champagne	27
flask	1
green beer	9
modern beer	2
schnapps	5
spirits	1
unidentified	3
whisky	5
wine	26
TOTAL	**101**

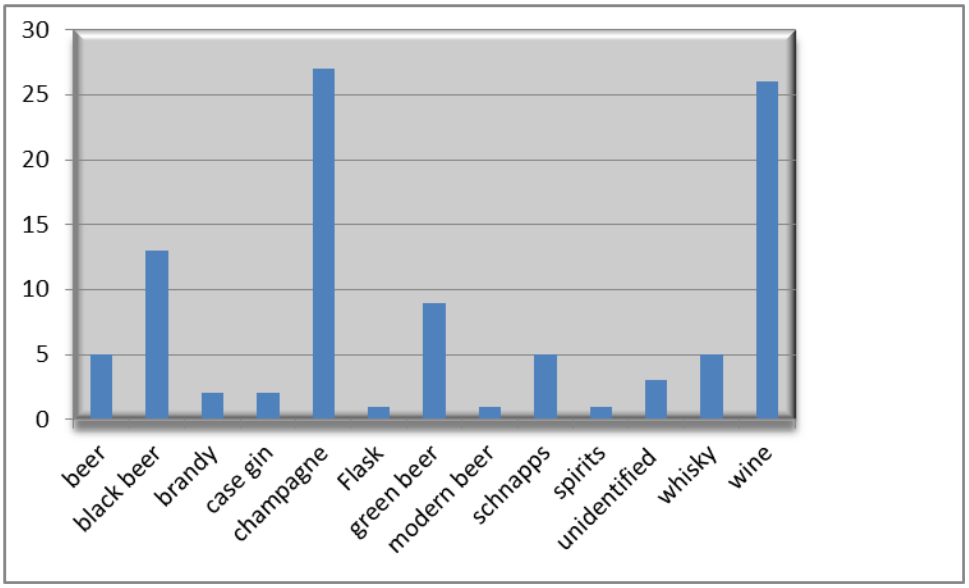


Figure 150. Graph illustrating the alcohol bottles recorded based on MNI

Beer

Beer bottles recovered from the assemblage (Figure 151A–C) were from both black beer and other types, pint size, half pint, and tall pint size:

- 13 Black beer
- 9 Green beer bottles
- 2 Amber beer bottles
- 5 beer bottles

The black beer bottles numbered quite low, which is perhaps due to their hey-day being in the 1870s, their use decreasing over time as the ring-seal champagne bottles increased in use (Bickler et al. 2005). The main reclamations took place in the 1880s-early 1900s which could explain why the black beer bottles were relatively scarce in the assemblage.

Seven pieces had embossed bases and 7 were without embossing:

- 1 had a central nipple on the base , and 1 had 3 nipples and '32' on the base
- 1 had slightly raised concentric circles on the base
- 4 had tool formed pontils
- 1 ladies leg
- 1 three piece mould with 'N & Co 1014' on the base
- 2 had a conical pushup
- 1 moulded
- 1 had 'SB & G Co. a' on the base (see below)
- 1 had 'THE…LIMITED…19..' on the base (see below)

The 'N & Co 1014' bottle was identified by Toulouse (1971) as Nuttall & Co. of St Helens, Lancashire. Nutall & Co began producing wares at St Helens in 1872 and continued using this

mark until 1913, when it became part of the United Glass Bottle Manufacturing Company. Toulouse (1971) notes that after the turn of the century Nuttall had two tanks each for the manufacture of pale green and darker green glass.

While amber beer bottles are generally associated with a much later date (post c.1915), one particular example predated 1905. The base was embossed SB & G Co, identifying the manufacturer as Streator Bottle & Glass Co, of Illinois (Toulouse 1971). Streator Bottle & Glass were contracted to provide bottles to Adolphus Busch, who was co-founder of Anheuser-Busch, well known for their Budweiser brand purchased in 1891, and it is likely that this particular bottle contained Anheuser-Busch beer. The other amber bottle was clearly 20th century as it was embossed 'THE…LIMITED…19..' (the rest of the date being missing).

Stoneware Beer and Ginger Beer Bottles

Only one stoneware beer bottle was found in the assemblage, standing 220mm high with a base diameter of 76.31mm (Figure 151D). The lower body of the bottle was cream coloured and the upper, from shoulder to rim, was fawn coloured and it had a clear glaze. No maker's mark was found on the bottle.

While ginger beer was a popular drink in the colony, only 3 bottles were recovered during the excavations, and likewise in the Britomart project only 8 ginger beer bottles were recovered (Bickler et al. 2005). At the north end of the tunnel a portion of a ginger beer bottle with a grey base colour was collected bearing the mark of John Grey & Sons Auckland. While John Grey had been manufacturing various brands of 'soft' drinks from 1874 when he purchased Charles Sutton's manufactory, it was not until 1880 that the company name was changed to John Grey & Sons. Although John Grey died in 1896 the company retained the name until 1902 when it merged with Robert Menzies, becoming Grey & Menzies. This provides a date range of 1880-1902 for the manufacture of this particular bottle of ginger beer (Figure 151E).

At the southern end of the tunnel near Victoria Street an almost complete ginger beer bottle was recovered bearing the print of William Handley (Figure 151F). The 'home brewed' ginger beer was in reality brewed in a manufactory (probably at Handley's factory in a lane off Hobson Street). Handley used a cannon in his company logo and in 1890 he took legal action against George Gledhill who incorporated a cannon into his own design (*Auckland Star*, 4/11/1890:5).

Champagne

Twenty-seven champagne bottles were identified in the assemblage, including 5 almost complete and 2 complete bottles derived from the tunnel excavations. These ranged in size and the complete bottle stood 301mm high with a base diameter of 93.11mm. None of the bottles contained any surviving labels to identify the former contents, and as discussed above the contents could have been alcohol or condiments/sauces.

Five out of the six champagne bottles found in Well 2 were complete, with two partial seals still in place. Two of the complete bottles were a large size standing 304mm and 305mm (Figure 152). These bottles had remnants of the lead seals around the circumference of the rim and neck. Three complete vessels were small champagnes standing 241mm, 250mm and 253mm high (Figure 152). The remaining vessel was another large bottle represented by a partial base. All the champagne bottles had a ring seal finish.

		
Black beer	Green beer 'Nuttal & Co' bottle	Collar band of a green beer bottle
		
Stoneware beer bottle	John Grey & Sons ginger beer bottle	William Handley ginger beer bottle

Figure 151. Examples of beer and ginger beer bottles in the VPT assemblage

Figure 152. Two large champagne bottles (left), and smaller bottles (right) from Well 2

Wine

Wine was not a particularly popular drink in the 19th century, and only 12 bottles were recovered in the Britomart assemblage (Bickler et al. 2005). In contrast, 26 wine bottles were recorded in the VPT assemblage, 5 from Well 1 and the remainder from the tunnel excavation. Wine was present in large and small sizes, but no complete examples were recovered. Two green wines, one large and one small were almost complete, missing only the rims. A third almost complete wine in amber glass missing the rim and neck is known as a hock bottle (Figure 153). These particular bottles were traditionally used to contain Rhine or Mosel wines (red or white) with the bottle style originating in Hockheim, Germany (www.odysseysvirtualmuseum.com). The bases or part bases of five further wine bottles were noted. Where sizes could be established, two were a small size, five were a large size and the hock bottle had a capacity between these two sizes.

Figure 153. Hock bottle

Spirits

Alcohol played an important role in the colonial settlement, and the colony had its fair share of problems related to drunkenness, particularly in the early days of settlement. By the end of the 1870s, however, the consumption of alcohol had reduced, particularly the consumption of spirits (Eldred-Grigg 1984:78, cited in Bickler et al. 2005). There was an increase in imported whisky along with a decline in consumption of brandy and rum (Eldred-Grigg 1984).

In the VPT assemblage only 20 spirits bottles were identified of which schnapps and whisky numbered the highest (n=5 and n=6 respectively). No rum bottles were identified, the other bottles present being case gin and brandy. Gin was very popular in the 19th century as it was cheap. The majority of gin was made in Holland, and was a mix of herbs, juniper berries, and barley (Tasker 1989:47). Changes in the style of the bases of case gin occurred over time, becoming noticeably wonkier and the rims more regular. As only 2 bottles were recovered in the VPT assemblage little can be said of their form or type.

There were too few spirits bottles in the assemblage to come to much of a conclusion about consumption patterns at Freemans Bay.

Aerated/Mineral Water

Aerated water drinks increased in popularity in the 19th century and there was significant innovation in soda bottling methods during this period. Further information can be found in Tasker (1989) (cited in Bickler et al. 2005). The problem of keeping the water 'fizzy' was not an easy one to solve, but led to innovations such as the 'torpedo' bottle which had to be laid on its side so that the cork would not dry out, and was first patented in the 1830s (the Hamilton Patent: Bickler et al. 2005).

Unlike some other drinks, many New Zealand companies bottled water here in the 19th century, and either sourced their bottles within New Zealand or imported them to be filled in the country. Licensing patents became important in order for bottling companies to successfully operate and obtain the right equipment (Bickler et al. 2005).

Only 19 aerated bottles/bottle fragments were recovered from the VPT assemblage, which is quite a low number (Figure 154). Most products appear to have been bottled in New Zealand, although some could not be identified. One marble was also recovered which would have been located inside the bottle in order to help maintain the 'fizziness'.[38] The two 20th century bottles (C.L Innes & Co. Waihi, and Kia-Ora) came from context 462, an upper reclamation fill deposit.

Table 17. List of aerated water bottles in the VPT assemblage

Company	Year/s of Production	Patent	Number
Puriri Mineral Water	?	Bottle	1
John Grey & Sons	1880-1902 (Rusden 1979)	Codd	4
Phoenix Aerated Water Co	est. 1895	Bottle	1
C.L. Innes & Co. Waihi	1910 -	Codd	1

[38] See Bickler et al. (2005) for additional descriptions on the patents and their qualities.

Kia-Ora	1909-1926	Crown-Seal	1
E. Breffit & Co. Makers, London	c. 1875-1913 (Toulouse 1971)		2
Auckland Aerated Water Company	1884-1888 (Rusden 1979)	Vane, granted 1884 (Rusden 1979)	1
Bottle manufacturer: Burlington Glassworks	1875-1877 (Toulouse 1971)	Codd	1
not known		Codd	2
not known	1870s -?	Lamont	1
C & E Co. trident on base	?		1
not known	?		3
marble			1

A. John Grey & Sons. B. Breffit & Co., London C. Auckland Aerated Water Co., Vane Patent

Figure 154. Example of aerated bottle types found in the assemblage

Condiments/Food

The 19th century colonists typically enjoyed sauces and condiments with their meals. Fifty-two glassware items related to food consumption were recorded in the assemblage, with many related to pastes, pickles, sauces, salad oils and vinegars, while others related to preserves/jams and infant formula (Table 18; Figure 155). This is quite a low number of food items compared to Britomart and other excavations around the city. However, unlike Britomart, no bottle dumps or bottle pits were identified during the project, only small deposits of bottles or isolated finds. The wells were the only examples of concentrated 'rubbish dumps', and they did provide over half the amount of bottles in the overall assemblage. Salad oil and vinegar bottles were the most common, but there were also 7 pickles/capers, 7 coffee and chicory bottles, 4 infant formula bottles, and 4 or 5

jams/preserves as well as pastes, fruit and miscellaneous items. However, the low numbers indicated that these could derive from household waste only, rather than dumping by hotels and a majority of these came from the domestic dumps in the wells.

Table 18. Food/condiment types recorded in the VPT assemblage, with numbers present and comments

Food/Condiment Type	Colour	No.	Comments
Capers	emerald	1	
Capers	aqua	1	plain
Capers	green	1	with cork, partial lead seal "gauranteed genuine"
Champions Vinegar	aqua	5	one small
Coffee & Chicory Essence	aqua	3	…T & Co..ND/..Sence of Coffee & Chicory/ M on base. Also …Co/Essence of Coffee & Chicory
Coffee & Chicory Essence	aqua	1	…Barrett & Co…ckland / …fee…/ M on base
Fruit	clear	1	plain
Half-whirly salad oil	aqua	1	
Jam	clear	1	
Jam	aqua	2	..ATRIC..; …ICK's JA
Jar/Jam?	aqua	2	
Lipton Coffee & Chicory Essence	aqua	1	London & Ceylon
Mellin's Infant Formula	aqua	4	
Miscellaneous	aqua	1	
Oil	aqua	1	4 on base
Paste or spread	clear	2	D at centre on base/ around edge - ….31 T1870; one
Paste or spread	green	1	Machine made 6 on base along with makers mark script f?
Pickles	aqua	3	one with P on base; one plain round 2 piece mould, applied rim
Pickles	emerald	1	
Preserves/Jam	aqua	1	5 oz on base
Salad oil	aqua	3	one with 5 on base
Spiral salad oil	aqua	1	
Symington's Coffee & Chicory Essence	aqua	2	
Thompson & Hills Fruit, Auckland	aqua	1	
Tyer & Sons Jams, Mountain Brand	aqua	1	
Unidentified	clear	1	…hit…possibly whittomes??
Unidentified	aqua	1	could be salad oil, vinegar, sauce etc
Vinegar	aqua	1	
Whirly salad oil	aqua	4	M on base, with cork, fatty residue inside; 3 nipples on base
Other		3	

Coffee & Chicory Essence

Mellins Infant formula

Half whirly salad oil

Champion's Vinegar

Figure 155. Examples of food and condiment bottle types in the VPT assemblage

Household

A number of glass household items were recovered in the assemblage (Table 19), ink bottles being one of the two most commonly represented items (23%) being (Figure 156). A large number of the rest were attributed to light fittings (23%). One almost complete oil lamp chimney was of interest – the chimney was acid etched with BEST FIREPROOF TIGER BRAND Made in Silesia and a depiction of a tiger (Figure 157). Silesia was originally a Polish territory but in the 19th century was under the control of Prussia. Such an item may have been brought by an immigrant to New Zealand, although the date of production of this particular lamp chimney is not known.

Figure 156. Four round inks in clear glass with an aqua shear-lipped boat ink

Figure 157. Silesian Tiger brand lamp chimney

Table 19. Number of household glass items in the VPT assemblage

Household Type	VPT
boot polish	1
bowl	2
dish lid	4
footed bowl	3
glue?	1
gum or ink	1
ink	14
jug?	1
lamp chimney	2
lamp chimney?	2
lampshade	10
leather treatment	1
mirror?	1
oil lamp	1
sewing machine oil	1
soap container	1
spectacle lens	1
stopper	5
vase	3
Unidentified	7
TOTAL	**62**

Pharmaceutical

Pharmaceutical products formed a large percentage of the bottle assemblage with a clear dominance of medicine bottles (53%) (Table 20). These were supplemented by other bottles of medicinal value such as castor oil, pills and tonics, with a combined percentage of 17%. After this came perfume and toilet water, followed by poison, beef supplement and a jar of dental filling compound. Six glass items were not clearly identified. As already mentioned, the VPT pharmaceutical assemblage outnumbers the Britomart assemblage, but this can be attributed to the majority of these deriving from the wells. Certainly, it appears that medicinal products and 'quack' remedies were of high importance to the Victorian colonists and Bickler et al. (2005:191) point out that while alcohol remained the main 'drug' of the people, it also formed the basis of

many medicinal products consumed during the period (and see Eldred-Grigg 1984 for further details). The BOVRIL beef supplement can probably be placed under this category due to its perceived health benefits (Figure 158B). As already noted, Bovril was created by John Johnston who was contracted by Napoleon to provide canned beef to his troops; the Bovril Company was formed by 1889 and the product is still available today.

Some medicinal products were clearly identified from embossing or surviving labels, such as BONNINGTONS IRISH MOSS, BARRYS TRICOPHEROUS (Figure 158B and Figure 159), and BEETHAM'S GLYCERINE & CUCUMBER. The latter preparation was advertised to preserve the skin and complexion from the effects of frost, cold winds, and hard water (*Otago Witness*, 14 June 1894). A bottle embossed CRAWFORD PHARMACIST NEWTON AUCKLAND NZ indicates a local product (Figure 158B). Crawford's Pharmacy was located in Newton from at least 1880 (*Observer,* 30/10/1880:51). Later advertisements included the initials T.A. (Crawford) (*Observer*, 23/1/1897:10). Crawford advertised a number of remedies, the majority being imported patent medicines.

Only three poison bottles were identified (Figure 158A), though are usually more common in historic assemblages. One complete cobalt blue poison bottle was marked NOT TO BE TAKEN and had ribbed panels either side of the embossing as a warning to the visually impaired.

Table 20. Number of pharmaceutical items in the VPT assemblage

Pharmaceutical Type	VPT
beef supplement	2
castor oil	6
dental	1
medicine	41
perfume	5
pill	6
poison	3
toilet water	6
tonic	1
Unidentified	6
TOTAL	**77**

A. Cobalt blue poison bottle

B. Barry's Tricopherous, Crawford, Bovril, toilet water and pill bottle

C. Cobalt blue castor oil bottles

D. Assortment of pill bottles, dental filling and tincture

Figure 158. Examples of pharmaceutical items in the assemblage

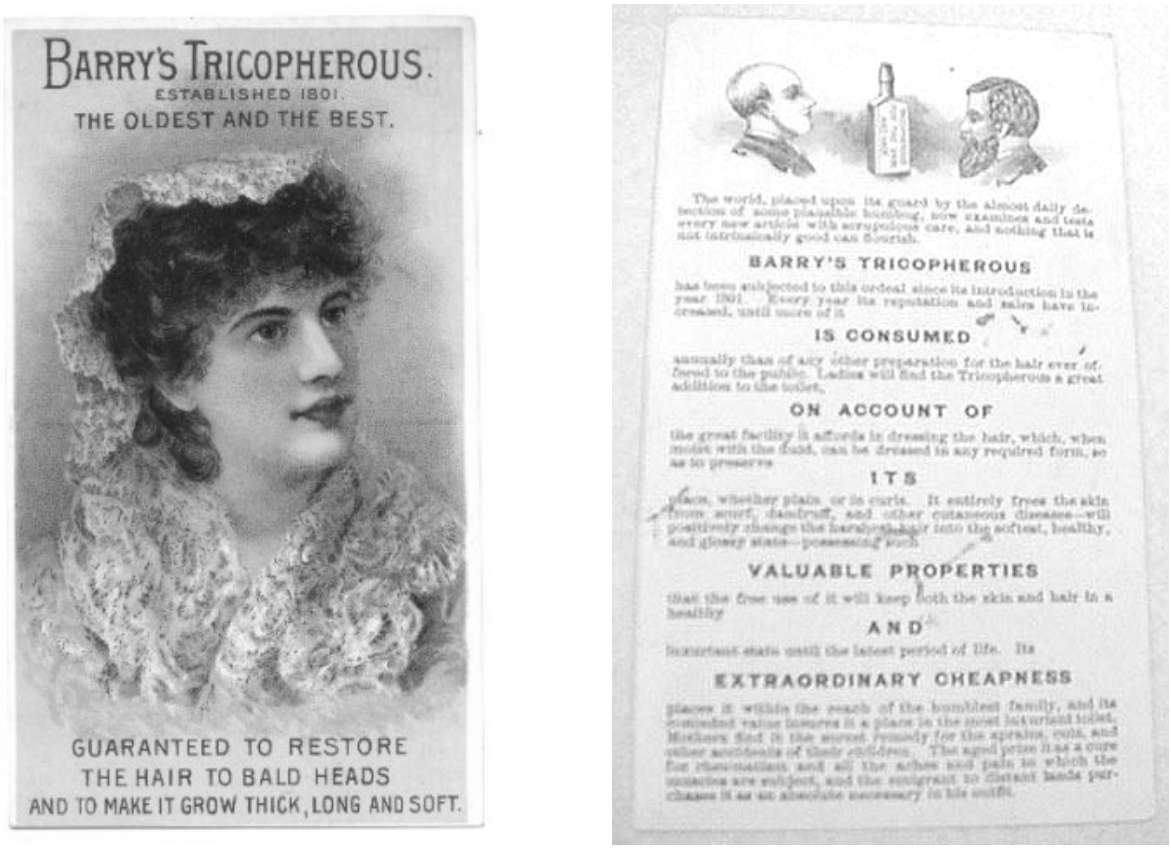


Figure 159. Examples of 19th century advertisements for Barry's Tricopherous

6.3 LEATHER, TEXTILES & RELATED ITEMS

Various materials and leather used for personal clothing and effects were recovered and provide a glimpse of the clothes worn by the colonists in 19th century Auckland. Many items would have been made by local manufacturers rather than imported, especially in the later 19th century. Bickler et al. (2005:180) provide a useful summary of tanneries and boot-makers in Auckland in the 19th century. In the 1840s there were butchers and tanners present, one operating both businesses from one premises in O'Connell Street until he was forced to close in 1844. Certainly, at this time within 100m radius of the O'Connell Street tannery 16 butcher's premises were recorded, along with 13 shoemakers and 1 currier (McLean 1989:59; Tenancy Plan 2b, cited in Bickler et al. 2005:180). Tanneries were located further out of town soon after due to pollution of and access to water supplies, and they tended to specialize in different products such as white chrome leather (Sutherlands), black harness, bridle and saddlery leathers as well as shoe and boot sole leathers (Astleys).

Boots and shoes were made by a number of businesses by the 1860s and 1870s, and makers included G.A. Coles in New North Road, Trenwith Bros. in Wakefield Street, and T. Richardson on the corner of Queen Street wharf and Customhouse Street. Bickler et al. (2005) note that in the initial years of settlement, boots and shoes would have been imported from abroad, either Europe or America, and of course settlers would have brought shoes with them. This was in part due to a lack of machinery used to sew, peg and screw boots and shoes together in the early days. Shoe repairs were made on a regular basis to extend their longevity.

The government placed a one shilling duty on imported boots from the 1860s in order to encourage the local industry, but still many boots were imported. Indeed, they may have been preferred as New Zealand boots and shoes were not of the same quality, being made for the lower end of the market. By 1895, however, 65 boot factories were operating in the colony, and more than a million pairs were produced annually (http://www.teara.govt.nz/en-3).

Personal goods in the form of shoes were represented in low numbers in the assemblage, with only 25 shoes/boots recovered compared to 51 from the Britomart assemblage (Table 21; Figure 160). The majority of leather shoes came from Well 1, although some were also retrieved in the reclamation deposits. The shoes survived in variable condition – in some cases only portions of the inner soles, leather loops and eyelets survived, and others were nearly complete, giving a clear idea of the shoe in its original form. The details of this latter group of shoes are provided in Table 22.

Table 21. Leather, textiles and related items recovered in the VPT assemblage. The figures in brackets indicate the number within the total that derived from the wells

Leather & Textile and Related items	VPT
Shoes/boots	25 (21)
Strap	3 (2)
Bag/satchel	(1)
Pieces of fabric/textiles	29 (20)
Wooden pegs	(2)
Wooden bobbins	(3)
Wooden cotton reels	(2)
TOTAL	**61**

All shoes were from adults, following Best's (1992) system of measurement, whereby children's shoes = <180mm; women's and young adults' shoes from >181mm to <250mm; and men's shoes >251mm. Eight shoes were women's and four were men's. Two shoes (nos. 6 and 7) had been repaired, and all that retained the sole and/or heel appeared to be very well worn. Three shoes were of the Oxford style and one was clearly of the Derby/Blucher style. Unlike the Britomart assemblage, no elastic sided boots were identified, nor were any 'straights' recovered, only left and right shoes (7 rights and 4 lefts).

Table 22. Details and measurements of shoes/boots

Context	No.	Length (cm)	Width (cm)	Heel Height (cm)	Sex	Age	Style	Condition/Notes
703	1	29.6	2.8	10.3	M	ADULT	BLUCHER/ DERBY	Right foot. Fastening consists of four eyelets. No toe cap utilised. Triple line vamp stitching is robust. Sole constructed with iron nails. Four layered heel capped with a robust heel plate.
703	2	19.4	2.5	6.5	F	ADULT	OXFORD	Left foot. Hobnailed base. Fastening consists of 8 eyelets. No toe cap utilised. Vamp stitching in double line. Iron nails in sole. Four layered heel & capped heel plate.
705	3			9	U	ADULT		Right foot. Toe portion of shoe only. No toe cap present. Iron nails in sole.
705	4	25	3.3	7.5	F	ADULT		Right foot. Large portion of shoe missing. No toe cap. Sole stitched with iron nails. Heel intact, some use wear on inner heel.
705	5	22.8		6.7	F	ADULT		Left foot. Mid-sole only. Stitching and iron nails visible.
705	6	22	4	7.9	F	ADULT		Left foot. Repairs to sole visible, iron and copper nails used. Heavy war on ball instep. Heel large, multiple layers capped with iron plate.
705	7	25.2	3.4	9	M	ADULT	OXFORD	Right foot. Full wingtip toe cap. Brogue pattern on eyelet tabs, 7 copper ringed eyelets present. Iron & copper nails in sole. Use worn through sole across ball of foot, might have previously been repaired. High heel, full iron plate cap.
705	8	25.4	3	8	M	ADULT	OXFORD	Right foot. Quarter brogue toe cap. 16 copper ringed eyelets. Stitched sole, 5 layered heel with copper nails. Some wear on outer heel.
Recl. Fill	9			6.5	F	ADULT		Right foot
Recl. Fill	10			6.13	F	ADULT		Right foot, worn big toe impression.
Recl. Fill	11	24.5	3	6	F	ADULT	BLUCHER/DERBY	Double layer leather upper.
Recl. Fill	12	29.6	2.8	10.3	M	ADULT		
458	13	25		7.8	F	ADULT		Left foot. Heel constructed of 5 lifts of leather joined with iron nails. Copper nails used in parts of sole.

		
No. 2. Adult female boot in the Oxford style	No. 1. Adult male shoe in the Derby/Blucher style	No. 11. Adult female boot in the Derby/Blucher style
		
No. 4. Adult female boot	No. 6. Adult female shoe with a high heel	Leather shoe fragments including eyelets and partial vamp

Figure 160. Examples of shoes recorded in the assemblage

Other Leather Items

Other leather items included 2 leather strap fragments, most likely from a saddle, and a leather satchel which was found in Well 1. The satchel measured 22cm long by 18cm wide, and displayed stitching missing from along one portion of a side. The mouth of the satchel appeared to have a return edge (Figure 161).

Figure 161. Leather satchel recovered from Well 1 (left: upper side; right: under side)

Clothing/Textiles and Related Items

Twenty-nine pieces of fabric/textiles, including some twine fragments were recovered (Table 23), all located in Well 1 in context 705. The fabric varied from fine to coarse weave, and the presence of a bow on one fragment suggested it was formerly from a woman's garment. The pieces of felt may have come from hats and the wool from garments such as jackets and skirts. The feathers could have come from a feather boa, or alternatively from pillows or stuffed downs. Two wooden clothing pegs were also identified.

In the 19th century men commonly obtained either imported or tailor-made clothes. Clothing and drapery made up the largest category of imports into New Zealand and many storekeepers imported directly (Tolerton 2011). Women, however, usually made their own and their children's clothes, and in the 1890s sewing machines were widely available. Items found in the Well 1 assemblage that suggest sewing was taking place on the property were two wooden cotton reels and three degraded bobbins/reels (Figure 162), dressmakers' pins and a possible needle (see below) and a bottle of Singer sewing machine oil (see previous section). Many women worked from home as seamstresses and were paid on the piecework system, i.e. for each piece produced, not by the hours worked. This became known as the 'Sweating System' and there was a 'Sweating Scandal' in the late 1880s. Women doing this kind of work were commonly low paid, and the 1890 Sweating Commission looked into conditions for all women sewers, in both factories and as pieceworkers based in the home (Tolerton 2011).

The coarser weave textiles may have been derived from drapery or blankets. Indeed, the two fragments that were attached to a nail and a piece of tin (Table 23) indicate they were fastened to a structure and may have formed rough curtains, or alternatively the fabric may have been furniture upholstery, and was removed from an armchair or sofa.

Table 23. Fabric and textiles in the assemblage (from Well 1)

Context	Description	
705	Two fine-medium weave fabric fragments in shredded/poor condition	

705	Three fragments from a fine weave, one sewn in the form of a bow.	
705	Three fragments of twine/felt. The single thin twine fragment was constructed from a rough fibre.	
705	Six coarse weave textile fragments. One was joined to a nail, while another was joined to a small piece of tin.	
705	Six coarse weave fabric fragments	

705	Seven felt fibre fragments	
705	Two rectangular woollen swatch fragments, a feather, and some twine	

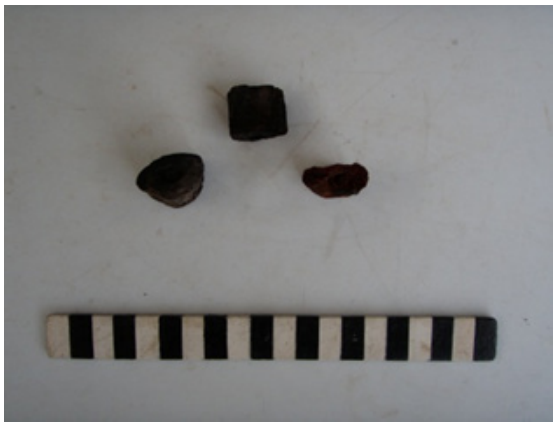
	
Cotton reels	Degraded cotton bobbins/reels

Figure 162. Other evidence of sewing – cotton reels and bobbins from Well 1

6.4 Other Organic Items

Organic food items were also recovered, the majority from Well 1, although some shells and animal bones were found in the reclamation soils (Table 24; Figure 163). Oyster shells clearly dominated, and pumpkin seeds and peach pits also numbered slightly higher than the other food types. The pumpkin seeds are likely to have been associated with some pumpkin/melon rind. Little animal bone was recorded, but this was in part due to the sampling strategy, as only a small selection of animal bone was collected. The coconut rind indicates imports from the Pacific

Islands. However, the number of finds in the category overall was low, representing one or two days' food at most.

Coal would have been used for heating and/or in the coal range for cooking, whereas the wood items would have had various uses. They included cut pieces, the end of a cut branch, and a length of wood cut from a trunk which still had some bark on the exterior. One offcut piece of tongue and groove flooring was identified. The corks recovered would most likely have been stoppers in either the alcohol or sauce/condiment bottles.

Table 24. Food and other organic items

Organic Items	VPT
Pumpkin seeds	7
Pistachio (?) nut	2
Hazelnut	1
Almond	1
Coconut rind	1
Pumpkin/melon rind	2
Peach pit	7
Oyster	33
Cockle	1
Mussel	1
Pipi	1
Sheep bone	5
Cow bone	1
Bird bone	2
Coal	3
Wood	37
Cork	2
TOTAL	**107**

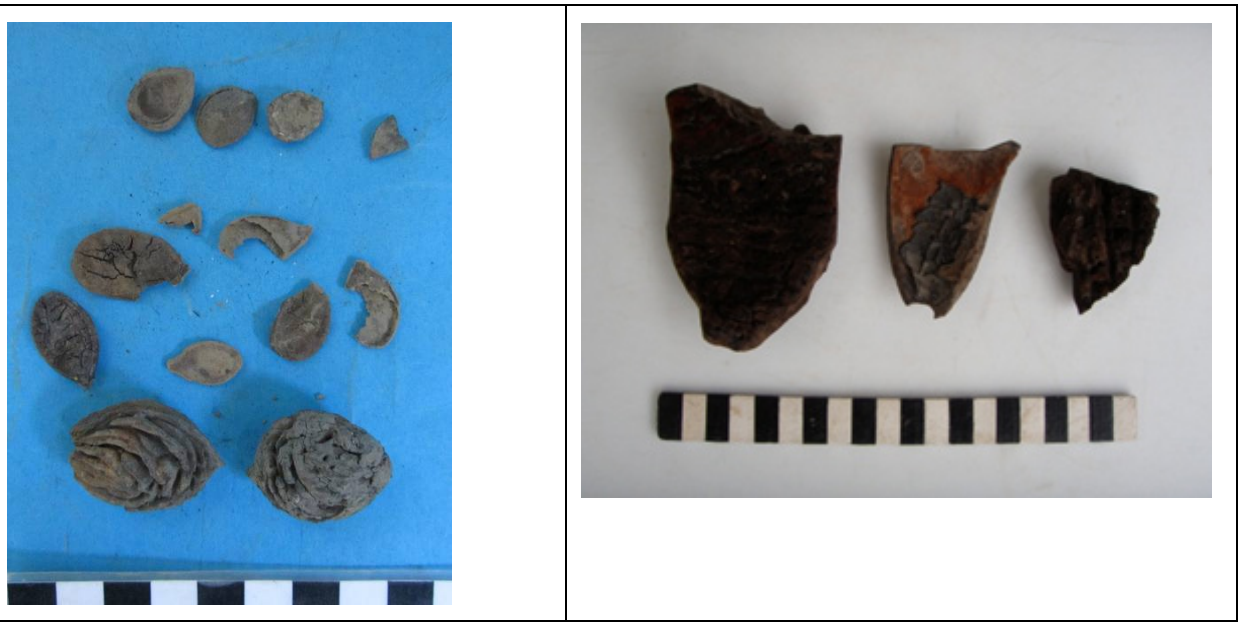


Figure 163. Nuts and rinds recovered in the assemblage (from Well 1). Left: pumpkin seeds, peach pits and two possible pistachio nuts. Right: melon/pumpkin rinds with coconut rind in the centre

6.5 METAL ARTEFACTS

In total, 237 metal artefacts were identified in the VPT assemblage (Table 25). This included 120 iron artefacts from a post-reclamation early 20th century industrial iron foundry located on Victoria Street West (see Chapter 3). While the artefacts were used by the foundry, it is highly likely that many of the iron scrap pieces were actually from items made in the 19th century. However, their identification to this period would not be possible without highly detailed analysis, and even then not all pieces could be positively identified as 19th century in date. Despite this, all the iron artefacts were included in the metal analysis (Table 26). While the drainage trench through the former foundry contained the majority of metal artefacts (59%), Well 1 contained most of the remainder (40%) and had artefacts from each metal category.

Decorative

Decorative pressed copper covered in gilt in an oak leaf design probably once adorned a piece of furniture or picture frame (Figure 136C), and the function of a pressed brass decorative piece cut and pressed in a floral pattern was unclear (Figure 164A). Two decorative iron plates of unknown origin were also identified, and one piece that might have been part of a bed head or fence (Figure 164D).

Clothing and Personal

The boxlock pocket pistol was a very unusual find, as firearms of any kind are not often recovered in historic excavations. The pistol is discussed in Chapter 5.

Two brass safety pins may have been used to fasten nappies, and 16 pins would have been used in dressmaking, along with the hook and eyes and a decorative item (Figure 164B). Three buttons and a rivet were also found (Figure 164C). Two of the buttons and the rivet would originally ahve been from trousers and the remaining button from a shirt. One button was stamped G McBRIDE AUCKLAND. McBride is known to have had a store in Customs St East in 1888 (*Auckland Star*, 1/10/1888:4) prior to moving to Queen Street in 1890 (*Thames Star*, 23/7/1890:2), where he advertised as an importer, manufacturer, merchant tailor, and naval and military contractor. Other items include a needle and the end of a pair of braces.

Table 25. Metal items in the VPT assemblage by metal, type and MNI

Metal	*Type*	*MNI*
Brass	corkscrew	1
	decorative edging	2
	bar	1
	Cap	1
	pins	18
	safety pin	2
	braces?	1
	button	3
	Rivet	1
	hook and eyes	1
	ball headed pin	1
	wall hook	1
	unidentified	2
Copper	wire	2
	Ring	1
	Name tag	1
	tap	1
Lead	flashing ?	1
	offcut	3
	seal	1
	unidentified	2
Silver	spoon	1
Steel?	binding?	1
Steel	knife blade	2
	spoon	1
	strap/flashing	1
	strip	2
	unidentified	1
	wire	3
	can	1
	can or pot base	1
	flange?	1
	frame	1
	needle?	1
	springs	1
	unidentified	2
Tin	can	9
	can lid	1
	sign?	1
	vesta?	2
Tin?	tray?	1

Metal	*Type*	*MNI*
Iron	attachment	11
	band	3
	bar	26
	beam	8
	block	2
	bolt	3
	bracket	6
	brad	1
	cap	2
	chain	2
	cog	5
	collar	1
	dome	1
	Door	3
	drill bit	1
	File	6
	flakes	1
	flywheel	1
	fragment	9
	Grate	2
	handle	5
	hanging handle	2
	Hook	2
	horseshoe	2
	mould	1
	nail	8
	flathead nail	1
	pick head	1
	pipe	8
	plate	8
	plough blade	1
	pulley?	1
	ring	1
	screw	1
	shears	1
	sheeting	2
	spike	3
	spring	1
	spur	1
	tube	1
	unidentified	6
Cast Iron?	bar	1
	unidentified	1
Steel & Iron	Pistol	1
	GRAND TOTAL	**237**

Table 26. Iron objects associated with the iron foundry

ID	Object	Portion	Dimensions (max LxWxT cm)	Comments
72	attachment	>50	14x3x1	Adjustable connection. Central slot measures 6cm in length, attachment point has a diam. of 1.5cm
77	attachment	>50	12.5x9.5x8	Circular. Internal diam. measure 4.7cm
80	attachment	?	21.5x7x1.5	Rectangular with multiple adjustment holes (min 12), and an attached bolt. Adjustment holes are 0.5cm diam.
84	attachment	complete	14.5x6.5	Similar to vacuum attachment but possibly pipe fitting. Pipe diam is 5.3cm
87	attachment	<50	16.5x14	Possibly a fitting for a stove or boiler
99	attachment	complete	13diamx8x0.8	Elbow shaped connector, with a diameter of 4.5cm
100	attachment	complete	43x22x1.2	7 adjustment points, situated 4.5cm apart and 1.2cm diam. One adjustment point has a bracket present, while the other end has a pulley wheel present
103	attachment	>50	19x14x1.5	Possibly from a stove or boiler
110	attachment	complete	9x9x0.5	Possibly for a boiler. Pipe connection has a diam. of 6cm. Four attachment points are on each corner, with a diam of 1.2cm
112	attachment	complete	10x7.5	Possibly for a pulley. Two connection holes measure 1.2cm diam.
113	attachment	complete	10x7.5	Possibly for a pulley. Two connection holes measure 1.2cm diam.
37	band	?	59x3x0.9	Portion of a flat iron band
38	band	?	62x5x0.6	Portion of a flat iron band
109	band	>50	15.5x3.4x0.2	Portion of an iron band with four attachment holes, distance between holes is 3.6cm and hole diam. is 0.8cm
8	bar	>50	53x4diam	Portion of a circular iron bar - possibly part of a grate
9	bar	>50	78.5x3.5diam	Portion of a circular iron bar with collar. Collar is situated 16cm from one end and measures 6cm width by 2.5cm thickness
10	bar	>50	42.5x1.5diam	Portion of a circular iron bar
11	bar	>50	36x4x1	
16	bar	<50	11x3diam	Portion of circular iron bar
21	bar	complete	28.5x1.5diam	Curved with double prong. Prongs are set 18.5cm apart, each has a small collar 5cm from the upper end. Central shaft has possible screw thread at the base
31	bar	<50	62x6diam	Portion of a circular iron bar, with a collar. Collar is situated 17.5cm from one end with a thickness of 3cm and diam of 9cm. Possibly from an axle
34	bar	<50	20x3x2	Portion of a square sectioned iron bar, with a rise at one end (4x4)
35	bar	<50	16x5.5x4.5	Portion of rectangular sectioned iron bar. Attachment hole 1.5cm diam.
36	bar	>50	30x5x3	Portion of iron bar with heavily rusted attachment (rises 7cm from main bar)
43	bar	complete	30x1.5diam	Circular ring at one end (6.5diam) and flat portion at other with two small raised points. Possible utensil for opening furnace or industrial machinery doors
62	bar	?	23x2.5diam	Unknown iron object
65	bar	>50	56.5x1diam	Portion of circular iron bar with rotating iron attachments
66	bar	<50	15x2.5x2.5	Portion of triangular sectioned iron bar
67	bar	<50	20x3x2.5	Portion of iron bar, with head measuring 6x3.5cm
68	bar	<50	30.5x1.5x1.5	Portion of square sectioned iron bar
69	bar	<50	36.5x3diam	Portion of circular iron bar, with rounded head, measuring 6cm width
74	bar	<50	30x8x2	Portion of square sectioned iron bar with a loop measuring 3.5cm diam.
85	bar	<50	27x1.6diam	Decorative iron bar, with head measuring 5cm x 5cm. Possibly fence or bed head portion
102	bar	>50	53.3x4.5diam	Circular, possibly a shock absorber. Internal bar extends 4cm from upper end and 6.5cm from lower end
104	bar	?	69.5x4x1.2	Flat iron bar

105	bar	?	41x5x1.5	Flat iron bar
107	bar	?	54.3x2.2diam	Circular iron bar
108	bar	?	69x1.5diam	Circular iron bar with bolt head at one end measuring 2.5cmx2.5cm
118	bar	>50	45x7x3	Hoop at one end (11x7) and two nails present
2	beam	complete	98x12x2	Purpose unknown, multiple examples present, with variation between those with small square ends and those with rounded ends
3	beam	>50	60x11.5x2	Rounded end iron beam
6	beam	<50	47x7.5x1.5	Portion of a L-shaped iron beam with a tapered end - L section returns 2.5cm
12	beam	<50	19x5.4x2	Portion of a rectangular iron beam with a rectangular indent - measures 2x1.5x2
13	beam	<50	27x16x3.5	Portion of a rectangular iron beam with a rounded indent - indent measures 3.5cm in diam.
15	beam	>50	112x13x1.5	Convex terminal end
92	beam	complete	41.5x7x2.5	Iron beam with squared ends
101	beam	>50	89x11.5x1.5	Curved iron bar with one facetted end
17	block	<50	27.5x9x8	Portion of a block of iron
119	block	complete	52x17.5x10	Large iron block, flat base with a convex upper surface
53	bolt	complete	11x3diam	Bolt has diam. of 2cm, attached bolt head, washer and nut had diam. of
81	bolt	>50	16x2.5diam	Ring shaped head
20	bracket	complete	12x7	Curved with three attachment points - one at either end of the curve and one at the top
30	bracket	>50	15x10x5	Possibly for a boiler or similar machinery. Object has four bolt holes for attachment with diam. of 1.5cm, central pipe attachment rises 5cm from the plate and has an internal diam. of 3.5cm. Base plate thickness 2cm
58	bracket	complete	15x11x1.5	Four attachment points (1.5cn diam.) and two connection points, possible for an axle
64	bracket	>50	10x7x2	Portion of an iron bracket attachment
76	bracket	complete	25x6.5x2	Two base attachment holes and two bracket holes. All holes measure 1.5cm diam, and brackets rise 8cm from base plate
82	cap	>50	10diamx8	Very small central hole
86	cap	>50	14diamx8	Small nipple
120	chain	?	146.5x11.5	Large sea chain, 16 links in length. Each length measures 16x11.5x3.5diam
22	cog	complete	10x10diam	Hollow iron cog with spiral thread. Internal hollow is 3cm diam.
48	cog	<50	10.5x7x4	Portion of a large iron cog, each tooth measures 1x1 with a thickness of 4cm
49	cog	complete	7diamx3	Cog with two rings, one 3cm thick the other 2cm. Internal square connection measures 2cm x 2cm
50	cog	complete	16.5diamx6	Outer rim of cog has thickness of 3cm
56	cog	<50	10.5x6x5	Portion of an iron cog, teeth measure 2cm x 2cm
94	collar	complete	22x15x3	Oval iron collar with two connection points with bolts, and one further attachment point. Bolts measure 3cm in length
27	dome	>50	4x8diam	Circular iron dome or cap with a slightly raised rim around the exterior
32	door	<50	19x8x1.5	Possible portion of iron range door. Scar marking presence of handle still present
33	door	<50	17x10x0.5	Possible portion of iron range door. Ridge runs around exterior. Design is very similar to that exhibited on the Shacklock range from the Rob Roy Hotel
95	door	>50	25x6.5x2	Iron door from a range, door handle rises 5.5cm from the door
73	drill bit	>50	24x1.5diam	Possible iron drill bit, thread present over 7cm from tip, collar measures 5cm in width
44	file	complete	34x4x1.5	Convex cross section iron file
45	file	complete	30x4x1	Convex cross section iron file
46	file	complete	29x3.5x1	Rectangular cross section iron file
47	file	complete	21.5x3.5x1	Rectangular cross section iron file

114	file	>50	30x4x1	Rectangular cross section iron file
115	file	complete	42.5x3.5x1.5	convex cross section iron file
29	flywheel	<50	13diamx2.5	possible portion of a flywheel
7	fragment	?	17x16.5x2	portion of an L-shaped iron beam - L returns 5cm with a thickness of 2cm
54	fragment	?	16x4x1.5	Unknown
59	fragment	?	21x6x3	Unknown
71	fragment	?	13x0.5diam	Unknown - central slot measures 4cm in length
83	fragment	?	12x2.5diam	Unknown
89	fragment	?	31x8.2x1	Unknown external rim (2cm thick). An attachment hole has diam. of 3cm, and a central slot is 8cm long
90	fragment	<50	13x8.5x7	Unknown, with attached bolt
93	fragment	?	28.3x12x6.5	Portion of triangular iron object, slot measures 12.7cm x 3.8cm
97	fragment	?	22.5x20x1	Possibly a fragment of an engine housing
70	grate	<50	19x12x4	Portion of an iron grate such as for covering a drain, grate width measures 2.5cm
88	grate	<50	14x10x1.7	Portion of iron grate for drain or like. Width between grates is 1.8cm
24	handle	>50	24.7x2x2	Portion of iron handle, square in section with a simple grooved design
25	handle	>50	23x2.5x2.5	Portion of iron handle, square in section with a simple grooved design
26	handle	>50	24x4x3.5	Portion of iron handle, square in section, no design
28	handle	<50	12x4diam	Possible portion of a circular iron handle
60	handle	>50	12x10x1	Portion of an iron handle
78	hook	complete	13.5x1diam	Hook, with width measuring 6.5cm
1	mould	complete	42x25x25	Possible iron mould for casting
41	nail	complete	10x0.6diam	
42	nail	complete	10.5x0.3diam	
96	pick head	complete	41x3.7x3.5	Pick head, head attachment measures 5.5cm x 5, with the slot measuring 6cm x 1.5. Point is just 1.5cm thick
51	pipe	?	33x2.5	
52	pipe	?	21x2.5	
57	pipe	<50	8x7x6	Portion of a pipe fitting, flat base, with internal diameter of 3cm
61	pipe	<50	18.5x3diam	Portion of iron pipe
63	pipe	<50	11x4diam	Portion of an iron pipe, has three raised rimmed holes. Possibly used for spraying liquid
106	pipe	?	31.5x5.5diam	Portion of iron pipe
116	pipe	?	54x3diam	Iron pipe with head. Head measures 5cm x 5cm
117	pipe	?	18x2.5diam	Portion of iron pipe
5	plate	<50	21x9.5x2	Portion of a metal plate, with small raised square tiles (2.5x2.5)
14	plate	<50	19.5x7x0.8	Portion of iron plate with 2 small ridges present - height of 1cm. Two possible iron nails are present
18	plate	<50	19x15.5x4.5	Portion of iron plate with a raised rim (3cm width x 1cm height)
75	plate	complete	31x12x0.8	Rectangular iron fitting plate. Two central holes measure 20cm diam, five smaller holes for attachment measure 1cm diam.
79	plate	<50	24.5x6x0.6	Portion of an iron plate with a decorative surface pattern - OIIIOIIIO
91	plate	>50	22.5x7.5x1	Portion of a possible decorative iron object, possibly fish or ornate foliage
98	plate	?	28.5x12.5x0.5	Fragment of an iron plate
111	plate	complete	19.3x8.8x0.9	Iron plate with two attachment holes measuring 1.5cm diam.
4	plough	complete	39x22.5x2	2 bolt holes present - with diam. of 1cm and o.4cm
55	ring	complete	11.5diamx0.5	Possible iron washer, inner ring has 5.5cm diam.
39	spike	complete	19.5x1.4diam	
40	spike	complete	15.5x0.7diam	

23	spring	complete	13x7diam	Iron has a 1cm diam.

A. Brass decorative item with a floral design

B. Pins, safety pin, hooks and eye, and decorative item

C. Three buttons and a rivet

D. Decorative iron bar

Figure 164. Decorative items and those related to clothing and dressmaking

Household & Food Related

The items included a personal corkscrew, a hook for hanging pictures or paintings, and another hook possibly from scales or some other measuring device (Figure 165A).

Kitchen items included three iron stove/boiler attachments, and a portion of a range door similar to that of the Shacklock oven recorded in the basement of the Birdcage Tavern/Rob Roy Hotel (Phear & Farely 2012) (Figure 165B). Hanging handles were probably from cooking pots, and a steel table knife blade (Figure 165C) had the mark: CJ (in a flag) JOHNSON WESTERN WORKS and WARRANTED GOOD formed in a circle (these works were located in Sheffield, England). Another badly corroded steel knife blade and handle was recovered, with less than 5cm of the handle remaining. Other cutlery included the bowl of a steel spoon and a silver plated teaspoon bowl. A tin tray was possibly used as a tea/coffee tray.

Food items in the form of tins were present in Well 1, with 6 nearly identical items measuring between 86.20mm high and 115.17mm high (Figure 165D). No markings were visible on the cans to determine possible contents. A tall rectangular cross-section can standing 117mm high could have contained any of a number of different products, including tea. A section of a large can and the base of a heavy can or pot were recovered with a portion of a ceramic plate embedded in the corroded metal. By 1891 there were 15 canning factories operating in New Zealand, as 'cans' were an improvement on storing food in glass jars. Fruit was the most popular canned food, and one Nelson company, Kirkpatrick and Co. sold 'K' brand jam and fruit from 1881 (Wilcox 2010). As canned food was still imported as well, it is not clear whether the cans recovered in the assemblage were of local or foreign manufacture.

Brass hook

Part of a range door

Steel knife blade

Portions of tin cans

Figure 165. Household and food related metal items

Building and Related Items

Numerous fragments of copper and other wire were identified which could have been related to any number of activities, while lead flashing was most likely derived from around windows or on the roofs. Numerous nails were identified, along with spikes and iron beams and metal sheeting which were also likely to have been related to building. A pick axe head could have been used to excavate plots and prepare the land for building (Figure 166), and five files would have been used in woodworking and/or metalworking.

Figure 166. Building related items: pick axe head and iron nails and spikes

Machinery

The remaining metal items all related to machinery, either as components or as part of the casing/body. Small scale and private mechanical engineering firms became established from the late 19th century, with light engineering businesses springing up making machines and small parts (Wright 2010). Both small and larger government engineering workshops were established, with many businesses cashing in on the railway and mining boom (Wright 2010). However, machinery from Europe was still commonly imported into the country. For example, one interesting item recovered was a copper name tag/plate with the name J. BAKER & SONS, 58 CITY RD, LONDON, E.C. (Figure 167A). Joseph Baker and Sons Ltd was an engineering company that specialised in large scale machinery for the confectionary and baking industries. The company moved into the City Road premises in 1881. In 1919 the company merged with Perkins Engineers Ltd to form Joseph Baker Sons & Perkins Ltd. This company still exists today as Baker Perkins Ltd (http://www.bphs.net/GroupFacilities/J/JosephBakerAndSons/index.htm).

Numerous cogs were identified, both small and large, and five iron brackets (Figure 167B–C). Beams and bars were also recovered, and part of an iron chain which might once have been part of an anchoring system was also identified (Figure 167D). A partial flywheel, numerous iron attachments, part of a flywheel and a collar, a pulley, drill bit, and various unidentified objects were all parts of machinery.

A. Copper name tag/plate

B. Cog

C. Iron bracket

D. Iron chain

Figure 167. Mechanical and related parts

6.6 BUILDING/STRUCTURAL MATERIALS

Materials related to structures and building/construction were recovered in small numbers only (Figure 169, Table 27). The majority of items analysed were bricks, of various colours and sizes, glazed and non-glazed, wire cut and moulded. In the Britomart project, Bicker et al. (2005:109) illustrated a brick typology based on manufacturing method, following Best (Figure 168), whereby generally handmade bricks are earlier than machine-made ones, although there is some overlap in the mid-1800s. 'Frogging' relates to a shape that is pressed out of the brick before firing; wire-cut bricks are identified by a drag mark across the brick surface, and machine made bricks are generally more uniform.

No brick makers were identified in the assemblage, as few whole bricks were recovered, and none had clear distinguishing marks for known makers. The bricks did appear to be predominantly handmade, some in sand coated wooden moulds, one was wire cut, and one frogged, and one had aeration holes (Figure 169).

There were also slate roof tiles, a common roofing material in the 19th century, and a piece of tongue and groove floorboard.

Faced stone blocks used in the sea wall and the Freemans Bay Stormwater culvert were recorded in situ and have already been discussed.

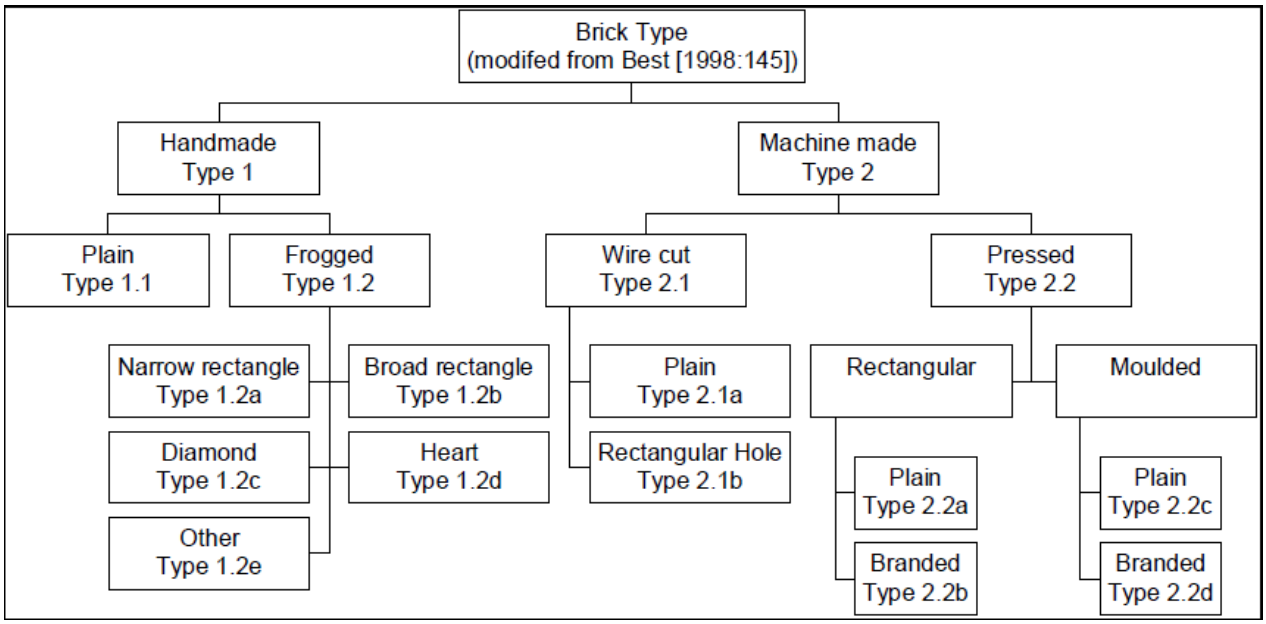


Figure 168. Brick typology from the Britomart Project (Bickler et al. 2005), modified from Best (1998:145ff)

Table 27. Building material in the form of brick, tile, cement and slate (those in italics are from the stormwater trenches)

ID	Material	Description
1	Brick	Four fragments
2	Brick	Cream coloured fragment, wire cut
3	Brick	102mm wide paver
4	Brick?	Dark coloured mix appears glazed on one surface
5	Brick	Orange, 225x107x74mm, wood mould, scrape marks on top face
6	Brick	Red-orange fragment, sand coated wood mould

7	Brick	Pale orange, 225x105x74mm, sand coated wood mould rectangular frog
8	Brick	Orange, fragment, four aeration holes
9	Brick	Orange, 215x100mm, some large inclusions, dark discolouration on one face
10	Brick	Orange, fragment, frogged, water rolled
11	*Drainage Tile*	*Reddish-brown fragments, glazed*
12	Roof Slate	3 pieces of tile
13	Roof Slate	2 pieces
14	Cement	Dark coloured mix, abundant sand. Likely used to seal a drain joint
15	*Wood*	*Offcut tongue & groove board, 110x135x13mm*
16	Scoria	Numerous fragments which might have been used in drainage or basecourse material

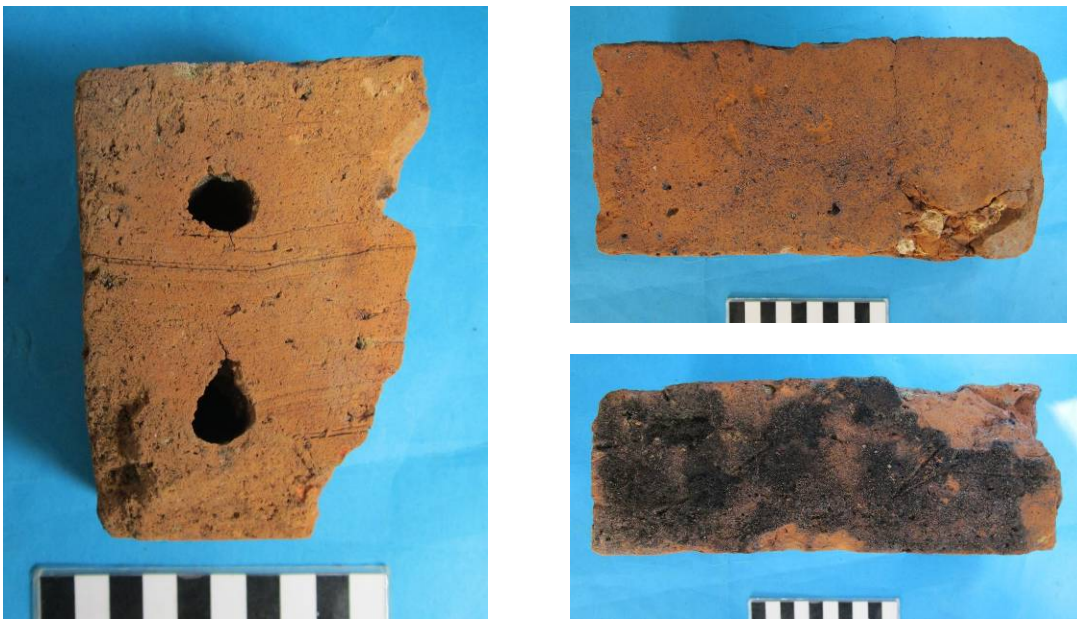


Figure 169. Bricks recovered during the project: aerated brick fragment (left); two faces of a plain stock brick illustrating the discolouration and natural colour of the brick (right)

Conclusion

A vast array of artefacts largely dating to the later 19th to early 20th century were recovered from the VPT project. The artefacts recovered from the reclamation soils were items discarded from both domestic and industrial facets of settlement around the bay, while those recovered from the two wells represent domestic life in the nearby residential area of Freemans Bay. When compared with other assemblages such as Britomart (which dates from 1876 to 1886), the assemblage is significant as it provides information from secure contexts dating to the later period of settlement and development in Auckland, a period that is not so well represented artefactually in the current archaeological record for Auckland.

7. DISCUSSION AND CONCLUSIONS

The VPT project produced an array of archaeological evidence relating to the development of Auckland from town to city, and in particular the changing landscape and environment of Freemans Bay. The project encompassed a variety of environments both past and present, including the foreshore, the bay, and land containing early Auckland roads and settlement areas – Union Street, Patteson St, Franklin Road and Napier Street. The 19th century reclamations formed the majority of the area that was excavated, and archaeological evidence of materials, structures and processes relating to this large scale landscape transformation were revealed.

The results of the VPT project are significant in that they add to our understanding of Auckland's early history, both specifically in relation to the area of Freemans Bay and more generally in terms of waterfront reclamation and the lifestyle of late 19th century and early 20th century settlers in Auckland. This complements other archaeological studies relating to the early decades of Auckland's history, including the results of investigations at the Victoria Hotel on Fort Street (Brassey & Macready 1994), the Chancery Street neighbourhood (Macready & Robinson 1990; Macready & Goodwyn 1990), the Queen Street Gaol (Best 1992), His Majesty's Theatre (Felgate 1998), the Britomart project (Bickler et al. 2005), the Albert Barracks (Clough & Geometria 2004), and the Phoenix Foundry and the Wynyard Street neighbourhood (Clough, Campbell & Mace 2004; Bickler et al. 2007; Clough, Mace et al. 2004). These have provided a wealth of information on the developing 19th century town of Auckland and its commercial, industrial and residential activities in different decades. The Britomart project in particular focussed on reclamation in the period 1879-1886, and the subsequent development of the port and Auckland's transport hub. The VPT study carries the reclamation story into Freemans Bay, a less central, more working class and industrial part of Auckland's waterfront, and allows comparison with a slightly later period of reclamation, within the last 12 years of the 19th century and into the first few years of the 21st. It also provides an impression of life within a predominantly working class suburb in the areas close to the reclamation, at around the same period.

7.1 LANDSCAPE AND SETTLEMENT

While there was no evidence of Maori settlement in the excavations, the bay (Waiatarau) was known to have been inhabited and frequented by Maori for fishing and shell fish gathering. The two streams, Tunamau on the east and Waikuta on the western side, would have provided both fresh water and fish such as eels. Pa sites located on either headland attest to an area that was worth protecting.

The foreshore, particularly the estuarine environment, would have been one of dynamic processes, and prior to European settlement it was much further inland than it is today. Early European settlement on the hills around the bay, starting in 1841 with James Freeman, would have created changes in the landscape – initially from vegetation clearance and livestock farming, followed by the formation of town sections, residential and industrial development, and the culverting of natural watercourses. Evidence for increased silt deposits on the sea floor are likely to be linked to erosion resulting from these processes, as well as the deliberate dumping of silt as recorded in 1885, when the transformation of the harbour was in full swing with reclamations and wharf building requiring dredging activities.

With an early sea wall constructed prior to the Drake St–Patteson Street reclamation, evidence points to some development of the foreshore in the 1860s in order to create roadways and access to the developing area, and a very early Franklin Road surface identified during the excavations attests to this. Such facilities were required as the bay developed, with records indicating the presence of sawyers, brick makers and boat builders operating businesses by the water's edge in the 1850s. The stone used in the walls was probably cut and faced nearby. Evidence for the importation of bark for tanning was recovered, probably from Australia but possibly from elsewhere in New Zealand, and the processing of hides into leather would have been essential for the establishment of local businesses making shoes, saddles and other leather products typical of the period. These businesses became more numerous as time went on and the foreshore was quite heavily built up by the 1870s.

Further up the slope on Union Street, Napier Street and around Franklin Road, the land was soon sold, with houses being built from the 1860s, a process which intensified in the 1870s on Union Street. While the stream Tunamau originally provided fresh water into the bay, as the area became more developed it would have become polluted and it was culverted to form the Freemans Bay Stormwater sewer in the 1870s. Some properties had their own wells, and the two discovered during the tunnel works would have added value to the properties on which they were located. They may originally have serviced a number of properties in the area, until reticulated services were fully operational by the early 1880s, and continued in use on private properties for some years afterwards, not being infilled until the early 20th century.

There was evidence that this area may not have been a particularly safe environment in the early years. The area around Hardinge, Drake, Sale, Scotland and Middle Streets were among the least desirable areas in Auckland (Husbands 1992:27), with Sale, Vernon, and Centre Streets known for prostitution. Such factors may explain why a pistol was found discarded at the bottom of the well on the Union Street property, located very close to the somewhat rough area around Drake and Sale Streets. Personal protection may have been a high priority in this area, and a pistol would certainly be one means of protecting oneself against thieves, brigands and hooligans!

The most significant changes to the early landscape came with the reclamations of the 1880s. The natural headland Acheron Point was forever transformed through demolition and the subsequent dumping of the materials as reclamation fill in order to create Beaumont Street and thus provide a solid road to provide access to the Auckland Gas Company. This west side of the bay took on an industrial character, having previously been characterised by the gardens and grounds of the Bishop's residence. Within 15 years the entire bay had been obliterated by reclamations which extended as far north as Fanshawe Street.

7.2 RECLAMATION

Drake to Patteson Street 1875-78

While a small strip on the eastern side of the bay had been reclaimed in 1873-74 (Hardinge-Patteson Street), the first major foreshore development was the Drake Street to Patteson Street reclamation. This created land new land for the construction of commercial businesses, and room for a road running from the bottom of College Hill, across the bay and up into the city, first known as Patteson (or Patterson) Street (later becoming Victoria Street West).

Excavations for the tunnel and associated works revealed layers of the reclamation along with the stone sea wall that demarcated the northern edge of the reclamation and retained the fill. As the foreshore developed, new structures were built, including the Gasometer site, wooden houses in the area that later became the Destructor site (and then Victoria Park Market), and in 1885/6 the Rob Roy Hotel was built on the corner of Union Street and Franklin Road (Phear & Farley 2012).

In line with the increase in land occupation (both business and residential), drainage issues came to the fore and culverting using brick, stone and concrete was introduced in the area. Plans for increased wastewater and sewerage works and the perceived health risks of not improving these, were highlighted in the newspapers of the time. Certainly the Freemans Bay stormwater/sewer was in place by the mid 1870s, and while it helped to direct wastewater away from the settlement, it still emptied into Freemans Bay, which was strongly criticised by the long-suffering local residents and business owners.

Freemans Bay – Beaumont Street and Victoria Park 1885-1901

The main reclamation works infilled the whole of Freemans Bay, creating Victoria Park and Beaumont Street. At this stage the plans by the Harbour Board to transform the Auckland harbour into useable accessible land while creating a deeper harbour and more productive wharves was in full swing. Point Britomart had been demolished to connect Commercial Bay to Mechanics Bay in 1879-1886, and reclamation had created new land and waterfront for the development of businesses, tramways and industries.

Further west, Freemans Bay also required large-scale infilling, and this had been envisaged from the earliest period of settlement. Such an undertaking would have incorporated a large range of people and processes – from dredgers working on ships in the harbour, labourers excavating earth and rock, carters driving teams of horses hauling the carts of fill, all coming together to dump material into the bay in the process of reclamation. Construction of seawalls, retaining structures and temporary wharves was integral to this process, utilising the skills of sawyers, carpenters and stonemasons, along with iron workers who attached the metal sheathing and other elements to the long piles which were driven into the seabed. A range of timbers was utilised for this, both native species such as Kauri and Totara and imported species such as Eucalypt and Huon pine – evidence of trade, particularly with the colony in Australia, which was an important part of Auckland's increasing role in the import and export of resources.

The fill materials being dumped into the bay derived from a range of sources – sterile clays and bedrock material derived from Point Acheron and other earthworks taking place around the city; and marine clays and shell dumps collected by dredgers who were dredging the harbour to allow for deeper passages for ships. These fills formed the majority of the lower deposits, located above the sea bed. Closer to shore and closer to the surface there was evidence of the dumping of domestic waste including glass bottles formerly used for containing medicines, condiments, water and of course alcohol, broken crockery, old shoes, and discarded bits of wood and broken machinery, iron and nails. Some of this refuse would have been deposited directly by neighbouring businesses and residents, while some would have come from secondary deposits further afield. Various unsavoury items were probably dumped into the reclamation, such as night soils, carcasses and other materials.

7.3 URBAN EXPANSION: LATE 19TH TO EARLY 20TH CENTURY

At the same time that the final stages of reclamation in Freemans Bay were taking place, both the residential and industrial areas were expanding. Known as a predominantly working class area, hotels like the newly constructed Rob Roy (1885/6) were frequented by people working on the wharves and in the local industries such as the gas works. The majority of houses were occupied by tenants, people working in the area but not able to purchase their own property, although it appears that the slightly larger property with the well on Union Street may have been owner-occupied for a time. The infilling of the wells in the late 19th to early 20th century provided a snapshot of life at the time, with an image of domestic life not that dissimilar to our own. Evidence for the consumption of nuts and starchy foods, alcohol, home medicines, infant formula, and a range of sauces and condiments to complement the food was recovered. Broken dinner services were discarded, and the consumption of tea and coffee seemed popular. Home sewing was evident, possibly in order to earn a wage, but also to provide clothes for the family.

However, while the area was developing it was not a particularly up-market neighbourhood, largely due to the industrialised element. Certainly during this time of expansion the area was cluttered with sheds, factories, timber shacks and ill-formed roads which became rutted and muddy following rain (Mathews & Mathews 2003). It appears that the lower part of Freemans Bay was particularly troubled in this respect, and the grand plans of the Harbour Board were not materialising in a positive way: 'the lower parts of Freemans Bay were neither an image of arcadia nor a tribute to the triumphs of material progress' (Husbands 1992:26).

Efforts to improve the lifestyle and health of inhabitants of the city came with the introduction of a city wide water reticulation system in the early 1880s. This would have provided much needed relief to those reliant on the wells in the area, which would have been under a great deal of pressure during times of drought. It is interesting that the well on Union Street appears to have been used for at least 10 years after the city water reached the area, and this may indicate a particularly good water source, possibly one tapped into a spring, or perhaps just reflects the 'teething' problems the new system from Western Springs experienced after it was initially established.

A good and reliable water source would have been essential to industries in the area, such as the iron foundry that was soon constructed after the reclamation was completed and the land was split into lots along Victoria Street West and Beaumont Street. While the area was obviously still dogged by unsavoury behaviour and far from perfect facilities, the creation of Victoria Park was a positive move, providing a place where people could exercise and partake in good healthy activities, rather than using the entire area for industrial or residential expansion. Although further reclamation in the mid 20th century pushed the terrestrial limits further into the harbour and created a new industrial zone, the park at least was retained.

7.4 CONCLUSION

The monitoring of earthworks related to the construction of the Victoria Park Tunnel has provided a wealth of new information on the early development and expansion of the city of Auckland, as well as glimpses into the lives of the people living and working in Freemans Bay. In all, about a quarter of the reclamation area recorded as site R11/2374 was affected by construction of the tunnel, and as such a large part of the site still remains unaltered. The project area, however, also

extended to the north and south of the bay, and the results have provided an insight into the varied physical and social environments of the late 19th and very early 20th centuries. The results of the project have helped to provide a fuller understanding of the development and landscape changes in Freemans Bay, and in doing so have contributed to a broader understanding of the history of Auckland's waterfront and the expansion of Auckland in the 19th century.

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Figure 15: Sir George Grey Special Collections, Auckland Libraries, 7-A4942.

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Figure 23: Richardson, James D. 1878. 1931. Sir George Grey Special Collections, Auckland Libraries, 4-1374.

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APPENDIX 1

CONTEXT DESCRIPTIONS

Fanshawe Street On-ramp (Chapter 2)

Context No.	Type	Description
170	Surface	Tarseal
171	Layer	Base layer of pavement. Very well compacted, mid brown gravel
172	Layer	Very well compacted, mid greyish brown to mid reddish brown, mixed gravel hard course
173	Wall	Concrete coated sea wall, comprised of a mix of large rocks and concrete chunks. Very occasional fragments of wood and fibrolite included in wall fill
174	Layer	Firm, mid yellowish brown, clayey gravel fill
175	Layer	Compacted, dark black, pebbly tarseal. Located in patches, possibly a foot path
176	Layer	Compacted, mid brown sandy gravel
177	Layer	Firm, blackish yellow, mixed silty clay
178	Layer	Well compacted, mid reddish brown, very fine gravel mixed with scoria
179	Layer	Moderate, mid brownish yellow, mixed silty clay fill
180	Layer	Compacted, mid brownish black, fine gravel
181	Pipe	Concrete drain pipe. Modern
182	Layer	Moderate, mid brownish red, scoria fill. Backfill around drain pipe (181)

Western Stormwater Trench – Areas 1 and 2 (Chapter 3)

Context No.	Type	Description
500	Layer	Moderate, dark brown mixed clayey silt topsoil
501	Layer	Firm, light brownish-yellow clay, with some clusters of sandstone present. Up to 1.8m thick in parts
502	Layer	Moderate, brownish-grey clay with a high level of organics
503	Layer	Greyish-brown layer with a high number of small timber fragments
504	Layer	Blackish-grey sticky clay silt
505	Layer	Light blackish-blue sticky clay layer
506	Layer	Firm, bluish-grey clay
507	Layer	Soft, dark greyish to blackish-blue clay
508	Layer	Blackish-grey sandy silty clay
509	Layer	Soft, dark black, sandy silty clay - possibly organic material but also includes glass, ceramics, bones, wood, organics, tin, fabric, leather. Material appears to be the sea floor from the beginning of European occupation. Above 510

510	Layer - Natural	Soft, bluish-grey sandy clay, with shells present. In situ marine clay layer
511	Layer - Natural	Firm, light yellowish brown clay. This deposit was located in some areas below the marine deposit. Identified at a depth of c. 7m
515	Surface	Bitumen road surface
516	Layer	Basecourse layer for road surface
517	Surface	Basalt cobbled surface, former road surface
518	Layer	Red scoria layer, basecourse for cobbled surface
519	Layer	Light bluish-grey clay, moderately compact. Fill/levelling layer
520	Layer	Mid, greyish yellow, moderately compact clay. Levelling layer
521	Surface	Bitumen surface, likely former road, 6cm thick
522	Layer	Small-medium sub-rounded scoria. Basecourse for former road
523	Layer	Bluish-grey with yellowish-brown mottles, silty clay, moderately compact. Reclamation soil
524	Layer	Dark grey-black silty clay, moderately compact
525	Layer	Mid-grey shelly clay, compact and sticky. Marine deposit
526	Layer	Dark grey clay, compact. Extends beyond base of excavation
527	Surface	Modern bitumen road surface
528	Layer	Mixed dark black to reddish brown ashy clinker. Thick burnt deposit
529	Layer	Firm, mid brownish yellow clay
530	Layer	Firm mid blueish-grey clay
531	Layer	Moderately compacted, mid to dark brownish black silty clay layer

Eastern Stormwater Trench – Area 7 (Chapter 3)

Context No.	Type	Description
400	Tarmac	Road surface
401	Hardcore	Base for road surface
402	Layer	Mixed compact yellow clay with brown mottles, moderately compact. Occasional fragments of pottery, CBM, and wood, glass, very occasional shell
403	Surface	Concrete surface - mix of angular gravels, shell and lime. 8cm thick. Early surface? 95cmbs
404	Surface	Concrete surface, similar makeup to 403 so likely contemporary. Lower depth compared to 403 - 1.65mbs
405	Layer	Light brownish, greyish yellow clay, moderately compact. Occasional organic content. Reclamation fill
406	Layer	Yellowish grey clay, compact and plastic. Occasional degraded fragments of sandstone. Located to the south side of wall 407
407	Wall	Stone sea wall, large to medium subangular volcanic rocks, 2 courses depth remaining, 3.2mbs

408	Layer	Dark bluish grey plastic clay, moderately compact, with yellow mottles. Sterile
409	Stone Deposit	Stone deposit on the seaward side of the wall. Large subangular stones butting 407. Deposited as part of the sea wall
410	Layer	Bluish-greyish yellow sticky clay, moderately compact. Present in southern section behind the stone wall only
411	Layer	Light greyish yellow, moderately compact clay. Possible old surface but not clear
412	Layer	Bluish-greyish yellow clay, moderately compact. Similar to 410
413	Layer	Dark grey silty clay, plastic and sticky. Marine sediment?
414	Layer	Dark greyish-black silty sand, loose to moderately compact. Occasional to frequent shell fragments and organic material. Finds included worked leather and preserved wood. Base of excavation

Eastern Stormwater Trench – Area 6 (Chapter 3)

Context No.	Type	Description
420	Tarmac	Modern road surface
421	Fill	Fill of service cut 422
422	Cut	Cut for modern services. Filled by 422
423	Layer	Mixed mid-grey and yellow clay, compact. Reclamation layers
424	Layer	Mix of brown loam and small angular stones, lens within 423
425	Layer	Similar to 424, higher concentration of loam
426	Layer	Dark greyish yellow clay. Lower reclamation deposit
427	Layer	Dark greyish-black silty clay. Buried seabed/mudflat deposit
428	Layer	Dark greyish blue marine clay. Located beneath 427
429	Cut	Cut for brick culvert 430. Northern side visible only. Steep to moderate angle, moderate break from surface. Base not observed
430	Structure	Brick culvert. Circular, extending east-west along Victoria Street West. Approx. 1.5m diameter
431	Structure	Timber shoring alongside culvert 430. Average length 1.4-1.5m. Machine cut

Eastern Stormwater Trench – Area 5 (Chapter 3)

Context No.	Type	Description
451	Layer	Compacted hard course
452	Layer	Mixed fill. Moderate, dark yellowish black silt with clay chunks. Included frequent demolition rubble - bricks, fibrolite, iron pieces. Same as (306)
453	Cut	Linear, break of slope sharp at top and base, vertical sides, flat base. Cut made for the addition of new pipes for the viaduct stormwater
454	Fill	Compacted, mid brown and mid grey. Two lenses of backfill for [453] - lowest was clean base course, upper most was backfill redeposited (452)
455	Layer	Firm, dark yellowish black, mixed silt with lenses of clay. Clay was in small layers almost like at capping deposit but incomplete.
456	Layer	Very loose/friable, mid reddish brown, sandy clay with occasional brick fragment.
457	Layer	Soft, dark bluish grey sandy clay with clusters of shells. Appeared to be re-deposited marine material. Shells includde scallops, cockle (?). This deposit contained the retaining wall that had been identified in both the north and south sides of this section of trench
458	Layer	Moderate, dark black, lens of dumped waste material. Included iron and tin scrap, bottles, boots within a matrix of clayey silt. Grass and sawdust materials
459	Layer	Soft, dark black, silty sandy clay - component of organic material but also included glass, ceramics, bones, wood, organics, tin, fabric, leather. Material appeared to be the sea floor from the beginning of European occupation.
460	Layer	Soft, bluish grey sandy clay, with shells present. Marine sandy clay material believed to be in situ.
461	Layer	Moderate, mid greyish yellow clay, contained some fragments of brick and occasional shells.
462	Layer	Loose to moderate, dark black, clayey silt. Appeared to be a dump of predominantly silty material. Section shows this material gets thicker to the north - to over 1.5m thick. As the material got thicker there appeared to be more lenses of material including brick and iron. At lower levels great amounts of timber scrap was present.
463	Wall	Brick N/S wall - probably related to the foundry building on site. 6 courses of scoria/concrete foundation.
464	Wall	Brick E/W wall - probably related to the foundry building on site. 4 courses of scoria/concrete foundation.
465	Layer	Firm, dark yellowish black, mixed silt with chunks of clay.
466	Timber	Timber retaining wall structure and associated loose timber fragments. Identified on both the north and south sides of the trench - although not present in the middle of the trench so possibly two separate structures.

Orakei Main Sewer Trench (Chapter 3)

Context No.	Type	Description
470	Surface	Modern carpark surface
471	Basecourse	65mm agregate basecourse for the tarmac surface
472	Layer	Mixed gravel, ash and loose brown loam. Occasional small concrete fragments
473	Layer	Same as 472, with more dark grey ash
474	Layer	Blackish-grey ash deposit with occasional small gravel fragments and brown loam
475	Layer	Light grey gravel with occasional light grey ash deposits
476	Layer	Moderately compact light grey and light brown clay. Occasional small lenses of ash
477	Layer	Black ashy layer located between 476 and 478
478	Layer	Light greyish yellow compact clay
479	Layer	Black to dark grey ashy layer, thinning as it extended to the base of the trench
480	Layer	Dark yellow friable clay with small lenses of light grey clay mixed throughout. Present over most of the trench
481	Layer	Light grey clay with occasional light yellow clay lenses. Fused glass and ceramic present with occasional ash
482	Layer	Same as 481, but more yellow in colour

Drainage Realignment Trenches (Chapter 3)

Context No.	Type	Description
300	Surface	N/A, mid black, tarseal. Modern tarsealed surface
301	Layer	Well compacted, mid grey, gravel/base course. 10cm thick
302	Layer	Firm to cemented, mid reddish brown, mixed silt, clay, gravel. Very frequent iron and slab material present, a re-deposited well mixed deposit. Backfill for [304], associated with (303)
303	Pipe	N/A, mid grey ceramic drain pipe. Modern drain pipe connected to the overhead Viaduct
304	Cut	Unknown shape, BoS at top sharp, unknown at base, sides moderate, base unknown. Modern cut associated with the provision of drainage from the motorway viaduct
305	Layer	Compacted, dark black, ashy silt. Deposit largely truncated by [304]
306	Layer	Moderate, mid reddish brown, mixed deposit. Iron material and artefacts, bricks, mortar and slag. Large number of iron artefacts collected from this deposit. Bricks identified in dense clusters in some areas, especially close to (313)
307	Layer	Moderate, mid yellowish brown, silt clay, with frequent iron waste material present
308	Layer	N/A, dark grey, concrete foundation block. A block of concrete with an iron H beam rising from this, the foundation was also made up

		of an overturned iron mould
309	Surface	Indurated, dark brownish black, mixture of cemented slag, metal fragments and rock. A very solid, thin deposit of waste foundry material dumped to form a surface
310	Layer	Moderate to firm, mid greenish yellow, mixed clay fill, with some gravel and slag also present
311	Layer	Moderate, mid black, greasy silt, with a possible organic component. This deposit also contained occasional fragments of glass, ceramic and well-rounded water rolled pebbles
312	Timbers	N/A, N/A, worked timbers. Appears to form part of a shallow timber retaining wall. Consists of an upright with two flat backing planks and capped with a flat horizontal timber
313	Wall	N/A, yellowish to reddish orange bricks, with mid whitish grey gravelly mortar. E-W running brick wall, consisting of three wall courses, over two stepped base courses set on a scoria/concrete foundation (314). Wall was intersected at the eastern end by a short length of copper pipe
314	Layer	Indurated, dark reddish grey, mixed scoria/concrete. Concrete/scoria foundation material, 25cm thick, related to (313)
315	Layer	Moderate, dark brownish black, sandy, ashy clay, with occasional ceramic fragments
316	Layer	Moderate, mid reddish yellow, clay with occasional clay fragments

Main Tunnel Excavation (Chapter 4)

Context No.	Type	Description
700	Layer	Mid to dark grey sandy clay. Occasional shells and lenses of sand. Redeposited marine clay
701	Layer	Grey sandy silty clay, irregular base due to pedogenic processes. Redeposited marine clay
702	Layer	Light grey silty clay, undergoing pedogenesis. Redeposited marine clay (e.g. 705) and located immediately above the silty sea floor 703
703	Layer	Dark blackish-grey sandy silt. Occasional-frequent marine shells, occasional artefacts. Former sea floor
704	Layer	Mid greyish-yellow silty sand, frequent marine shells, occasional artefacts. At interface between sea floor and natural marine clay
705	Layer	Mid grey silty clay, occasional shell fragments. Natural marine clay substrate
706	Layer	Light grey clay with some yellow clay lenses. Derivative of the Waitemata formation. Base of excavation

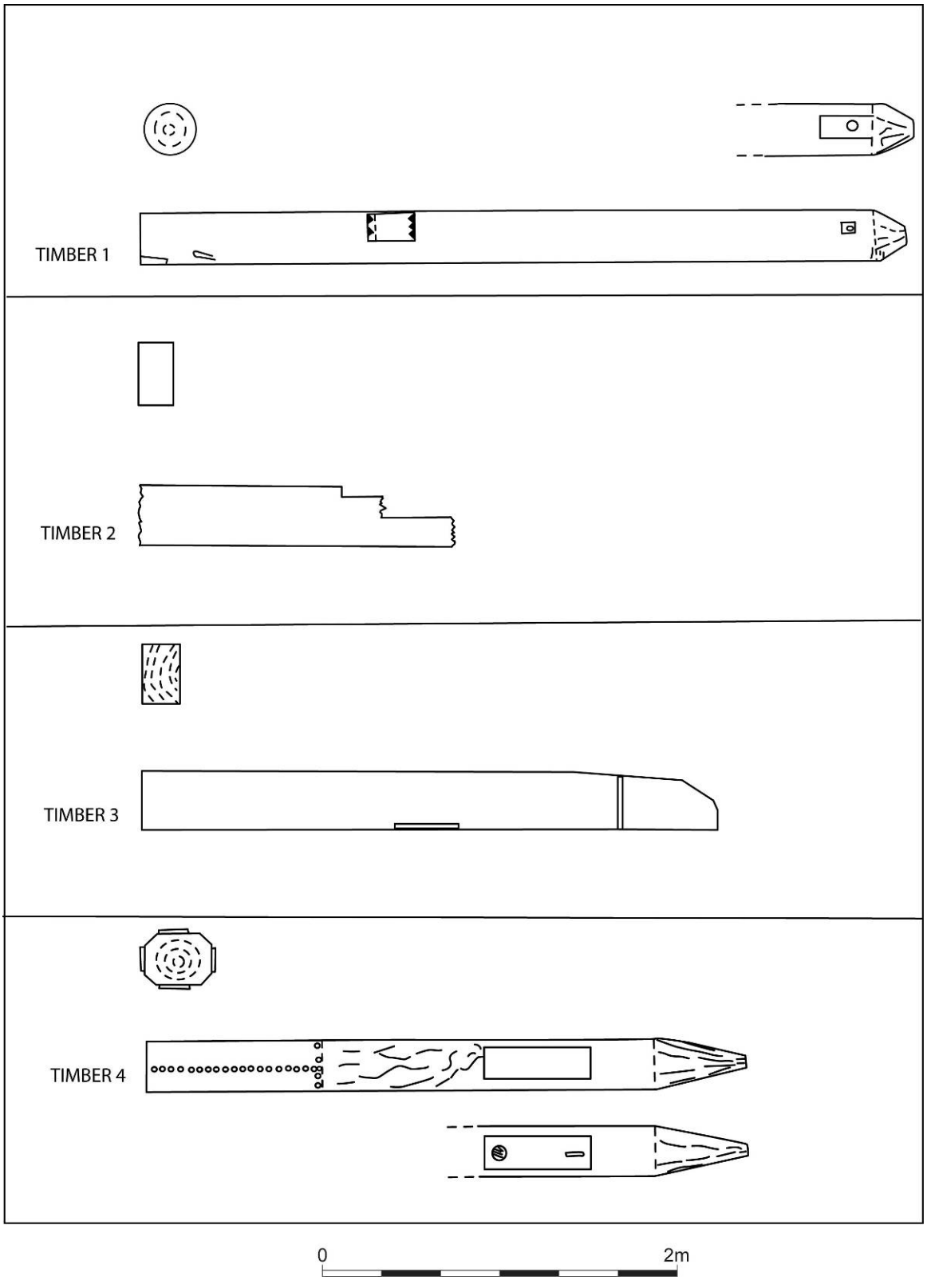
Context No.	Type	Description
710	Layer	Mid to dark grey sandy clay. Occasional shells and lenses of sand. Redeposited marine clay (e.g. 656)
711	Layer	Grey sandy silty clay, irregular base due to pedogenic processes. Redeposited marine clay (e.g. 656)

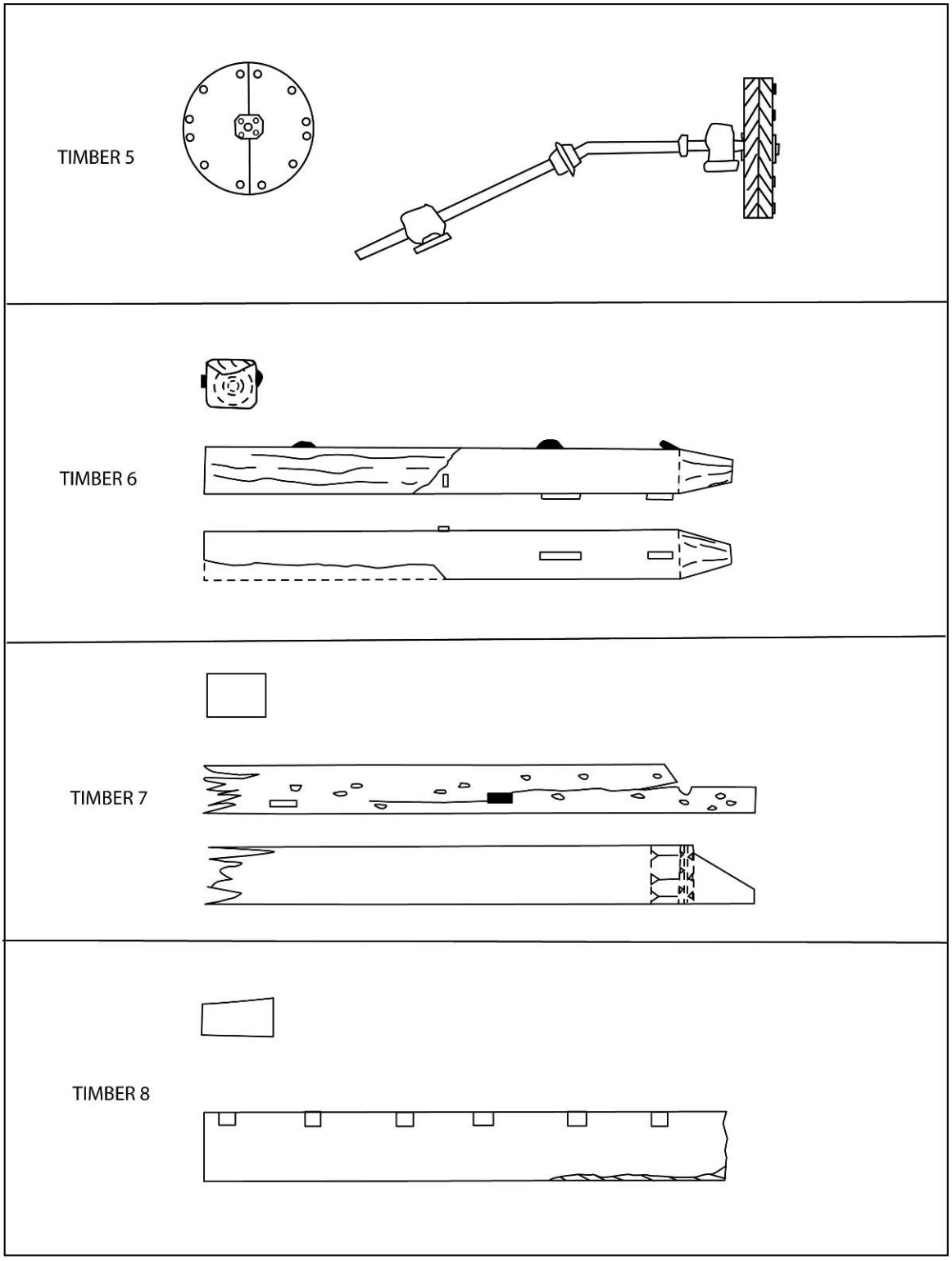
712	Layer	Light grey silty clay, undergoing pedogenesis. Redeposited marine clay (e.g. 656) and located immediately above the silty sea floor 654
713	Layer	Dark blackish-grey sandy silt. Occasional-frequent marine shells, occasional artefacts. Former sea floor
714	Layer	Mid greyish-yellow silty sand, frequent marine shells, occasional artefacts. At interface between sea floor and natural marine clay
715	Layer	Mid grey silty clay,occasional shell fragments. Natural marine clay substrate

Context No.	**Type**	**Description**
720	Layer	Modern crushed rock over weedmat
721	Layer	Reddish brown mixed clay and sandstone deposit. Upper reclamation fill
722	Layer	Blackish brown silty matrix with many artefacts including iron and glass
723	Layer	Greyish brown clay mixed with dredged marine shells
724	Layer	Brown clay with scoria

APPENDIX 2

TIMBERS (DRAWINGS)

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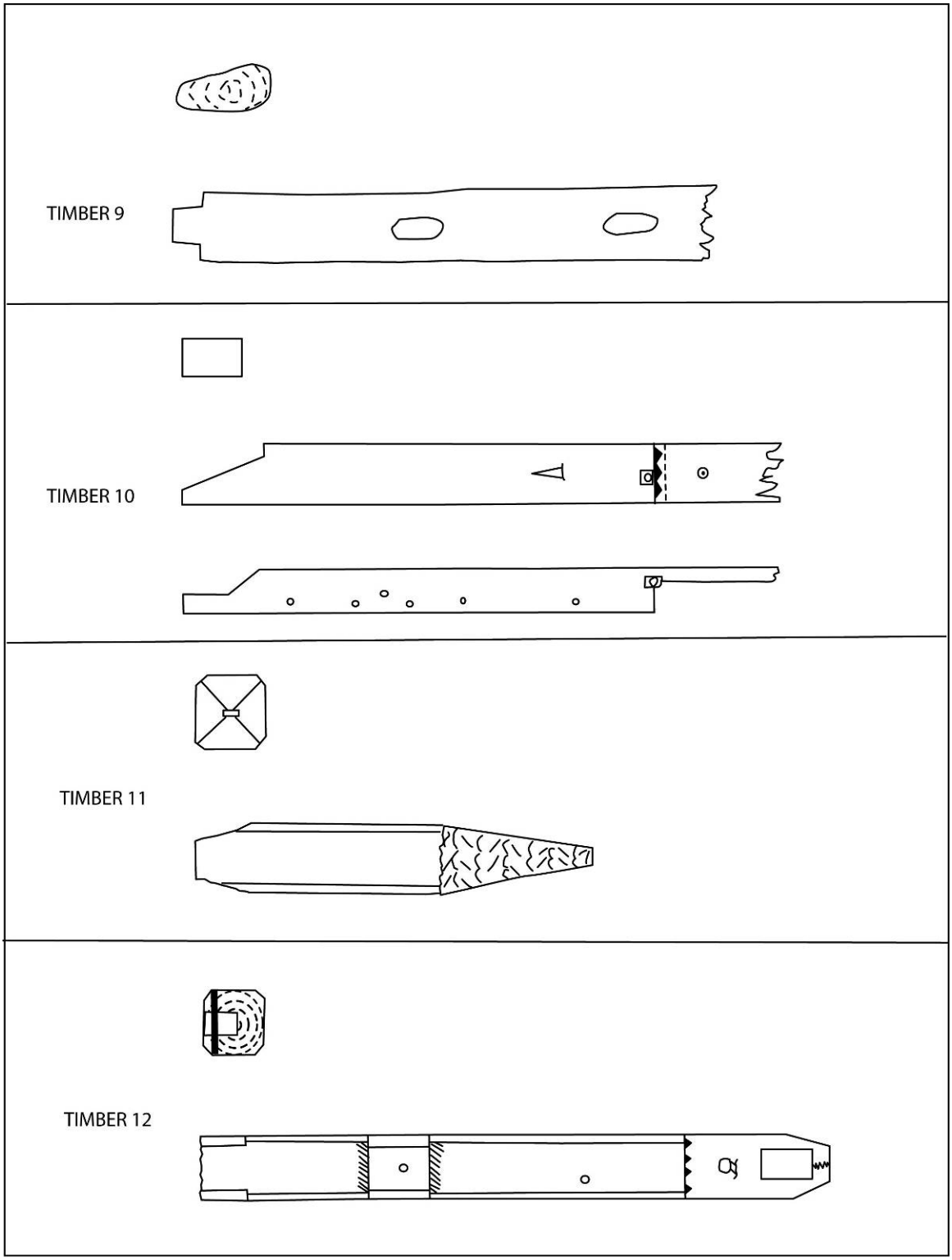
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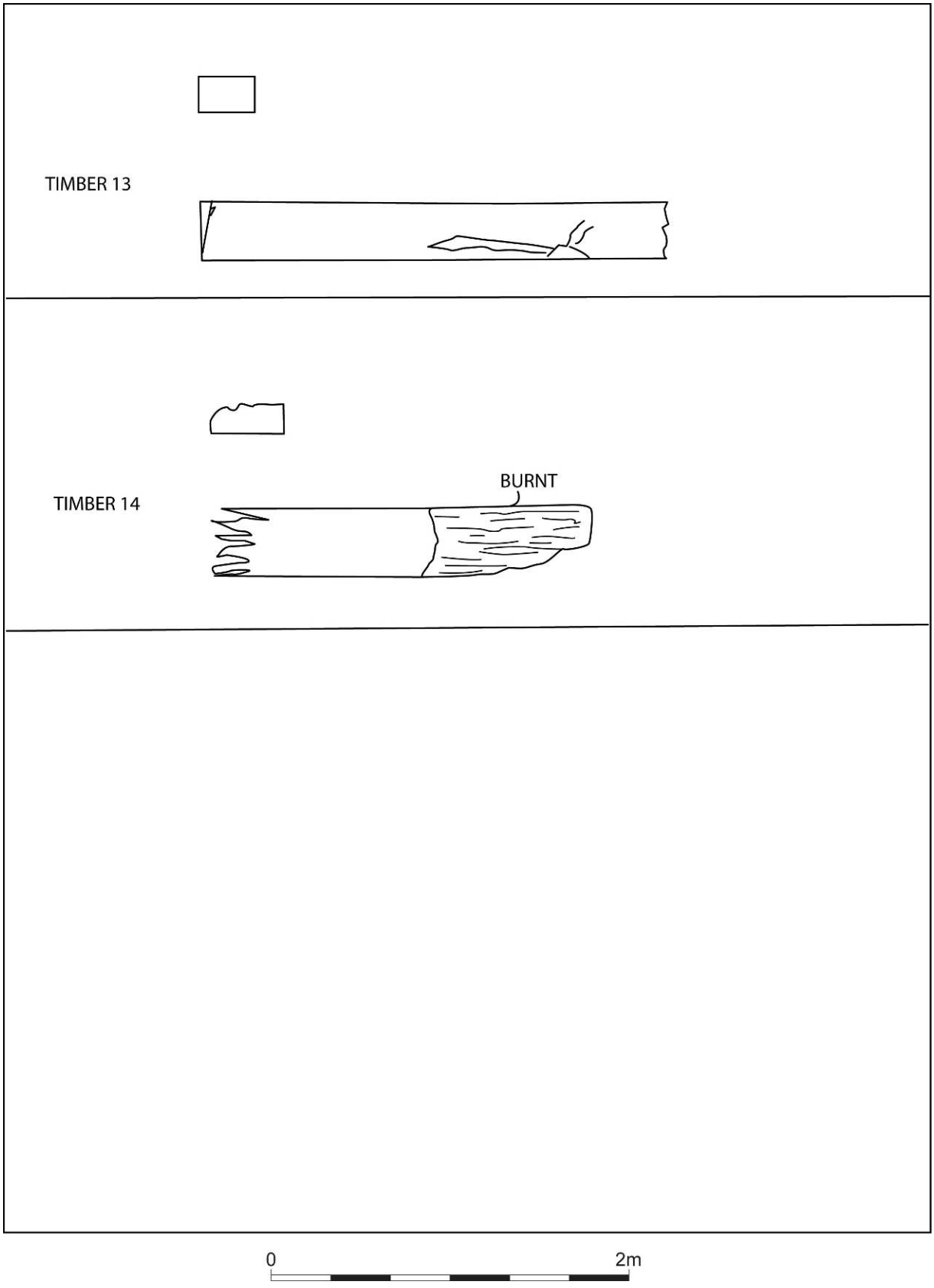
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TIMBER 14
BURNT
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