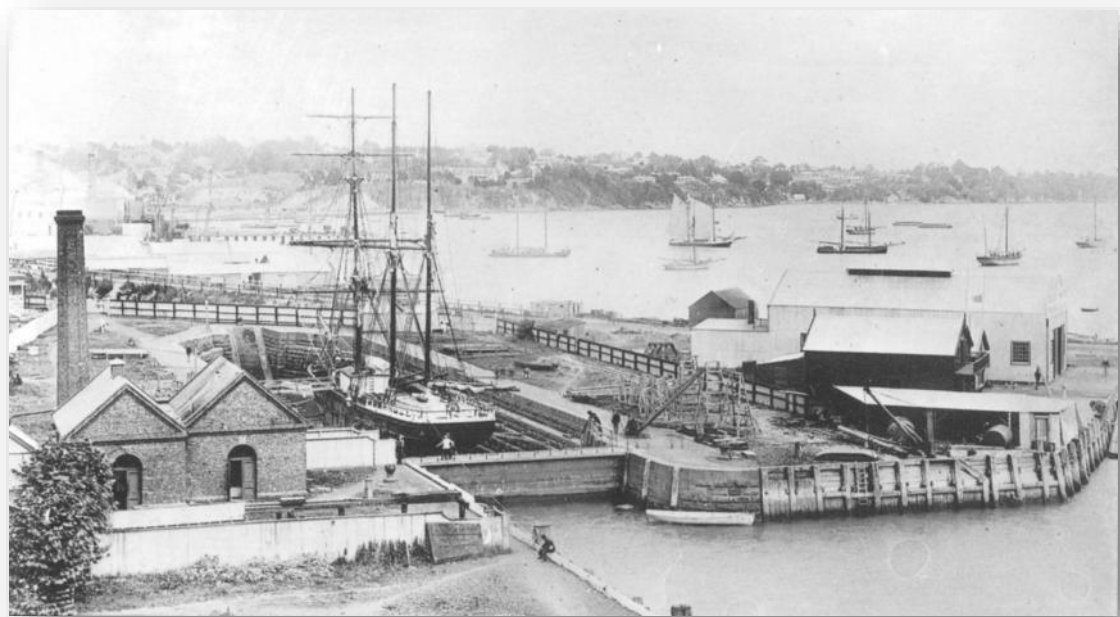


DOWNTOWN CARPARK REDEVELOPMENT, AUCKLAND: ARCHAEOLOGICAL ASSESSMENT

Prepared for Precinct Properties NZ Ltd

December 2024



By

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INTRODUCTION

Project Background

Precinct Properties NZ Ltd is proposing the redevelopment of the existing Downtown Carpark building located at 2 Lower Hobson Street, Auckland (Figure 1). The site is currently occupied by a multi-storey carpark that was constructed in 1970, which will be demolished to allow the redevelopment. The proposed development consists of the construction of two new multi-storey towers, landscaping works, footbridge connections and podium construction and basement levels (Figure 2 and Figure 3).

The proposed works will also require the removal (demolition) of the existing pedestrian overbridge over Lower Hobson Street and the vehicle ramp connecting the existing carpark to Fanshawe Street and 204 Quay Street. The Project Area also includes the properties at 29 Customs Street (Aon House) and 188 Quay Street (HSBC Tower), although subsurface disturbance is not proposed at these properties. The legal descriptions of the properties are Lot 9 DP 60151, Lot 7 DP 77037, Lot 1 DP 78340, Lot 5 DP 63972, Lot 1 DP 183125 and the road reserves of Lower Hobson Street, Sturdee Street and Fanshawe Street (also shown in Figure 1).

An archaeological assessment was commissioned by RCP on behalf of Precinct Properties NZ Ltd to establish whether the proposed work is likely to impact on archaeological values. This report has been prepared as part of the required assessment of effects accompanying a resource consent application under the Resource Management Act 1991 (RMA) and to identify any requirements under the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA). Recommendations are made in accordance with statutory requirements.

Methodology

The New Zealand Archaeological Association's (NZAA) site record database (ArchSite), Auckland Council's Cultural Heritage Inventory (CHI), the Auckland Unitary Plan Operative in Part (AUP OP) schedules and the Heritage New Zealand Pouhere Taonga (Heritage NZ) New Zealand Heritage List/Rārangi Kōrero were searched for information on sites recorded within and in the vicinity of the Project Area. Literature and archaeological reports relevant to the area were consulted (see Bibliography). Early survey plans and aerial photographs were checked for information relating to past use of the property.

Archaeological sites beneath modern buildings and sealed surfaces in urban environments can rarely be identified prior to being exposed in the course of redevelopment work, and the approach to archaeological assessment is therefore to identify historically recorded activities and assess the potential for archaeological evidence to have survived on the basis of later modifications to the site.



Figure 1. Upper map showing the location of the Project Area in the greater Auckland region and lower inset showing the detail of the properties in the Project Area and pedestrian overbridge and vehicle ramp (source: Auckland Council GeoMaps)

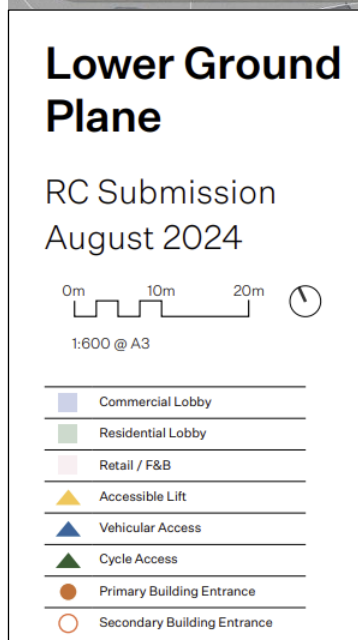


Figure 2. Site plan of the proposed works with the existing Downtown Carpark site outlined in red (source: RCP)

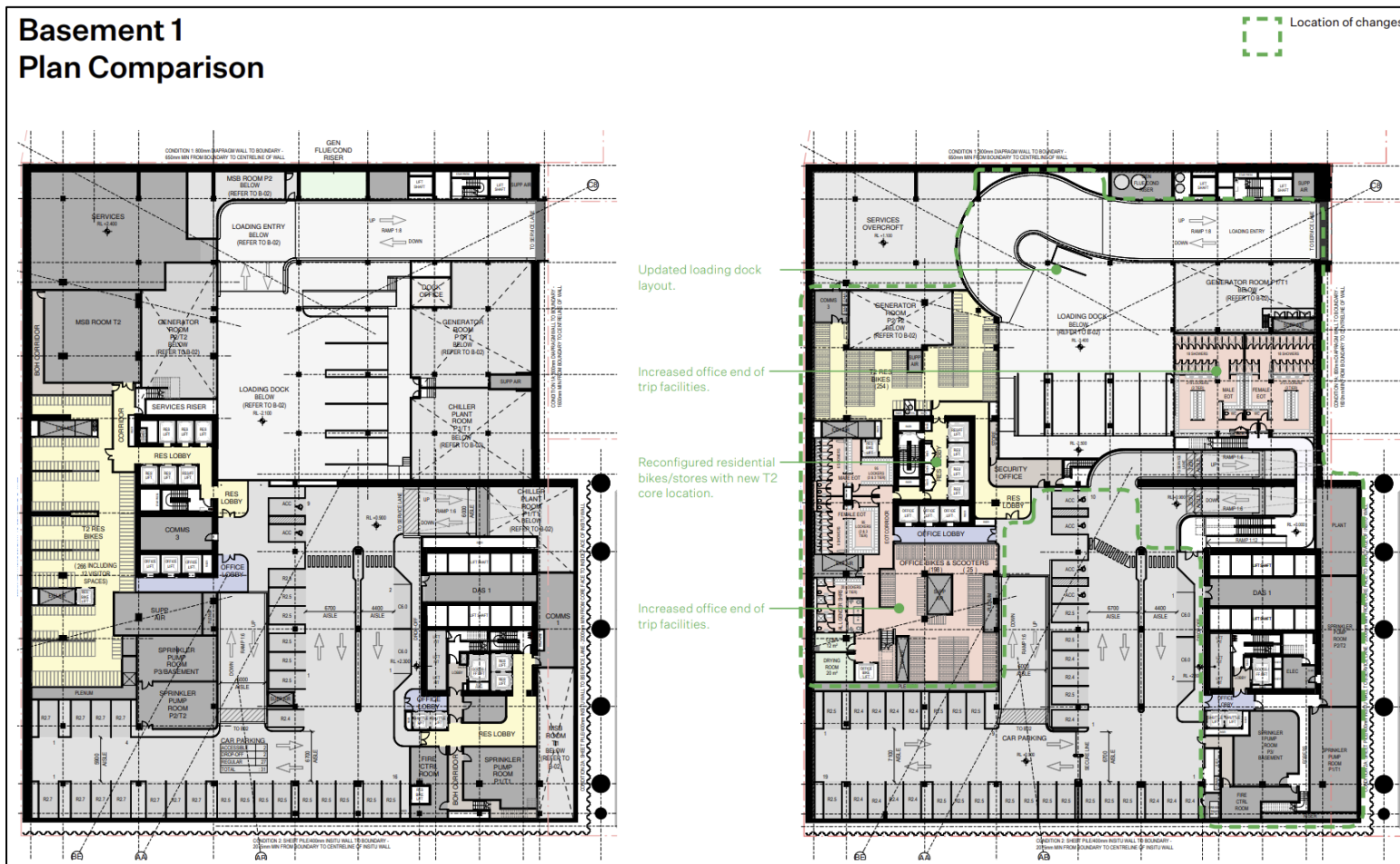


Figure 3. Left- plan showing the level 06 basement level floor plan (lowest level) and right- plan showing the basement level 01 (upper basement) of the proposed development (source: Warren and Mahoney)

HISTORICAL BACKGROUND

Māori Settlement

The isthmus between the Waitematā and Manukau harbours was known to Māori as Tāmaki-makau-rau, often translated as ‘the land of a hundred lovers’ or ‘the land desired by many’ (Stone 2001). The area contained sheltered harbours, rich volcanic soils ideal for cultivation, extensive fishing and shellfishing grounds, and easy canoe access between coastal settlements and the Gulf islands. All these aspects combined to make it a highly desirable location for settlement. Access between the two harbours and the east and west coasts was relatively easy using major rivers and portage routes, where canoes were carried across the shortest stretches of land separating the two. Over many centuries Māori established numerous settlements on and around the shoreline and major rivers of the isthmus. Many were substantial long-term settlements, while others were occupied seasonally or temporarily while resource gathering or gardening. From around 1500AD, pā defended with ditches and palisades began to be constructed at strategically located sites, notably the volcanic cones and on headlands, hinting at increased competition for resources and an expanding population. Many different iwi and hapu have featured in the history of Tāmaki-makau-rau, with tribal territories or rohe changing in response to migration, warfare and intermarriage (Daamen et al. 1966; Stone 2001).

The original shoreline of what is now central Auckland was very different from the waterfront today. In what is now the Central Business District (CBD) there were originally three main bays:

- Waiatarau (‘waters reflecting shadows’) or Waikokota (‘cockle water’), now beneath Victoria Park in Freemans Bay. Streams known as Waikuta (‘water-reed river’), and Tunamau (‘eel caught’) drained into the bay.¹
- Horotiu bay near the foot of what is now Queen Street, with its shoreline along Fort Street. The Waihorotiu, a stream named after a pā in the vicinity, ran down the Queen Street valley, entering the bay near the Queen Street/Fort Street junction.
- Te Toangaroa (‘The long pulling or dragging’ (of canoes), its original shoreline roughly defined by Beach Road and The Strand), with two streams known as the Waipapa (‘the waters of the flats’ and Waiparuru (‘shady or gloomy creek’) draining into the bay.

Pā were located on several of the headlands separating the bays, including Tangihangapukaea (‘the blowing of the war trumpet’) and Te Rerengaoraiti (‘the leap of the survivors’), names recorded for a pā on the former headland later known as Point Britomart. Another pā, Ngahuwera (‘Burnt Breasts’, later Smales Point), was located on the headland to the west; Te To (‘the dragging up’ (of canoes) was on the western side of Waikokota/Freemans Bay; Paritutu (‘perched on the cliff’) was on the cliff on the eastern side of the bay; and Te Reuroa (‘the long outer palisading’) in the vicinity of today’s High Court, extending down to the foreshore. Other recorded place names near the Project Area (Figure 4) were Wai Horotiu, the name of the creek that formerly flowed down Queen Street; Te Whatu (‘the rock’) and Te Tarakaraihi ‘a small sea bird of the tern variety’, referring to a canoe landing at the foot of what is now Swanson Street, opposite Te Whatu

¹ Translations of Māori place names are derived from Simmons 1987.

(Figure 4). These would have been only some of the Māori names associated with the area in the past.

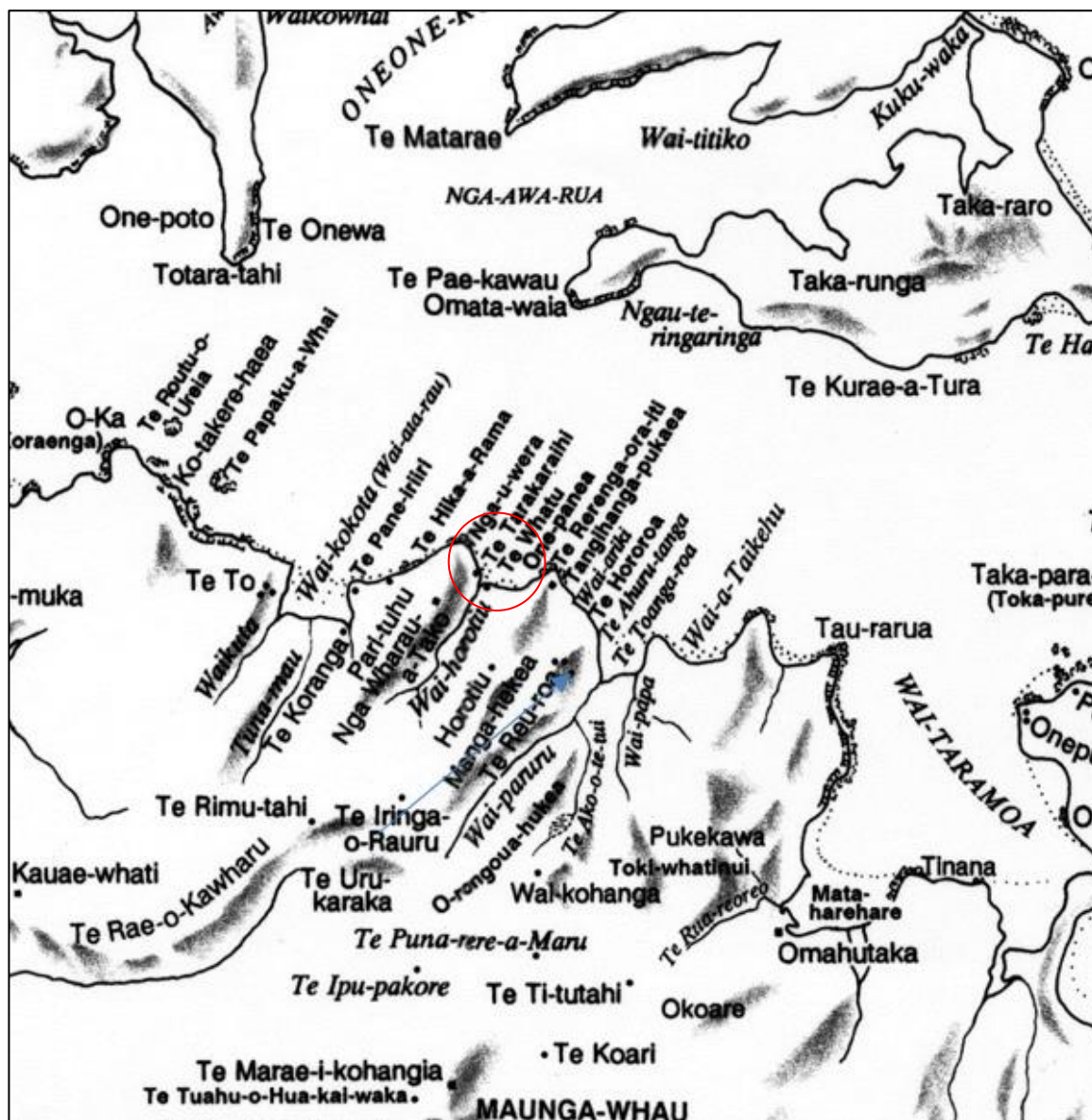


Figure 4. Māori place names around the Waitematā Harbour and Central Auckland with general location of Project Area circled in red (source: J. Kelly, J. and J. SurrIDGE. 1990. Map of the Tamaki Isthmus with Maori Place Names Redrawn from Tamaki-makau-rau by Leslie Kelly. Department of Geography, Auckland University)

European Purchase and Settlement

European settlement in Auckland began in 1840 after the first Governor of New Zealand, Captain William Hobson, chose the isthmus as the site of the capital of the new colony. A group of Ngāti Whatua chiefs had encouraged Hobson to choose the area they knew as Tāmaki-makau-rau, with a view to trading opportunities and protection from northern tribes (Stone 2001). The first land block bought by Governor Hobson to establish New Zealand’s capital city was a triangular 3000 acre block between Cox’s Bay and Hobson Bay, with Maungawhau (Mt Eden) at the apex. The sale was agreed with Ngāti Whātua chief Apihai Te Kawau in September 1840, and within four years most of the isthmus had been acquired, except for a large block at Ōrākei and Remuera retained by Ngāti Whātua (Stone 2001). Today’s CBD was the heart of the early town, which served as New Zealand’s capital from 1840 until 1865. New names were given to the bays and headlands and the commercial centre of the new town was located in a bay (Commercial Bay) between Point Britomart and Smales Point.

In order to provide adequate defense of the developing town, the headland of Point Britomart, once the site of Te Rerengaoraiti/Tangihangapukaea pā, was chosen as the location of Auckland’s earliest military barracks. Known as Fort Britomart, construction began on the garrison in late 1840 and was completed the following year (Stone 2001:226). To the west, the Horotiu bay became the centre of trading activities and was initially renamed Store Bay, and later Commercial Bay (Reed and Dowling 2010:86). Settlement of the bay developed rapidly with tents and whare erected for settlers, a government store, and later hotels and businesses established along the foreshore (Figure 5). As the focal point for trade, vessels (including waka) arrived daily with local and imported goods; however, the shallow mudflats of the bay provided poor anchorage for the growing capital and the development of a viable harbour soon became essential (Matthews & Matthews 2009: 5).

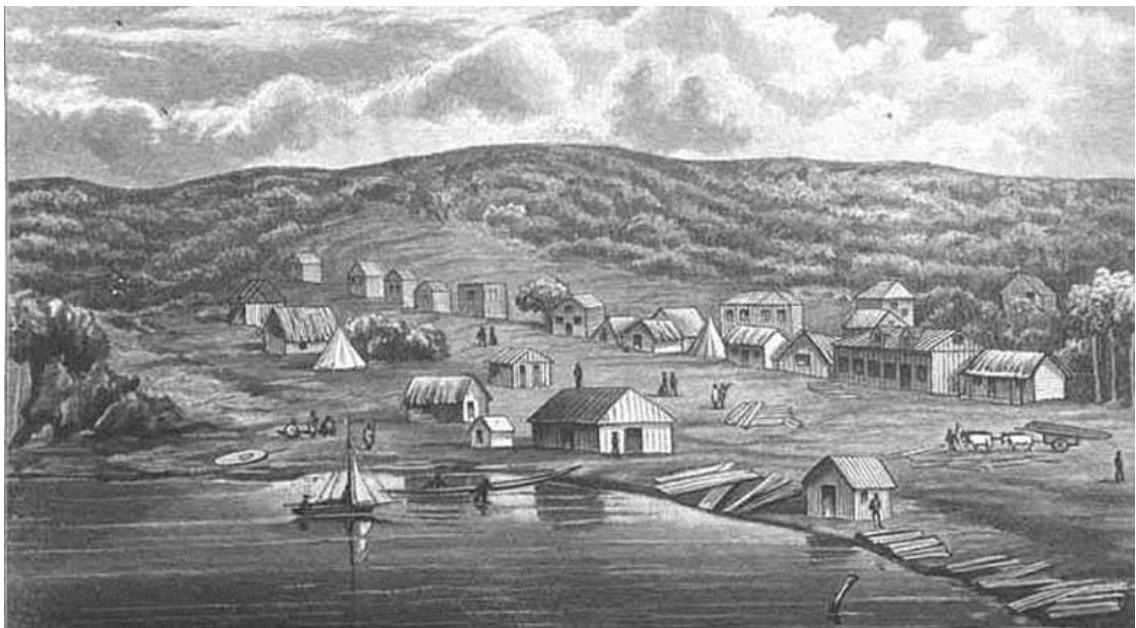


Figure 5. Sketch drawing of Commercial Bay, dated 1841, showing early timber buildings, whare and tents along the foreshore (source: Auckland Libraries Heritage Collections, 4-9089)

Reclamation

Reclamation to provide additional land and deeper harbours was actually intended from the earliest days of the establishment of Auckland and plans for the reclamation of Commercial Bay had been considered by the government Surveyor-General Felton Mathew as early as 1841, as can be seen in Figure 6, which is based on the original town plan by Felton Mathew showing proposed reclamation at Commercial Bay. His original plan of Auckland showed proposed reclamation of the entire bay up to Quay Street along with the extension of Queen Street and formation of Customhouse Street. Figure 7 shows the reclamations that were later carried out in relation to the original shoreline and the current Project Area, which is to north of what was Smales Point. The reclamations were undertaken in several stages. By c.1850, minor reclamation had been undertaken to create Fore Street (later Fort Street) along the foreshore of Commercial Bay, and further improvements were made soon afterwards with the erection of the 1,400 foot (c.427m) long Queen Street wharf, which replaced the former Queen Street jetty constructed in c.1846 (Matthews & Matthews 2009: 5; Macready and Clough 2012: 14 & 63).

In reality, the plans for reclamation proceeded at a slow pace and it was almost 20 years before any real progress was made on the reclamation programme. Figure 8 shows the sequence of major reclamations (with numbered reference) carried out between 1859 and the mid-1920s, and Table 1 provides the dates and extents of the reclamations that extend into the Project Area or are located nearby. The first major reclamation (reclamation 1) began in 1859 and was located in the area running from Fort Street (originally Fore Street, indicating the foreshore) to Customs Street East. This involved the demolition of Smales Point (the western headland and former location of Ngahuwera pā) to provide fill. A photograph taken in 1859 shows the works in progress (Figure 9).

Reclamation 4, the Queen Street to Albert Street reclamation from south of Customs Street to Quay Street, was undertaken between 1875 and 1877. Reclamation 7 was undertaken for the construction of the Auckland Graving Dock in 1878-79. Reclamation 14 in 1902-8 reclaimed Lower Hobson Street, including the solid part of the former Hobson Street Wharf, built in the late 1880s. Reclamation 22 was undertaken in 1915 after the closure of the Auckland Graving Dock and reclamation 27, completed in the early 1920s, extended Quay Street further west from Albert Street to Princes Wharf. Princes Wharf, which was originally known as Hobson Street Wharf, was constructed in 1921, replacing the earlier 1880s wharf.

As the site of the former Auckland Graving Dock runs through and is the main archaeological feature identified in the current Project Area, details of the history of the dock are provided below.

The Auckland Graving Dock²

The issue of planning a graving dock (dry dock) for repairing ships in the central city was first raised in 1872 and initial plans were prepared, and surveys carried out. The specifications were for a 250ft (c.76m) long and 55ft (c.17m) wide area that would be self-draining. The design was drawn up by Mr Moriarty, the Engineer for Rivers and Harbours in New South Wales, who was brought to Auckland to advise on the planned graving dock

² This section is adapted from Clough, Prince and Mace 2001, with additional research.

(Clough et al. 2001:6). However, the tenders that were submitted at this point were considered too expensive and the plans were put on hold and revised over several years and were not actually finalised until 1876, with an enlarged design measuring 300ft (91.4m) in length and 12ft (3.6m) deep (ibid.). The new dock was designed by William Errington, who had been working as an engineer in Australia, before coming to New Zealand to work in the gold mining industry at Thames. He was later appointed engineer to the Auckland Harbour Board and in this role he designed the Auckland and Calliope Graving Docks, the latter being located at Devonport. He was also involved in the construction of the Western Springs Reservoir for the Auckland City Council (ibid.:8).

The design of the Auckland Graving Dock included heart kauri and totara piles and Staffordshire iron. The dock was to have two 5ft (c.1.5m) centrifugal pumps with high-pressure steam engines and one auxiliary centrifugal drain pump measuring 36in (0.9m) in diameter. Two boilers of 5ft 5in (1.6m) diameter and measuring 20ft (6.1m) in length would also be constructed. The engine house and boiler house were to be built under the same roof and would measure 20ft (6.1m) square and 30ft by 20ft (9.1 x 6.1m) respectively. The chimney shaft was to be 50ft (15.2m) above ground level and 7ft (2.1m) square (ibid.). The extent of the works was also described as follows:

‘the West side and South end of the Dock to be filled in with earthwork for an extent of 50ft. wide from the edge of the coping; to finish off to a slope of 1 and 1/2 to 1 on the west side, for 3 feet in thickness, the slope to be composed of approved hard Sandstone Rock and foundation for hand packed pitching, which is to be of hard scoria in stones of not less than two cubic feet in each stone.’

Details of the works specifications have survived and an excerpt describing the construction details and design taken from *The Auckland Harbour Board Graving Dock-Specification of Works* is provided in Appendix B.

The graving dock was constructed during 1878-1879 (reclamation 7 on the plan in Figure 8) and the map from 1882 in Figure 10 shows the location of the dock and the surrounding area. A photograph dating from the late 1870s in Figure 11, shows the reclamation works to the east of the graving dock with the engine and boiler house visible and a later photograph in Figure 12 from the 1890s shows the completed graving dock. It is interesting to note that the Auckland Graving Dock was also used for recreational purposes by the Auckland Swimming Club, who used the water-filled dock for swimming competitions which, as can be seen in the photograph taken in 1902 in Figure 13, were popular events attended by the public.

Closing and Demolition of the Auckland Graving Dock

The use of the Auckland Graving Dock was relatively short lived and by 1910 the closing of the dock was being discussed. The closure was somewhat contentious, and the undertaking was covered in numerous newspaper articles, some of which are presented below to provide the background and details of the process.

By at least 1913, the closure of the Auckland Graving Dock was being reported in newspapers as can be seen in the following excerpt from an article in the *Auckland Star* dated 24 June 1913:

‘It is stated unofficially that an important scheme is afoot whereby the Auckland Graving Dock will be filled in and utilised for other Harbour Board Purposes. The fact should be mentioned however, that when approached on the matter this

morning the Chairman (Mr. J. H. Gunson) said he was not in a position to answer questions and would not be until the next meeting of the Board on Tuesday of the ensuing week.’

The plans for closure of the Auckland Graving Dock and the construction of a slipway as a replacement were not universally supported and a petition was signed in 1913 by 108 shipowners who stated that the closing of the dock was ‘premature, unjustifiable and retrogressive’ (*New Zealand Herald* on 7 October 1913).

Despite the protests the removal of the dock went ahead with the commencement of the demolition noted in the 16 February 1915 edition of the *New Zealand Herald*, which reported that at that time there was ‘a large gang of men engaged in the undertaking’. It was suggested at the time and noted in the same article that the Auckland Graving Dock could be rebuilt at Devonport for the use of smaller ships. However, this was not to be the case and by September 1915 it was noted that all of the stone had now been removed and should be sold (*Auckland Star* 1 September 1915). A 1920 newspaper article noted that some of the stone was eventually used for harbour purposes, specifically in building the shore end of the new eastern reclamation (*Auckland Star* 23 October 1920).

As noted above, the plans for the demolition included removal of the stones from the old graving dock and an article from the *New Zealand Herald* dated 19 May 1915 stated that this was required as ‘preparatory to the making of the road along the waterfront to render the Hobson Wharf more easy access from Queens Wharf’. By November 1915 it was reported that the roading of the area reclaimed at the former site of the graving dock was about completed with the surrounding walls removed and that the Harbour Board would soon be putting the newly created sections up for lease (*Auckland Star* 13 November 1915). The reclamation associated with the closure of the graving dock is indicated by reference number 22 on the plan in Figure 8.

Use of the Graving Dock Site after 1915

The plans for leasing the newly created land did not, however, materialise and as early as 1916, the Auckland Town Planning League petitioned the Harbour Board to use the former graving dock site as a public open space for recreation purposes and also as the possible location of a war memorial to be established when the war ended (*New Zealand Herald*, 26 January 1916). However, after the war the idea of a War Memorial Museum and Monument on Observatory Hill was put forth instead and the plans for a memorial at the old graving dock site shifted to a peace park (Timespanner Website). The planned park was never realized; however, a memorial was commissioned by the Harbour Board to commemorate employees who had served in the war which was located near the corner of Quay Street and Lower Albert Street for some years before it was taken down in the late 1960s or early 1970s. A refurbished version survives today after it was discovered abandoned in a storage shed in 1999 and rehabilitated. It was relocated firstly to a site near the Maritime Museum and is currently located on Quay Street (Timespanner Website).

Photographs show that no substantial development occurred at the site of the former graving dock for many years with the exception of the construction of Sturdee Street, as shown in the photographs from 1916 and 1917 in Figure 14. These photographs also show the presence of a large triangular-shaped building, the Gunson Building adjacent to Sturdee Street and Customs Street West, and it is noted that the lot containing this building is partially located within the current Project Area. The Gunson Building was constructed between 1906 and 1912, which was prior to the demolition of the graving dock, as can be

seen in the two photographs from these years showing the location (Figure 15) – the 1906 photograph showing the area prior to the construction of the Gunson building with an open area adjacent to the graving dock and some small buildings present which for the most part appear to be constructed of wood; and the 1912 photograph showing the newly constructed Gunson Building. The Gunson Building was associated with the Gunson family business as grain and seed merchants, established by William Gunson in 1881. His son James became managing director of the company in 1902. James Gunson was a well-known public figure in early 20th century Auckland, serving as Mayor from 1915 to 1925, when he retired. During his time as the Mayor of Auckland he oversaw a number of improvements to the city, including infrastructure, purchase of the city’s tramways, the establishment of the Auckland Electric Power Board, widening and paving of many city streets, the absorption of Point Chevalier into the city and establishment of the Auckland Zoological Park. He also served as chairman of the Auckland Harbour Board from 1911 to 1915 (Stacpoole 1996).

As mentioned previously, the majority of the Project Area lies within the area of the 1915 reclamation undertaken after the closure of the graving dock and, as can be seen in the photograph dated 1933 (Figure 16), the majority of that area remained open and grassed with only a small building reported to be a service station at the corner of Sturdee and Quay Streets. It has been noted that this open area was put to use as a temporary amusement venue for circuses and an earlier photograph from 1920 shows the site being used to stage the St Leons Circus (Figure 17). Development of the site did not occur until World War II, when the Public Works Department took over most of the site and constructed concrete warehouses to store supplies for U.S. forces and house the United States Joint Purchasing Board staff that were stationed in Auckland (Timespanner Website). The buildings appear to have remained in place up until 1968, when they were demolished (Figure 18) to make way for modern development. The 1970 photograph in Figure 19 shows the Project Area after the demolition of the warehouses and with the Downtown Carpark under construction.

Table 1. Date and extent of reclamations within or near the Project Area (source: Barr 1926)

No.	Date	Location	Area
1	1859-6X?	Fort Street to Customs Street East	9 acres/ 3.64ha
4	1875-77	Queen St to Albert St	8acres/3.24ha
5	1876-77	Albert Street to Nelson Street	11.5 acres/ 4.55ha
7	1878-79	Auckland Graving Dock	1acre/0.40ha
14	1902-08	Hobson St including solid part of Hobson St wharf	3.75acres/1.52ha
22	1915	Auckland Graving Dock site	1acre/0.40ha
27	1923-25	Princes Wharf approach	2.25acres/0.911ha



Figure 6. Detail from plan dated 1841, based on Felton Mathew's plan of the town of Auckland, with Smales Point indicated by red arrow (source: Auckland Libraries Heritage Collections, NZ Map 4611)

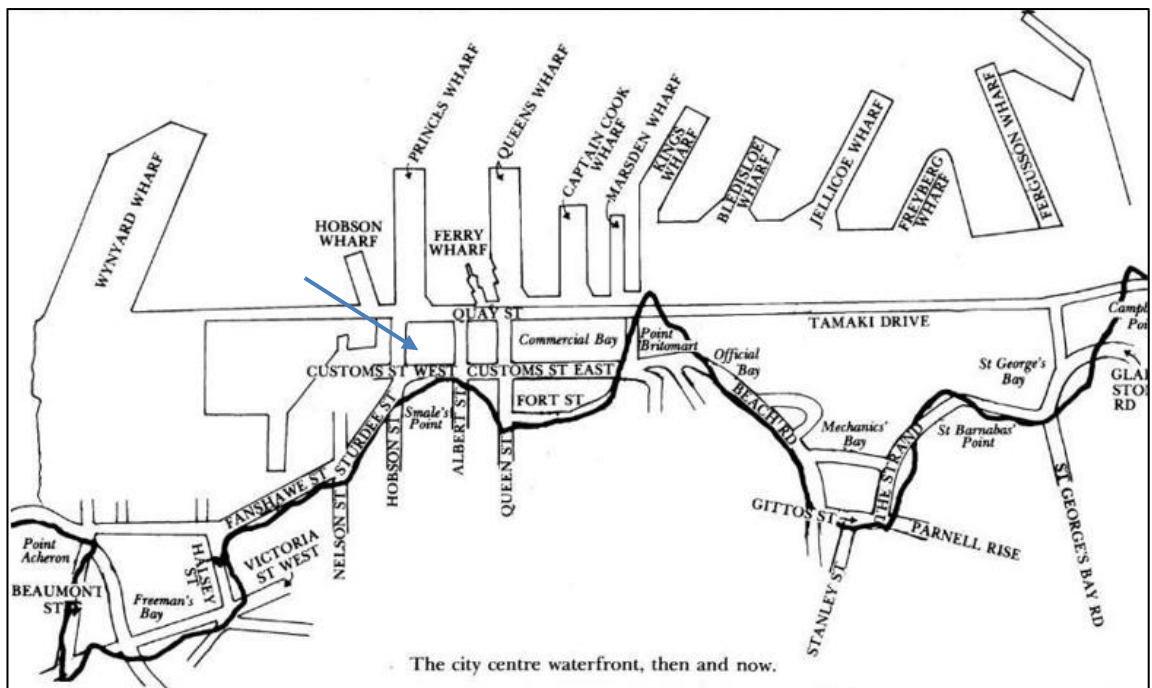


Figure 7. The early shoreline in comparison with today's waterfront, with the Project Area indicated by the blue arrow (source: Barnett 1981: 10)

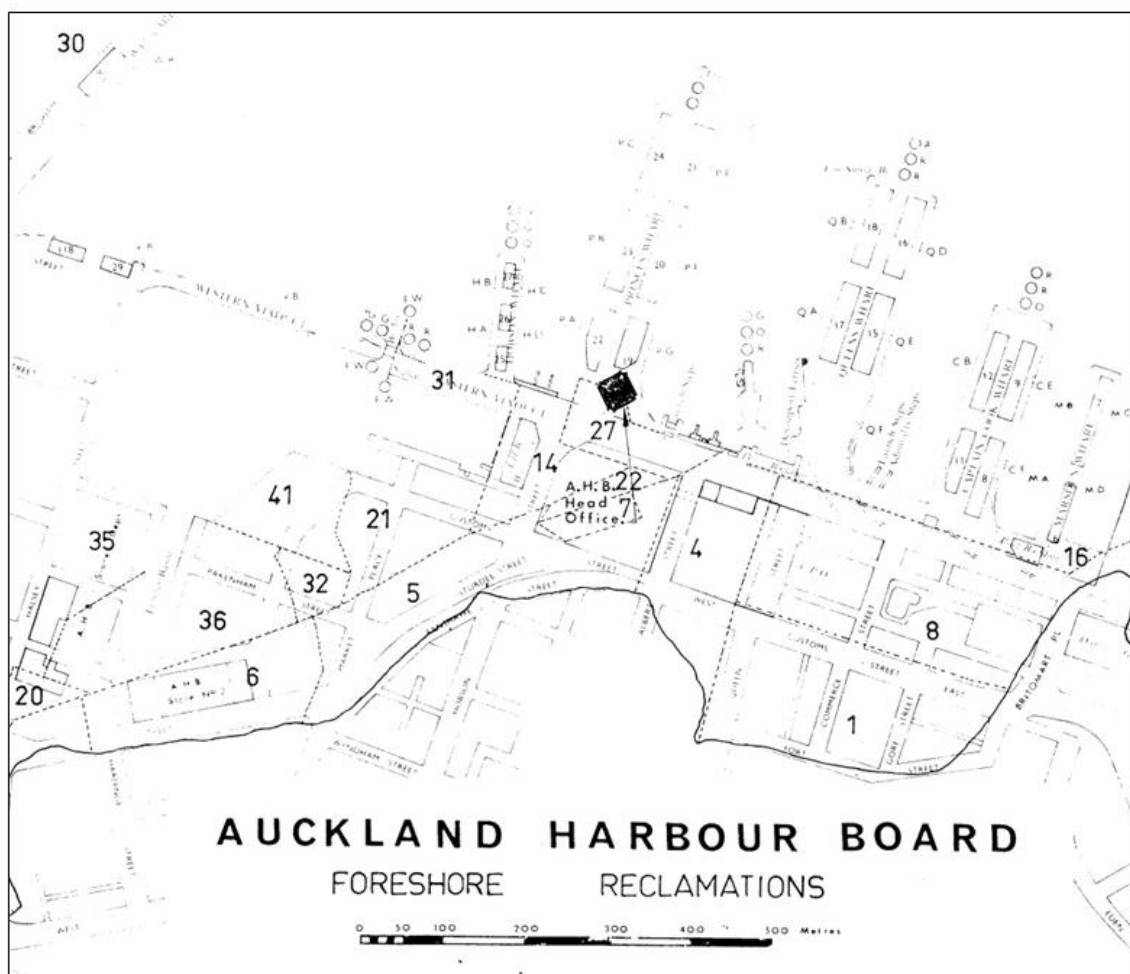


Figure 8. Auckland Harbour Board plan showing the original shoreline (solid line) and numbered foreshore reclamations, with the Auckland Graving Dock site indicated by no. 7 (1878-79) and no. 22 (1915) (source: Auckland Harbour Board plan E851/9)



Figure 9. Photograph dated 4 October 1859, looking southwest from Point Britomart showing Commercial Bay during the early stages of reclamation, with Smale's Point under demolition (arrowed in red) (source: Auckland Libraries Heritage Collections, 4-1121)



Figure 10. Map of Auckland in 1882, showing the Auckland Graving Dock, indicated by red arrow, and engine and boiler house indicated with blue arrow (source: Auckland Libraries Heritage Collections, NZ Map 91)



Figure 11. Photograph taken in the late 1870s from the foot of Hobson Street looking towards Queens Wharf, showing recently reclaimed land with the engine and boiler house of the Auckland Graving Dock indicated by arrow (source: Auckland Libraries Heritage Collections, 1043-122)



Figure 12. Photograph of the Auckland Graving Dock and engine and boiler house dating to the 1880s (source: Auckland Libraries Heritage Collections, 1677-056)

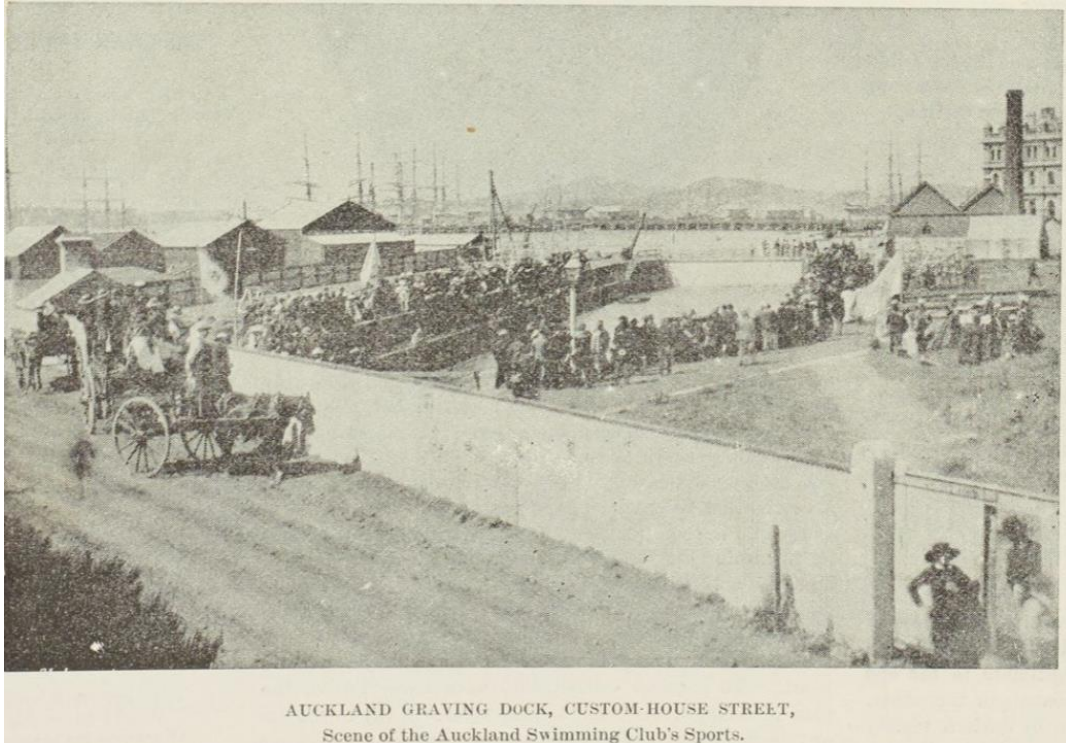


Figure 13. Photograph showing spectators at a competition of the Auckland Swimming Club at the Auckland Graving Dock dated 1903, published in *The New Zealand Graphic* 1891-02-07 (source: Auckland Libraries Heritage Collections, NZG-18910207-0009-02)

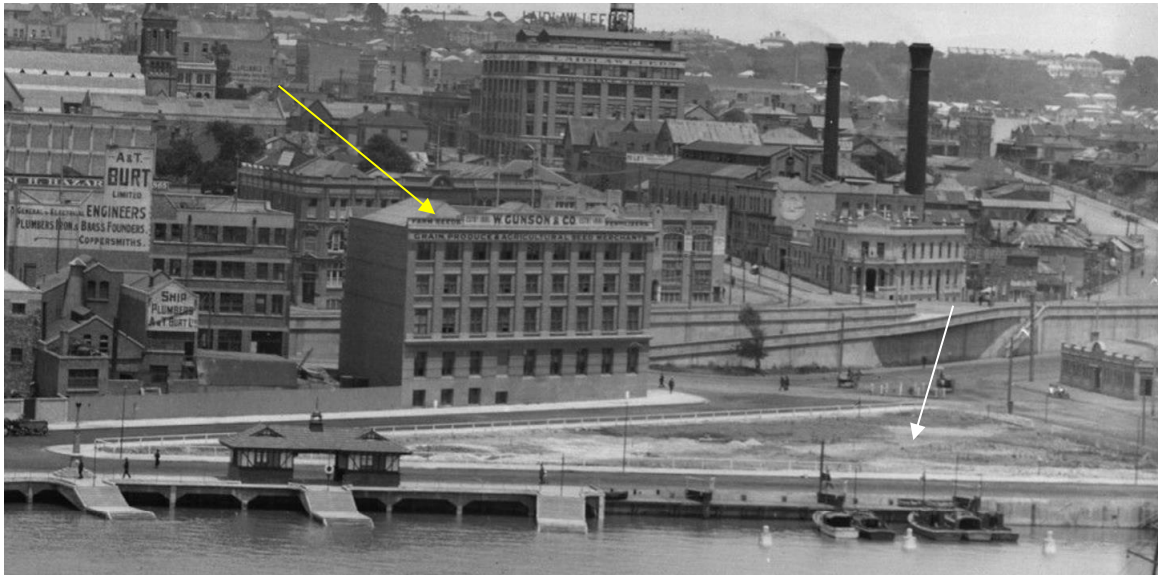


Figure 14. Upper photograph dated 1916 showing the newly reclaimed land at the former graving dock site (white arrow) and the Gunson Building (yellow arrow). Lower photograph dated 1917 showing the newly constructed part of Sturdee Street (indicated by arrow) with the Gunson Building shown (source: upper, Auckland Libraries Heritage Collections, 1-W1330 ; lower, Auckland Libraries Heritage Collections, 1-W1607)



Figure 15. Upper photograph dated 1906 and lower photograph dated 1912, showing the Auckland Graving Dock with boats in for repairs and location of the Gunson Building prior to and after construction indicated by white arrows (source: Auckland Libraries Heritage Collections – upper 1-W0570 and lower 1-W0985)

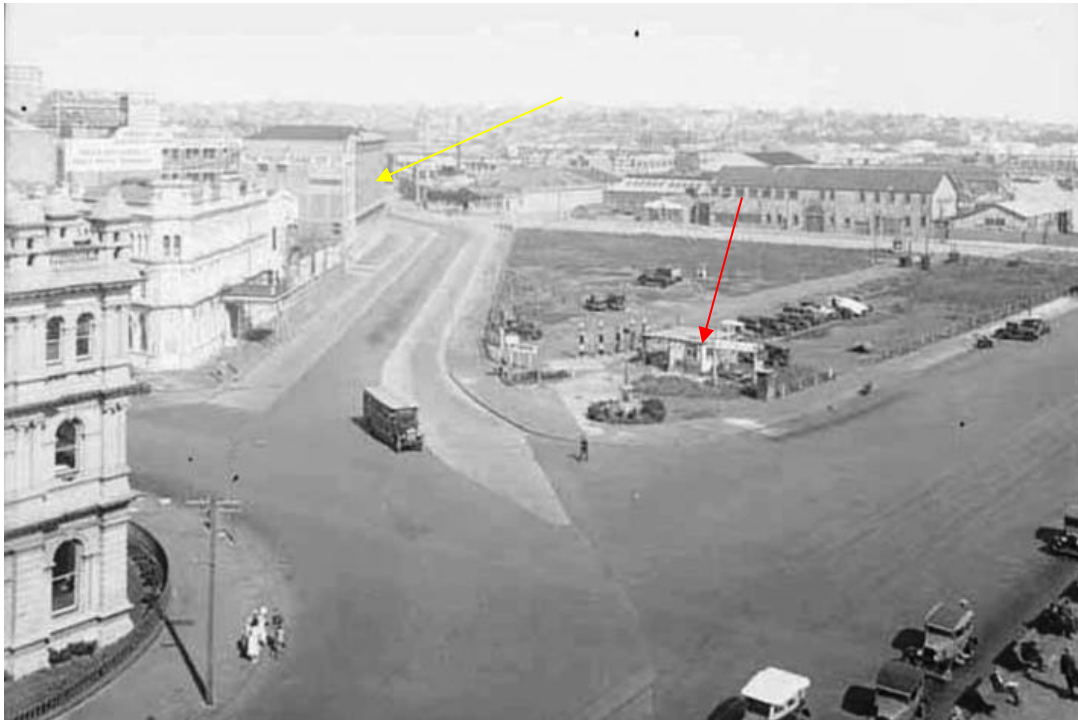


Figure 16. Photograph dated 1933 showing the site of the former graving dock as an open grassed triangular area with service station indicated by red arrow and Gunson Building by yellow arrow (source: Auckland Libraries Heritage Collections, 4-5327)



Figure 17. Photograph dated 1920 showing the tent of St Leons Circus on the site of the former graving dock (source: Auckland Libraries Heritage Collections, 1-W1701)



Figure 18. Photograph dated 1968 showing the demolition of the World War II warehouses as part of the construction of the Travelodge Hotel, with the Gunson Building visible in the background and indicated by red arrow (source: Auckland Libraries Heritage Collections, 786-A26-04)

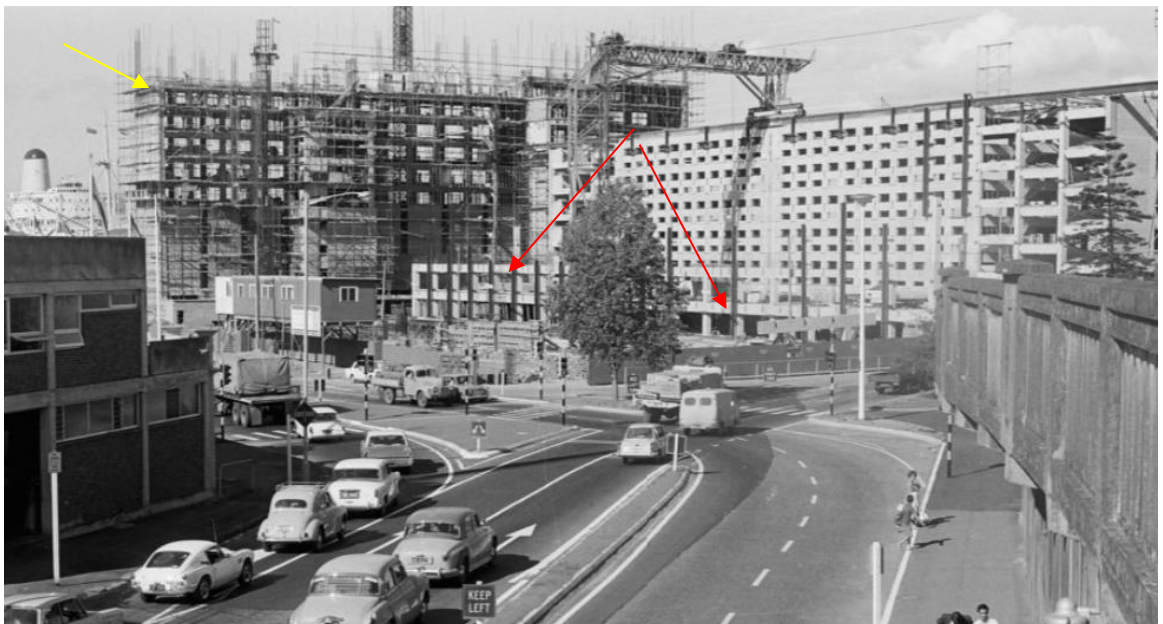


Figure 19. Photograph taken in 1970 looking northeast along Sturdee Street with the Downtown Carpark under construction (indicated by red arrows) and Travelodge Hotel also under construction, indicated by yellow arrow (source: Auckland Libraries Heritage Collections, 786-A21-05)

HISTORICAL SURVEY

Information from Early Maps and Plans

Twentieth-century plans were also reviewed to gather additional information on the Project Area after the demolition of the Auckland Graving Dock in 1915. It has been noted that after the former Auckland Graving Dock site was reclaimed in 1915, leasing out of the reclaimed land was proposed by the Auckland Harbour Board and also that a new thoroughfare, Sturdee Street, was constructed running diagonally from the southwest to the northeast from the corner of Hobson Street and Customs Street West to the corner of Quay Street and Albert Street. The earliest relevant plan found during research for this assessment dates to 1928 (Figure 20) and shows the subdivision of the former graving dock site to the northwest of the newly formed Sturdee Street. It is noted that a small part of the current Project Area is located to the southeast of Sturdee Street, indicated as Lot 1 on the 1939 map in Figure 21. This plan has annotations regarding buildings present at that time and the annotation in Lot 1 (the location of the Gunson Building) notes a brick building present, although it does not provide any additional details. The 1968 plan in Figure 22 shows the subdivision that created Lot 9 DP 60151, which is the location of the existing Downtown Carpark, building with part of Sturdee Street running through it.

Information from Aerial Photographs

Aerial photographs were also reviewed to show the development of the Project Area from 1940 to recent times. The aerial photograph in Figure 23 dated 1940 shows that most of the Project Area is located in the open grassed area to the northwest of Sturdee Street. Part of Sturdee Street is also included in the Project Area as is a small triangular area to the southeast (including part of Lot 1 which contained the former Gunson Building as described above). By 1950, as can be seen in the aerial photograph in Figure 24, the area to the northwest of Sturdee Street at that time contained large rectangular buildings, i.e. the warehouses dating to World War II described previously that ran from Sturdee Street all the way to Quay Street. Finally, as can be seen in the aerial photograph in Figure 25 dating from 1972, the warehouses and the Gunson Building are no longer present with the completed Downtown Carpark now covering the Project Area.

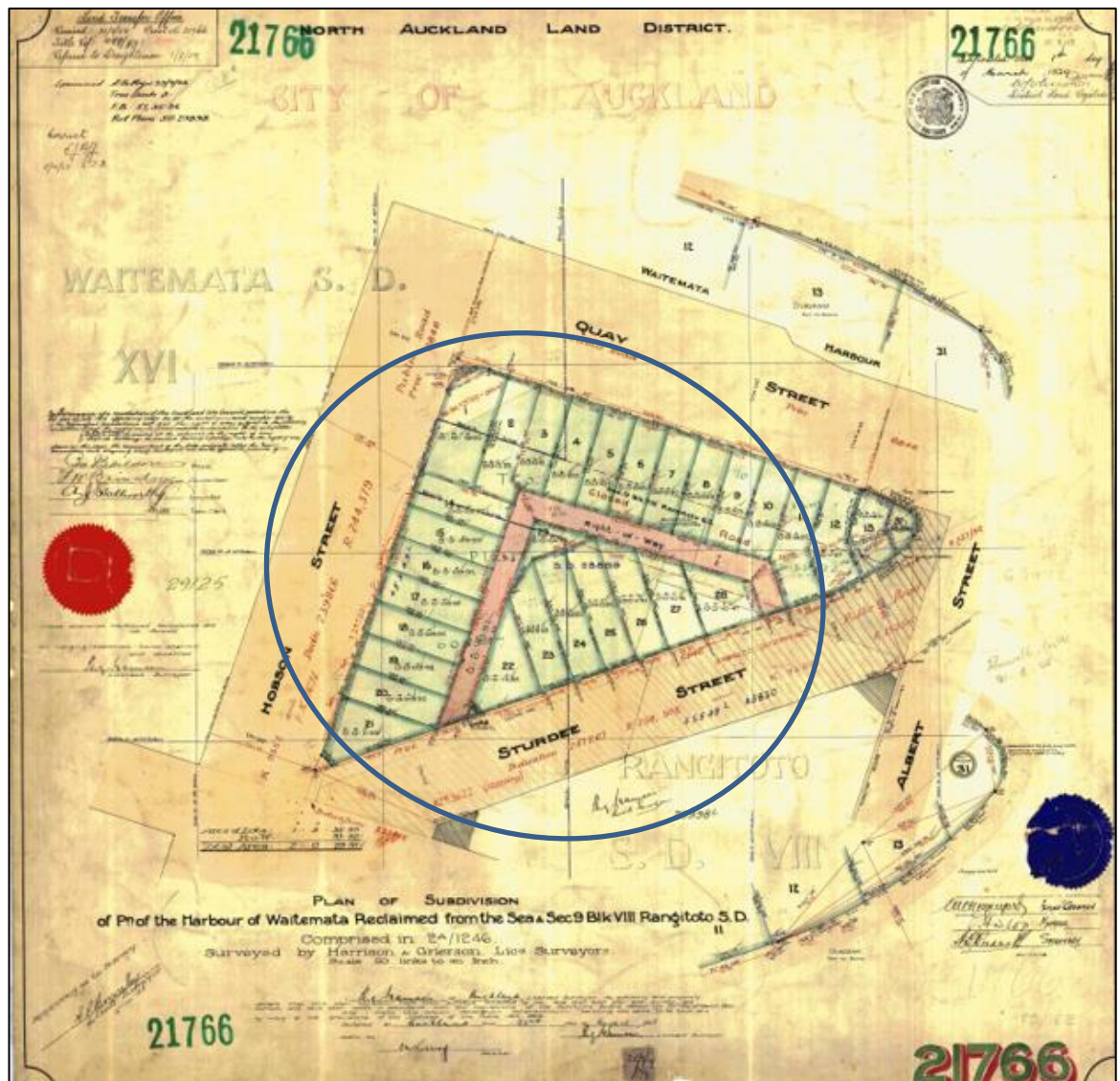


Figure 20. AK DP 21766 plan dated 1928 showing the subdivision of the reclaimed land where the former Auckland Graving Dock was located and also the location of Sturdee Street, with the approximate location of Project Area indicated by blue circle (source: Quickmap)

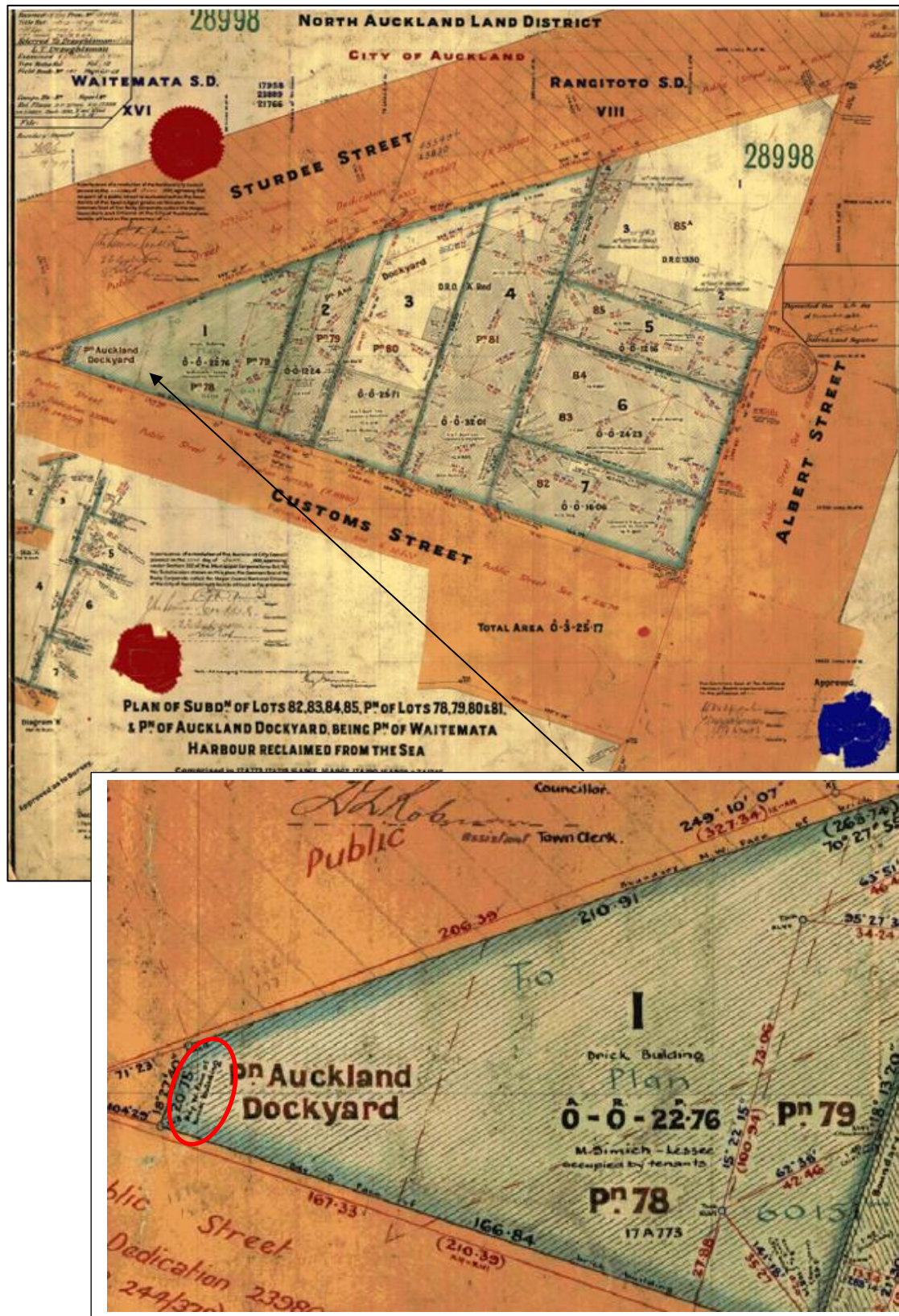


Figure 21. AK DP 28998 plan dated 1939 showing subdivision of lots to the southeast of Sturdee Street with approximate area located within the current Project Area shown in lower inset with annotation 'Bdy of W. face of brick building (circled in lower inset) (source: Quickmap)

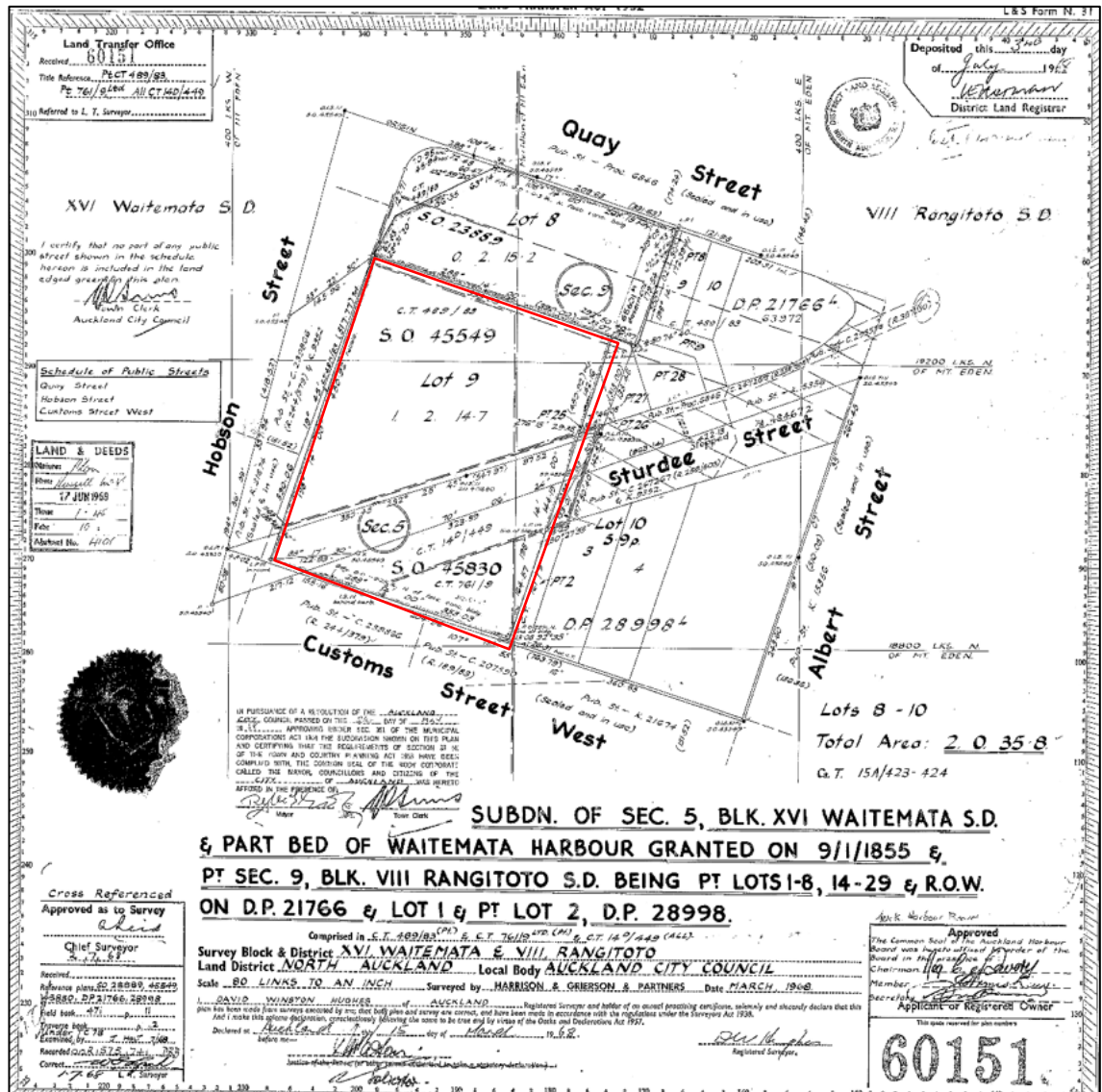


Figure 22. AK DP 60151 plan dated March 1968 showing the subdivision which created Lot 9 DP 60151, with proposed new development area to replace the existing Downtown Carpark outlined in red (source: Quickmap)

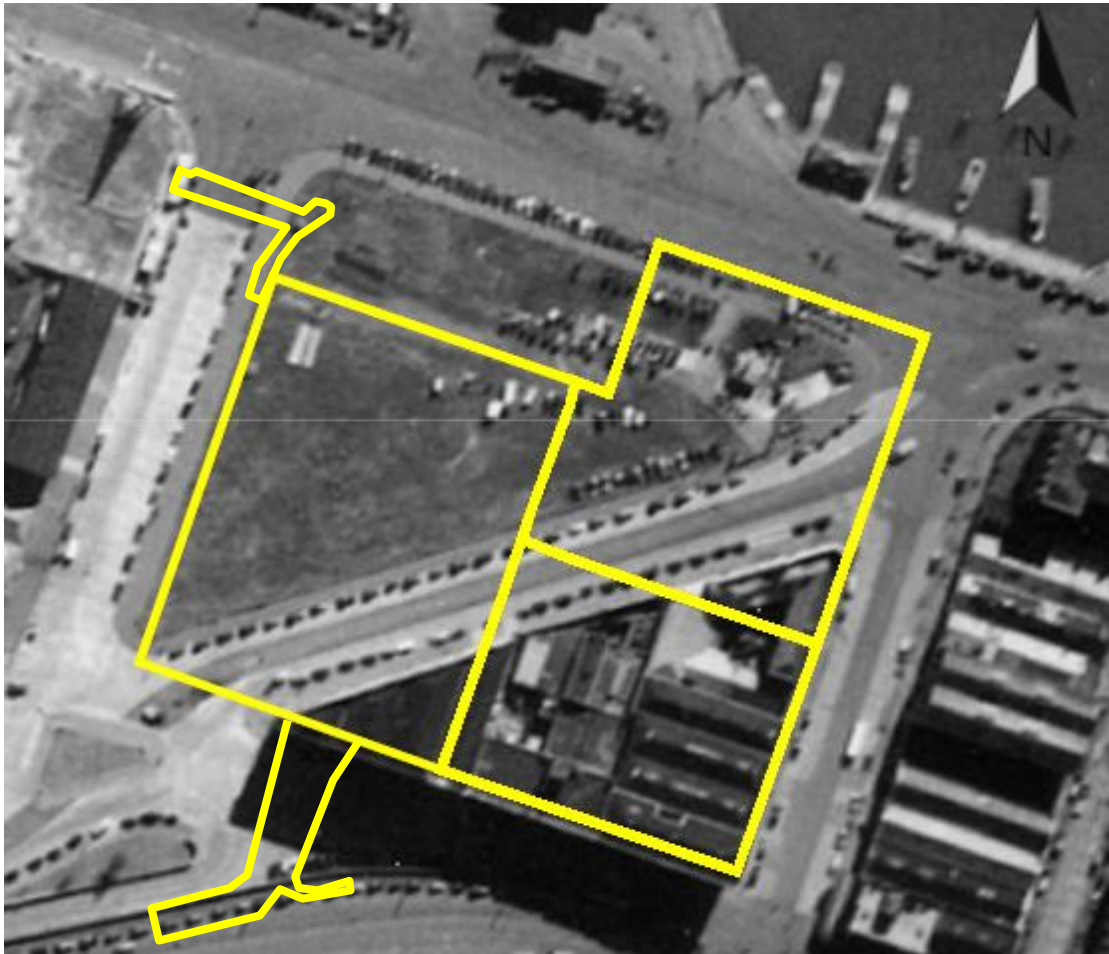


Figure 23. Aerial photograph dated 1940 showing the Project Area outlined in yellow (source: Auckland Council GeoMaps)

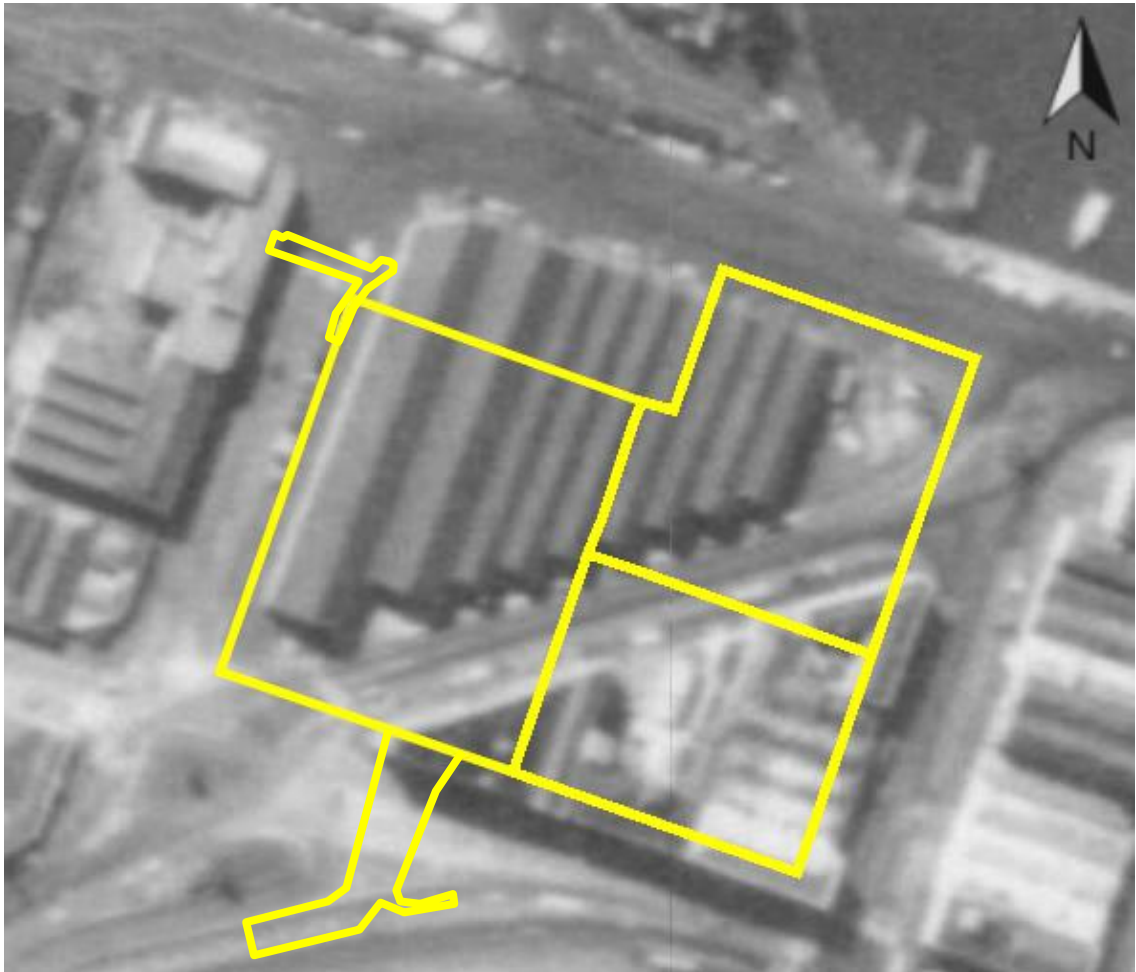


Figure 24. Aerial photograph (Crown 583 1917 30) dated 1959 showing the Project Area outlined in yellow (source: Auckland Council GeoMaps)

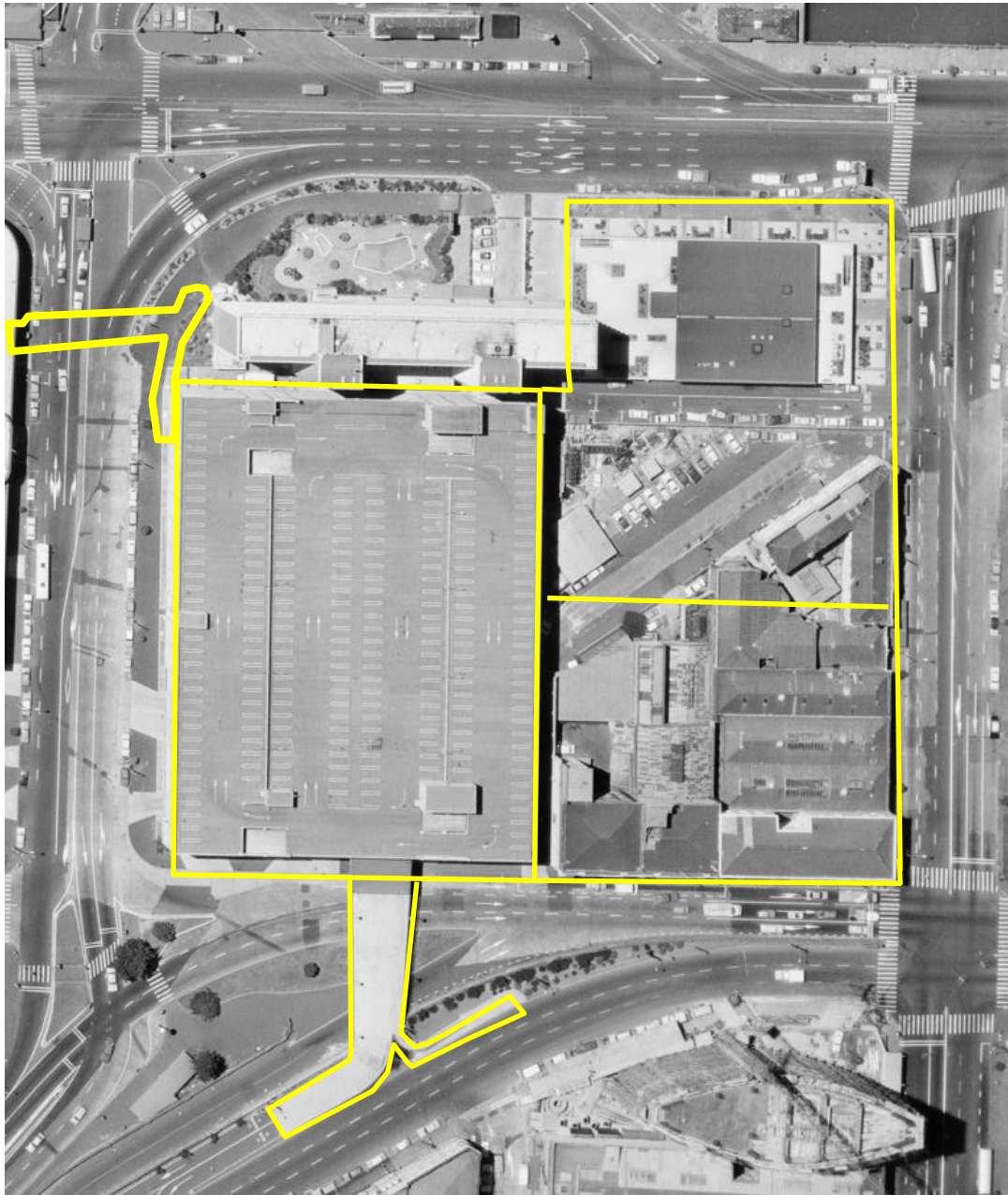


Figure 25. Aerial photograph (Crown 2565 J 3) dated 1972 showing the Project Area outlined in yellow (sourced from: <http://retrolens.nz> and licensed by LINZ CC-BY 3.0)

ARCHAEOLOGICAL BACKGROUND

Recorded Archaeological Sites within the Project Area

One archaeological site has been previously recorded in the Project Area (R11/3354) Historic Land Parcel – Marine Chambers Building. It was identified during archaeological monitoring at the southwestern corner of the junction of Lower Queen Street and Quay Street in 2020/2021. A variety of brick foundations stretching over a distance of 9m were recorded. The foundations are believed to have been associated with two brick buildings that fronted onto Lower Queen Street and most likely were associated with the former Marine Chambers Building built in 1885 (NZAA Site Record).

During the research for this assessment it was noted that the former Auckland Graving Dock meets the definition of an archaeological site under the Heritage New Zealand Pouhere Taonga Act and as such it has now been entered into the Archsite Database base as R11/3458. The extent of the surviving remains of the graving dock are not known at present, although it is noted from historical sources that the stone sides of the dock were removed during its demolition in 1915 and also that the construction of the Downtown Carpark in 1970 would have affected any surviving archaeological remains. It is, however, considered likely that some features will have survived, as the graving dock was a structure that continued to substantial depth from the reclamation ground surface (estimated to be more than c.3m from the original specification notes). Also, as noted above, the investigation undertaken for the AMP Tower Development (Clough et al. 2001) identified features associated with the engine and boiler house, coffer dam and brick culverts that were used to empty the graving dock. It was noted that additional features associated with the graving dock could have survived to the west of those excavations, which includes part of the existing carpark building. The locations of the archaeological sites described above and also in the section below are shown in Figure 27 and a brief description is provided in Table 2.

Previous Archaeological Investigations

AMP Tower Investigation

There have been a number of archaeological investigations in the general area surrounding the current Project Area. However, this is the closest, being situated to the east of the existing carpark building (Figure 26). The works consisted of archaeological monitoring for the AMP Waterfront Tower that was undertaken between June and September 2000 (Clough et al. 2001). It was noted that the area included in the archaeological investigation had been previously modified by development in the late 1970s, including construction of the Downtown Terminal Building.

The works were situated on land reclaimed in the 1870s and also partially on reclaimed land dating to 1915. The works were also expected to affect the Auckland Sailors Home, which was built in 1887 and demolished in 1973/4. The earthworks on the site consisted of excavating a 50m x 50m pit down to the rock layer, which was encountered at depths between 5m and 7m. It was noted that archaeological excavation was restricted to minor investigations of rubbish pits and features for recording, as they were exposed during excavations for the AMP tower, due to safety restrictions.

The results of the monitoring included identification of features relating to the Auckland Graving Dock, including a short section of the southern inner wall (c.1.2m in length) consisting of large basalt and scoria boulders with Portland cement mortar. As well, the foundations of the Engine and Boiler House, which were described in the works specifications ‘to be carried down to the rock’ were identified, as were remnants of the inner and outer walls of the timber coffer dam consisting of totara and kauri piles and a system of contiguous brick culverts that emptied the graving dock. Features that were not encountered included the rear wall of the Engine and Boiler House, the majority of the Graving Dock structure and the 50ft (15.7m) discharge pipe. The results were summarised as follows, indicating that additional evidence of the dock would be expected:

‘Excavations revealed only a minor section of the graving dock. However, significant sections of the engine and boiler house basement/foundations, including a number of culverts and cast-iron suction pipes were exposed. The remains demonstrate the quality of design, workmanship and engineering in Auckland at that time and indicate that the archival works specifications for the construction, brought to light during research (above) were generally adhered to. The “3ft thick concrete floor” of the engine/boiler house was not evident and must have been removed during the construction of the 1970s and there was no sign of the pump well. This and other features must still be buried in the unexcavated western portion of the site” (Clough et al. 2001: 36).

Timber pile caps and strip footings associated with the Sailors Home to the east of the existing carpark building were also encountered, as were two rubbish pits in the reclamation fill containing burnt material, glass and stoneware representing late 19th century material. Only one of the pits was able to be hand excavated due to safety issues. The artefacts recovered were mainly broken glass bottles, dominated by black beer bottles, and some stoneware. Evidence of the 1915 seawall was also identified. The seawall was constructed from the inner wall of the graving dock to the west and out east to Quay Street. A section of the wall was demolished as part of the works for the AMP tower. It was also noted in the 2001 Clough report that the results indicated that further remnants of the Engine and Boiler House and related culverts and the dock itself were still likely to be present to the west, where the existing carpark building is located.

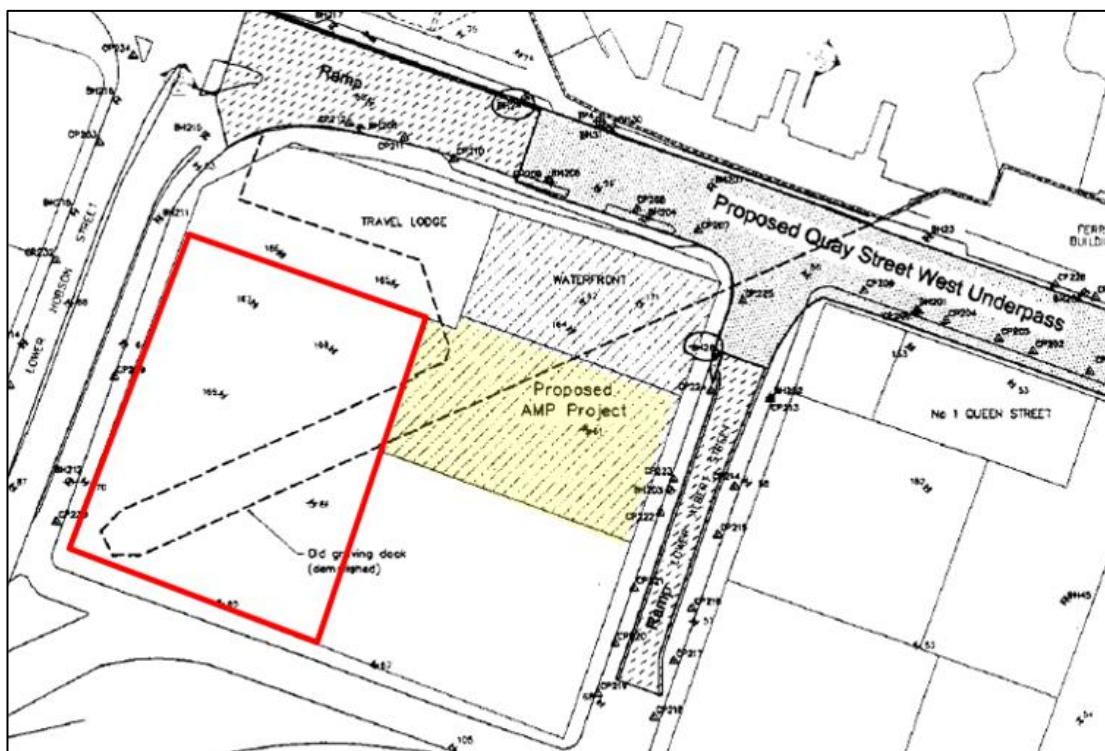


Figure 26. Plan showing the project area for the 2000 investigation for the AMP project (shaded yellow) in relation to the existing Downtown Carpark (outlined in red) (source: Clough and Prince 1999: 2)

Other Archaeological Investigations and Monitoring in the General Area

Other investigations in the general area with the most relevance to the current project in terms of proximity and type of archaeological remains include an area along Quay Street where part of an 1880s seawall was exposed in 2001 during trenching for stormwater diversion in Quay Street from Cooks Wharf East into Britomart Place (Clough and Prince 2001). The work required the removal of a section of the 1880s Quay Street seawall and a general reconstruction was able to be proposed (Bickler et al. 2005: 33). As well, between 2001 and 2003 excavations at Britomart provided information on 19th century features such as old wharves, reclamation fill, parts of a drainage system through the reclaimed land and numerous 19th century household and industrial artefacts. The reclamation fill also contained extensive remains relating to the activities of the city during the late 19th century (Bickler et al. 2005). The processes which can be applied to a broader area in general identified as a result of the investigations were as follows:

1. Building of a seawall in the Quay Street area
2. Demolition of Point Britomart and infilling the area behind the seawall
3. Demolition of structures such as wharves and jetties
4. Use of the site as a rubbish dump to complete reclamation
5. Stabilisation of reclamation
6. New buildings on reclamation land

Major excavations have also been carried out within reclamation site R11/2572 between Lower Queen Street and Lower Albert Street, which is located to the east of the current Project Area (Judge et al. 2018; Larsen et al. 2018), including land within Queen Elizabeth Square, for the Commercial Bay development. The site had previously been modified by the construction of the former Downtown Shopping Centre and other buildings in the late 1960s to early 1970s. Excavations extended to a depth of 12m below ground level in some areas, and the development included the integration of the City Rail Link tunnels below the property. Most of the reclamation deposits that made up the site were removed in the process, but there is still potential in areas that were not so deeply excavated for reclamation deposits to have survived. Features exposed included a short section of bluestone blocks and wooden piles that were thought to be part of the 1850s-60s Customs Street seawall; a basalt stone wall that appeared to be the southern end of the stone pier for the Queen Street wharf; timber piles relating to the original Queen Street Wharf; deep foundations and piles that supported some of the late 19th century buildings; and a number of artefacts within the reclamation fill.

To the northwest of the current Project Area, test trenching for a seawall upgrade uncovered a wharf pile relating to the old Hobson Street Wharf (R11/2901) at 1.4m below the ground surface with the top truncated by modern services installation. The pile was rectangular in section and measured 340mm x 230mm. It was left in situ. Bluestone blocks probably relating to 20th century kerbing were found in two other trenches and the base of a wooden post in a third (Larsen and Macready 2018).

Site R11/3385 was identified during archaeological monitoring for infrastructure installation works in 2018. This site consists of two identified sections of seawall (one being 5.03m in length and the other 2.84m) and reclamation fill. Both sections of seawall were demolished as part of the construction works (Larsen et al. 2018).

Archaeological monitoring during the redevelopment of the Downtown Shopping Centre along the eastern edge of Lower Albert Street identified two sections of underground curved brick walls (R11/3166). The foundations were part of the 19th century Hardie Brothers Building and consisted of two sections of brick wall 11 courses high and are believed to have formed part of the openings to the basement of the building (Judge et al. 2018). As well, a section of seawall (R11/3165) was identified during the Downtown Shopping Centre redevelopment along the northern edge of Customs Street to the southeast of the current Project Area. It was identified as part of the Customs Street Seawall and consisted of semi-dressed bluestone basalt blocks (ibid.).

Archaeological monitoring for the City Rail Link project in 2017 identified two archaeological sites, R11/3278 and R11/3279, located near the junction of Lower Albert Street and Fanshawe Street to the southeast of the Project Area. The sites consisted of brick drainage structures, with R11/3278 being a brick barrel drain and brick inspection chamber and R11/3279 a circular brick structure, thought to be an old bell-shaped drainage chamber, possibly for stormwater with a broken terracotta pipe leading from the chamber (Judge et al. 2020). The locations of the archaeological sites described above are shown in Figure 27 and a brief description is provided in Table 2 (which also includes the CHI reference for the sites).

The previous archaeological monitoring and investigations undertaken on reclaimed land in the area surrounding the current Project Area indicates the potential for archaeological remains to have survived, even after an area has been previously impacted by 20th century

development. Within the current Project Area, archaeological remains associated with both 19th and early 20th century reclamation and seawalls, the Auckland Graving Dock and also possibly foundations of the Gunson Building (which was at least partially located in the southeast corner of the Project Area) would be expected.

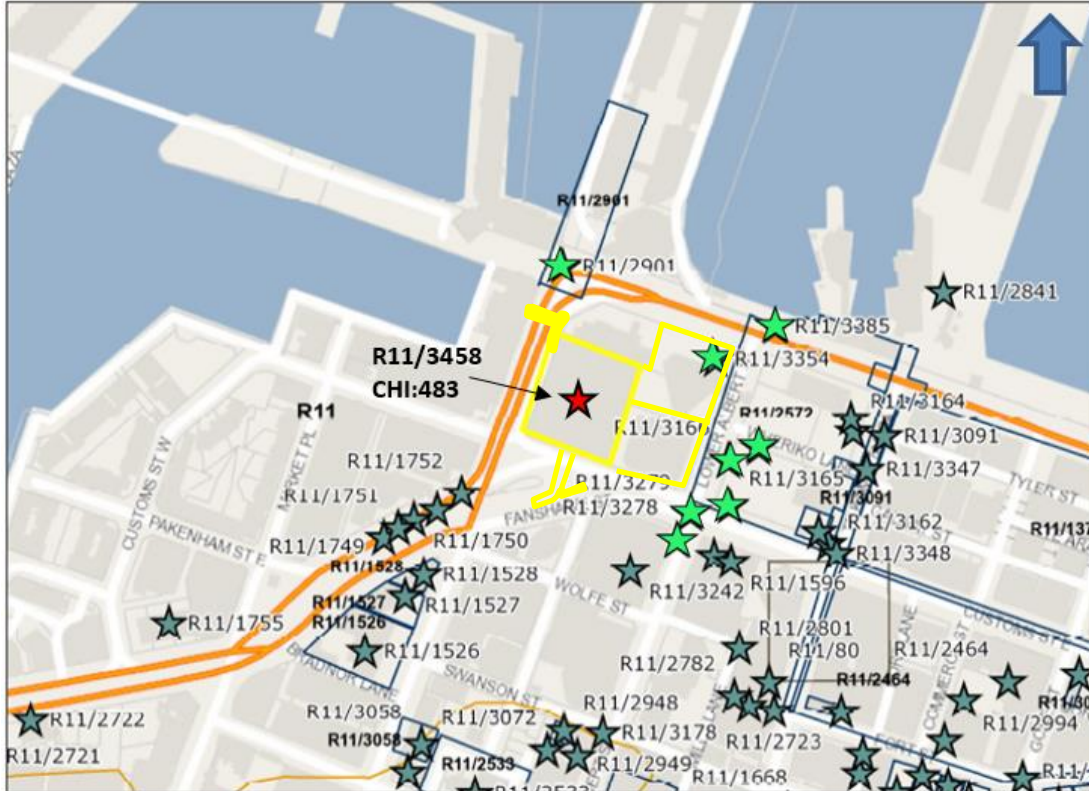


Figure 27. Map showing the recorded archaeological sites in proximity to the Project Area (outlined in yellow) with sites described in the text of this report indicated by green stars and newly recorded site R11/3458 (The Auckland Graving Dock) represented by red star (source: NZAA ArchSite Website)

Recorded Historic Heritage Sites

It is noted that the Auckland Graving Dock is included on the Auckland Council Cultural Heritage Inventory (CHI:483)³ as a Maritime Site – Industrial – Dock (Graving), although it is not included in Schedule 14.1 Schedule of Historic Heritage. It is also noted that none of the archaeological sites in the vicinity are included in Schedule 14.1 Schedule of Historic Heritage in the AUP OP.

There are, however, a number of historic heritage places in proximity to the Project Area, some of which are also listed in the NZ Heritage List / Rārangī Kōrero. These sites are described in more detail below with locations shown in Figure 28 and Figure 29 and a brief summary provided in Table 2.⁴

³ See map in Figure 27 for location.

⁴ Table 2 also contains the Auckland Council Cultural Heritage Inventory (CHI) reference for the archaeological and historic heritage sites included in the CHI

There are seven Historic Places in the NZ Heritage List⁵ that are also included in Schedule 14.1 Schedule of Historic Heritage in the AUP OP, which are as follows: The Former Custom House (NZHL:104/ AUP OP ID:1946/ CHI:2668), which was built in 1888-89. It was designed by architect Thomas Mahoney in a French Renaissance style and it has been noted that the extravagance of the workmanship and materials reflect the affluence and optimism of Auckland at that time (Heritage NZ Website). The Wharf Pavilions, known as the Public Shelters (former) on the NZ Heritage List (NZHL:670 (AUP ID:2018/ CHI:17516), which consist of two half-timbered style buildings formerly used as public launch shelters, situated along the waterfront. The Auckland Harbour Board Former Workshops (NZHL:2649/ AUP OP ID:1969/ CHI:2551), which were completed in 1944 to house the workers associated with the running of the port. The Tepid Baths (NZHL:7377/ AUP OP ID:1947/ CHI:12559), which were originally two heated swimming pools, which opened in 1914. The facility underwent refurbishment between 2010 and 2012. The First World War Memorial Beacon (NZHL:9652/ AUP ID 2727/ CHI:20107), which was originally planned to be located within a park at the site of the former Graving Dock reclamation area. The monument was present in that area in the past but was removed around 1969 and put into storage – a scaled-down version was present near the Maritime Museum until recently, when it was again moved, this time to a location on Quay Street with plans to recreate a copy of the original glass orb that was set on top of the monument in an ironwork spire, which is also planned to be remade. The Ferry Building (NZHL-102/ AUP OP ID:2016/ CHI:332) is one of the most distinctive buildings on the Auckland Waterfront. It was built between 1909 and 1912 and was designed to be the focal point of an extensive ferry network. It was intended to be used entirely for leasing out as a way to raise a regular income for the Auckland Harbour Board. The Queens Wharf Gate and Auckland Harbour Board Fence (NZHL-632/ AUP OP:1915/ CHI:302) are also a distinctive feature of the area.

There are also two scheduled Historic Heritage Places that are not included on the NZ Heritage List, firstly West Plaza (AUP OP:1923/ CHI: 17241), which was built in 1972; and secondly, the Foster & Co. Building (AUP OP:1954/CHI: 12561) located at 30, 32 and 34-36 Fanshawe Street. There is also one place included on the NZ Heritage List and not scheduled in the AUP OP, this being the Launch Offices (NZHL:608/ CHI:308) which are located near the current Maritime Museum. As well, the Harbour Historic Area (NZHL:7158) is not included in Schedule 14.1 of the AUP OP, although it is noted that some of the structures and buildings included in the area are scheduled. The area includes the waterfront where 19th century improvements created an area which allowed for a 1904 improvement plan (The Hamer Plan) which shaped the Auckland Waterfront. There are a number of significant buildings within the area, many described above, including the Ferry Building and wharf sheds, Quay Street Landings, wharf gate and fences, Launchman's building and Harbour Board Workshops.

⁵ The NZ Heritage List is a professionally researched and documented record of Aotearoa New Zealand's historical and cultural place-based heritage which is managed by Heritage New Zealand.

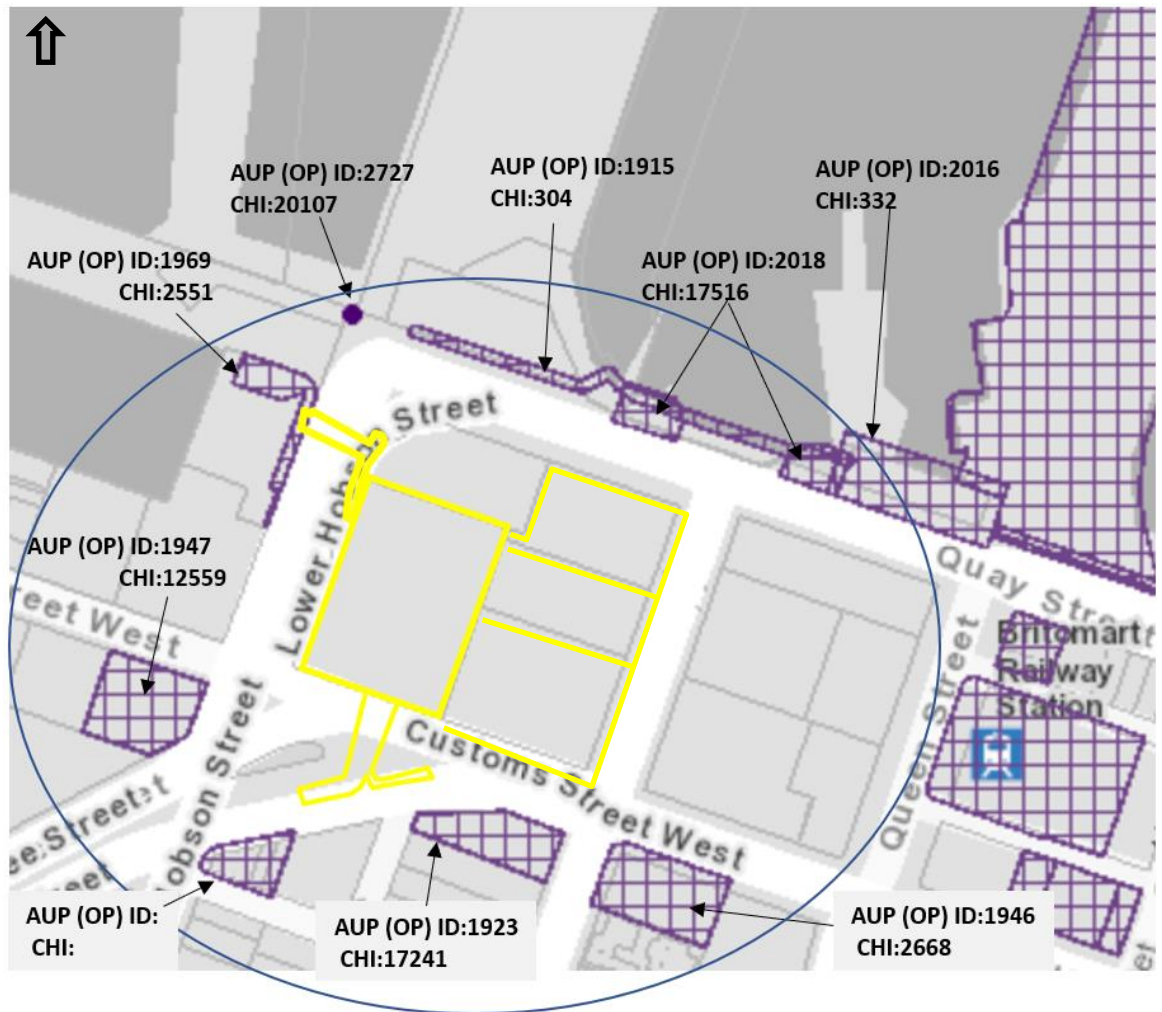


Figure 28. Map showing the locations of the scheduled historic heritage places (purple hatched areas) in proximity to the Project Area, which is outlined in yellow (source: Auckland Council Geomaps)

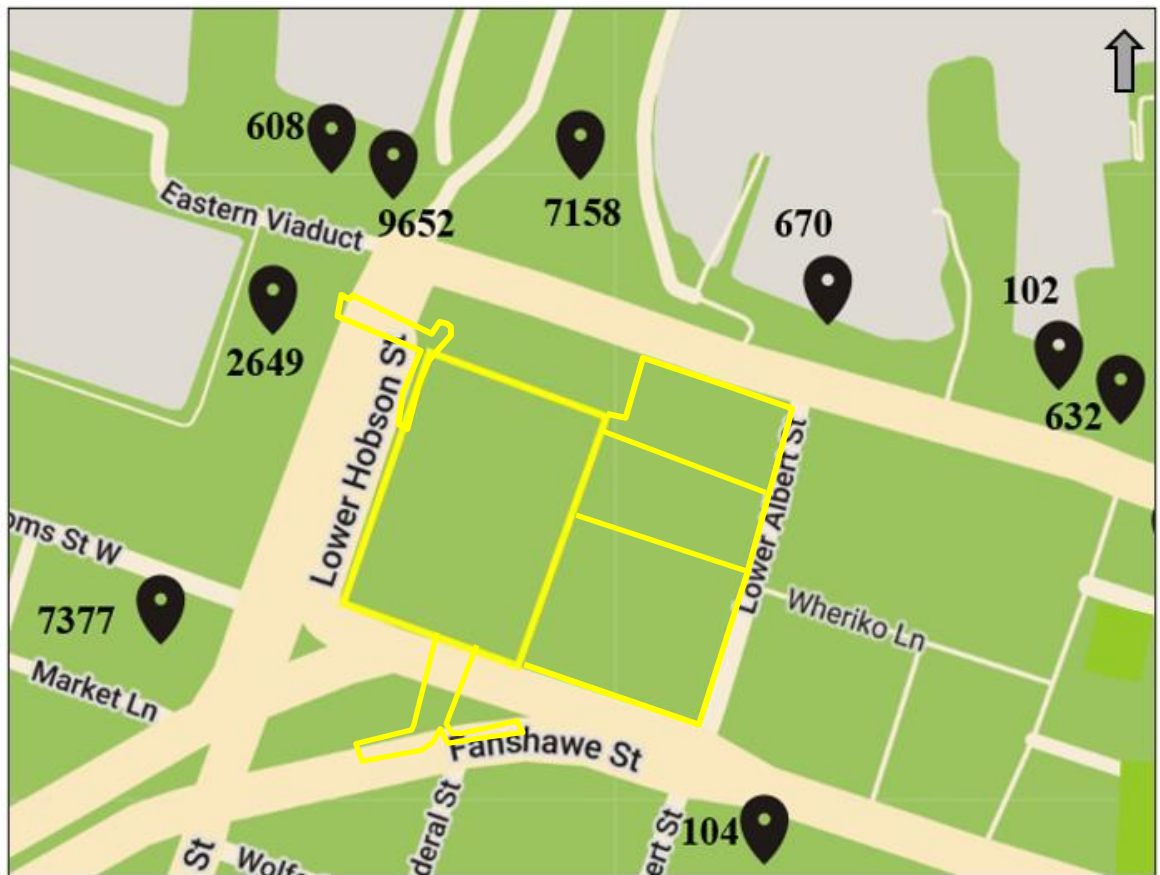


Figure 29. Map showing the location of the buildings and structures on the New Zealand Heritage List / Rārangi Kōrero (numbered items) in proximity to the Project Area, which is outlined in yellow (source: Heritage New Zealand Website)

Table 2. Brief description of the recorded archaeological sites, NZ Heritage List/ Rārangī Kōrero Historic Places and Scheduled Historic Heritage Places within and in proximity to the Project Area, with sites within the Project Area shaded grey

NZAA Ref	CHI Ref	UPID ID	NZ Heritage List Ref	Site Type	Description	NZTM Easting	NZTM Northing
R11/2572	20336	n/a	n/a	Historic Land Parcel	Reclamation, wooden piles, brick features, artefacts identified during archaeological monitoring.	1757455	5920998
R11/2901	582	n/a	n/a	Transport Communication	Hobson Wharf (Former) wooden pile identified during archaeological monitoring.	1757292	5921149
R11/3165	22001	n/a	n/a	Industrial	Part of the Custom Street Seawall	1757431	5920949
R11/3166	22002	n/a	n/a	Commercial	Foundations of the Hardie Bros. Building	1757430	5920987
R11/3278	23057	n/a	n/a	Administrative	Brick barrel drain	1757387	5920921
R11/3279	23058	n/a	n/a	Administrative	Brick drainage feature	1757398	5920943
R11/3354	n/a	n/a	n/a	Historic Land Parcel	Marine Chambers Building – brick foundations identified during construction works	1757419	5921071
R11/3385	n/a	n/a	n/a	Industrial	Seawall – running from the ferry building diagonally to the southwest corner of Lower Albert and Quay streets	1757469	5921099
R11/3458	483	n/a	n/a	Industrial	Auckland Graving Dock – built in 1878 and demolished in 1915.	1757313	5921030
n/a	17241	1923 (Cat B)	n/a	Historic Structure	West Plaza- built in 1972	n/a	n/a
n/a	304	1915 (Cat A)	632 Category 2	Historic Structure	Queens Wharf Gates and Auckland Harbour Board Fence	n/a	n/a
n/a	332	2016 (Cat A)	102 Category 1	Historic Structure	Ferry Building built between 1909-1912, an ornate building that was intended to be the focus of an extensive ferry network.	n/a	n/a

NZAA Ref	CHI Ref	UPID ID	NZ Heritage List Ref	Site Type	Description	NZTM Easting	NZTM Northing
n/a	2668	1946 (Cat A)	104 Category 1	Historic Structure	Former Customs House- built between 1888 and 1889 and designed in a French Renaissance style. It has been readapted for cultural and commercial use.	n/a	n/a
n/a	12559	1947 (Cat A)	7377 Category 2	Historic Structure	The Tepid Baths opened in 1914 and contained two separate pools which were heated from the nearby tramway power plant. They were refurbished between 2010-2012.	n/a	n/a
n/a	12561	1954 (Cat B)	n/a	Historic Structure	Foster & Co Building located on Fanshawe Street	n/a	n/a
n/a	2551	1969 (Cat B)	2649 Category 2	Building- Commercial	Auckland Harbour Board Workshops (former) were completed in 1944 and were used to provide accommodation for the staff who maintained the port facilities. The buildings are now an arts and entertainment venue.	n/a	n/a
n/a	17516	2018 (Cat B)	670 Category 2	Building- Commercial	Former Public Launch shelters- Wharf Pavilions	n/a	n/a
n/a	20107	2727 (Cat B)	9652 Category 2	Memorial Structure	Auckland Harbour Board World War I Memorial Beacon-relocated.	n/a	n/a
n/a	308	n/a	608 Category 2	Historic Structures	Launch Offices- now associated with the Maritime Museum	n/a	n/a
n/a	18642	n/a	7158 Historic Area	Historic Heritage Area	Harbour Historic Area – 19 th century improvements along the Auckland Water, new Queen Street Wharf, reclamation, and graving dock. Also features that were part of a 1904 report by engineer, W. H. Hamer (The Hamer Plan).	n/a	n/a

PHYSICAL ENVIRONMENT

Existing Site Condition

The existing Downtown Carpark is an eight-level structure with the ground floor staggered, with the north half being at a lower elevation than the south. It is situated on a concrete slab on-grade with a split basement level beneath the northern half of the building. The building is founded on belled reinforced concrete piles with lengths between 5.6 and 13.9m with shaft diameters between 1.5 and 2.3m and which extend into the rock layers below (Tonkin & Taylor 2021).

The geology in the general area consists of reclamation fill over Tauranga Group rocks which are sediments of the last 5 million years, mainly of volcanic pumice and recent marine sediments with Waitemata Group East Coast Bays Formation rock expected at 5m to 11m below the existing ground level (Figure 30). The reclamation fill is highly variable and ranges from fine-grained clays and silts through to boulders, which were both locally sourced and imported and would include dredged materials along with debris from earlier seawalls and structures. It is expected that the fill will be deeper at the graving dock location, which runs northeast to southwest across the Project Area, as shown in Figure 31 (Tonkin & Taylor 2021).

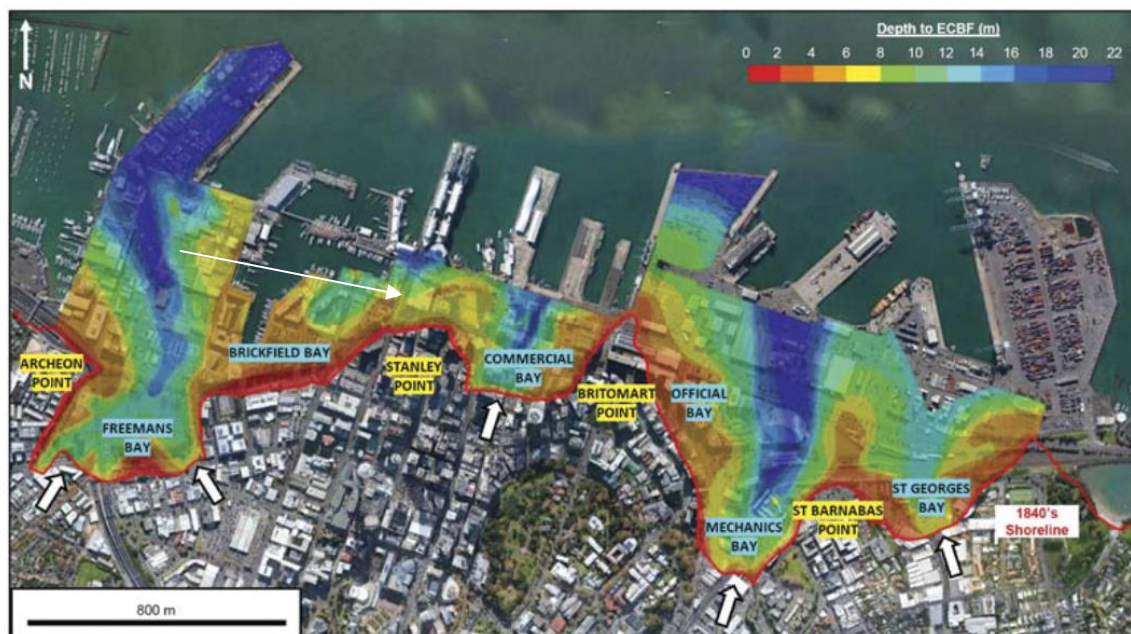


Figure 30. Aerial plan showing the depth to East Coast Bay Formation Rock with the Project Area indicated by the white arrow (source: Lee and Wotherspoon 2016. Dynamic Characteristics of Auckland Central Business District Reclaimed Zones published in NZ Geomechanics News Issue 92-December 2016)

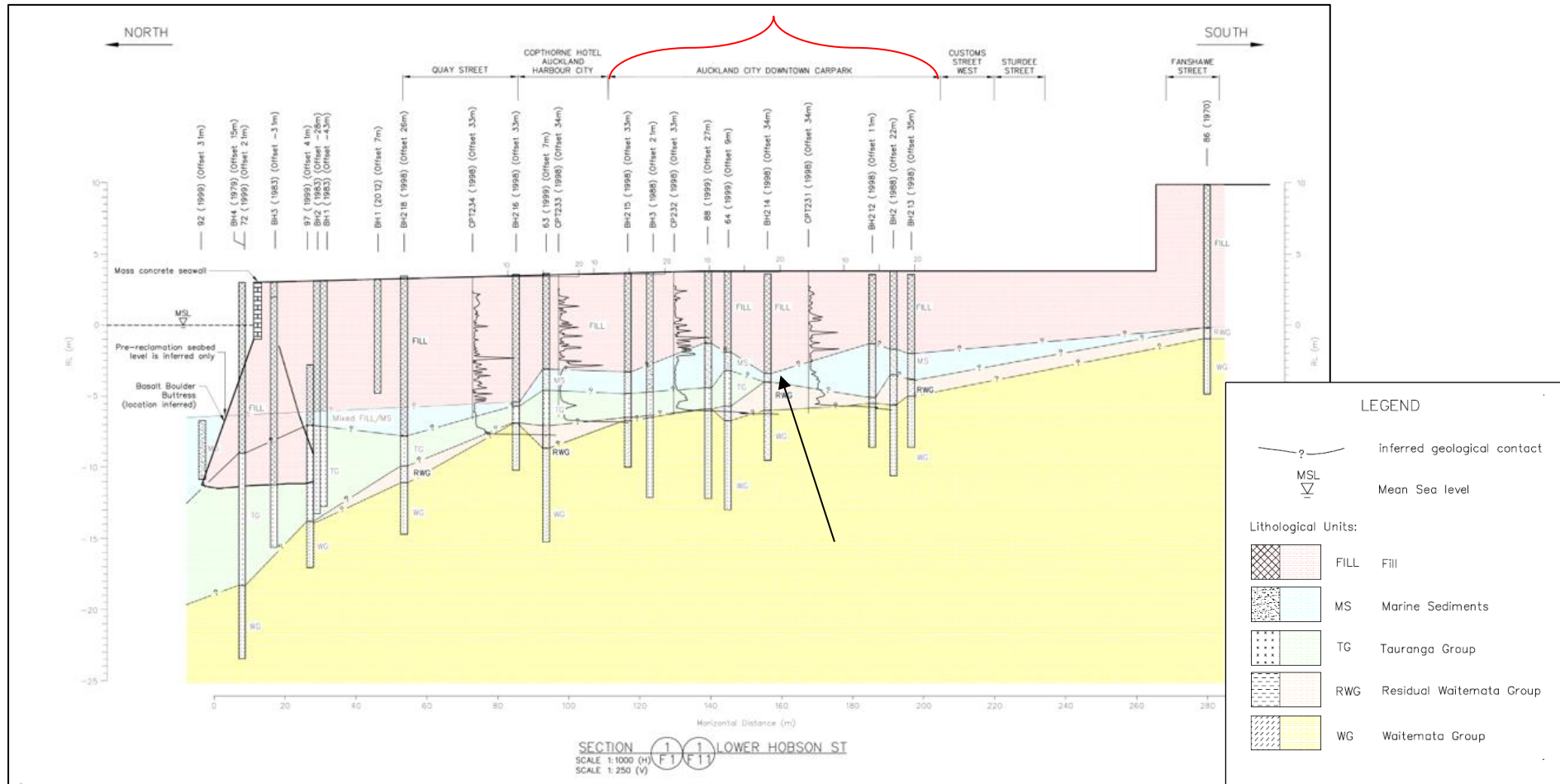


Figure 31. Depths of fill and underlying geology under the Downtown Carpark (within red brackets) and surrounding area with deeper fill probably associated with the graving dock indicated by arrow (Tonkin & Taylor 2021)

ASSESSMENT

Based on the historical information provided above, the Project Area has been confirmed to contain the former Auckland Graving Dock, which was constructed in 1878/79 and which has been recorded as an archaeological site (R11/3458). As noted in the original construction plans for the dock, the earthworks included an area 50 feet (15.24m) wide to the west and south of the dock, with the area to the east reclaimed around the same time as the graving dock. As such, remains of 19th century reclamation and possibly seawalls are also located within the current Project Area. As well, the 1915 reclamation associated with the closure of the graving dock is also present in the Project Area and possibly evidence of the 1915 seawall associated with that reclamation. The Project Area also has the potential to contain evidence in the form of foundations/piling of the early 20th century Gunson Building.

The proposed works for the current project will impact on both 19th and early 20th century reclamations and also on the archaeological site R11/3458 (Auckland Graving Dock). It is noted that the graving dock was demolished in 1915 and at least some of the structural remains were removed; however, the extent of what was removed and what was left in place cannot be determined until excavation works are underway. It is noted that the investigation undertaken in 2000 by Clough & Associates was able to identify archaeological remains associated with the graving dock even after 20th century development had affected the site. In the case of the current Project Area, the main impacts from previous construction works that have been identified through this desk-based study consist of the construction of the warehouses dating to the 1940s and the existing Downtown Carpark. Based on information from the construction of the carpark the piles went from the ground surface into the underlying rock. There was also a split-level basement beneath the northern half of the building footprint (although the depth of the basement is not noted). These works would have damaged and likely destroyed some archaeological remains (especially in the northern part of the carpark); however, based on the overall depth of the reclamation fill, the additional depth of the graving dock, and archaeological remains identified in nearby areas that had also been affected by development in the 1960s/70s, it is considered very likely that some archaeological evidence has survived.

In summary, the Project Area contains the recorded archaeological site R11/3458 and is also located in an area reclaimed during the late 19th and early 20th centuries which is likely to contain additional 19th and early 20th century remains, such as seawalls, building foundations, historic artefacts, drainage pipes and other features.

DISCUSSION AND CONCLUSIONS

Summary of Results

The proposed works will affect archaeological site R11/3458 (the Auckland Graving Dock) and will also require the removal of a small area of 19th century reclamation fill and also a larger area of 1915 reclamation fill. The areas of reclamation have the potential to contain historic artefacts and early maritime structures and features and possibly early 20th century building foundations.

Māori Cultural Values

This is an assessment of effects on archaeological values and does not include an assessment of effects on Māori cultural values. Such assessments should only be made by the tangata whenua. Māori cultural concerns may encompass a wider range of values than those associated with archaeological sites. The historical association of the general area with the tangata whenua is evident from the recorded sites, traditional histories and known Māori place names.

A programme of engagement has been undertaken via the Eke Panuku Mana Whenua Governance forum, including Ngāti Whātua Ōrakei.

Limitations

Archaeological sites beneath modern buildings and sealed surfaces in urban environments can rarely be identified prior to being exposed in the course of redevelopment work, and the approach to archaeological assessment is therefore to identify historically recorded activities and assess the potential for archaeological evidence to have survived on the basis of later modifications to the site.

This assessment is based on desktop analysis, although this includes the results of previous archaeological investigations in the vicinity of the Project Area.

Archaeological Value and Significance

The Auckland Regional Policy Statement (RPS) in the AUP OP identifies several criteria for evaluating the significance of historic heritage places. In addition, Heritage NZ, has provided guidelines setting out criteria that are specific to archaeological sites (condition, rarity, contextual value, information potential, amenity value and cultural associations) (Heritage NZ 2019: 9-10). Both sets of criteria have been used to assess the value and significance of archaeological site R11/3458 (see Table 3 and Table 4).

The archaeological value of sites relates mainly to their information potential, that is, the extent to which they can provide evidence relating to local, regional and national history using archaeological investigation techniques, and the research questions to which the site could contribute. The surviving extent, complexity and condition of sites are the main factors in their ability to provide information through archaeological investigation. For example, generally pā are more complex sites and have higher information potential than small midden (unless of early date). Archaeological value also includes contextual (heritage landscape) value. Archaeological sites may also have other historic heritage values including historical, architectural, technological, cultural, aesthetic, scientific, social, spiritual, traditional and amenity values.

Overall, site R11/3458 is considered to have moderate archaeological/historic heritage value based on the criteria discussed, as it was designed by a well-known and renowned engineer, William Errington and was the first graving dock constructed in Auckland. As the dock was demolished, and in terms of information potential there are detailed historical records available on its design and specified construction materials, the overall significance is lowered, although any extant remains will have some value.

Table 3. Assessment of the historic heritage significance of site R11/3458 (Auckland Graving Dock) based on the criteria in the AUP OP (Chapter B5.2.2)

Criterion	Comment	Significance Evaluation
a) historical: The place reflects important or representative aspects of national, regional or local history, or is associated with an important event, person, group of people or idea or early period of settlement within New Zealand, the region or locality	The site was designed by William Errington who also designed the Calliope Graving Dock (which was for a time the largest in the southern hemisphere). He was a specialist in building large steam operated plants and pumps and he oversaw the construction of one of the first locomotives in Australia and also the Western Springs Pumphouse and Boiler House at Western Springs which was considered in its day to be one of the most advanced public water supply systems in the world.	Moderate
b) social: The place has a strong or special association with, or is held in high esteem by, a community or cultural group for its symbolic, spiritual, commemorative, traditional or other cultural value	The site has no known social values.	Little
c) Mana Whenua: The place has a strong or special association with, or is held in high esteem by, Mana Whenua for its symbolic, spiritual, commemorative, traditional or other cultural value	The site is not associated with Māori settlement. Māori cultural values should be determined by mana whenua	Not assessed
d) knowledge: The place has potential to provide knowledge through scientific or scholarly study or to contribute to an understanding of the cultural or natural history of New Zealand, the region, or locality	The site has the potential to provide some information on how Errington’s design was implemented as the specifications are known from surviving documents. The site will also likely contribute information on maritime and industrial activities at Commercial Bay, including reclamation and seawalls.	Moderate
e) technology: The place demonstrates technical accomplishment, innovation or achievement in its structure, construction, components or use of materials	The site was designed by Willaim Errington whose projects included significant technical accomplishments in engineering projects.	Moderate
f) physical attributes: The place is a notable or representative example of a type, design or style, method of construction, craftsmanship or use of materials or the work of a notable architect, designer, engineer or builder;	The physical attributes of the graving dock are well documented historically, although as the dock was demolished the significance will be lowered as the dock is no longer intact.	Little
g) aesthetic: The place is notable or distinctive for its aesthetic, visual, or landmark qualities	The site is entirely subsurface and has no aesthetic, visual or landmark qualities.	none

h) context: The place contributes to or is associated with a wider historical or cultural context, streetscape, townscape, landscape or setting	The site has contextual value as part of the development history of Auckland and especially activities at Commercial Bay during the 19th and early 20th centuries.	Moderate
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Table 4. Assessment of the archaeological values of site R11/3458 (Auckland Graving Dock) based on Heritage NZ criteria (Heritage NZ 2019: 9-10)

Value	Assessment
Condition	The condition of subsurface remains cannot be determined prior to excavation. The site has been previously modified through demolition of the graving dock in 1915 and subsequent development, including the construction of the existing Downtown Carpark, however, as the graving dock and its associated infrastructure extended well below the surrounding contemporary ground surface, it is expected that remains will have survived.
Rarity	The Auckland Graving Dock was one of two such facilities present in late 19th century Auckland, although it was the first to be constructed.
Contextual value	The site has contextual value as being part of the development history of Auckland during the 19th century, and in particular the expansion of the city centre and the shipping industry and the Auckland Harbour Board.
Information potential	The site has the potential to provide physical evidence of the graving dock, which we only know from historical documentation and limited archaeological investigation. However, there are detailed records available on the design and construction of the graving dock (Appendix 2), which reduces the site's potential to provide new information through archaeological investigation
Amenity value	The site has no amenity value as it is entirely subsurface.
Cultural associations	The site has direct association with early European activity and development in Auckland, especially activities at Commercial Bay during the 19th and early 20th centuries.
Other	The site retains technological value as a structure designed by the notable engineer William Errington.

Effects of the Proposal

Downtown Carpark

The proposed works will include extensive excavation through the reclamation fill down to and into the base rock layer to a depth of c.16m below the existing ground surface as shown in Figure 32. This will require the removal of all fill and marine sediments with a minimum of 9m below the interface with the underlying rock surface (East Coast Bays Formation). Thus, any surviving remains of the Auckland Graving Dock (R11/3458) would be destroyed by the proposed works. It is also noted that the existing Downtown Carpark structure is situated on an on-grade concrete slab with a split basement level beneath the northern half of the building, which would suggest that the southern part of the Project Area may have a lower degree of previous subsurface impacts where it would be more likely for archaeological remains to have survived.

The Auckland Graving Dock was demolished in 1915. It is known from historical sources that some of the material of the graving dock was removed; however, the actual extent of what was removed and what was left in situ has not been able to be determined. It is noted that the archaeological investigation undertaken by Clough & Associates in 2000 on the adjacent AMP Tower site was able to identify subsurface remains of the Auckland Graving Dock and associated structures. It is also noted that 20th century development, especially the construction of the Downtown Carpark would have damaged or destroyed archaeological evidence; however, as the graving dock is a feature which extended to a considerable depth below its surrounding contemporary ground surface, it is likely that some evidence would have survived, although the extent of these remains cannot be determined prior to the commencement of excavation works.

As noted above, the proposed works will involve the excavation and removal of late 19th century and early 20th century reclamation materials, which extend to depths down to c.5m below the existing ground surface. Based on archaeological investigations in similar circumstances within and in the vicinity of the Project Area,⁶ some evidence of archaeological remains, such as historical artefacts, possible remnants of early maritime structures and features, such as seawalls and evidence of early 20th century building foundations are likely to have survived. In the case of the current Project Area, the remains of foundations of the early 20th century Gunson Building, which was at least partially located within the current Project Area boundary, would be expected.

Due to the depth of the excavation, which is estimated to be around 11m, the proposed works will effectively destroy the recorded archaeological site R11/3458 and any other unrecorded archaeological/historic heritage remains present within the proposed area of works. The Auckland Graving Dock has been evaluated as having moderate archaeological

⁶ The archaeological excavation for the redevelopment of the Downtown Shopping Centre, which was constructed in the 1960/70s identified features including a short section of bluestone blocks and wooden piles that were thought to be part of the 1850s-60s Customs Street seawall; a basalt stone wall that appeared to be the southern end of the stone pier for the Queen Street wharf; timber piles relating to the original Queen Street Wharf; deep foundations and piles that supported some of the late 19th century buildings; and a number of artefacts within the reclamation fill.

values relating to historical, knowledge, technological and contextual values. Overall the historic heritage and archaeological significance of site R11/3458 is lowered as the site was at least partially demolished and the Calliope Graving Dock in Devonport which was constructed between 1885-1888 and which was designed by the same engineer who designed the Auckland Graving Dock is still present, thus still providing an intact example of a late 19th century graving dock in Auckland. As such, the effects of the proposed works on archaeological and other historic heritage values can be mitigated through the recording of any surviving remains of the archaeological site (R11/3458) along with additional information to be gained through the recording and sampling of reclamation fill to provide information on late 19th century and early 20th century activities associated with the Auckland Waterfront.

Vehicle Ramp to Fanshawe Street

The vehicle ramp will be demolished. The works will only be carried out to ground level and no impacts are expected during the demolition stage. The post-demolition works will include remediation of the streetscape including installation of new road kerb and footpath and planting and landscaping (Figure 33. Plan showing the proposed demolition and remediation works for the existing vehicle ramp (source: Warren and Mahoney)). Although these works are not extensive, they are situated in late 19th century reclamation adjacent to the original shoreline and have the potential to damage or destroy any historic heritage/archaeological remains that are present. The effects of the proposed works on archaeological and other historic heritage values can be mitigated through the recording and sampling of reclamation fill to provide information on late 19th century and early 20th century activities associated with the Auckland Waterfront.

Pedestrian Overbridge over Lower Hobson Street

The existing pedestrian overbridge over Lower Hobson Street will be demolished. The works will only be carried out to the level of the pavement and no impacts are expected during the works (Figure 34).

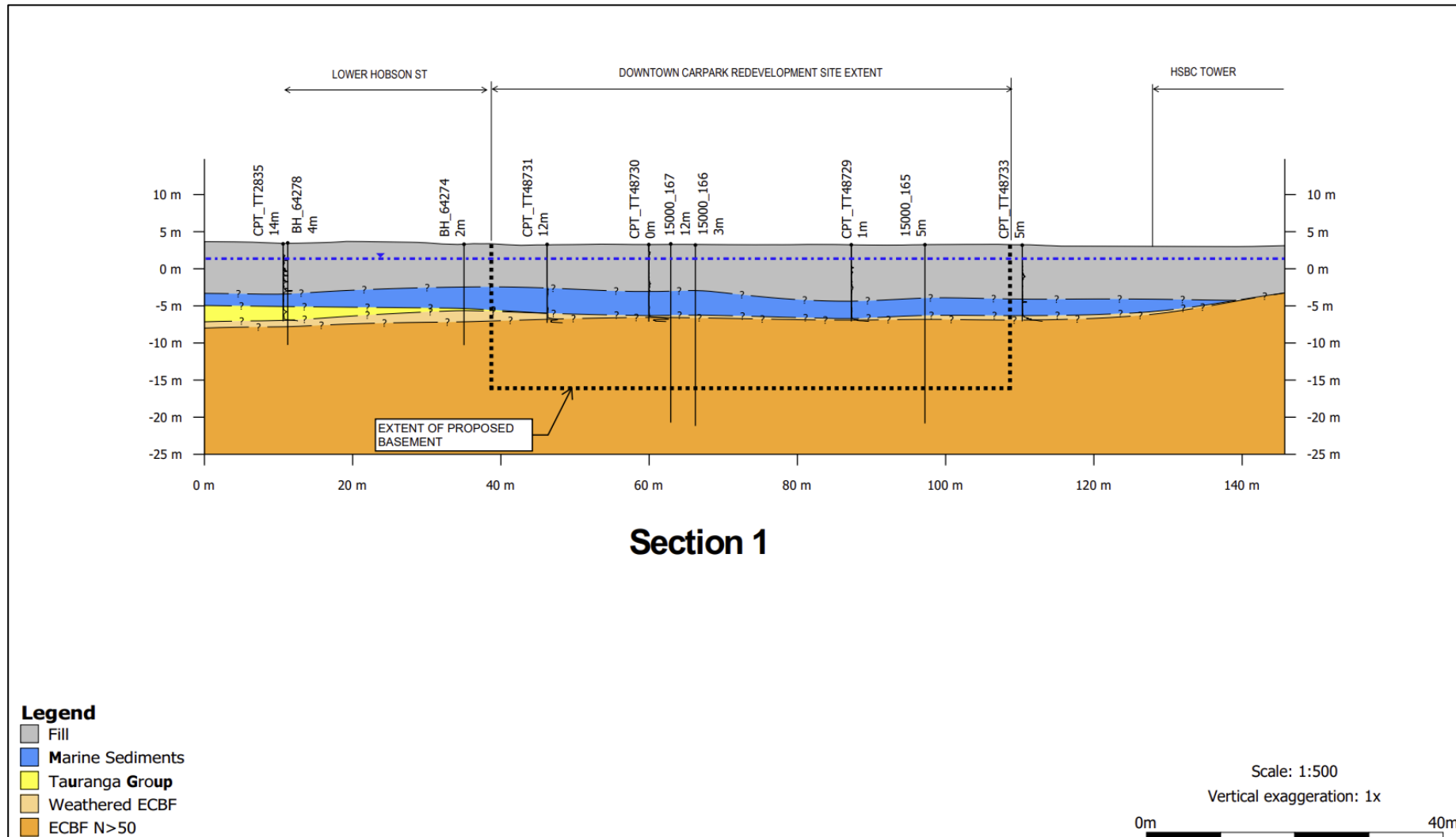


Figure 32. Proposed excavation depth for the redevelopment works with the Project Area (Downtown Carpark) indicated (source: Tonkin & Taylor)

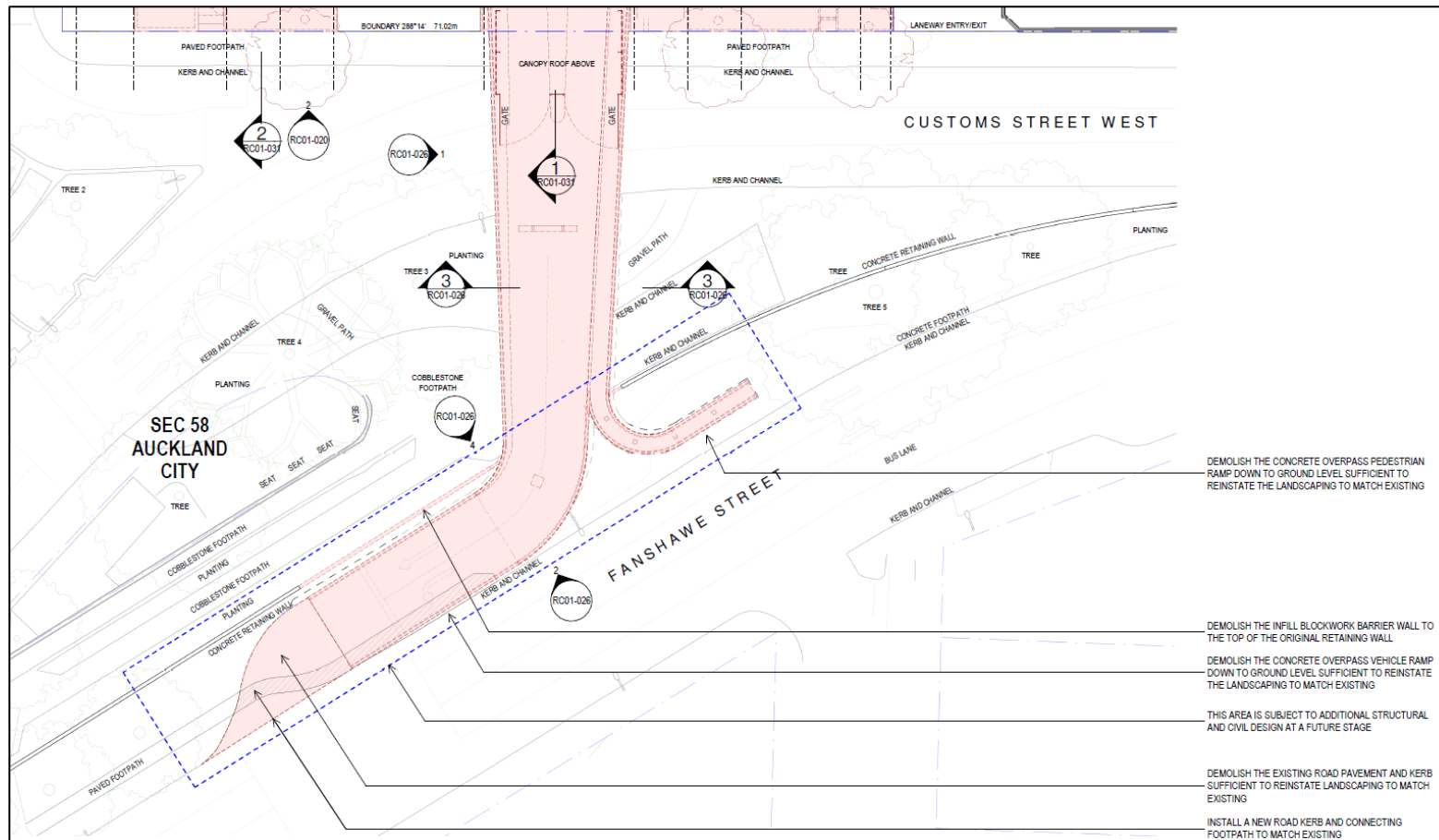


Figure 33. Plan showing the proposed demolition and remediation works for the existing vehicle ramp (source: Warren and Mahoney)

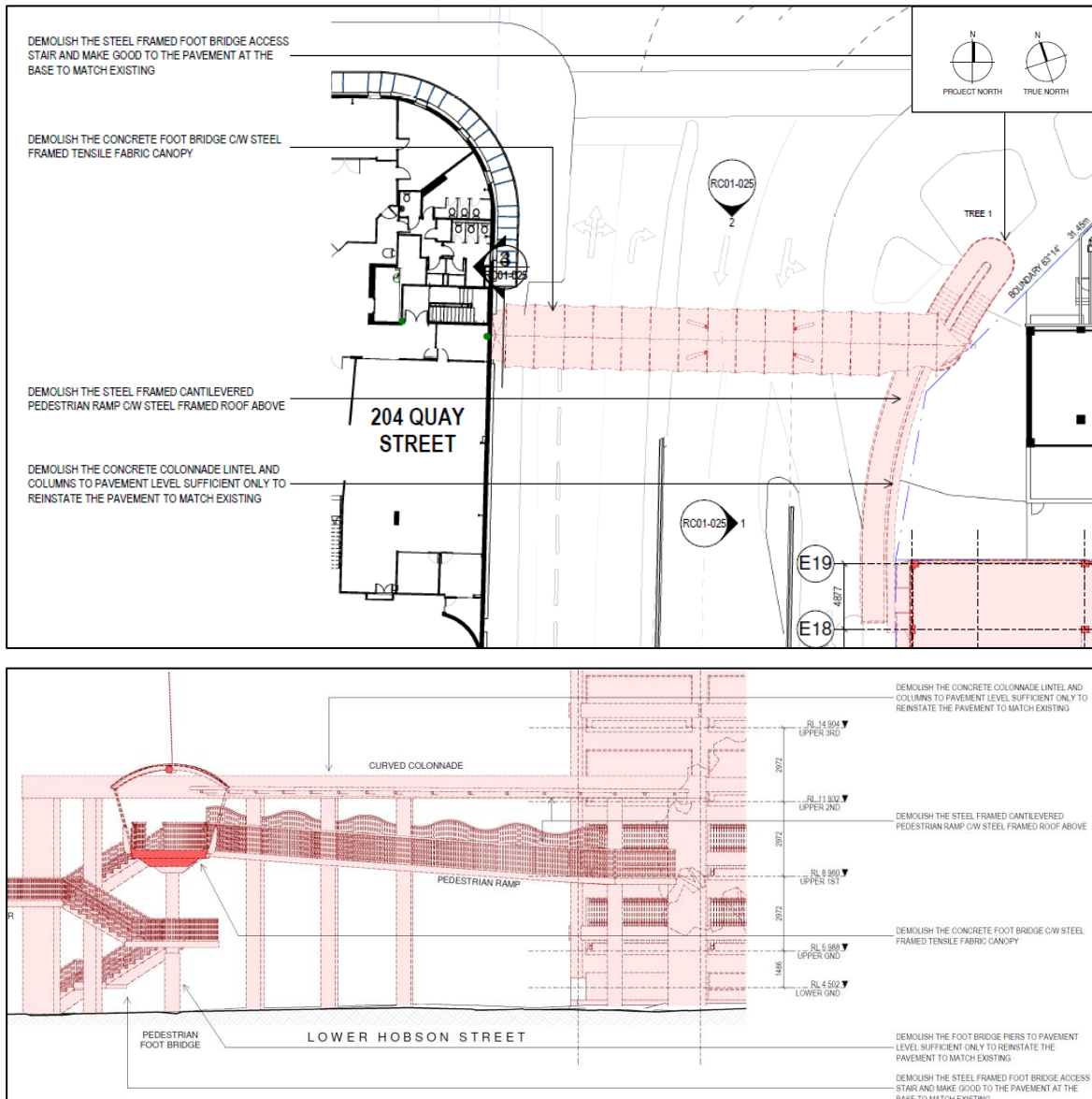


Figure 34. Plans showing the demolition and remediation works for the pedestrian overbridge (source: Warren and Mahoney)

Resource Management Act 1991 Requirements

Section 6 of the RMA recognises as matters of national importance: ‘the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga’ (S6(e)); and ‘the protection of historic heritage from inappropriate subdivision, use, and development’ (S6(f)).

All persons exercising functions and powers under the RMA are required under Section 6 to recognise and provide for these matters of national importance when ‘managing the use, development and protection of natural and physical resources’. There is a duty to avoid, remedy, or mitigate any adverse effects on the environment arising from an activity (S17), including historic heritage.

Historic heritage is defined (S2) as ‘those natural and physical resources that contribute to an understanding and appreciation of New Zealand’s history and cultures, deriving from any of the following qualities: (i) archaeological; (ii) architectural; (iii) cultural; (iv) historic; (v) scientific; (vi) technological’. Historic heritage includes: ‘(i) historic sites, structures, places, and areas; (ii) archaeological sites; (iii) sites of significance to Māori, including waahi tapu; (iv) surroundings associated with the natural and physical resources’.

Regional, district and local plans contain sections that help to identify, protect and manage archaeological and other heritage sites. The plans are prepared under the provisions of the RMA. The Auckland Unitary Plan Operative in Part 2016 (AUP OP) is relevant to the proposed activity.

A number of heritage structures have been scheduled in proximity to the proposed development and this assessment has established that the proposed works for the demolition of the pedestrian overbridge over Lower Hobson Street will be located within the extent of place of the Auckland Harbour Board Former Workshops (AUP OP ID:1969). The proposed works consist of removal of the existing connection between the overbridge and the building and restoration of the façade of the building. The effects on built heritage values from the proposed works are outside of the scope of this report and will be addressed separately.

This assessment has also established that the proposed activity will affect archaeological site R11/3458. This site is not scheduled on the AUP OP. It also has the potential to affect unidentified subsurface archaeological/historic heritage remains that may be exposed during development. If resource consent is granted, it is recommended that a condition requiring monitoring of all subsurface works for the development is included, so that archaeological investigation and recording of all significant remains (including any of early 20th century date) and reporting of the findings can be carried out. It is also recommended that an advice note regarding the provisions of the HNZPTA is included, as an Authority under that Act will be required for any modification and investigation of pre-1900 archaeological remains.

Heritage New Zealand Pouhere Taonga Act 2014 Requirements

In addition to any requirements under the RMA, the HNZPTA protects all archaeological sites whether recorded or not, and they may not be damaged or destroyed unless an Authority to modify an archaeological site has been issued by Heritage NZ (Section 42).

An archaeological site is defined by the HNZPTA Section 6 as follows:

‘**archaeological site** means, subject to section 42(3)⁷, –

(a) any place in New Zealand, including any building or structure (or part of a building or structure) that –

(i) was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and

(ii) provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and

(b) includes a site for which a declaration is made under section 43(1)⁸’

Authorities to modify archaeological sites can be applied for either in respect to archaeological sites within a specified area of land (Section 44(a)), or to modify a specific archaeological site where the effects will be no more than minor (Section 44(b)), or for the purpose of conducting a scientific investigation (Section 44(c)). Applications that relate to sites of Māori interest require consultation with (and in the case of scientific investigations the consent of) the appropriate iwi or hapu and are subject to the recommendations of the Māori Heritage Council of Heritage NZ. In addition, an application may be made to carry out an exploratory investigation of any site or locality under Section 56, to confirm the presence, extent and nature of a site or suspected site.

As the proposed development, will affect site R11/3458 an Authority must be obtained from Heritage NZ before any work can be carried out that may affect the site. The conditions of the authority are likely to include the archaeological recording/investigation of any remains affected. As the exact location of the remains of the graving dock are not able to be established prior to earthworks and additional archaeological remains are likely, it is recommended that the entire Project Area be included under the Authority.

Under Section 65 of the Act, Heritage NZ has the power to list significant historic places and areas, wahi tupuna, wahi tapu and wahi tapu areas on the New Zealand Heritage List. The purpose of listing is to inform members of the public and landowners about the values of significant places and to assist in their protection under the RMA. Heritage NZ would be considered an affected party in relation to any consent application affecting an item on the List. There is one place included on the NZ Heritage List that will be directly affected by the proposed works, specifically, the demolition of the pedestrian overbridge over Lower Hobson Street. This is the Auckland Harbour Board Former Workshops (NZHL: 2649). The proposed works consist of removal of the existing connection from the overbridge and

⁷ Under Section 42(3) an Authority is not required to permit work on a pre-1900 building unless the building is to be demolished.

⁸ Under Section 43(1) a place post-dating 1900 (including the site of a wreck that occurred after 1900) that could provide ‘*significant evidence relating to the historical and cultural heritage of New Zealand*’ can be declared by Heritage NZ to be an archaeological site.

restoration of the façade of the building. The effects on built heritage values from the proposed works are outside of the scope of this report and will be addressed separately.

Conclusions

The proposed works will affect archaeological site R11/3458 (the Auckland Graving Dock) and will also require the removal of 19th century and early 20th century reclamation fill, both of which have the potential to contain historic artefacts and early maritime structures and features (including seawalls) and possibly early 20th century building foundations in addition to the remains of the recorded archaeological site.

As the proposed activity will affect the recorded archaeological site R11/3458, an authority under Section 44(a) if the HNZPTA 2014 must be obtained prior to works being undertaken. The effects on archaeological and historic heritage values should be mitigated through archaeological investigation of site R11/3458 and the recovery of information relating to the history of reclamation in the CBD and activities associated with the Auckland waterfront.

It is noted that the Auckland Harbour Board Former Workshops (AUP OP ID: 1969 and NZHL: 2649) will be directly affected by the proposed demolition works of the existing pedestrian overbridge over Lower Hobson Street. The impacts on the built heritage values of the place are outside of the scope of this report and will be addressed separately.

RECOMMENDATIONS

- As the proposed works will affect recorded site R11/3458 an Authority must be applied for under Section 44(a) of the HNZPTA and granted by Heritage NZ prior to the start of any works that will affect the site. (*Note that this is a legal requirement*).
- As the Project Area also contains 19th century and early 20th century reclamation, all sub-ground earthworks should be monitored by an archaeologist. This should also include works for the demolition of the pedestrian overbridge and vehicle ramp.
- Any surviving archaeological remains should be archaeologically investigated and recorded in accordance with the conditions of an Authority from Heritage NZ, and the construction management plan should allow sufficient time for the investigation and recording of any remains that may be exposed.
- Consideration should be given to incorporating information recovered from historical research within this report and any information recovered from archaeological investigation into publicly accessible site interpretation, particularly regarding the Auckland Graving Dock within the proposed new development.

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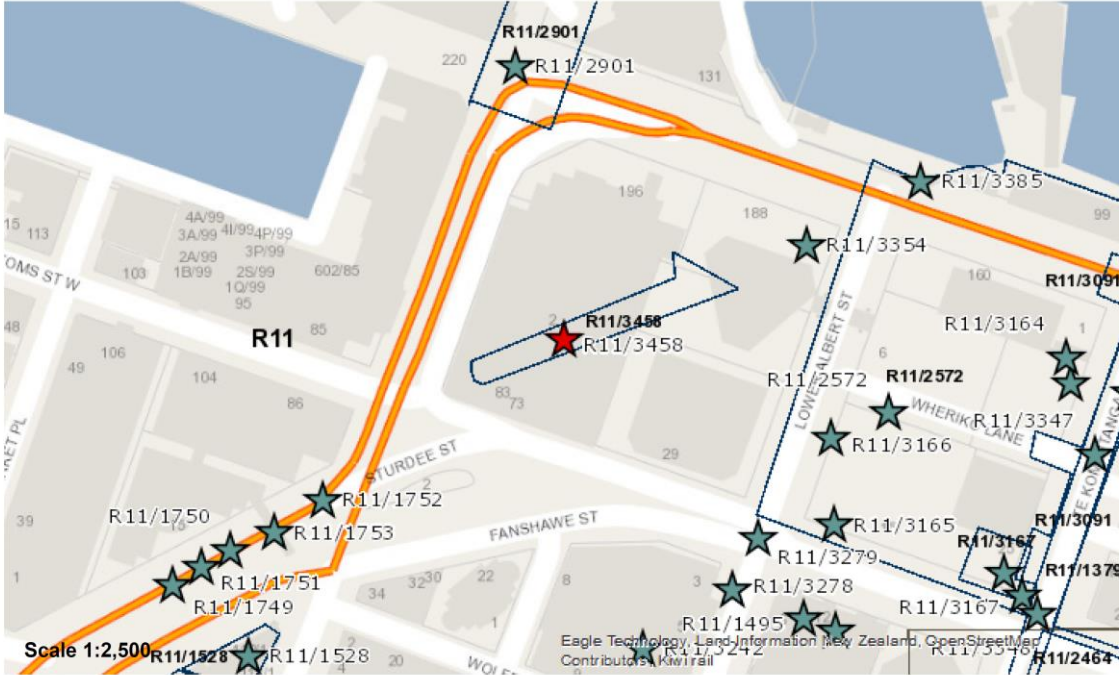
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APPENDIX A: SITE RECORD FORMS

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

 <p>Site Record Form</p>	<p>NZAA SITE NUMBER: R11/3458</p> <p>SITE TYPE: Industrial</p> <p>SITE NAME(s): Auckland Graving Dock</p> <p>DATE RECORDED:</p>
<p>SITE COORDINATES (NZTM) Easting: 1757313 Northing: 5921030 Source: On Screen</p>	
<p>IMPERIAL SITE NUMBER: METRIC SITE NUMBER: R11/3458</p>	
	
<p>Finding aids to the location of the site The site is situated in an area bordered by Customs Street West to the south, Lower Hobson Street to the west, Quay Street to the north and Lower Albert Street to the east</p>	
<p>Brief description</p>	
<p>Recorded features Boat yard</p>	
<p>Other sites associated with this site</p>	

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: R11/3458
<p>Site description</p> <p>Updated 29/04/2023 (other), submitted by ellencameron Grid reference (E1757313 / N5921030)</p> <p>The Auckland Graving Dock was constructed in 1878/79 and demolished in 1915. The dock was used for the repair of ships. It consisted of a wooden coffer dam with inner and outer casing with stone masonry covering the finished surfaces. An engine and boiler house was also included with centrifugal pumps and a 50 foot high chimney. The estimated location of the graving dock (based on historical research and an archaeological investigation in 2000 (R. Clough, D. Prince and T. Mace: 2001. Old Sailors and Auckland's Graving Dock: The Archaeology of the AMP Waterfront Tower)</p> <p>After demolition the dock site was filled in and is currently the site of the Auckland Downtown Carpark (which is currently being redeveloped)</p> <p>Updated 29/04/2023 (other), submitted by ellencameron Grid reference (E1757313 / N5921030)</p> <p>The Auckland Graving Dock was constructed in 1878/79 and demolished in 1915. The dock was used for the repair of ships. It consisted of a wooden coffer dam with inner and outer casing with stone masonry covering the finished surfaces. An engine and boiler house was also included with centrifugal pumps and a 50 foot high chimney.</p> <p>After demolition the dock site was filled in and is currently the site of the Auckland Downtown Carpark (which is currently being redeveloped)</p> <p>Updated 29/04/2023 (other), submitted by ellencameron Grid reference (E1757302 / N5921030)</p> <p>The Auckland Graving Dock was constructed in 1878/79 and demolished in 1915. The dock was used for the repair of ships. It consisted of a wooden coffer dam with inner and outer casing with stone masonry covering the finished surfaces. An engine and boiler house was also included with centrifugal pumps and a 50 foot high chimney.</p> <p>After demolition the dock site was filled in and is currently the site of the Auckland Downtown Carpark (which is currently being redeveloped)</p> <p>Condition of the site</p> <p>Updated 29/04/2023 (other), submitted by ellencameron</p> <p>The condition of the subsurface remains of the site are currently unknown, although the archaeological investigation in 2000 identified that remains of the engine and boiler house and other features associated with the graving dock had survived.</p> <p>Updated 29/04/2023 (other), submitted by ellencameron</p> <p>The condition of the subsurface remains of the site are currently unknown, although a previous investigation in 2000 identified remains of the engine and boiler house and other features associated with the graving dock. (Clough, R. D. Prince and T. Mace. 2001. "Old Sailors and Auckland's Graving Dock: The Archaeology of the AMP Waterfront Tower)</p> <p>Updated 29/04/2023 (other), submitted by ellencameron</p> <p>The condition of the subsurface remains of the site are currently unknown, although a previous investigation (Clough et al 2001) identified remains of the engine and boiler house and other features associated with the graving dock.</p> <p>Statement of condition</p> <p>Current land use:</p> <p>Threats:</p>	

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: R11/3458
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Supporting documentation held in ArchSite

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

Photograph of the Auckland Graving Dock with engine and boiler house visible (source: Auckland Libraries Heritage Collections 1677-056)



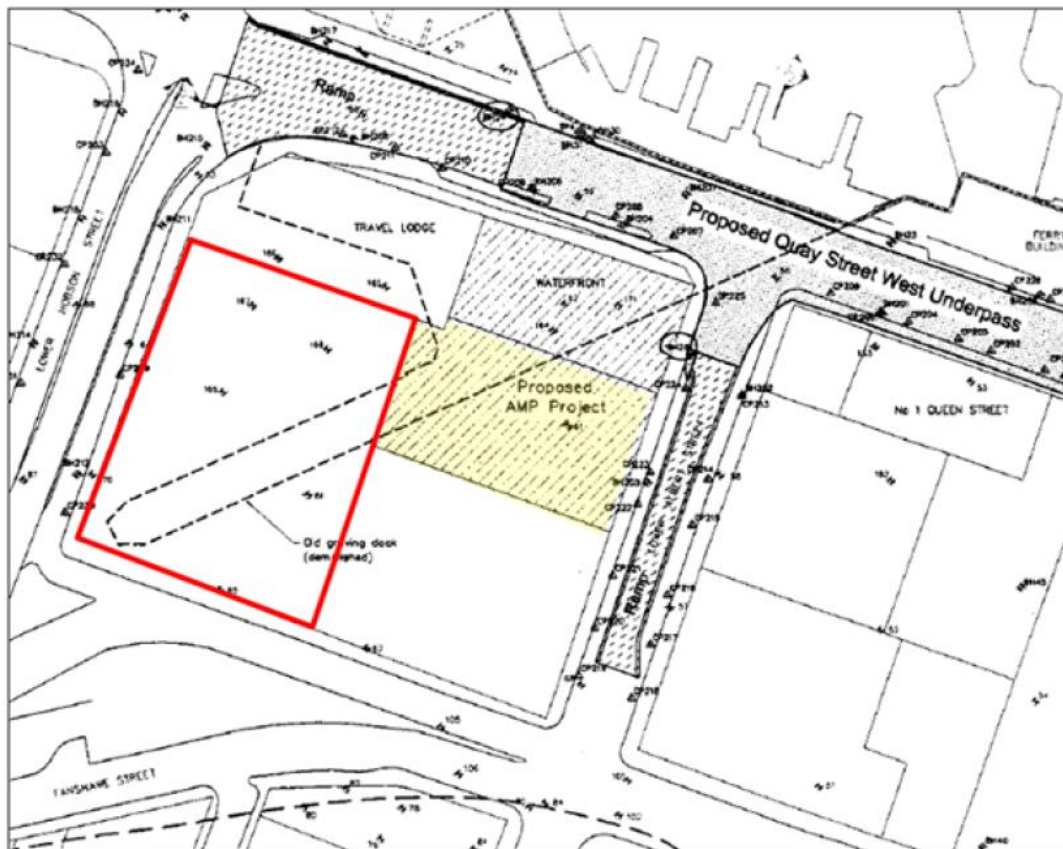
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Plan taken from Clough 2001 showing the outline of the Auckland Graving Dock with 2000 investigation at the Waterfront Tower Shaded yellow and the Downtown Carpark outlined in red



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APPENDIX B: AUCKLAND GRAVING DOCK SPECIFICATION OF WORKS

(Taken from Clough et al 2001)

Coffer Dam

The Coffer Dam shall be composed of an Inner and Outer casing.

The Inner shall consist of a row of Totara piles, 12inch by 12inch, shod with 25lbs wrought iron shoes, pointed so as to be capable of being driven a sufficient depth into the soft sandstone. To these piles four tiers of walings, 12inch by 9inch, heart of kauri, are to be securely bolted by inch bolts, one to each intermediate connection, and two at their joints. Sheet-piling, 12inch by 4inch, shod with 5lbs wrought iron and grooved both sides to receive wrought iron tongues, 2 by 1/8, are to be driven between the piles and securely bolted to the walings by 1/2 inch bolts.

The Outer casing shall consist of main piles 12 inch x 6 inch, 4inch heart of kauri sheet-piling tongued and grooved, and three tiers of wales all securely bolted as described for the inner casing. The casings shall be tied together by 1inch diameter bolts, two to each pile, distance pieces being introduced at each tie. The outer casing to be strutted against the inner at every pile and securely bolted. The Coffer Dam shall be strengthened by being supported one side against the other by six main struts, each main strut to consist of a horizontal shore, 12inch by 9inch, straining pieces 12inch by 6inch and four struts 12inch by 6inch all securely bolted together and to the Coffer Dam, and supported on piles at suitable intervals as shewn. The space between the piling to be filled with clay of approved quality, put in layers one foot in height and well puddled, so as to thoroughly consolidate it and the mud underlying it. Should any further shores or struts be found necessary to ensure the stability of the dam they shall be provided and fixed by the Contractor, who must hold himself responsible for the due efficiency of the same, and at his own risk. On completion of the dock as much of the of the coffer dam as the Engineer may require shall be removed by the Contractor; the remainder to form a portion of the permanent structure.

Pumping - the Contractors shall supply and maintain sufficient pumping power to empty the space enclosed by the Coffer Dam, and shall keep the area perfectly free from water during the progress of the works.

Excavation - the whole of the mud inside the enclosed space to be excavated and removed to a position outside the Coffer Dam to be pointed out by the Engineer, and where required for reclamation purposes.

The indurated clay or laminated sandstone to be excavated to the depth shewn on the drawings or otherwise directed, and removed to a position outside the Coffer Dam to be pointed out by the Engineer; the finished surfaces to be brought to level beds, with benching of not more than 12 inches in height.

Masonry: Ashlar - the Stones in the face of the work shall be of the sizes shewn on the drawings, or as otherwise described. They shall be built in bond of three stretchers to a header, the alternate courses to break joint, and the header of one over the middle stretcher of the other. The stones shall be in the proportion of one and a half times the height of the bed and three times the height for the length. All the beds and joints to be dressed fair, to be out of winding, and to hold their dimensions in full in every part.

Joints of Ashlar and block in course not to exceed 1/4inch in thickness when set.

Dressings to Stones - the whole of the inverts, floors, aprons, top surfaces of altars, top and front of coping, exposed faces of steps and slides, and all quions to be punched, the facings to caisson chamber to be fine axed and to be very carefully fixed. The remaining faces to have an inch chisel draft round the stone, and the space inside it to be scabbled. The whole in accordance with specimen samples.

Arch stones over Water Gate to be similar to the face of the work. The Key Stone to have date carved thereon.

Cement - the Invert to the body of the Dock, the Head, and the Entrance to be bedded, well flushed up and grouted in best Portland Cement and ground Scoria Ash, measure and measure of each, and mixed in a Pug Mill. The altar stones and all the stones in faces of walls within the caisson to top of broad altar to be also bedded, flushed up and grouted in cement, the remainder of the stonework throughout to be bedded, flushed up and grouted with mortar and grout as described.

Block in Course - the Parapet Wall above broad Altar; the return walls at entrance and end; spandrills to steps and slide; caissons chamber walls, and spandril to south-west of caisson chamber, and wing at entrance, to be block in course work for at least half the thickness of the respective walls; to be bedded, finished, and the stones to be of the proportions as described for the Ashlar work, and of such thickness that two courses shall equal one course of Ashlar or thereabouts.

Rubble - all walls not otherwise described to be carried up in rubble of the very best quality, with large stones dressed with hammer on the beds, with long header and stretcher bonds at intervals, well flushed up with mortar, laid in courses corresponding with the Ashlar, and well grouted.

The Foundations of the Inverts, backing of sides and end to be of random Rubble, brought up in course and grouted, as shewn on the plan.

It is to be distinctly understood that the whole of the work is to be simultaneously carried up in level courses throughout, and all walls not otherwise described have a batter of 1 in 8.

Arch over caisson chamber to be constructed in brickwork as shewn.

Caisson

Shell - the Caisson to be constructed of the best Staffordshire iron. It is to be 48ft 9in. long at the top, 43feet 9inch at the bottom, 21feet high over all, and 6feet wide; the bottom sides and ends to have angle iron ribs two feet apart, 3 1/2inch by 3 1/2inch by 1/2inch, covered one-third of the height by 3/8inch plate, one-third 5-6inch, and one-third 1/4inch, all with butt joints and plates of equal thickness, and double riveted.

Compartments - to be divided by three decks and a floor into four compartments in height, the lower as ballast chamber, the two intermediate as tidal ballast, and the upper to contain a cistern of sufficient capacity to firmly sink it to its bed by water admitted either by pump or from shore, and divided laterally by two bulkheads.

Decks and Bulkheads - the decks and floor to be formed of 2 3/4inch x 2 3/4inch x 3/8in. angle iron, riveted to the ribs of the frame and strengthened with angle plates at the junctions; each deck to have nine pairs of intersections, and strengthened with angle plates, the whole to be covered with 1/4inch plate. The three bulkheads to consist of angle iron bracing as described for the decks; manholes and covers to be provided to each deck and

the floor. The lower ballast chamber to be a water tight tank, the two intermediate to communicate, and the cistern of the upper one to be 15feet wide, the ends being formed of 1/4inch plate secured to the bracing.

Valves - all the Valves described below to have gun metal faces and to be worked from the deck. Three sluice valves 32inch diameter, fixed as near the bottom as possible, for the admission and discharge of water to and from the dock, and also arranged for sluicing the channel, and a 15inch valve to be fixed at the end for sluicing the chamber; one 15inch valve to be fixed as near the bottom of the tidal ballast chamber as possible, and a 6inch valve to the cistern.

Traversing Gear - the caisson to be moved by means of a 1 1/4inch chain fixed at either end to the caisson, and worked through the necessary leading blocks, etc, by a treble purchase crab, fixed as shall be directed; folding down hand-rails of wrought iron to both sides. Heart of totara facings, 12inch x 6inch, to be bolted to the bottom and sides, fitted in oil cement and corresponding timbers fixed to the stonework by bolts, three feet apart, lewised into the stone. The deck to be covered with 2inch totara planks, securely fixed to the iron deck.

Provide: four 3 1/2inch gun metal setting up screws, with suitable apparatus for working the same from the deck floor, as may be approved.

Pumps, Engines and Boilers

Pumps and Engines - to provide, erect, and satisfactorily finish two five-feet (5feet) Centrifugal Pumps, with high pressure Steam Engines of 14 nominal horses power to each, and capable of lifting 4000 gallons of water per minute 20feet high, and so arranged that they shall work as combined or detached; inlet and outlet pipes to Pumps to be 17inch in diameter, with all the necessary bends and connections. To supply also one Auxiliary Centrifugal Drain Pump, 36inch diameter, and having 11inch inlet and outlet pipes, and so constructed that it may be driven by either Engine, as found necessary; all steam, feed, and exhaust pipes, with all other fitting to be provided, so that the whole shall be complete.

The Boilers - there are to be two Boilers 5 feet 6 inch in diameter and 20 feet long, with a 34 inch tube in each; shell and tubes to be 7-16 inch best Bloomfield boiler plates, ends 1/2 inch; the crown plates over furnace to be of Low Moor iron; the while properly stayed and capable of bearing a working pressure of 70lbs; and to be proved to a Hydraulic test of 100lbs. Furnace doors, fire bars and bearers, dampers and frames, safety valve with gunmetal seats, steam stop valves, feed valves, blow off cocks, and other requisites complete in every respect.

Engine and Boiler House:

The Engine house to be 20 feet x 20 feet, and the boiler house 30 feet x 20 feet, both under one roof. The foundations of engine house shall be carried down to the rock, and the space inside the walls excavated; the pump well to be 15 feet x 5 feet wide and 5 feet high, and to be one foot deeper than the conduit to which it is to be connected; it is to be paved with two courses of brick on edge in cement; walls and arch roof 14 inch thick also in cement; the remainder of the interior of the engine house and the foundations of walls to be carried up solid to within 10 feet of the level of dock coping, in the very best coursed rubble, opening of sufficient diameter being left for the three suction pipes and for the necessary holding down bolts, and large stone blocks inserted for supporting the girders. The foundations of boiler house to consist of a layer of concrete 3 feet thick over the whole surface of the building, to reach to within 4 feet of the floor line, the walls of the combined building to be carried up to the floor level in coursed rubble 2 feet thick, and finished with a tooled and chamfered plinth 18 inch deep, put together in the best manner. The engine house walls to

be lined with brick, the remainder of the walls to be carried up 14 inch thick in English bond brickwork, joints neatly struck inside and out; bricks to be hard, well burnt, and of good shape, and must be of a quality to be sailing courses, and two extra courses as cornice and pediments. Stone templates 2 feet long, 10 inches wide, to be let in for principals of roof. No four courses to exceed 13 inches in height.

Ten window openings, 3 feet x 6 feet, with semicircular heads, 9 inch reveals externally, 4 1/2 inch deep, arches 9 inch and 14 inch, in half brick rings neatly tuck pointed. Two doorways, 5 feet 6 inch x 11 feet, finished as the windows. One opening between engine and boiler house, 7 feet x 3 feet stones steps to doorways, and sills to windows, 12 inches longer than the respective openings.

Set the two boilers, which are 5 feet 6 inches in diameter and 20 feet long, in brickwork, with return flues to each boiler, all lined with fire brick 4 and 1/2 inches thick. Let in all dampers and flue doors.

Pave the floors of engine and boiler house with 4in. tooled Yorkshire stone, build in solid tooled stone steps, 3 feet 6 inches wide, tailed 9 inches into the walls with 11 inch treads, and 6 inch rise, from engine room to boiler house, height 10 foot, iron balusters and handrail.

Roof - all timber best heart of kauri: 4 pair of principals, consisting of ties, 10 inches x 4 feet; king post and principal rafters, 5 inches x 4 inches, struts, 4 inches x 3 inches, with the requisite straps and bolts; purlins, 6 inches x 4 inches; common rafters and wall rafters, 4 inches x 3 inches; ridge piece, 9 inches x 1 and 1/2 inches, all wrought inch matched and beaded boards as covering. Countess slating cut close 3 inch lap and two copper nails to each slate; 6 inch cast iron, O.G., face gutters with clips, stop ends, and outlets; and two stacks of down pipes with heads and shoes complete.

Two doors to entrances, to be 2 inch, 4 panel bolection moulded hung folding with 3 pair of 4 inch butts each leaf, to frames, 5 inches x 4 inches, with beaded stop laid on transoms, 5 inches x 4 inches, and circular head filled with panel similarly moulded and beaded up centres to correspond with the doors; one door, 7 feet x 3 feet, both sides moulded and hung with two 4 inch butts to frames 4 inches x 3 inches, as before described; two 9 inch barrel bolts, and 8 inch "Carpenters" locks to folding doors, and 6in. lock the other door.

Windows to have 2 inch ovals, two pane sashes single hung to frames with solid weathered and throated sills, inch pulley styles and brass pulleys, parting slips, beaded stops, fronts, backs and architrave moldings complete, proper sash fastenings.

The walls to have two coats of whitewash and color; and the joiners' work to be knotted, stopped, and that the ironwork to have three coats of oil and plain color; the roof timbers and boarding to be stained and twice varnished.

Chimney Shaft - the chimney shaft to be 50 feet above ground level; the foundations to be built on the rock and to be 9 feet square of coursed rubble to ground line; 8 feet above ground to be 7 feet square, carried up in block in course work, with a dressed plinth 18in. high, and a bold half round molding as cap; the remainder to be carried up in brickwork in an octagonal form with a weathering to the square; one third in height, 18 inches thick, one-third 14 inches, and one-third 9 inches (area of opening at top 9 feet), to be carried up with a regular batter, angles sharp and well defined; bold capping of stone, for which a detail drawing will be provided; hoop iron bond every 4ft., and iron brackets inserted every 2 feet.

Generally:

Earthwork - the West side and South end of the Dock to be filled in with earthwork for an extent of 50ft. wide from the edge of the coping; to finish off to a slope of 1 and 1/2 to 1 on the west side, for 3 feet in thickness, the slope to be composed of approved hard Sandstone Rock and foundation for hand packed pitching, which is to be of hard scoria in stones of not less than two cubic feet in each stone.

Pitching - the ground to be well rammed, consolidated and brought to a level surface; the stone blocks to be 12 inches x 6 inches on the face and 9 inches deep, dressed fair with a hammer, laid on a bed of gravel, the spaces filled with fine gravel and well grouted. The pitching to have a fall from the dock and channeling to be formed in it, as shewn leading to outfalls, which are to be 2 feet square, paved with brick on edge built up in 9 inch brickwork, covered with a stone 3 feet square and 9 inches x 3 inches, or other standard size of equal area.

Provide and lay 2500 yards of asphalt in positions to be pointed out.

Conduit - a Conduit to be constructed from the Dock to the pump well, about 50 feet long; and from the discharge pipe to the Harbour, about 50 feet; both 4 feet in diameter, of 9 inch brickwork in cement.

The Caisson and all other ironwork to receive two coats of red led and one finishing coat of oil and plain color, to be approved of.

Contractor to provide the requisite and sufficient enclosed shed buildings, with floors for storing lime, cement and other perishable materials, to the satisfaction of the Engineer; also an office, with window, door, lock and key, and floor, desk and shelves, for the use of the Engineer.

Three Capstans of approved construction and power shall be provided and fixed in positions, to be pointed out by the Engineer, and secured to a heavy Ashlar masonry.

Also eight Bollards of approved Totara to be provided and securely fixed as provided.

The Contractors shall provide and fix forty pairs of keel blocks of good sound 'Rata' or 'Pohutukawa' timber, with the necessary anchor chains, &c.; to be of the form and fixed in the position to be decided upon by the Engineer.

Provide two pitch pots properly set in brickwork, with necessary fireplaces &c., to be placed in such position as may be directed.

