NZ TRANSPORT AGENCY
WAKA KOTAHI

Roads of national significance

16 20 Western Ring Route – Waterview Connection

Assessment of Archaeological Effects

Clough
& ASSOCIATES LTD

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1. Summary

1.1 Potential Environmental Effects

The proposed Western Ring Route Waterview Connection project has some potential for to modify, damage or destroy archaeological sites. This applies to:

- Recorded archaeological sites; and
- As yet unknown archaeological sites that might be exposed by earthworks.

1.2 Assessments Undertaken

The NZ Transport Agency (NZTA) commissioned a number of archaeological field surveys and assessments within the project area from Bioresearches Ltd, which were carried out by archaeologist Brent Druskovich. The NZTA then commissioned Clough & Associates Ltd to undertake a detailed Assessment of Archaeological Effects, drawing information from the earlier work and from any additional research or fieldwork considered necessary.

The assessments involved:

- Searches for information on archaeological and other heritage sites recorded within or near the project area in: the New Zealand Archaeological Association's (NZAA) site record file and ArchSite database; Auckland Regional Council's Cultural Heritage Inventory (ARC CHI); the NZ Historic Places Trust (NZHPT) Register of Historic Places; District Plan schedules; and historic plans held by Land Information NZ (LINZ).
- A review of literature and archaeological reports relevant to the area.
- A series of field surveys to locate and record archaeological sites, which included both visual assessment and limited subsurface testing.
- Detailed recording and assessment of a historic stone wall in the Great North Road Interchange area (Sector 5).
- Historical research relating to sites in the Great North Road Interchange area (Sector 5).
- Geophysical survey of a historic mill/tannery site in the Great North Road Interchange area (Sector 5) using Ground Penetrating Radar.

The assessments did not include an assessment of Maori cultural values. Such assessments should only be made by the tangata whenua. Maori cultural concerns are likely to encompass a wider range of values than those associated with archaeological sites. Consultation with tangata whenua is ongoing and cultural values will be documented elsewhere.

1.3 Results of Assessments

A number of archaeological sites, relating to both Maori and early European occupation of the area, are recorded within or near the proposed construction footprint.

In most sectors there will be no effects on recorded archaeology. However, there will be some effects on significant recorded archaeological sites within Sector 5 (Great North Road Interchange) and some effects on recorded archaeological sites of limited significance in Sector 3 (Rosebank Peninsula).

In Sector 5 (Great North Road Interchange) there is a significant complex of archaeological sites which includes site R11/2191 (the historic Star Mill/Garrett Brothers Tannery/Quarry site), R11/2203 (a Maori Settlement site), and midden sites R11/2202 and R11/2459. This complex of sites is referred to in this report as the Waterview Inlet Heritage Area. Stone seawalls on either side of the Waterview Inlet relating to site R11/2191 are scheduled in the Auckland Regional Plan: Coastal (Schedule 2, item 177). The features of the heritage area have been largely avoided by the project by placing the supporting piers for Ramps 1-4 on the periphery of the site complex, but there will be some physical effects from access and construction and also visual effects from the piers and overhead ramps. There may also be minor physical effects from improved public access to the area proposed as mitigation.

Elsewhere in Sector 5, works will also destroy part of a historic stone wall of moderate heritage significance (R11/2213). The locations of two recorded midden sites (R11/2214 and 2215) will also be affected but these sites have no known intact remains and have probably already been destroyed by previous roading works.

Road widening in Sector 5 will encroach slightly into the scheduled surrounds of the historic Carrington Hospital within the Unitec grounds (Auckland City District Plan Isthmus Section, item D04-1, Category A). However, no known archaeological or historic remains will be affected.

In Sector 3 (Rosebank Peninsula) most of the recorded archaeological sites whose locations will be affected have been destroyed or severely modified through earlier motorway construction or erosion. These destroyed or modified sites comprise R11/74 (Settlement), R11/444 (Midden), R11/1698 (Midden), R11/1699 (the site of Dr Pollen's house), R11/2212 (Midden), R11/2216 (Midden), R11/2253 (Midden) and R11/2550 (Midden). There may still be surviving subsurface remains associated with some of these sites (for example R11/444 and 2216), which would be damaged or destroyed by the proposed works, but if so these would be of limited extent and significance and any effects would be minor. Another site affected within Sector 3 is R11/2508 (an early European landing site); however this was recorded from historical records, and no physical evidence of the site has been identified.

Other recorded sites in Sector 3 can be avoided if care is taken. These comprise two more landing sites (R11/2505, R11/2506), a midden in relatively good condition (R11/2507), and a historic tramway (R11/2504)

that are located on the northern boundary of or just outside the construction footprint. The tramway is scheduled in the Auckland Regional Plan: Coastal (Schedule 2, item 636).

The eastern bank of Oakley Creek near Sectors 5, 7 and 8 is an area of recognised archaeological significance, and Maori occupation sites in this area are scheduled in the Auckland City District Plan Isthmus Section (item D04-19). However, none of the recorded sites will be affected, and construction in Sectors 7 and 8 will largely involve tunnelling. A small number of sites located above either the eastern or western boundary of the construction footprint are very unlikely to be affected by vibrations during construction.

The potential for additional unrecorded subsurface archaeological remains to be exposed during construction is recognised. Most areas, however, have seen considerable modification in the past, and have very limited potential for intact unrecorded archaeological remains. The locations with most potential are in the vicinity of the Waterview Inlet and Oakley Creek, and on the Rosebank Peninsula.

Overall, the project will have no adverse effects on any significant archaeological remains outside the Great North Road Interchange area (Sector 5). In this Sector, the effects on archaeological heritage are considered significant, because of the combined visual and physical effects on the Waterview Inlet Heritage Area which includes the regionally significant mill/tannery/quarry site R11/2191 and a Maori settlement site R11/2203. However, the project will also involve improved public access to the site from proposed walkways, a cycleway, and reinstatement of a former bridge, which will have positive effects.

1.4 Suggested Approach for Effects Identified

The following measures are proposed to mitigate the effects of the project on archaeological and other heritage values:

1. Where effects on known archaeological sites cannot be avoided, standard archaeological mitigation investigation and recording of any affected archaeological remains should be carried out under Authority from the NZHPT, in order to obtain information which will contribute to our knowledge of the history and archaeology of the area.

2. In Sector 3 the following measures should be taken:

    - Recorded archaeological sites R11/2504, 2505, 2506 and 2507 located on or just outside the northern boundary of the construction footprint should be fenced off prior to any works being carried out to ensure that they are not damaged by heavy machinery during construction works; and

    - Earthworks in all previously unmodified areas with Sector 3 (Rosebank Peninsula) should be monitored by an archaeologist and any remains exposed should be investigated and recorded under Authority from the NZHPT (including sampling for radiocarbon dating purposes).

3. In Sector 5 in the Waterview Inlet Heritage Area the following measures should be taken:

    - All works carried out, including vegetation removal, should be monitored by an archaeologist and any affected archaeological remains investigated and recorded in detail under Authority from the NZHPT;

- Machine access and construction works in this area should be planned in such a way as to minimise effects on archaeological features;

- During and following removal of the houses north of Cowley Street and west of Great North Road in the area where mill workers' cottages and the mill race were once located, investigations should be carried out to establish whether any archaeological remains have survived and to record them, if present, under Authority from the NZHPT. Any information relating to the cottages, the mill race or other remains relating to the mill/tannery site would add significantly to our understanding of this heritage area;

- Remedial or limited restoration works should be carried out to the basalt walls, wheel pit and bridge abutment of the mill/tannery/quarry site R11/2191, to specifications prepared by a heritage professional, to ensure their long term preservation;

- A vegetation management plan should be prepared and implemented to remove vegetation that is damaging archaeological features and to protect and enhance features with appropriate vegetation cover;

- Public access to the heritage area should be improved, including by walkways and reinstatement of the former bridge across the Inlet; and

- Interpretation signage should be provided for public information and education purposes.

4. In Sector 5 effects on the stone wall R11/2213 should be mitigated as follows under Authority from the NZHPT:

   - If it is necessary to demolish part of the wall, the stone should be used for repairing the remainder of the wall, and any surplus stone offered to Auckland City Council for use in repairing other historic stone walls within reserves such as those along Oakley Creek;

   - Effects on the remainder of the wall should be minimised as far as possible by keeping heavy machinery that might destabilise it as far away as possible, and demarcating the section to be preserved with waratahs and an adequate buffer area prior to earthworks; and

   - The remainder of the wall should be carefully cleared of vegetation growth and repaired where necessary to a specification prepared by a heritage professional. It should be left exposed to view, and a vegetation management and maintenance plan developed.

5. Elsewhere in Sector 5, works in the vicinity of recorded sites R11/2214 and 2215, and in all previously unmodified areas near the banks of the Waterview Inlet, should be monitored by an archaeologist in case intact archaeological remains are present.

6. In Sector 7 in the construction yard in the Oakley Creek Esplanade Reserve, any works involving ground disturbance should be monitored by an archaeologist in case intact archaeological remains relating to occupation along Oakley Creek are present. The recorded site R11/2383 (a hole dug into the banks of the stream) should be fenced off to protect it prior to any works being carried out in this area.

7. The possibility of impacts on unidentified subsurface archaeological remains exposed during development can be mitigated by implementing Accidental Discovery Protocols, which have been included in the Archaeological Site Management Plan to be contained within the Construction Environmental Management Plan (**Appendix D**).

8. Contractors and subcontractors should be trained in the archaeological requirements of the project.

2. Project Description

The NZTA is currently planning to complete the connection between Auckland's southern and north-western motorways. The key elements of the project are:

- Completing the Western Ring Route (which extends from Albany to Manukau via Waitakere);
- Improving resilience of the SH16 causeway between Great North Road and Rosebank Interchanges to correct historic subsidence and "future proof" it against sea level rise;
- Providing increased capacity on the SH16 corridor (between the St Lukes and Te Atatu Interchanges);
- Providing a new section of SH20 (through a combination of surface and tunnelled road) between Great North Road and Maioro Street Interchanges; and
- Providing and maintaining a cycleway throughout the Waterview Connection Project corridor.

Figure 2.1 shows the project area divided into sectors of work. These sectors will be referred to in the assessment below.

On SH16 between Te Atatu and St Lukes the work will involve reconfiguration of the Te Atatu Interchange (Sector 1); widening of SH16 between the Te Atatu and the Great North Road Interchanges (Sectors 1 – 4) and between the Great North Road Interchange and the St Lukes Interchange (Sector 6); enlargement of the Whau River Bridge (Sector 2) and the Patiki Bridge (Sectors 3 and 4); reconfiguration of the Rosebank on and off ramps (Sectors 3 and 4); enlargement and raising of the causeway between Rosebank Peninsula and the Great North Road Interchange (Sector 4); and a shared use cycle and pedestrian way running parallel to the motorway from Te Atatu to the Great North Road Interchange (Sectors 1 – 4).

SH20 will be extended by c.5.5km between the Great North Road Interchange and Maioro St Interchange (Sectors 7 – 9). The work will involve the reconfiguration of the Great North Road Interchange (Sector 5) to connect SH16 with SH20; a cycleway connection between the SH16 cycleway and SH20 and continuation of the cycleway to the Maioro St Interchange (Sectors 5 – 9); the construction of cut and cover tunnels from the Great North Road Interchange (Sector 5), to connect with deep driven tunnels in Sectors 7 and 8; re-emergence of the road southeast of New North Road and continuation to the Maioro St Interchange (Sector 9).

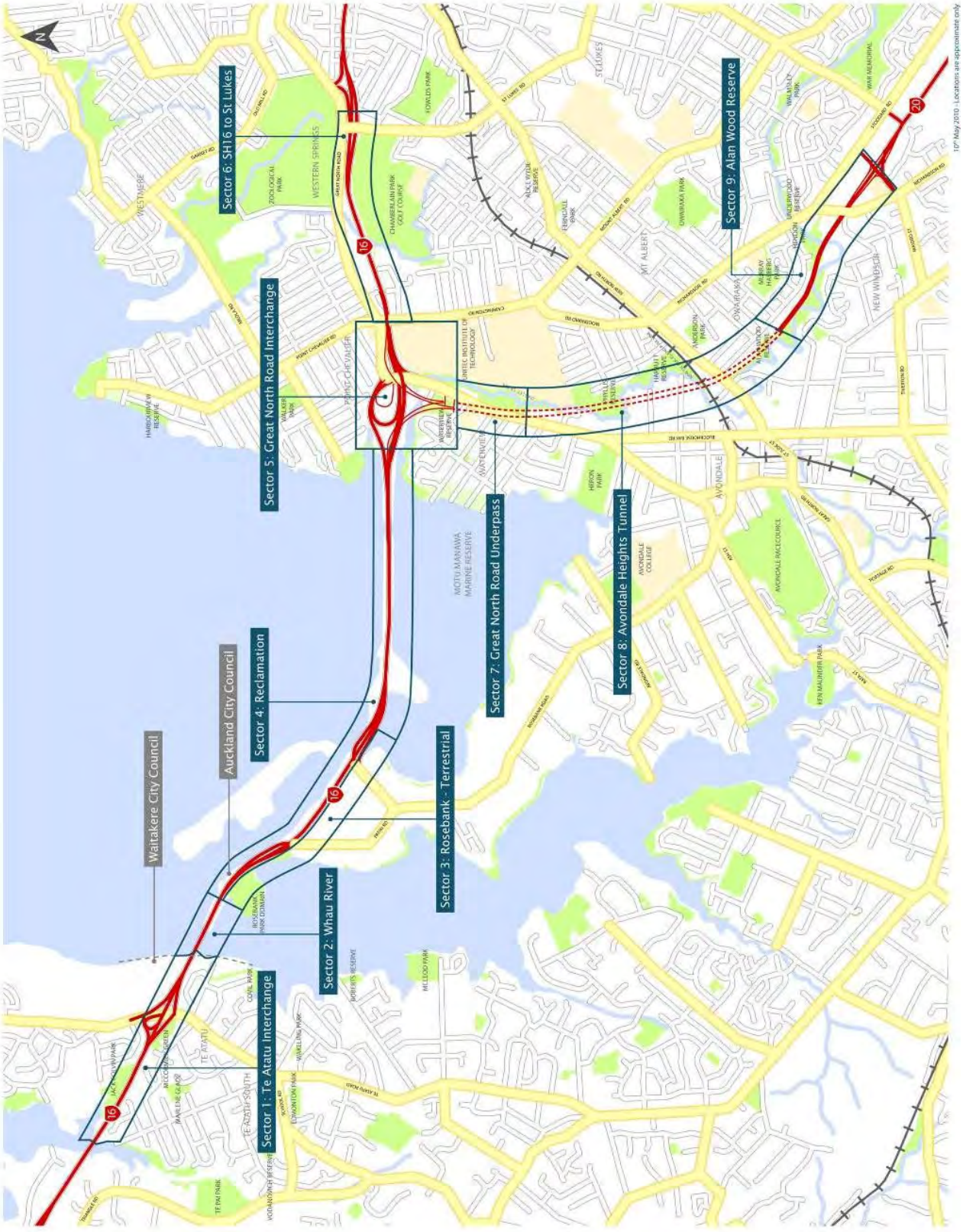

Figure 2.1: Western Ring Route: Waterview Connection (SH16-SH20) Sector Diagram

3. Purpose

The NZTA has commissioned a number of environmental impact reports as part of the planning process for the Waterview Connection project. This report has been prepared as part of the required assessment of effects to accompany Notices of Requirement and resource consent applications in accordance with the Resource Management Act 1991(RMA) and to identify any requirements under the Historic Places Act 1993 (HPA). It assesses the effects of the project on the existing archaeological environment and the significance of those effects. Where it is considered that there will be potential adverse effects on archaeological values, recommendations are made relating to mitigation and any statutory requirements are identified.

3.1 Resource Management Act 1991

Section 6 of the RMA 1991 recognises as matters of national importance: '*the relationship of Maori 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*'.

Historic heritage is defined 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 Maori, including wahi tapu; (iv) surroundings associated with the natural and physical resources*'. (S2).

3.2 Historic Places Act 1993

In addition to any requirements under the RMA, the HPA 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 the NZHPT.

An archaeological site is defined by the HPA Section 2 as: '*any place in New Zealand that – (a) Either – (i) Was associated with human activity that occurred before 1900; or (ii) Is the site of the wreck of any vessel where that wreck occurred before 1900; and (b) Is or may be able though investigation by archaeological methods to provide evidence relating to the history of New Zealand*.'

Authorities to modify archaeological sites can be applied for either under Section 11 of the HPA, in respect to a particular site or sites, or under Section 12 of the HPA, for all sites that may be present within a specified area. Applications made under Section 12 require approval by the Maori Heritage Council of the NZHPT. An application to undertake an archaeological investigation can also be made under Section 18 of the HPA. The

tangata whenua must be consulted regarding applications to modify, destroy or investigate archaeological sites which have Maori cultural associations.

4. Methodology

A literature search and field surveys were undertaken to identify potential and recorded archaeological sites and historic structures in the project area. The initial surveys and assessments of effects on archaeological values were carried out by Brent Druskovich of Bioresearches between 2000 and 2010, and a final archaeological survey report was prepared by Druskovich in 2010 (**Appendix A**). **Figure 4.1** shows the areas surveyed at various stages of the project.

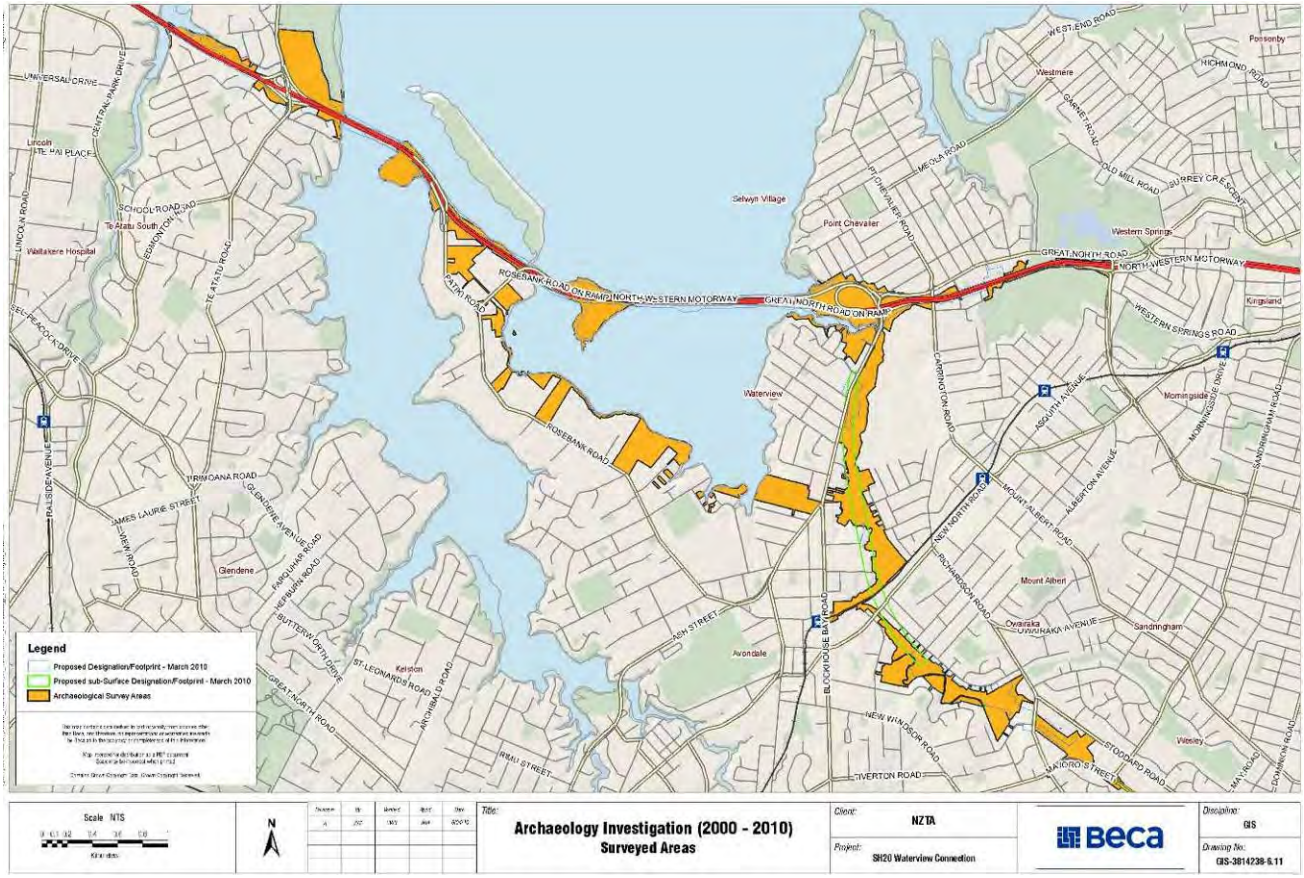

Figure 4.1: Areas surveyed for archaeological sites by Bioresearches between 2000 and 2010

Clough & Associates was asked to prepare an overall Assessment of Archaeological Effects, based on Bioresearches' survey results and any further research and assessment that might be required. The surveys carried out by Brent Druskovich involved the following standard methodology:

- The New Zealand Archaeological Association's (NZAA) site record file and ArchSite database, Auckland Regional Council's Cultural Heritage Inventory (ARC CHI), the NZHPT Register of Historic Places, and District Plan schedules were searched for information on archaeological and other heritage sites recorded on or in the immediate vicinity of the project area;

- A search of historic plans held by Land Information NZ (LINZ) was made for information relating to past land use in the project area;

- Literature and archaeological reports relevant to the area were reviewed;

- The ground surface along the proposed route and areas of work was examined for evidence of former occupation (in the form of shell midden, depressions, terracing or other unusual formations within the landscape, or indications of 19th century European settlement remains);

- Exposed and disturbed soils were examined where encountered for evidence of earlier modification, and an understanding of the local stratigraphy. Areas considered to have archaeological potential were probed, and possible subsurface archaeological features or deposits identified through probing were investigated through small spade test pits to confirm whether or not archaeological remains were present;

- Photographs were taken to record the topography and features of interest, and site locations were recorded using GPS; and

- Site record forms were compiled or updated and filed in the NZAA site record database (ArchSite).

Clough & Associates reviewed the Bioresearches' reports and survey results in detail. Further field survey of most of the route was not considered necessary as Druskovich's surveys were thorough, and because Clough & Associates had carried out previous survey and archaeological site investigation on both the Te Atatu and Rosebank peninsulas in the immediate vicinity of the proposed works (Clough 1995; Prince and Clough 2002; Best and Clough 2000; Clough and Prince 2000; Clough et al. 1997).

However, additional research and field assessment relating to a recorded stone wall at Point Chevalier near the Great North Road Interchange (Sector 5) were carried out to supplement the earlier work.

Further research and fieldwork was also carried out at the site of a historic mill and tannery also located in Sector 5. Clough & Associates had previously visited and assessed this site for the Auckland City Council Isthmus Archaeological Upgrade Project, and had organised vegetation clearance and detailed total station mapping of the site by Thorne Archaeology. Rod Clough revisited the site on a number of occasions as part of the current project, and organised and assisted in geophysical survey of the site by ScanTec Ltd in March 2010 in an attempt to identify potential additional subsurface remains (see Section 6.5.1).

It should be noted that archaeological survey techniques (based on visual inspection and minor sub-surface testing) cannot necessarily identify all sub-surface archaeological features, or detect wahi tapu and other sites of traditional significance to Maori, especially where these have no physical remains.

5. Archaeological Background

5.1 Brief Historical Background

Tamaki-makau-rau was a very favourable area for settlement by Maori from the earliest times, with its two harbours, the Waitemata and the Manukau, rich and easily accessible marine resources and its extensive volcanic fields which provided excellent agricultural soils. The distribution of archaeological sites of pre-European date on the Isthmus reflects the general pattern of settlement in pre-European times. Archaeological sites include: shell midden and settlement sites around the coast and along the waterways leading inland; Maori agricultural and garden areas around the volcanic cones and in other suitable locations (often characterised by landscapes of stone walls, alignments, mounds, food storage pits and other features); and defensive settlement on higher points, and particularly concentrated on the volcanic cones themselves. The harbour catchments combined access to marine resources, agricultural soils and fresh water, and communication routes via harbours, waterways and overland.

Oakley Creek[1] and the Whau River to the west represent two of these catchment areas. The areas around Oakley Creek still contain evidence of past Maori settlement, and the creek enabled communication with and access to significant inland settlements such as Owairaka (Mt Albert). The Whau River was also a primary communication route, leading to an important portage between the two harbours.

European settlement from 1840 onwards spread rapidly outwards from what is now Auckland's CBD, and initially had the same focus on the coastline and the rivers, which were an essential part of the colonisation of the Isthmus. Farms were established away from the central city, also taking advantage of the volcanic soils. As with Maori agriculture, the process involved stone clearance and the construction of stone walls as field boundaries, although these were more substantial and often aligned to formal property boundaries.

A number of industries sprang up along the rivers, which provided the necessary water supply as well as a means of transportation in the days before road and rail systems had been developed. These industries included pottery and brick manufacturing along the Whau River, and flour milling and tanning along Oakley Creek.

The Northwestern Motorway (SH16) has played an important role in the westward expansion of Auckland's urban extent. Population levels in West Auckland were relatively low until after the Second World War, but greatly increased during the 1950s and 1960s. This growth was partly due to the completion of the single lane motorway linking Great North Road at Point Chevalier to Te Atatu in 1952, which made the area much more accessible to the City. The rapid increase in population during the early 1950s necessitated improvements to the motorway, which was increased to two lanes between Point Chevalier and Te Atatu. The motorway was then extended westwards culminating at Lincoln Road in 1955. The extension of SH16 terminating at Hobsonville Road was completed in 1961.

[1] Oakley Creek refers to both the Waterview Inlet to the west of Great North Road and the continuation of the creek to the east of the road.

5.2 Recorded Archaeological and other Heritage Sites in or near the Project Area

A number of archaeological sites recorded both prior to and during the archaeological surveys carried out for the project are located in the vicinity of the proposed roading works. The majority relate to Maori occupation of the area, and largely consist of shell midden sites (evidence of the preparation and consumption of food), with some evidence of food storage pits and living terraces along Oakley Creek (Sectors 7 and 8), and a possible former settlement site near the Great North Road Interchange (Sector 5). The significant pa of Owairaka (Mt Albert, NZAA site no. R11/20) is located to the east of the proposed SH20 route and Puketapapa (Mt Roskill, site no. R11/19) near the southern end of the route, but both are outside the project area.

Several of the sites relate to early European industry and settlement. They include the site of an early brickworks on the Te Atatu Peninsula (Sector 1), the Star Mill site (later the Garrett Brothers Tannery) near the Great North Road Interchange (Sector 5) and sites associated with Dr Daniel Pollen, a noted historical figure, on the Rosebank Peninsula and Pollen Island (Sector 3).

The sites are listed in **Table 1**, and site record forms are included in the Bioresearches survey report attached as **Appendix A**. Their locations in relation to the proposed roading works are discussed sector by sector below and shown in accompanying Figures, with detailed site information provided in **Tables 2–6** and **8**.

Table 1: List of archaeological and other heritage sites recorded in the project area, by sector

CHI[2]	NZAA3	NZMG Easting	NZMG Northing	Site Type	Site name
Sector 1 (Te Atatu Interchange)					
5919	R11/458	2658126	6481009	Midden (Shell)	
5920	R11/459	2658114	6481082	Midden (Shell)	
5921	R11/460	2658000	6482000	Midden (Shell)	
11251	R11/1375	2658100	6481400	Drains (Historic)	
9505	R11/1724	2658100	6481300	Brickworks	Auckland Brick and Tile works
14357	R11/2503	2658118	6481060	Midden	
-	R11/2549	2658094	6481113	Midden	

[2] This column refers to the computer numbers assigned to heritage sites in the Auckland Regional Council's Cultural Heritage Inventory

[3] This column refers to archaeological site numbers in the NZ Archaeological Association's database (ArchSite).

-	n/a	2657963	6481365	Concrete foundation	
-	n/a	2657698	6481811	Brick foundations	
Sector 2 (Whau River)					
202	n/a	2658100	6481050	Hulk	*Edith*
Sector 3 (Rosebank Peninsula)					
7106	R11/74	2658600	6480900	Settlement	Patiki?
5906	R11/444	2659038	6480318	Midden (Shell)	
11633	R11/1698	2658800	6480400	Midden (Shell)	
11714	R11/1699	2659500	6479900	Building Site (Historic)	Dr Daniel Pollen's House and Grounds
14356	R11/2212	2658835	6480579	Midden	
14360	R11/2216	2659546	6479983	Midden	
16739	R11/2253	2659230	6480160	Midden	
802	R11/2504	2658786	6480850	Tramway	
14359	R11/2505	2658790	6480840	Landing	
14360	R11/2506	2659373	6480172	Landing	
16739	R11/2507	2659411	6480157	Midden	
16739	R11/2508	2659617	6479996	Landing	Pollen's landing
-	R11/2550	2659336	6480113	Midden	
Sector 4 (Reclamation)					
14342	R11/2199	2661832	6479587	Midden	
14343	R11/2200	2661783	6479576	Midden	
14344	R11/2201	2661675	6479610	Midden	

Sector 5 (Great North Road Interchange)					
5975	R11/521	2662407	6479313	Midden	
5976	R11/522	2662457	6462400	Midden	
5977	R11/523	2662389	6479169	Midden	
11267	R11/1452	2662100	6479500	Midden	
136	R11/2191	2662264	6479464	Flourmill/Tannery/Quarry	Star Mill/Garrett Bros. Tannery
1345	R11/2202	2662248	6479500	Midden/Karaka Trees	
14346	R11/2203	2662190	6479541	Settlement	
14347	R11/2204	2661930	6479597	Midden	
14357	R11/2213	2661956	6479831	Stone Wall	
14358	R11/2214	2661869	6479721	Midden	
14359	R11/2215	2662016	6479689	Midden	
14369	R11/2224	2662437	6479231	Mill	
14657	R11/2231	2661977	6479479	Midden	
-	R11/2459	2662322	6479528	Midden	
2504	n/a	2662700	6479600	Carrington Hospital	Carrington/Oakley Hospital
-	n/a	2662770	6479662	?military camp	
Sectors 7 & 8 (Great North Road Underpass & Avondale Heights Tunnel)					
5972	R11/518	2662418	6478789	Midden	
5973	R11/519	2662220	6478437	Midden (same site as R11/520)	
5974	R11/520			Midden (same site as R11/519)	
5978	R11/524	2662364	6479041	Midden/Pits	

5979	R11/525	2662461	6479008	Midden	
13839	R11/2108	2662214	6478666	Stone Wall	
13840	R11/2109	2662150	6478220	Midden	
14348	R11/2205	2662296	6478891	Mill	
14350	R11/2206	2662282	6478746	Stone Wall	
14351	R11/2207	2662403	6477492	Stockyard/Pen	
14352	R11/2208	2662486	6477809	Stone Wall	
14353	R11/2209	2662211	6478554	Stone Wall/ Farm Crossing	
14354	R11/2210	2662231	6478542	Pit/Terraces	
14355	R11/2211	2662355	6477943	Not a site	
-	R11/2247	2662236	6477341	Historic Quarry/Railway Bridge/ Embankment	
-	R11/2248	2662377	6477976	Midden	
-	R11/2373	2662309	6479091	Bridges/Track/Wall	
-	R11/2383	2662244	6478855	Hole in bank	
-	R11/2473	2662358	6479108	Stone Wall	
-	R11/2497	2662111	6478655	Midden	
-	R11/2500	2662282	6478847	Stone Wall	

6. Existing Archaeological Environment

6.1 Sector 1 (Te Atatu Interchange)

No archaeological sites are recorded within the construction footprint, which has been extensively modified by earthworks. However, 7 sites are located nearby (see **Figure 6.1**, **Table 2**), two of which were recorded during recent survey of the SH16 route by Druskovich (Bioresearches 2010).

The recorded sites include R11/1724, the former Auckland Brick and Tile works and wharf site to the north and east of the construction footprint. This site has been partly investigated (Best and Clough 2000) and is scheduled in the Auckland Regional Plan: Coastal (Item 333, Schedule 2) and the Waitakere City District Plan (item 327). Apart from site R11/1375, consisting of some historic drains to the north of the brickworks site, the remaining sites are all shell midden sites containing evidence of food processing and consumption.

Druskovich (Bioresearches 2010) surveyed the Coastal Marine Area (CMA) on either side of the Whau Bridge, the walkway to the south of the bridge, the reserve land to the east and south of the Te Atatu interchange, and a number of properties in Titoki Street and Alwyn Avenue, but no further sites were identified. He noted that the vegetation growth was dense in the Reserve on the southern side, and that materials have been deposited on the reserve from adjacent private properties, which would have reduced the visibility of sites, leaving open the possibility that undiscovered archaeological evidence may be present in the reserve.

Druskovich (Bioresearches 2010) noted that shell is regularly found on the motorway berm on the northern side of the motorway, but that most of this is obviously recent, typically mussel shell, and has been deposited by people throwing waste shell over their back fences or from the Rugby League club. One deposit containing crushed cockle (often a component of pre-European midden) was observed, but it was not an intact deposit and Druskovich was initially unable to establish its origin. However, further inspection in 2010, including a number of adjoining properties in Titoki Street, confirmed that all the shell deposits were modern (based on condition and context). It is unlikely that any sites are present in this area, as earlier survey by Mosen (Bioresearches 1996) and others (Prince and Clough 2002) along the north side of the construction footprint also failed to find any archaeological remains.

In general, while it is possible that archaeological evidence may be located around the motorway and the connecting roads, the likelihood of any significant archaeological remains being present is not high as most of the area has been heavily modified by urban development and intact deposits are unlikely.

Figure 6.1: Locations of recorded archaeological and other historic sites in Sector 1 in relation to the construction footprint

Figure 6.2: Locations of recorded archaeological and other historic sites in relation to the construction yard in Sector 1

On the northern side of the motorway are some concrete foundations that are thought to have been part of a former cowshed and windmill, and some brick foundations of unknown date and origin, which Druskovich notes are in the vicinity of a former homestead visible in 1940s aerial photographs. Neither of these have been recorded as archaeological sites, but the concrete foundation is identified in Waitakere City Council's Harbourview-Orangihina Open Space Management Plan (2003) as a site of potential historical interest. Both these sites are within the Harbourview Orangihina Park. A construction yard is located in the park, but would occupy only part of the area to the north of the brick foundation and to the south of the concrete foundation.

Table 2: Summary description of sites in Sector 1

Site	Description	Condition	Relationship to Construction Footprint
R11/458 Midden	A thin layer of shell spread over a 10m x 3m area on the gentle southern slopes of the point 3-8m ASL and 30m north of the end of Bridge Rd, in the reserve at the end of Alwyn Ave, above the car park and boat	Some trampling evident	South of construction footprint

	ramp and c.200m south of the motorway bridge, in grass beneath Pohutukawas.		
R11/459 Midden	Midden exposed in top of bank 1-2m ASL, 100m south of motorway bridge, in the reserve at the end of Alwyn Ave, on the north side of the point at the north end of Bridge Rd. Spread over a distance of 13m, and less than 30cm thick. The bank above the slopes may contain further evidence	Eroding	South of construction footprint
R11/460 Midden	A large patch of shell in the slope below a small natural terrace, 100m from the Whau River, 600m north of the motorway bridge, 100m north of the bushline on the slope. The site was partly investigated in 2000 and found to contain mixed 19th century and pre-European midden remains	Stock trampled, partly excavated	North and east of construction footprint
R11/1375 Drains (Historic)	The site consists of manuka bundles and brick fragments exposed in the foreshore bank, 600m north of the motorway bridge over the Whau, and 200m north of site R11/1724. These are probably the remains of a historic drainage system. Drains in this area were reported to have been dug and filled with manuka to drain the flats in the 1880s	Eroding	North and east of construction footprint
R11/1724 Brickworks	The remains of the Auckland Brick & Tile Co. brickworks (1883-87), are on the foreshore of Whau River, just north of motorway bridge, covering a 50m x 200m area of the flat foreshore. The site was levelled by bulldozer in the 1990s. Remains include bricks, brick rubble, scoria blocks, brick machinery foundations, clay quarry areas, jetty, brickbats, basalt stones, slag piles and various artefacts. The site has been partly investigated	Fair, stable condition	North and east of construction footprint
R11/2503 Midden	The site consists of a small amount of cockle shell on a steep bank exposed in a recent bank collapse, south of the motorway bridge, in the reserve at the end of Alwyn Ave, north of the Boat Club, between	Eroding	South of construction footprint

	R11/458 and R11/459. There could be more midden at the top of the cliff		
R11/2549 Midden	A small amount of sparse midden amongst topsoil, in and around the roots of large Norfolk Pine, and in some slope wash on the banks immediately below, south of the motorway bridge, in the reserve at the end of Alwyn Ave. Only cockle shell was noted	Poor; visible features are incomplete, unclear and/or the majority damaged in some way	South of construction footprint
-	Concrete foundation, possibly relating to a former cowshed and windmill	Fair, recently modified by addition of a trough	North of construction yard (within overall construction footprint)
-	Brick foundations in the area of a former homestead visible in 1940s aerials	Poor, fragmentary remains	South of construction yard (within overall construction footprint)

6.2 Sector 2 (Whau River)

This sector of the route crosses the Whau River and is entirely on reclaimed causeway or bridge. No archaeological sites are present in this sector. However, in the CMA Druskovich noted eroding material from site R11/459 at the western end (Sector 1) and from site R11/74 at the eastern end (Sector 3) (see **Figure 6.3**). A hulk, or abandoned boat (the *Edith*), formerly located on the western side of Sector 2 was recorded in this area by the ARC, but the record notes that it had rotted away by 1993, and Druskovich found no remains that are likely to relate to the hulk.

Table 3: Archaeological and other heritage sites in Sector 2

Site	Description	Condition	Relationship to Construction Footprint
ARC CHI 202	Hulk (*Edith*) built at Omaha in 1905, converted to a barge and register closed in 1925. Abandoned on west bank of Whau River	Rotted away bar a few rusty spikes reported in 1993. Nothing visible today	South of construction footprint

Figure 6.3: Recorded archaeological sites in the vicinity of Sector 2 in relation to the construction footprint

6.3 Sector 3 (Rosebank Peninsula)

6.3.1 Historical Background

The Rosebank Peninsula has strong associations with Dr Daniel Pollen (1813–96), a noted historical figure (**Figure 6.4**). Dr Pollen had a varied career which included a period as the resident medical practitioner for the copper mining community on Kawau Island for several years from 1847. He also had a practice in Auckland. At the same time he actively pursued an entrepreneurial career and was a partner in many property deals. In the 1850s he was involved in local politics and held various posts before going on to be Colonial Secretary and for a brief period Premier of New Zealand in 1875–1876. (*Encyclopedia of NZ* 1966; Best 1993:6).

In the 1850s, Daniel Pollen purchased land at Whau, including what became known as Pollen Island (**Figure 6.5**), and established one of the earliest brickworks and potteries in Auckland next to the Creek (site R11/1509, some distance to the south of the project area). He built his house nearby (**Figure 6.6**) and died there in 1896 (Best 1993:6). His former house site is recorded as archaeological site R11/1699, and what is thought to be the landing area he used to access his house (**Figure 6.5**) as site R11/2508. Both these sites are within or partly within the construction footprint.

Daniel Pollen's brickworks on the Rosebank Peninsula was one of the few early industrial ventures there, as for most of its European history the area was used for agricultural purposes. He also produced lime on the site, transporting shell from Pollen Island for the purpose. In the early 20th century the large quantities of shell on the Island continued to be exploited, with lime produced on the island itself and transported via a tramway built in the late 1920s (R11/2504, ARC CHI 802).

An early survey office plan, DP4115 dating to 1907 (**Figure 6.7**), shows the Pollen farm on the Rosebank peninsula being surveyed for subdivision by Hugh Pollen (Daniel Pollen's son), and the subdivision process continued through the 20th century. In 1940, the northern end of the peninsula was still agricultural land with a few scattered homesteads. The present day landscape, though, is predominantly industrial.

Figure 6.4: Photograph of Dr Daniel Pollen

(National Library McLean Papers - Reference Number: 35mm-00132-f-F. Object #14451 Daniel Pollen, circa 1873. Photographer unidentified)

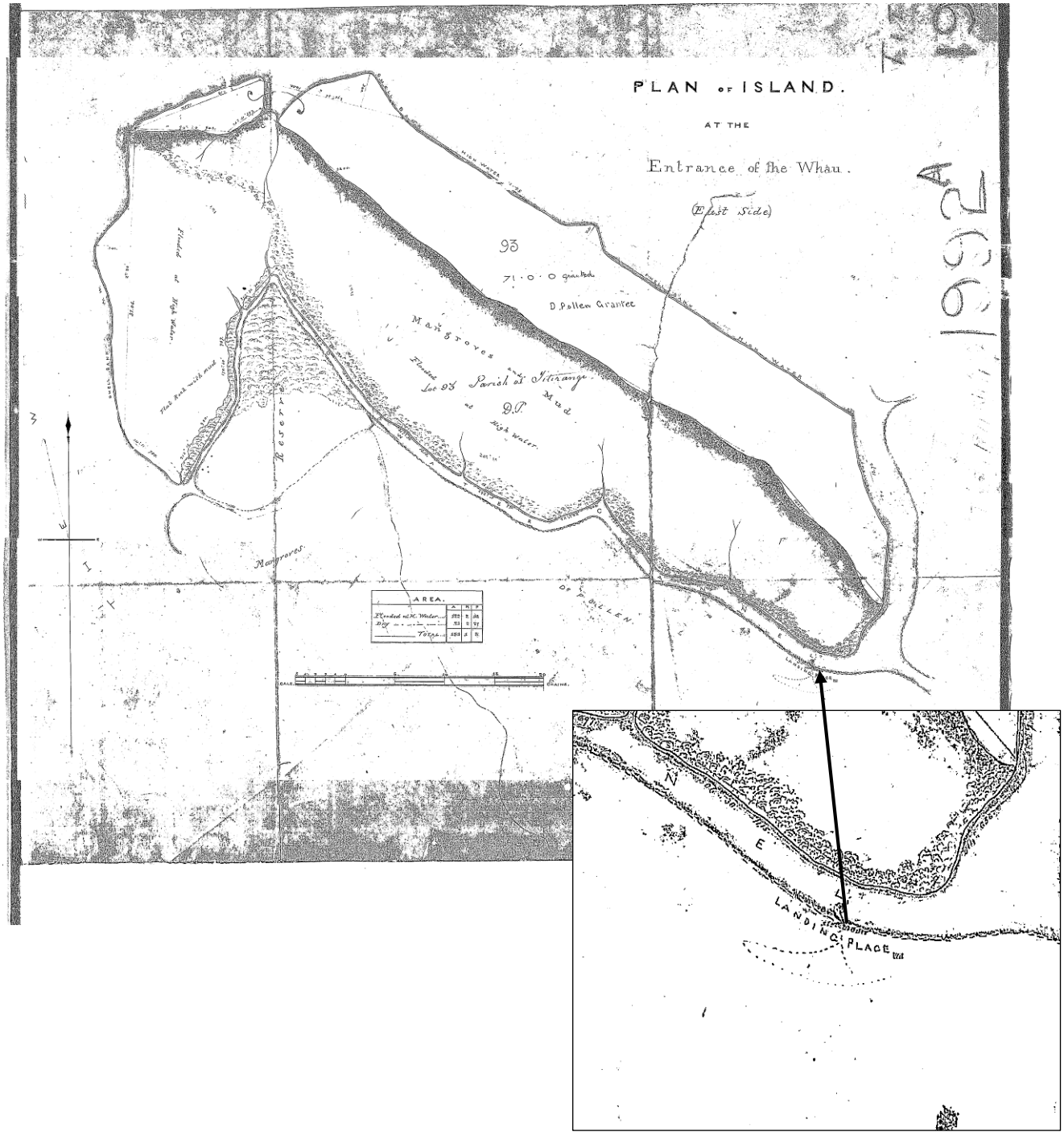

Figure 6.5: SO 1992A (dated 1857) showing Pollen Island ('Dr Pollen grantee') and landing area (inset)

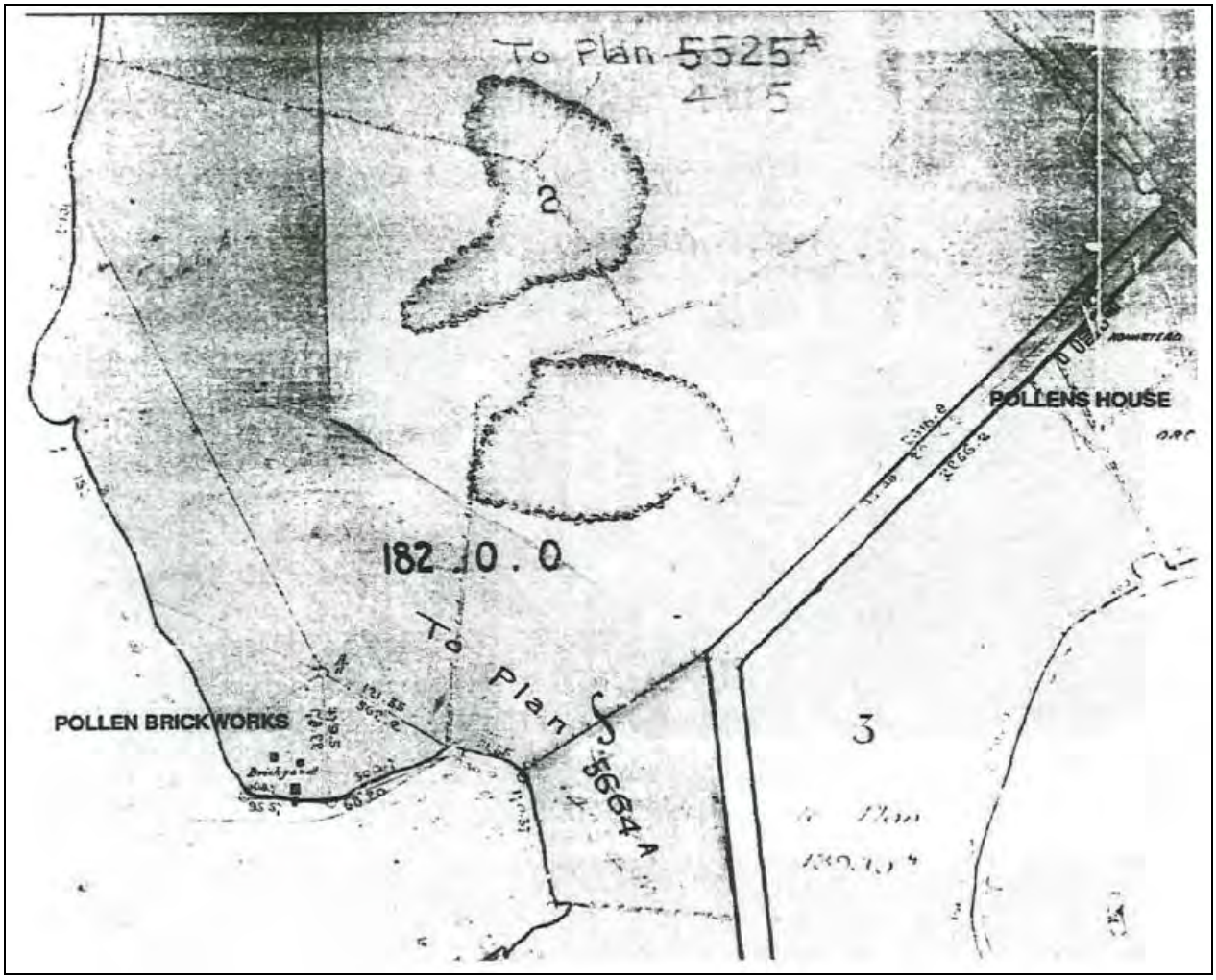

Figure 6.6: 1884 plan showing locations of Pollen Brickworks and House on the Rosebank Peninsula (from Best 1993)

Figure 6.7: DP 4115 showing proposed subdivision of Pollen farm for Hugh Pollen 1907

6.3.2 Archaeological Sites

At the northern end of the Rosebank Peninsula, a number of sites have been recorded within the construction footprint or immediately adjacent to it (see **Figure 6.8**, **Table 4**). Several of the recorded sites have already been damaged or destroyed by past activities including motorway construction and urban development. Much of the western end of Rosebank Peninsula between the current motorway and Waitemata Harbour has been modified substantially and the area was used as a works depot when the original motorway and bridge to Te Atatu was constructed. No archaeological sites would be expected within this area or generally within c.5m of the existing motorway. The earlier work on the ramps at Patiki and Rosebank Roads has also already modified the

areas near the motorway, but there is still some potential for intact features adjacent to the modified areas. The sites in or near SH16 can be grouped as follows:

1. Previously recorded remnant sites (R11/74, R11/444, R11/2212, R11/2216, and R11/2253);
2. Newly recorded sites (R11/2504, R11/2505, R11/2506, R11/2507, R11/2508 and R11/2550);
3. Previously excavated site R11/1698 (midden);
4. Previously excavated site R11/1699 (Dr Pollen's House site).

These sites are discussed by group in the following text, and are summarised in **Table 4**. Of the 13 recorded archaeological sites, 10 are within or partially within the construction footprint, while 3 are just outside it. The sites are discussed further below.

Previously Recorded Remnant Sites

R11/74 is the recorded site of a pre-European settlement and was identified on the basis of stories indicating that the area was used in the 19th century by Maori as a temporary campsite. No archaeological features were ever identified on this site and only fragmentary shell has been observed in the recorded location.

The other four sites (R11/444, R11/2212, R11/2216 and R11/2253) represent the remains of midden found throughout the area. R11/2212 has been destroyed and the rest are all heavily modified, but it is possible that some intact remains may still be present (especially in R11/444 and 2216) and may fall within the construction footprint.

Newly Recorded Sites

Druskovich (Bioresearches 2010) also recorded six new sites, five of which are on the northern side of SH16: R11/2504 (Tramway); R11/2205 (Landing); R11/2506 (Landing); R11/2507 (Midden); and R11/2508 (Landing). These sites are located either within the construction footprint or immediately adjacent to it. Druskovich noted that the majority of this area is covered in dense invasive weeds (especially blackberry and pampas), which restricted visibility and field survey.

R11/2504 is the remains of an old tramway built in the 1920s that are visible in mudflats between Rosebank Peninsula and Pollen Island. The site was already recorded in the ARC CHI (no. 802) and consists of a square concrete pad used for burning shell to make lime and the remains of a tramway built in the 1920s for carrying the lime to shore. It is scheduled in the Auckland Regional Plan: Coastal (item 636, Schedule 2). It is just outside the construction footprint.

Figure 6.8: Locations of recorded archaeological sites in Sector 3 in relation to the construction footprint

Table 4: Summary description of sites in Sector 3

Site	Description	Condition	Relationship to Construction Footprint
R11/74 Settlement	This former settlement site has been all but destroyed by past Reserve Management and motorway building activities, with only occasional small remnant midden deposits existing amongst dumped concrete and other rubbish surrounding the cart track	No known archaeological features	Within the construction footprint

R11/444 Midden	The motorway, cycleway and roading have been remodelled since the original recording of the site. Midden is present subsurface between the cycleway and the factory at 85-91 Patiki Road. Test pits conducted in 2003 indicate that it is likely that any remaining midden here is largely in situ, it can therefore be assumed that subsurface features associated with it may also be found. It is likely that this site was once somewhat larger and probably extended across the motorway to near the water's edge	Possible subsurface features or deposits	Within the construction footprint
R11/1698 Midden	The site was investigated during construction of the Patiki Road on-ramp (Clough et al. 1997)	Site destroyed	Within the construction footprint
R11/1699 House and grounds	This is the location of the former house of Dr Daniel Pollen. Construction of the present off ramp and earlier archaeological excavation (Clough et al. 1997) suggests that remains are unlikely	Site destroyed	Partly within the construction footprint
R11/2212 Midden	Crushed and fragmented midden was observed in 2003 on the southern bank adjacent to the road that links the kart track to Patiki Road. Midden appears to have been pushed down the bank by past earthworks and have had more recent rubbish (iron) mixed amongst it	Site destroyed	On the boundary of the construction footprint
R11/2216 Midden	A small amount of cockle is exposed in the cuts made for the cycleway/walkway at the eastern end of Rosebank Peninsula and within the adjoining Autex Factory/Office grounds. This midden deposit appears to be in situ, but its extent is not known. It is likely that the building of the adjacent office and factory have disturbed parts of this site. It is thought that this site has at least low to average value and it appears to be the least disturbed of all of the sites nearby	Disturbed but probably some in situ deposits	Within the construction footprint

R11/2253 Midden	This midden was observed twice in 2003, where midden was observed within grass that was in the process of being tarsealed. At the time of initial observation it was clear that much of the midden had been disturbed, however the subsurface integrity and extent of the site was unknown. Since 2003 the entire area has been surfaced and new factories built, therefore it is likely that more of the site has been damaged or destroyed	Probably mostly destroyed but some possible remains	On the boundary of the construction footprint
R11/2504 Tramway	This site is found in mudflats between Rosebank Peninsula and Pollen Island, and is visible as a band of laid shell running between the two. Occasional corroding and bent rails are also found on or adjacent to the alignment. The ARC CHI records that the site was constructed in the 1920s and that a wheel and axle from a trolley are found near the motorway. No remains of trolleys were found during survey, though vegetation in this area may conceal remains	Good	Just outside (north) of the construction footprint
R11/2505 Landing	A low earthen platform (5m long by 3m wide) has been built into the CMA from the end of Rosebank Peninsula, perhaps associated with the R11/2504 Tramway. However it is slightly off alignment. Its age is uncertain	Good	Just outside (north) of the construction footprint
R11/2506 Landing	The site is a cutting in the natural banks that lead steeply down to the foreshore, to allow access to the channel below. The cut is estimated to be 10m long by 5m wide. The state of erosion of the sides of this cutting would suggest it is of some age	Some erosion	On northern boundary of the construction footprint

R11/2507 Midden	Two midden exposures were found close to each other on the northern banks of the peninsula. Other than slow erosion and tree root damage both midden appear to be in very good condition and undisturbed. The banks behind the midden have been earth-worked, possibly fill rather than cuts, within relatively close vicinity and may have either destroyed or buried further evidence, such as associated food preparation areas. The larger exposure is present for at least 15m length and 5m up the bank. A second exposure found to the west was 5m across by 3m up the bank. Karaka trees are present, none of them old enough to have dated back to the age of this midden. They may be self-sown descendents of trees that related to this site	Good, one of the few sites on the whole of Rosebank Peninsula that has not been significantly damaged in the past.	Just outside (north) of the construction footprint
R11/2508 Landing	SO 1992A indicates that Dr Daniel Pollen had a landing at this location in 1857. This is likely to have been the nearest landing spot with a suitable channel to his residence and this site therefore is historically linked to R11/1699. No archaeological evidence was detected at this location and the location must be considered to be approximate	Unknown, no physical remains identified	Within the construction footprint
R11/2550 Midden	The site is in the westernmost corner of the Autex Factory site, 702-716 Rosebank Rd, next to the fence and possibly also extending into the neighbouring property. It consists of a small amount of sparse midden amongst topsoil, located in a hollow area on the boundary	Poor, probably damaged by earthworks	Within the construction footprint

The three landing sites comprise:

- R11/2505: a low earth platform 5m x 3m built into the CMA from the end of Rosebank Road, possibly associated with the tramway, in a good state of preservation but of unknown age. The site is just outside the construction footprint;

- R11/2506: a c.10m x 5m cutting in the foreshore bank on the eastern half of the peninsula. It is of unknown date, though possibly quite old. It is on the boundary of the construction footprint;

- R11/2508: the site of a landing recorded on an old survey plan (SO1992a dated 1857, see **Figure 6.5**), and almost certainly the landing that would have been used by Dr Daniel Pollen to access his house (see R11/1699 below). The landing location is within the construction footprint, but no physical remains of the landing have been identified in the location indicated on the plan.

The fifth site, R11/2507, is a midden seen in two exposures on the north bank of the peninsula. The site appeared to be in good condition, and is just north of the construction footprint.

The sixth site (R11/2550) is located in the Autex Factory site south of SH16 and is within the construction footprint.

Previously Excavated Site R11/1698 (Midden)

R11/1698, at the Patiki Road on-ramp and investigated during its construction, was originally recorded by Foster in 1989 as a midden. The particular features originally recorded were not re-identified during the investigation (Clough et al. 1997), although other scattered midden was found. However, during subsequent monitoring of the earthworks for the on-ramp construction some in situ midden and two pits were exposed. These were thought to represent the remains of Maori settlement, but no age determination was possible and the length of occupation represented was difficult to judge on this limited evidence.

Pits were used for food storage and are generally considered indicative of agriculture in the vicinity, but there was little to indicate the presence of garden plots or modified soils. However, the limited land area stripped, and the destructive effects of subsequent agricultural practices and industrial development activities in the area would have significantly reduced the chances of finding such evidence (Clough et al. 1997:18-19).

While the recorded site is destroyed, there remains some possibility of additional associated features in this general area.

Previously Excavated Site R11/1699 (Dr Pollen's House Site)

Site R11/1699 near the Rosebank Road off-ramp was the site of Dr Daniel Pollen's house. The recorded site of the Pollen house was investigated during previous works for the motorway and features identified included fire-scoops, a pre-European midden, extensive historic midden, artefacts, drains, rubbish holes, posts and postholes representative of both Maori and early European occupation. The excavation also identified extensive infilling of the area adjacent to the Pollen House site with midden containing early European debris which may have resulted from the later disturbance of earlier materials (Clough et al. 1997:19).

Druskovich (Bioresearches 2010) considered it possible that a small amount of in situ evidence may still be present on the site near the proposed remodelled westbound off ramps. While this is possible, the earlier motorway works and results of archaeological investigation carried out by Clough & Associates indicate that further finds are unlikely.

6.4 Sector 4 (Reclamation)

Most of the SH16 route in this section is along on reclaimed causeway where no archaeological sites would be located. However, it also crosses Traherne Island. As this will be affected by earthworks required to widen the motorway, Druskovich (Bioresearches 2010) carried out a survey of the entire coast of the island. No archaeological evidence was found.

Druskovich noted that survey on Traherne Island was constrained by the low-lying nature of the island and the vegetation cover that obscured the ground surface. On the other hand, he considered that the swampy nature of the island and its vulnerability to storm events would have made it unsuitable for settlement. We would agree with this assessment, and with his suggestion that if any archaeological remains are present they would probably be minor and insignificant.

Three midden sites (R11/2199, 2200, and 2201) are recorded at the eastern end of Sector 4, to the south of the Waterview Inlet (**Figure 6.9**, **Table 5**) and are therefore not in the vicinity of any proposed works.

Figure 6.9: Locations of recorded archaeological sites in Sector 4 in relation to the construction footprint

Table 5: Summary description of sites in Sector 4

Site	Description	Condition	Relationship to Construction Footprint
R11/2199 Midden	The midden is exposed in a track cutting in Howlett Esplanade, Waterview. Cockle shell visible over a length of 6m adjacent to the track and has been cut by the track.	Damaged by track cutting, extent unknown	South of construction footprint
R11/2200 Midden	The midden is exposed in a track cutting in Howlett Esplanade, Waterview. Pipi and fragmentary cockle shell visible over a length of 5m adjacent to the track and has been cut by the track	Damaged by track cutting, extent unknown	South of construction footprint
R11/2201 Midden	Two midden exposures within Howlett Esplanade, Waterview: (1) small cockle shells visible in a bank behind a natural sandstone platform projecting into the tide, in a patch 1mx2m in size; (2) 10cm thick seam of midden exposed in a track cutting over a distance of 3m	Damaged by track cutting, and being eroded by foot traffic	South of construction footprint

6.5 Sector 5 (Great North Road Interchange)

A number of archaeological sites have been recorded around the Great North Road Interchange (**Figure 6.10** and **Table 6**). The recorded sites include three sites considered to be of some significance in terms of their archaeological value and/or their heritage landscape value, which are discussed in more detail below:

- R11/2191: the Star Mill/Garrett Tannery/Quarry site (see Section 6.5.1);
- R11/2203 (Settlement): the remains of former Maori settlement in the same general location (possibly related to nearby midden sites R11/2202 and 2459) (see Section 6.5.2); and
- R11/2213: an early European stone wall (see Section 6.5.3).

Several other midden sites are recorded both north and south of the Waterview Inlet (R11/1452, 2204, 2214, 2215, and 2231), but most of these have been either damaged or destroyed and are of limited if any archaeological value in terms of the information they could provide (see **Table 6**). Sites R11/2214 and 2215, for example, are recorded as being located within the motorway interchange island, and no intact deposits are evident today – they are likely to have been completely destroyed by earthmoving for previous roading works in this area.

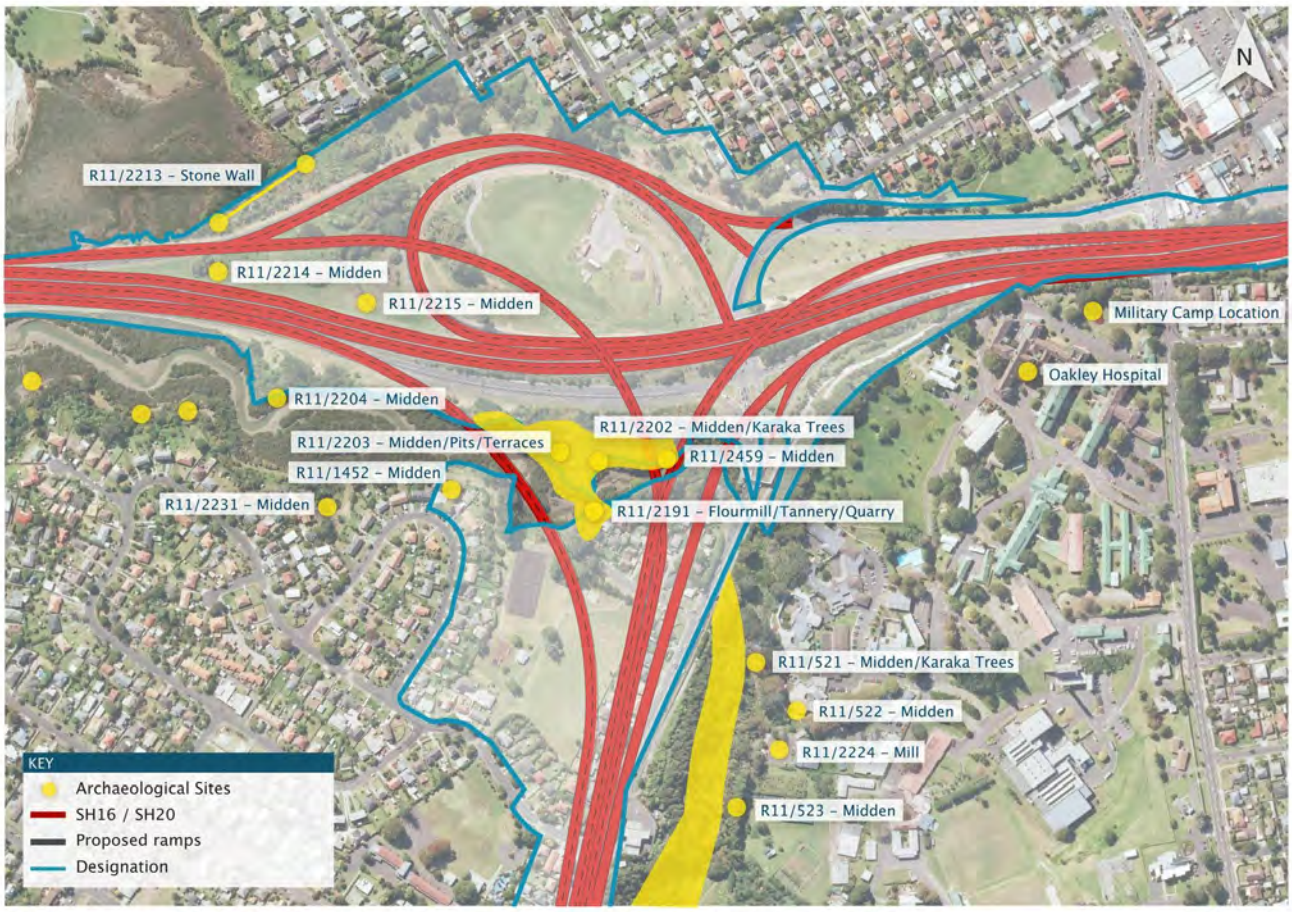

Figure 6.10: Locations of recorded archaeological sites and the Waterview Inlet Heritage Area in Sector 5 in relation to construction footprint

Table 6: Summary description of sites in Sector 5

Site	Description	Condition	Relationship to Construction Footprint
R11/521 Midden	Cockle midden on the east bank of Oakley Creek, exposed by a walkway cutting. Midden is exposed for over 11m along the track and continues up the bank to the boundary of the Mason Clinic and possibly beyond. There is a possible associated terrace	Partly damaged by track, but otherwise in fair condition	East of construction footprint
R11/522 Midden	Midden recorded on the east side of Oakley Creek (within the grounds of the Mason Clinic) in 1975, consisting of	Not known, but likely to be intact buried	East of construction footprint

	intact midden exposed in a pipeline cutting, 14m x 1m x 1.5m deep. It was no longer visible in 1981, as it had been covered by dumped clay material	subsurface remains	
R11/523 Midden	Fragmentary midden on the east bank of Oakley Creek near top of bank immediately adjacent to the Unitec boundary fence, in an area of privet. The area has seen a good deal of rubbish and soil dumping, obscuring visibility. The midden possibly extends into the Unitec grounds	Not known, but may be buried subsurface remains over a reasonably large area	East of construction footprint
R11/1452 Midden	Midden c.200m along the esplanade reserve track running west from Waterview Reserve at the end of Cowley Rd on the south side of Oakley Creek/Waterview Inlet. Recorded in 1994 as a number of small scattered shell deposits visible eroding from the bank, but no longer visible in 2003	Not known, either eroded away or buried	East of construction footprint
R11/2191 Flourmill/ Tannery/ Quarry	The site of the Star Mill, later the Garrett Bros. Tannery (1860-1890), and also a 19th - 20th century quarry. The site is located on both north and south sides of Oakley Creek. The main mill site is on the southern side at 15 Cowley St, and includes the remains of a basalt walled wheel pit, sea walls, concrete machine bases, a Cornish boiler relating to the tannery, and an iron plate relating to a second boiler. On the northern side of the creek is evidence of quarrying operations, a basalt walled platform (a bridgehead) and foundations of buildings probably relating to the tannery	Good	Within construction footprint
R11/2202 Midden/ Karaka Trees	On the northern side of Oakley Creek/Waterview Inlet in the same general area as the northern part of R11/2191. Midden is visible eroding out of the bank for a distance of c.20m, and deposits are up to 20cm thick in places.	Good	Within construction footprint

	Karaka trees are growing nearby		
R11/2203 Settlement	On the northern side of Oakley Creek/Waterview Inlet in the same general area as the northern part of R11/2191. The remains include two terraces, one of which contained two pits (4m x 2m and 1.5m x 0.5m). Concentrated midden occurs below the pits, near an access track from the creek to the quarry, and on slopes to the west. There is scattered midden elsewhere throughout the site, and karaka trees are present. The landward extent of the site has been quarried	Good	Within construction footprint
R11/2204 Midden	A small cockle midden (1m across, 20cm deep) near the mouth of Oakley Creek/Waterview Inlet on the northern bank, eroding into the mudflats	Poor, eroding	Within construction footprint
R11/2213 Stone Wall	A 130m length of basalt dry stone wall near the east-bound Waterview off-ramp from SH16. Typically between 1m and 1.2m high, c.1.2m wide at base and 0.6m wide at top. The western end of the wall narrows and reduces in height as it extends for c.4-5m into the mangroves and mudflats (c.0.8m wide, c.0.4m high)	Excellent	Within construction footprint
R11/2214 Midden	Near the western end of the existing interchange island. Only shattered shell mixed with soils and gravels noted in 2003	Probably destroyed	Within construction footprint
R11/2215 Midden	Near the eastern end of the existing interchange island. Scattered and fragmented shell spread over a 20m x 20m area. Disturbed soils noted in test pits in 2003	Probably destroyed	Within construction footprint
R11/2224 Mill	A 9m diameter octagonal concrete structure beside a small fast flowing stream at a point where there is a small waterfall within the grounds of the	Good, but being used to dump rubbish	East of construction footprint

	Mason Clinic on the eastern side of Oakley Creek. Tentatively identified as a mill site		
R11/2231 Midden	On the south side of Oakley Creek/ Waterview Inlet. The midden is eroding out of a property boundary at the beginning of the walkway in the Howlett Esplanade. The visible deposit is 6m long, but it is mixed with more recent rubbish and building materials	Disturbed/redeposited. Not known whether any intact deposits are present	East of construction footprint
R11/2459 Midden	Midden on the northern side of Oakley Creek/Waterview Inlet west of Great North Road. The midden consists of a small amount of cockle shell on a steep bank spread over a 2x2m area. Large quarry benches are evident behind the site which are likely to have destroyed any evidence that may have been present on the landward side	Eroding remnant site	Within construction footprint

Four sites are located to the east of the northern tunnel portal in this sector, all on the eastern side of Oakley Creek: R11/521 (a midden with a possible associated terrace, in fair condition but partly damaged by a track); R11/522 (a midden that has been buried under dumped soil); R11/523 (a previously recorded midden that also appears to have been buried under later deposits); and R11/2224 (a concrete octagonal structure thought to be a former mill).

Of the 14 recorded sites, 8 are within the construction footprint. The six sites that will remain outside it are R11/521-523, R11/1452, R11/2224 and R11/2231.

The former Carrington Hospital (now part of Unitec and a significant historic building) is located to the east of the proposed works and would not be affected by them. However, the northern strip of the former hospital grounds will be affected. Carrington hospital is discussed in more detail below (see Section 6.5.4).

A 19th century artillery camp has also been recorded in archival sources within the grounds of the Carrington hospital (see Section 6.5.5), but its precise location and whether there are any physical remains today are not known.

6.5.1 R11/2191 (Star Mill/Garrett Brothers Tannery/Quarry)

An early flour mill, tannery and quarry site is located within Sector 5, spanning both sides of the tidal stretch of Oakley Creek (Waterview Inlet). The history of the mill and tannery has been well researched by the owners of 15 Cowley Street, Waterview (which contains the mill remains on the southern side of the Creek) – Peter

McCurdy and Robyn Mason, both of whom work in the heritage sector, and by the Thomas family historian Trevor Price, and also by local historians Jack Dragicevich and Lisa Truttman (McCurdy and Mason 2006; Mason and McCurdy 2010; Dragicevich 2007; Truttman 2007). The following summary of the site's history is largely taken from these studies.

6.5.1.1 History of site R11/2191

Oakley's Dam and Flax Works

Documented European connections to the site date back to 1844 when carpenter and settler Edwin Oakley petitioned for a Squatting License (License to Occupy) for Government Reserve Allotment no. 61and to lease 2 acres of land on which to erect a flax mill (Mason and McCurdy 2010:8-9). Allotment 61 is the land adjacent to Oakley Creek on its western side, up to the waterfall, and is shown on **Figure 6.11**. By 1845 it was recorded that Oakley's works included a mill dam and water wheel; he requested a renewal and extension to his licence and stated his intention to begin flour milling (Mason and McCurdy 2010:3). The extent of these operations has yet to be determined, but they may well have extended into Pt Allotment 18A (see **Figure 6.11**) where the early flour mill known as Thomas's Flour Mill (or the Star Mills) is known to have been located. Oakley never owned land in this area, and in 1849 Pt Allotment 18A was granted by the Crown to Andrew Rooney (who had a number of business interests and also acquired other land in the area) and two others (Truttman 2007: 2). Allotment 61 remained as reserve land.

Thomas's Flour Mill (the Star Mills)

In 1859 John Thomas, a flour miller from Devon, bought 8 acres of land along Oakley Creek and secured the water rights up to the waterfall (Mason and McCurdy 2010: iii, 4; Truttman 2007: 3; Dragicevich 2007: 7). The 8 acres of land included 3½ acres comprising Pt Allotment 18A (roughly the area now enclosed by Cowley Street, Oakley Creek and Great North Road), and the western parts of allotments 31-33 adjoining Oakley Creek. The locations of the allotments are shown in **Figure 6.11**. At this stage a mill dam was already was already marked on the title deed (**Figure 6.12**). Thomas established a flour mill which traded as the Star Mills (Mason and McCurdy 2010: 7), although it was generally known as Thomas's Mill.

John Thomas (1829-1865) came from a family of millers and had learnt the trade from his father. In 1854 he emigrated to New Zealand and was followed a year later by his wife Jane, their two small children William and John, and his 17 year old brother George. At first the family settled in Wellington, but they later moved to Auckland, where John Thomas bought his 8 acres of land along Oakley Creek in April 1859. Their daughter Elizabeth had been born at Oakley Creek in the previous month and is thought to have been the first European child born in the district. (McCurdy and Mason 2006: 1-2, 8).

John Thomas wasted little time establishing his mill as it appears to have been operating by the end of January 1860, when it was referred to in a mortgage document (Deed 6M 793, no. 16281, cited in McCurdy and Mason 2006). The operation of the mill was also recognised during the same year by the Provincial Council which, when considering proposals for Auckland's future water supply, noted that if a scheme involving Oakley Creek was to be adopted, compensation would have to be paid to John Thomas for the loss of power to his mill (McCurdy and Mason 2006: 3).

Flour milling had been established in the region soon after the founding of Auckland in 1840, and a number of other flour mills were operating in the region at this time. The largest was Low and Motions mill at Western Springs (Truttman 2007: 3), and another large flour mill had recently been established at Riverhead (Clough et al. 2005).

Figure 6.11: 1891 plan (Eden Roll 46) showing the original allotments in the Waterview/Pt Chevalier area (Auckland Public Library NZ Maps 4785). Pt 18A south of the Oakley Creek/Waterview Inlet was the site of the flour mill.

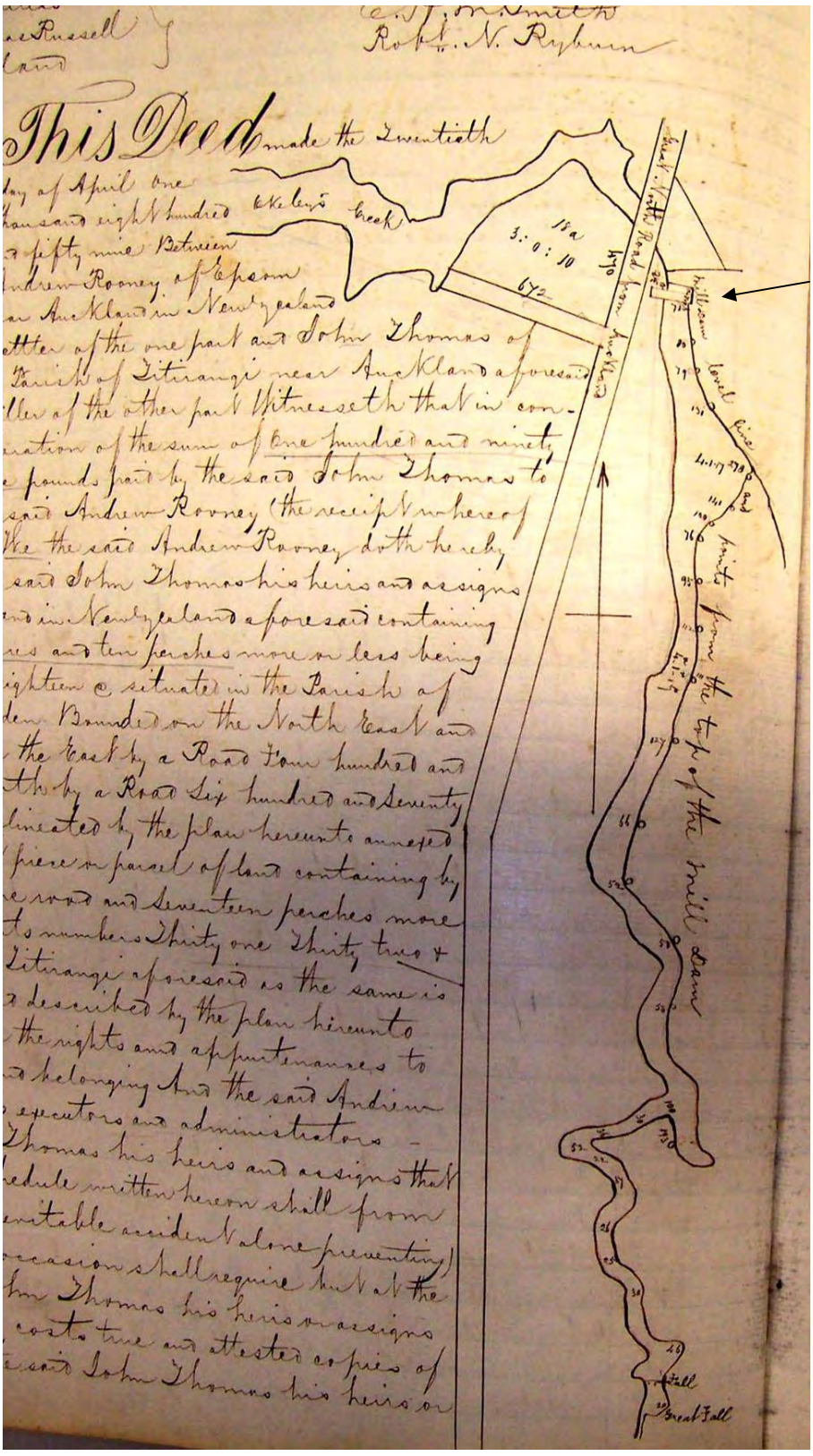

Figure 6.12: Drawing in Deed 15424 dated 20 April 1859, showing the location of the 'mill dam' (arrowed) and the mill property (Pt Allotment 18A) (LINZ DI 9D.389, reproduced in McCurdy and Mason 2006)

Thomas's mill was probably designed along the same lines as his father's mill in Barnstaple, Devon (Bradwell mill), and information from his descendants in Devon indicates that a mill wheel produced in Barnstaple was sent out to New Zealand for use in the mill (McCurdy and Mason 2006: 2). The mill was on a large scale, being 5 storeys high, and second only in size to the Low and Motions mill (Dragicevich 2007: 7; Truttman 2007: 7). It was entirely water powered, with a dam constructed above the mill site just past a bend in the creek (the location of the dam is shown in **Figure 6.12**). Water was released from the dam and fed through a water race or flume to the mill wheel which powered the grindstones on one of the upper floors of the mill through a gearing system. Goods were transported to the mill, and produce from the mill to markets throughout the Auckland region, by water (McCurdy and Mason 2006 citing Walker papers). Thomas owned his own boat, and Oakley Creek was known for some time as Thomas's Channel, or Thomas's Creek (McCurdy and Mason 2006: 30), and the nearby bridge as Thomas's Bridge (Mason and McCurdy 2010: ii,9).

In addition to the mill venture, in 1864 Thomas attempted to diversify into brick making, successfully tendering for the supply of bricks required for the construction of the Whau Asylum (later Carrington Hospital, see Section 6.5.4). He invested in brickmaking machinery and commenced production using the clay from his property, but after the first month was unable to fulfil his contract when he and his labour force were conscripted for military service, this being the period of the Land Wars. A penalty was imposed under the terms of the contract, and Thomas petitioned the Provincial Government for relief as he had apparently been given assurances that he and his workers would be exempt from military service. He died of dysentery in 1865 at the young age of 36, leaving his family in difficult circumstances as his will was not considered legally valid. (McCurdy and Mason 2006: 5; Walker 1961: 49; Truttman 2007: 4).

John Thomas's affairs were not settled until 1870, but his widow was given authority to administer the estate soon after his death (Price 1993: 50). This, and a grant of £250 from the Provincial Council to Thomas's wife and family c.1865 in relation to the brick contract, helped the family to continue running the mill (McCurdy and Mason 2006: 50). In 1867, Jane married Thomas Barraclough, machinist (Mason and McCurdy 2010: vii). In June 1870 the joint ownership of the mill was settled on William Thomas (son of John Thomas) and Thomas Barraclough, who continued trading as the Star Mills, and the following month William transferred half of his share in the business to his brother John (Price 1993: 59).

An advertisement in the *New Zealand Herald* dated 25 June 1870 (transcribed in McCurdy and Mason 2006: 6) announced that 'Messrs Thomas & Barraclough were 'now prepared to receive WHEAT, MAIZE, BARLEY etc for GRISTING', describing the Star Mills as 'the only Grist Mill in Auckland'. By this stage the business also had a produce store in town, in 'Wellesley-street East, a few doors from Queen-Street'.

A mortgage taken out in 1870 lists the chattels and effects of the mill as:

> *'... 1 water wheel with driving shaft, drums, cogs, wheels etc; 2 pair 4ft 6" mill stones; 1 dressing machine; 1 smutting machine; hoisting gear and chain; 2 pairs of trucks; 1 mill-proof weighing machine with 11 weights for same; all belting required for driving above machinery all fixed in good working order; all other machinery which may during the continuance of the security be fixed on the land'* (quoted in Price 1993: 59)

Three years later, in January 1873, the mill building burnt down, the fire thought to have been caused either by sparks from a candle, or by overheating of machinery. The event was well reported in the press, including in provincial papers (*NZ Herald* 9/1/1873; *Auckland Star* 8/1/1873; *Weekly News* 11/1/1873, p.15; *Waikato*

Times 11/1/1873; *Marlborough Express* 15/1/1873) (Mason and McCurdy 2010:11). As there are no known photographs of the mill prior to the fire,[4] most of the information on the mill comes from these articles. The property was described as including: '... besides the mill, a small dwelling house, some out-buildings, and a new cottage in which Mr. Thomas lived, with four acres of land' (*Weekly News*). The mill was described as 5 storeys high (6 in one version), and the following accounts give some indication of how the mill functioned:

> '*The mill had been at work lately both night and day, and, in consequence of the recent dry weather, the water supply was getting short, and Lowndes* [an employee] *says he lay down on some sacks, intending to rest until the dam, which is supplied by a shute, got a little fuller (the mill he stopped during the interval) ... he remained on the ground floor resting on the sacks, until about 12.30 p.m., when he perceived the smell of smoke, and immediately jumped up and proceeded to search the mill. On arriving at the fourth flat* [floor] *he noticed that it was on fire. It was filled with sacks of wheat, and already the fire had made considerable progress. ... Mr Thomas ...went to bed ... leaving Lowndes to wait on the mill till the dam filled. He had been at work in the fourth storey of the building, hoisting up maize for putting through the hopper ... The entire mill, a portion of the waterwheel, and all the machinery are destroyed.... The mill ... stood by itself, and there was therefore no likelihood at any time that the fire would spread*.' (*Weekly News* 11/1/1873, p.15)

> '*...the fire was first discovered by ... John Lowndes ... who sleeps on the premises. He was lying on the third floor of the building ....About half past twelve o'clock he was awakened by the sound of the mill stones going more rapidly than usual, and got up to weight them, when he felt the smell of something burning, and on looking round noticed a glare of light shining down from the floor above. He at once ran upstairs to the fourth floor of the mill, where about 100 sacks of wheat ... were stored... The men ... directed their efforts towards saving some of the flour and wheat in the lower store ... only three sacks of flour out of the fifty stored were got out uninjured. About one hundred sacks of wheat were also saved ... There were in the mill, at the time of the fire, 3 tons of flour, 400 sacks of bran, 1½ tons of wheat meal, and 15 bags of sharps...*' (*Auckland Star* 8/1/1873).

These descriptions, and the 1870 inventory of chattels referred to above, indicate that there were two pairs of grinding stones, which appear to have been on the third floor where Lowndes (according to the *Auckland Star's* account) was resting when he heard them rotating too quickly and so got up to slow them down. Sacks of wheat were stored initially on the ground floor. They were then hoisted up to the fourth floor to be poured into the hopper feeding the grindstones on the third floor. The hoisting machinery may have extended up into the fifth floor. After the wheat was ground into flour it would have passed down a shute to a bin below, to be packed into sacks.

The mill was promptly rebuilt and was described as follows:

> '*The contract for the restoration was undertaken by Mr. H. Palmer, the contractor for the Hamilton Mill in the Waikato .....The building consists of three storeys, and is substantially supported by a strong brick foundation. On the wheel side of the mill, a thick scoria and brick wall, surmounted by a solid*

[4] An earlier photograph of a mill thought to be the pre-1873 Star Mill has been reproduced in Walker 1861, McCurdy and Mason 2006 and Dragecevich 2007. However, there now seems to be general agreement that this is not the Star Mill (e.g. Campbell and Holmes 2008; Truttman 2009). Truttman (ibid.) has recently identified the mill in the photograph as a mill at Waitangi Falls, Waiuku.

> *beam of heart of kauri, gives the necessary strength for supporting the enormous weight here brought to bear. The sides elsewhere are weatherboarded with heart of kauri. The waterwheel is on the high-breast principle, and measures 20ft. in diameter by 5ft. on the face. It is composed of iron and kauri, with inverted segments. There are two pairs of stones of English manufacture. The mortice-wheels are furnished with wooden (pohutukawa) teeth, and worked noiselessly. A creeper of ingenious formation will convey the grist to the silk. Both the creeper and silk are to contain the latest improvements. Although the work of grinding was commenced yesterday, in order to enable the enterprising proprietors to exhibit some maize meal at the show to-day, a short time will necessarily elapse before everything is in perfect working order. The trial working was in every respect satisfactory, in spite of a somewhat small supply of water owing to the late dry weather. When both pairs of wheels are going, about 15 tons of flour can be turned out in a week*.' (*Daily Southern Cross* 20 June 1873, p.2).

The high breast shot wheel (or backshot wheel) would have maximised the available volume of water in Oakley Creek, which was clearly an issue even in June. (Where there is low waterflow either an overshot or backshot wheel is employed as these maximise the energy extracted from the flow. Mid breast and particularly undershot wheels (relying largely on the flow of the stream through the race) require higher volumes of water.) The new mill still had two sets of grinding wheels, and was fitted out with the latest equipment. The reference to three storeys is unlikely to be correct, as the previous mill had been a five storey structure, and later photographs of the rebuilt mill show five storeys (see **Figure 6.15** and **Figure 6.16**, below).

William Thomas sold his share of the business to his brother John and stepfather Thomas Barraclough in July 1874, and in September the same year the mill was sold to George Thomas, the brother of John Thomas senior (Price 1993: 218). Two years later (1876) the flour mill ceased operating, partly in response to competition from the Canterbury wheat fields (McCurdy and Mason 2006: 9). The ownership of the mill was transferred by George Thomas to George Binney & Co., merchants, in return for the payment of outstanding debts to Binney, and the repayment by Binney of George Thomas's mortgage on the property (Price 1993: 218).

Garrett Brothers Tannery

In 1879 the property was bought by the Garrett Brothers (Robert, Richard, William and George) in order to establish a tannery, and was referred to as the Star Tannery (Mason and McCurdy 2010: 14-15). The brothers were originally from King's County, Ireland, and owned a leather and bootmaking factory in Wakefield Street as well as a shop in Queen Street and others in New Plymouth, Gisborne, Oamaru and Napier (McCurdy and Mason 2006: 10; Mason and McCurdy 2010: 16). The tannery was a large scale operation and is described in an article written while it was under construction:

> '*Messrs. Garrett Brothers, who had been brought up to that line of business* [tanning]*, looked about them for a suitable locality. This they found on a creek traversed by the Great North Road, about a mile beyond the Lunatic Asylum. This creek is fed by waters which flow from springs rising from the subsidiary strata caved over by the lava streams which issued in days of yore from Mount Albert. The fullest advantage has been taken of the natural privileges thus held out, and the establishment, as it now exists, has natural advantages such as fall to the lot of few manufacturers. Although we understand the business is still in its infancy, the promoters have gone so far as to erect a large pumping engine by Vickers, of Liverpool, and to make every possible arrangement for the conversion of hides into leather to the best advantage. The engine not only raises water for the general service of*

the establishment, but provides the whole place with a superabundance of the necessary liquid. The tan-pits themselves are models of ingenuity, and provision has been made by which they can be fully supplied from a small branch creek or "ana" branch, which emerges from the main creek somewhat higher up, and which at all times is sufficient for subsidiary purposes. Just below the tan-pits is the curriers' shop and drying shed, which latter is not yet thoroughly completed, and other large improvements are in course of construction. Among other enlargements to the works, it may be mentioned that it is contemplated to construct thirty more pits ... In choosing their situation, the Messrs. Garrett have noted the superiority of water carriage. At high tide there is depth enough of water in the creek which encircles their property to float a vessel of 50 or 60 tons. The land carriage is also by a metalled road ...The first lot of leather will be taken from the pits on Monday next ...' (*NZ Herald* 24/4/1879, p.6).

The Garrett Brothers soon acquired additional land and in 1880 were reported to have '*... enlarged their boundaries ...forming ... a comfortable estate of 150 acres having about a mile frontage to the Great North Road, and a similar amount to the Waitemata River, enabling schooners deeply laden to come up to the tannery*' (*Auckland Weekly News* article cited in McCurdy and Mason 2006: 10). The additional land comprised Allotments 17 and 18 adjacent to the mill (see **Figure 6.11**), and the estate was named Oakleigh Park (Walker 1961: 41; McCurdy and Mason 2006: 20).

The mill was an important part of the tannery and would have been used as a bark mill, grinding the large quantities of bark required to produce tannin for the final leather curing process. In New Zealand the towai and what were referred to as white and black birch were initially the most commonly used sources of bark, with tanneries such as Messrs Ireland Brothers in Mechanics Bay crushing 7 or 8 tons of bark per week in the 1860s (*Daily Southern Cross* 19/6/1864, p.5). By the time the Garrett Brothers established their tannery the black wattle had also been introduced from Australia for tanning purposes (Smith 1878), having the advantages of being quick growing and of shedding its bark. Tanneries also imported wattle bark from Australia to crush in New Zealand, and other tanning materials such as 'a kind of nut, grown in Smyrna' were also imported by some tanneries during the 19th century (*Cyclopedia of New Zealand* 1891: 813).

The tannery also appears to have extended to the northern side of Oakley Creek (allotment 19), although this must have been on a lease basis as the recorded landowner from 1874 to 1892 was John Mattson, the area being known as Mattson's Flat (Truttman 2007: 9-10; Truttman n.d. (c)). The remains of building foundations probably from this era are still evident on the northern side of the creek (see Section 6.5.1.2). A bridge connecting the area of the tannery site south of Oakley Creek to Mattson's Flat on the north is shown in a plan dated 1913, and this bridge is likely to date back to the period of the tannery operations (1878-1890) (**Figure 6.13**).

In addition to water to power the mill wheel, the tanning process required a good supply of clean water for the tanning pits. Truttman points out that when the Garrett Brothers tannery was established, Oakley Creek was already very polluted by the earlier Gittos tannery on the upper reaches of the creek (on the northern side of the junction between Blockhouse Bay Road and New North Road), and also by sewage from the nearby Asylum (later Carrington Hospital) (Truttman 2007:9). A cleaner water source was required for the tanning pits, and the 1879 article (quoted above) states that the tan pits themselves were to be 'fully supplied from a small branch creek or "ana" branch ... '. Truttman (2007: 9) suggests that this was the stream shown in a 1880s plan on the northern side of the creek (**Figure 6.14**), and that the tanning pits may also have been on the northern side of the creek. It is reported that tanning pits were identified and mapped on the northern side when

investigations for the Northwestern Motorway were under way in the 1950s (Brian Bennett, formerly of Auckland City Council, pers. comm. to Peter McCurdy and Robin Mason). Their precise location is not known, however.

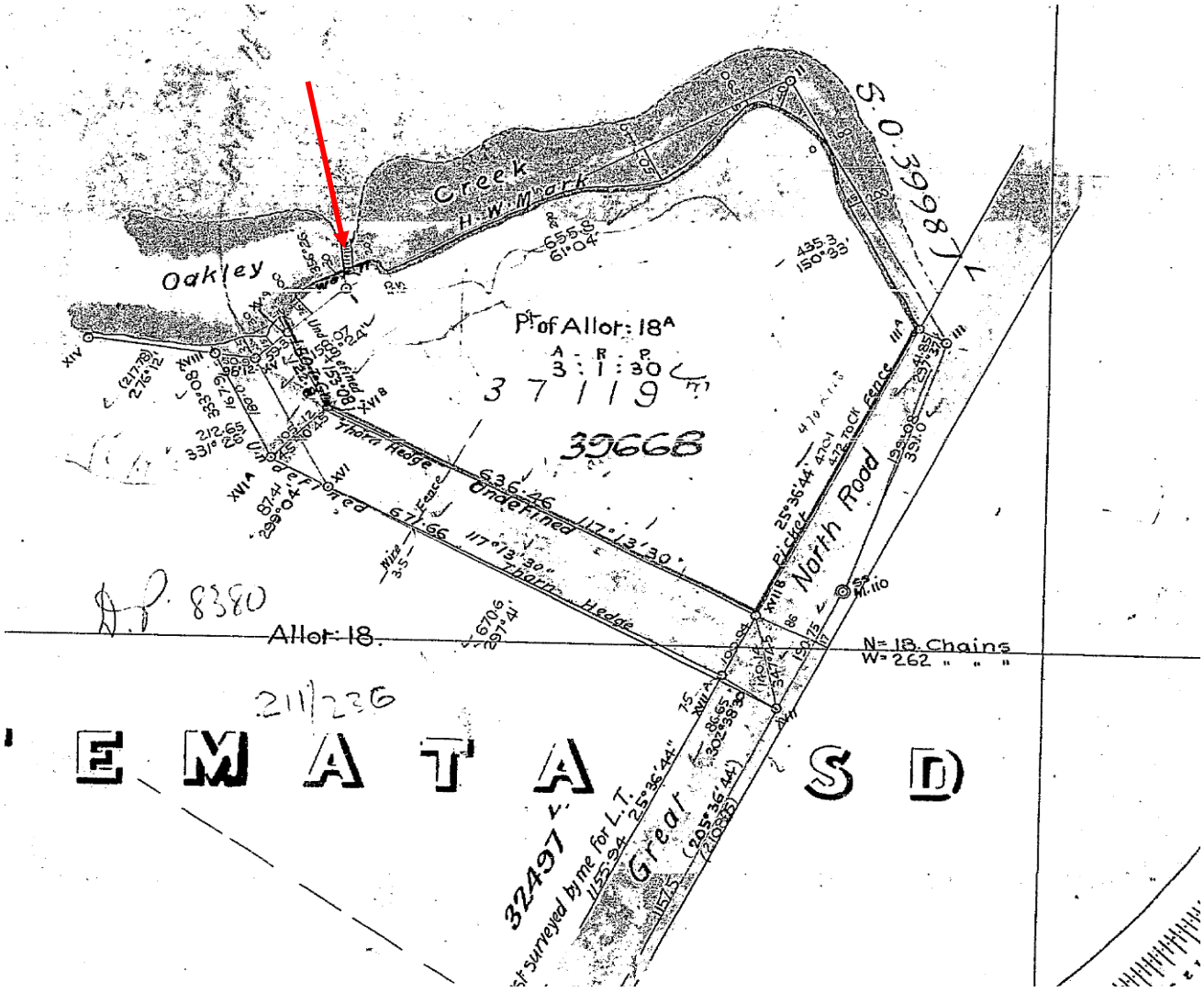

Figure 6.13: Detail from DP 8447 dated 13 February 1913, showing a bridge (arrowed) connecting the former mill/tannery site with the northern side of the creek

The Garrett Brothers tannery would have added to the pollution of Oakley Creek, although it was located downstream and further from the main residential areas than the Gittos tannery. (Many complaints about the smell of Gittos tannery were made in the 1870s from those living downstream of it, until the tannery was forced to close in the 1880s: Truttman n.d (f)). By the early 20th century pollution of the creek had led to outbreaks of typhoid and dysentery, and it was noted that a Mrs Porter, who lived near the creek close to Garrett's tannery, died of typhoid (McCurdy and Mason 2006: 21, citing A.H. Walker's research notes and other sources).

The tannery operated successfully throughout the 1880s, but in 1890, as a result of depressed economic times that affected many businesses in Auckland and elsewhere in New Zealand, Garrett Brothers became bankrupt and the tannery was closed (McCurdy and Mason 2006: 10; Mason and McCurdy 2010: 23).

The full layout of the tannery operation is not known, but two photographs show the mill and some of the buildings some years after it closed (**Figure 6.15** shows the mill/tannery in 1898, and **Figure 6.16** in 1909). The photographs show a five storey mill house and the high breast shot (i.e. backshot) mill wheel which date from 1873, when the earlier flour mill was rebuilt after the fire. The lean-to building to the right is likely to be the tannery boiler house, as this is the location of a remnant boiler on the site today (see Section 6.5.1.2). The boiler would have provided steam power for the Vickers pumping engine (referred to in the *Herald* article, 24/4/1879) and other machinery. Beyond the lean-to, two other buildings are visible in **Figure 6.16**, raised some way off the ground. It has been suggested that these are drying sheds (e.g. Truttman 2007: 14), though storage sheds for bark are also a possibility as the bark would presumably have been kept close to the mill and was needed in large quantities. There are low earthen foundation walls on the northern side of the creek for buildings which might also have served this purpose.

The mill/tannery buildings were eventually demolished c.1912. Pt Allotment 18A was subdivided in 1950, and in the early 1950s a house was built on the original mill site at what became 15 Cowley Street (Truttman 2007: 13). However, basalt seawalls, foundations of the mill/tannery, foundations for the pumping engine, and a boiler still survive on the southern side of Oakley Creek at 15 Cowley Street, as do the bridgehead and the foundations of buildings probably associated with the tannery on the northern side of the creek (see Section 6.5.1.2).

Quarry

The 1880s Springside subdivision plan shows a quarry on the northern side of Oakley Creek on Mattsons property (**Figure 6.14**). This local quarry would almost certainly have been the source of the basalt used for the foundations and retaining walls of the flour mill in 1859, and for the bridgehead and other structures on the northern side of the creek probably during the tannery period. In 1879 there is a record of stone being quarried 'close to Oakley Creek, for the purpose of getting out stone for the new wing of the Asylum' (Truttman n.d. (c), citing Walker 1961), which may also refer to quarrying on the Mattson property. In 1912, the Birkenhead Borough Council acquired some of Mattson's Flat for quarrying purposes, but the quarry was apparently operated inefficiently, and production appears to have been on a relatively small scale until the 1920s, when the Waitemata County Council quarry was established (Truttman n.d (c); McCurdy and Mason 2006: 11). Operation of the quarry in the later periods would have destroyed some of the archaeological evidence relating to earlier periods of occupation (pre-European) and use (the tannery operation and the 19th century quarry).

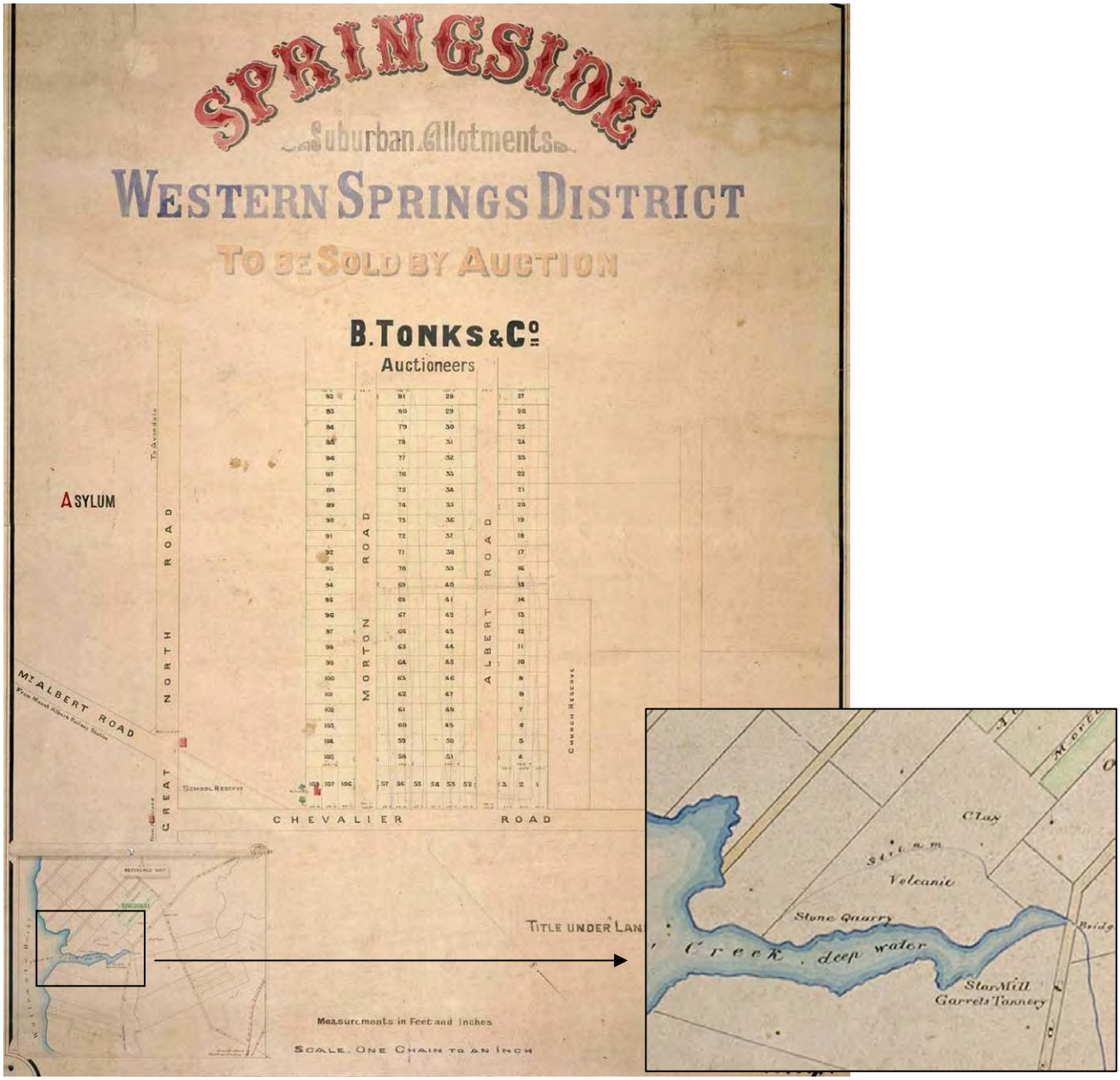

Figure 6.14: Auckland Public Library NZ Map 2695 'Springside Suburban Allotments Western Springs District To be Sold by Auction' (1882), with enlargement of inset plan. The Star Mill/Garrett Brother's Tannery site is shown south of Oakley Creek and a Stone Quarry to the north on the unsubdivided part of allotment 19. Note also the stream to the north of the Stone Quarry

Figure 6.15: The Waterview mill, originally Thomas's Mill or the Star Mills and later part of the Garrett Brothers Tannery (site R11/2191). This view dates to 1898, about 8 years after the tannery closed (from the *New Zealand Graphic and Ladies Journal*, 10/9/1898 p.332, Auckland Public Library A1683)

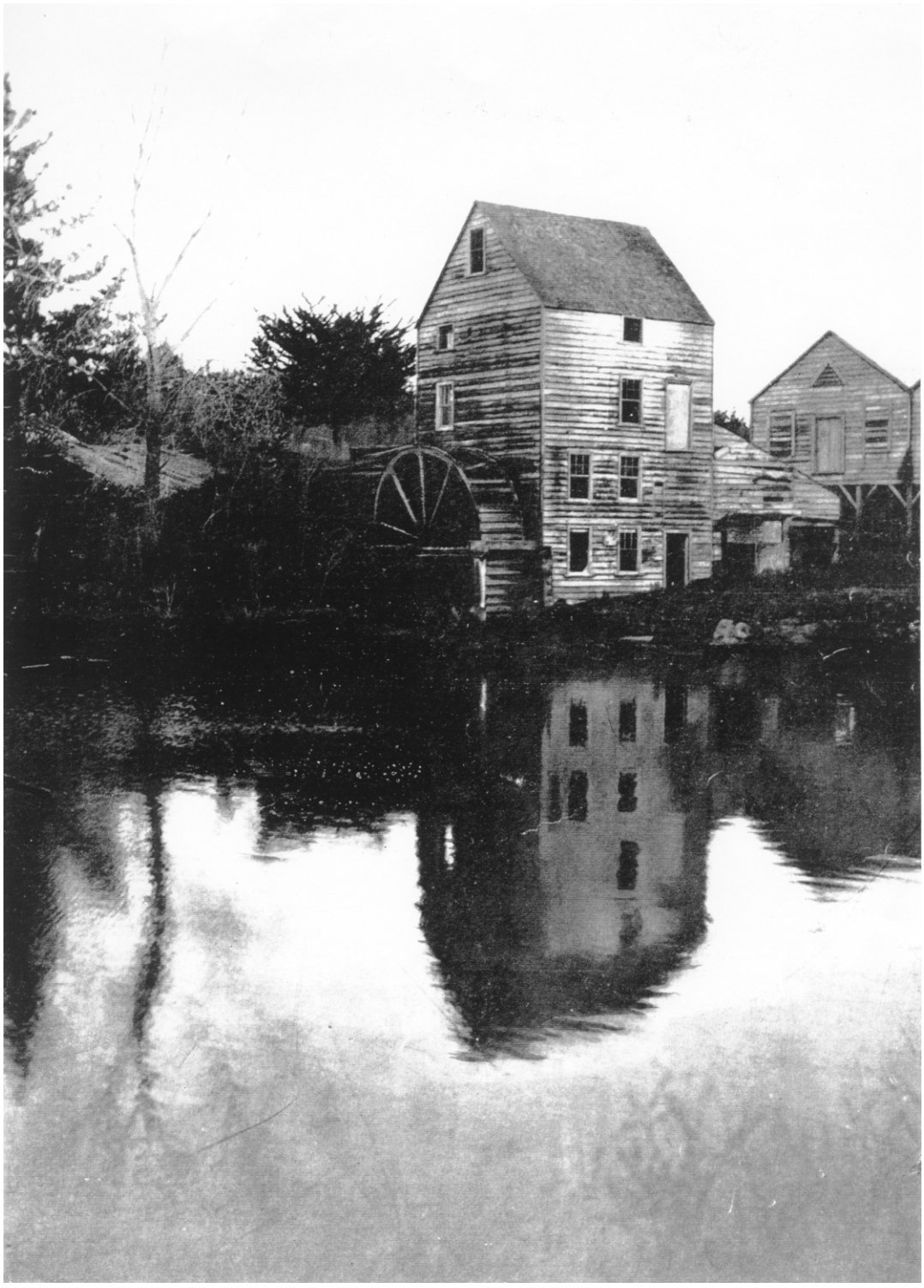

Figure 6.16: The mill in 1909 photographed by Samuel Frith (from the *Weekly Graphic and New Zealand Mail*, 11/8/1909, p.17, Auckland Public Library A1730)

Table 7: Summary history of Site R11/2191 (based on referenced information provided above)

Date	Event
Pre-1840	Maori occupation
1844	Edwin Oakley applied for a Squatter's License on Government Reserve Allotment no. 61 and 2 acres of land for the erection of a flax mill
1845	Edwin Oakley applied for renewal and extension of the Squatting License, stating his intention to unite a flour mill to the existing water wheel and cut a mill race from the 'Upper Water Fall'.
1849	Pt Allotment 18A granted by the Crown to Andrew Rooney and others
1859	John Thomas acquired from Andrew Rooney Pt Allotment 18A (north of Cowley St) and other land along Oakley Creek (8 acres in all). Mill dam shown on title deed
1860	Flourmill reported to be operating
1864	Failed attempt by John Thomas to make and supply bricks for new Lunatic Asylum. Flour Mill referred to as Star Mills
1865	John Thomas died (intestate)
1867	Jane Thomas married Thomas Barraclough
1870	Joint ownership of mill settled on William Thomas (son) and Thomas Barraclough. John Thomas (son) also given shares. Continued trading as the Star Mills.
1873	Flourmill destroyed by fire in January, rebuilt and operational again in June
1874	Property mortgaged to George Binney & Co. to settle debts
1874	George Binney, Thomas Barraclough, John Thomas Jnr. sold mill to George Thomas
1874	John Mattson acquired Allotment 19 on northern side of Oakley Creek, retaining ownership until 1892
1876	Mill closed and sold to George Binney
1879	Property acquired by the Garrett Brothers (leather and bootmakers), who established a tannery, using the mill as a bark mill. Tannery referred to as Star Tannery
1879-1880	Garrett Brothers increased land holdings to 150 acres south of Oakley Creek (Oakleigh

	Park estate)
Pre-1882	Quarry (established at unknown date) on Allotment 19 north of Oakley Creek shown on an 1882 subdivision plan
1890	Garrett Brothers declared bankruptcy and tannery closed
1898	Photograph showed mill and tannery buildings still standing
1909	Photograph showed mill and tannery buildings still standing
1912	Mill and tannery buildings demolished
1912	Birkenhead Borough Council acquired part of Allotment 19 north of Oakley Creek for quarrying purposes
Pre-1913	A bridgehead built on the northern side of Oakley Creek and bridge connecting the north and south banks shown on a 1913 plan. Date of construction unknown but probably during the Garrett Brothers Tannery period (1879-1890)
1920s	Quarry land acquired and run by Waitemata County Council
1950s	House built on mill site at 15 Cowley St

6.5.1.2 Site R11/2191 Today

The site is located at the southern part of the Great North Road Interchange. A detailed assessment of this archaeological area was undertaken by both Bioresearches (at earlier stages in the project) and by Campbell and Holmes (2008). This is a significant site which spans both sides of the Waterview Inlet/Oakley Creek, with the area of the former mill buildings on the southern side of the creek at 15 Cowley Street, and the related historic quarry and remains of building foundations (considered by Campbell and Holmes (2008: 14) to be structures related to the tannery) on the northern side. A recently compiled plan of the archaeological features of this site is shown in **Figure 6.18** to **Figure 6.22**, and various views of the site are presented in **Figure 6.23** and **Figure 6.29**. The plan includes elements relating to Maori settlement recorded in the same location (see section 6.5.2), and the area as a whole is referred to in this report as the 'Waterview Inlet Heritage Area'.

The features on the southern side at 15 Cowley St relate to the flourmill and tannery and consist of a level grassed area below the house which is retained by a basalt wall along the creek embankment for a distance of about 25m. On the eastern side the wall turns towards the southeast along the southwestern side of what today appears to be a tidal inlet for a further 11m, forming a platform south of the junction of the walls (**Figure 6.23** and **Figure 6.24**). This inlet is in fact the remains of the mill's wheel pit and identifies the location of the mill wheel, while the platform provided foundations for the mill and associated machinery. The basalt wall of the wheel pit on the western side has at least 4 courses of basalt blocks and currently stands approximately 1m above the infilling marine mud. The basalt blocks are variable in size but around 400mm x 250mm x

300mm high. The stone wall extends northeastward again (c.3m), but is obscured by vegetation, and a number of scattered basalt boulders lie on the northeastern side of the small inlet. To the rear of the grassed terrace/platform is an overgrown wall or rock facing. An old riveted iron boiler in good condition and lying on its side is located on the grassed terrace and almost certainly relates to the tannery period (**Figure 6.25**). Remains of a curved, riveted iron plate lie on the surface some 20m to the southwest and appear to derive from a second and possibly earlier boiler.

The boiler is approximately 4m long x 1.4m in diameter and constructed in sections of riveted overlapping and offset iron plates. It has a single offset central firebox, a steam dome, an inspection access port and a number of flanges and seatings for pipes and valves for the flow of water or steam. This has been identified as a Cornish boiler typically used for dewatering mines and other early industrial processes in England and elsewhere, and used extensively in New Zealand for sawmills, pumping and processing. Concrete plinths to mount machinery are located next to the boiler. From one of these iron mounting bolts protrude, probably for the pumping engine supplied with steam by the boiler (**Figure 6.25**).

Probing indicates the presence of further foundations beneath the surface. 19th century bottles are visible along the foreshore area east of the platform. There is likely to be additional archaeological evidence on the property that is not currently visible, including beneath the existing house. Recent ground penetrating radar (GPR) survey (**Appendix B**) indicated another buried foundation some 4x4m under lawn to the south of the house, but according to the owners (Peter McCurdy and Robyn Mason) this is the septic tank built with the original house.

On the northern side of the creek is a c.5m x 4m platform or landing, about 1.5m–2m high, extending into the creek, and retained with basalt stone walling 3–4 courses high. This appears to have been constructed as a bridgehead for the bridge shown in **Figure 6.13**. Surrounding this are areas of quarrying (quarry faces, a quarry pit, quarry drives and flaking floors) and a number of low walls (earthen and stone) which provided the foundations for what were probably tannery buildings.

The seawalls (i.e. the basalt walls along both sides of the Waterview Inlet) are scheduled in the Auckland Regional Plan: Coastal (item 177, Schedule 2).

Additional elements of the site are likely to be concealed beneath vegetation, or have no visible surface remains. The location of the tanning pits is not known, but it is possible that some have been filled in while others would have been destroyed during the construction of the current motorway in the 1950s (some were recorded in this area prior to construction, as noted above). Druskovich undertook detailed survey including probing and test pitting on all the properties on the northern side of Cowley St. In the properties along Cowley Street/Great North Road, where houses associated with the mill and tannery were formerly located (**Figure 6.17**) and through which the mill race once ran, Druskovich did not identify any intact subsurface remains and there were indications that the area had been levelled. However, it is possible that some deeper features may have survived in this area. GPR and magnetometer survey carried out by ScanTec in the rear of No.9 Cowley St detected a few small anomalies and a stronger anomaly which could relate to a buried metal object or services, but there were few anomalies to indicate any substantial buried remains relating to earlier occupation (see **Appendix B**).

On the eastern side of Great North Road there is little evidence today of the site of the former mill dam, but the bridge culvert through which Oakley Creek flows beneath Great North Road is a late 19th or early 20th century

feature built after January 1899 (Mason and McCurdy 2010: 18) (**Figure 6.30**). It has brick barrel vaulting and basalt walls and base. Mason and McCurdy (ibid.) suggest that the basalt used may have derived from the old mill dam. There are basalt retaining walls and basalt cobbles in the stream bed before the stream enters the culvert to direct the flow of water and protect the stream banks at this point. The western end of the culvert is built of concrete and would have been constructed at a later date when the road was widened.

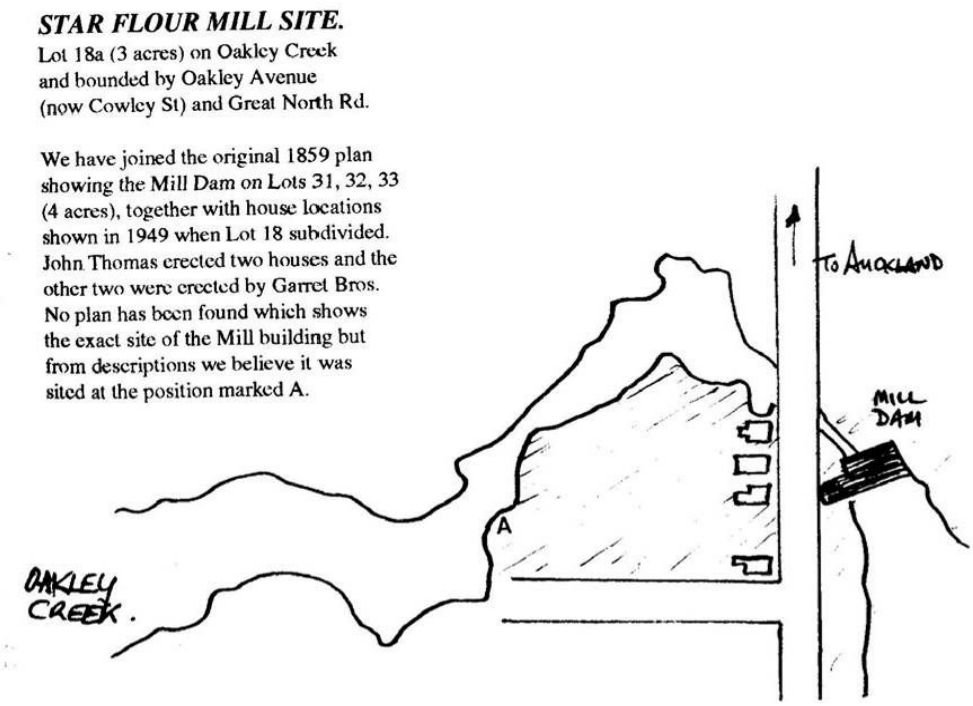

Figure 6.17: Location of workers' houses and dam along Great North Road and approximate position of mill (A) (from Price 1993:53)

Figure 6.18: Plan of the Waterview Inlet Heritage Area containing Site R11/2191 (mill/tannery/ quarry), R11/2203 (Maori settlement), R11/2202 (midden/karaka trees) and R11/2459 (midden). (Plan compiled by Thorne Archaeology, Bioresearches and Beca). Nos. 15 and 9 Cowley Street are marked. See enlarged sections in Figure 6.19 – Figure 6.22

Figure 6.19: Detail showing the mill site south of Oakley Creek (rock walls, wheel pit, boiler and boiler pieces) and the northern bridgehead surrounded by collapsed rock. Nos. 15 and 9 Cowley Street indicated

Figure 6.20: Detail showing the western part of the Waterview Inlet Heritage Area north of Oakley Creek (areas of midden, quarried rock, rock walls and alignment, boat slips and a tentatively identified 'quarry drive')

Figure 6.21: Detail showing the central part of the Waterview Inlet Heritage Area north of Oakley Creek (midden and pits, northern bridgehead and seawalls, boat slips, low earthen walls, and old quarry features including a pit, areas of benching and a topsoil mound)

Figure 6.22: Detail showing eastern part of the Waterview Inlet Heritage Area north of Oakley Creek (low earthen walls, midden, rock wall, and old quarry features including areas of benching and terracing, mounds and a pit)

Figure 6.23: The inlet formed by the construction of a basalt lined wheel pit for the original mill; views to the north (left) and to the south (right)

Figure 6.24: View of wheel pit at low tide showing stonework. The vegetated bridge abutment across the creek can be seen in the background of the general view on the left

Figure 6.25: Remains of the Cornish boiler and concrete foundations (photo on right courtesy of Robyn Mason and Peter McCurdy

Figure 6.26. Views of the creek from the current cycleway bridge over Great North Road, looking west (right: close-up showing a deposit of cut basalt in the creek)

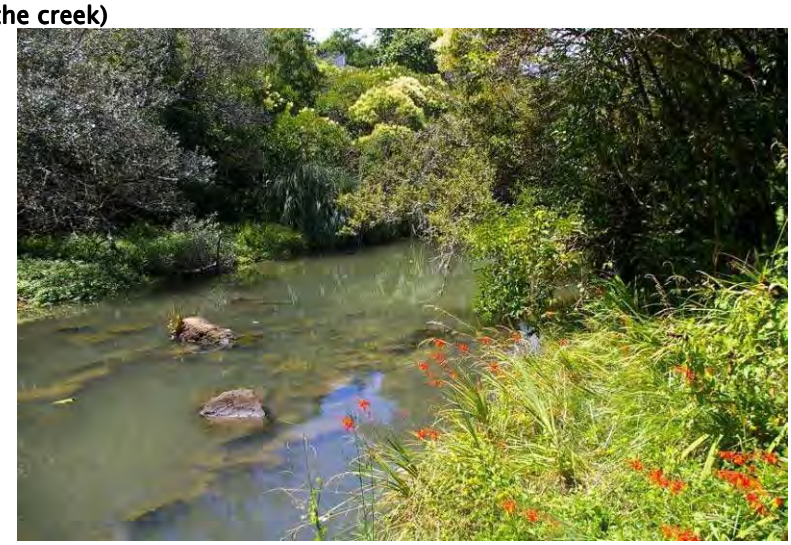

Figure 6.27: Low tide, showing the heavily vegetated northern bridge abutment (left) and cut basalt boulders some 50m upstream (right)

Figure 6.28: Brick and iron debris on the northern side of the creek (left) next to low earthen walls (right)

Figure 6.29: Northern side of creek: close-up of stone mason's flaking floor near quarry (left) and midden eroding below the pits in site R11/2203 (see also Figure 6.21)

Figure 6.30: View of the old dam site (in the foreground in the view on the left) and the basalt and brick bridge culvert through which Oakley Creek flows beneath Great North Road, from the east

6.5.2 R11/2203 (Settlement)

The remains of a former Maori settlement (R11/2203) and two possibly associated midden sites (R11/2202 and R11/2459) have been recorded in the same general location as the tannery and quarry site (R11/2191), on the northern side of the Creek (**Figure 6.18** and **Figure 6.20–Figure 6.22**, **Figure 6.29**).

The northern part of site R11/2203 has been quarried away, but the surviving features consist of two living terraces and (on one of the terraces) two pits measuring 4m x2m and 1.5 x 0.5m in size. The smaller pit had a tree growing at one end. Part of a third possible pit cut by the quarry is located to the north of the two pits. Thickly deposited intact midden was found on the slopes below the pits, and on slopes to the west, while scattered midden occurs throughout the whole area. A sketch plan of the features of R11/2203 by Druskovich is shown in **Figure 6.31.**

Further to the east, another concentrated area of midden (R11/2202), associated with karaka trees, may be related to the settlement site. The midden predominantly contained cockle, and was visible over a distance of 20m along the foreshore bank, extending inland up to 3m and with deposits up to 20cm thick. The midden also contains fire-cracked rock and ashy deposits, indicating cooking activities. A number of karaka trees are growing nearby – groves of karaka trees often indicate areas of former settlement, although the trees present today are not particularly old. Further east again, site R11/2459 is a small remnant cockle midden on a steep bank, the rest of the site having been destroyed by quarrying activities.

While the three pre-European sites have been given separate site numbers from each other and from the mill/ tannery/quarry site, they are all found within the same general location (referred to in this report as the Waterview Inlet Heritage Area). This is the area shaded in **Figure 6.10**, which should be recognised as an archaeological landscape with the potential to provide significant information relating to occupation of the area over a few centuries.

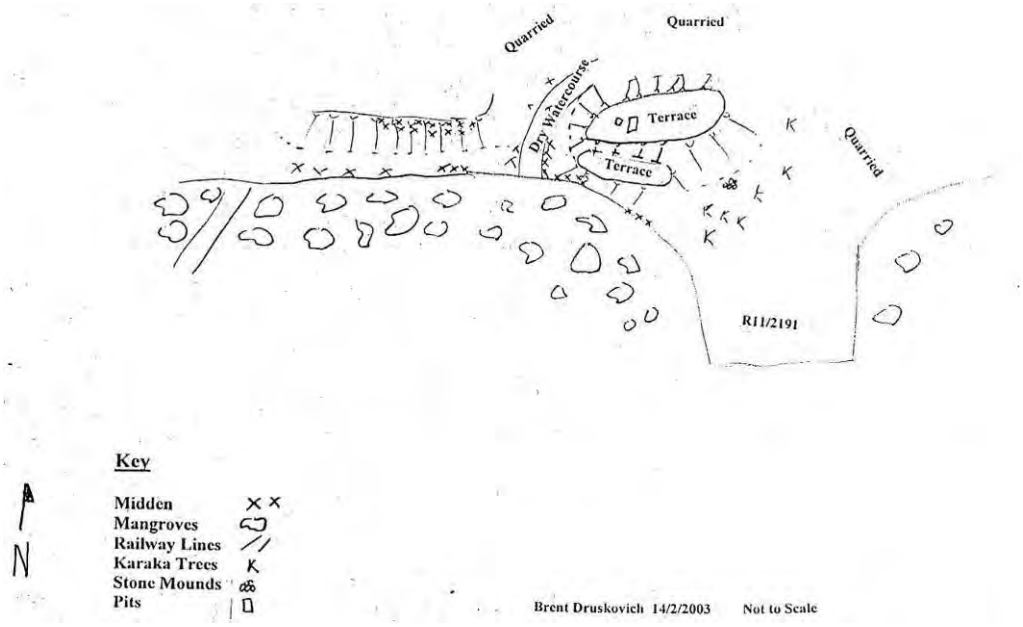

Figure 6.31: Sketch plan showing archaeological features of site R11/2203 (from NZAA site record by B. Druskovich); note that the 'Dry Watercourse' is in fact a track and boat slip

6.5.3 R11/2213 (Stone Wall)

The historic drystone wall is located near the Great North Road Interchange area (**Figure 6.32**). Research was carried out to establish its history and significance as it had the potential to be affected by the roading project. Early plans were examined for information about the date and function of the wall.

A comparison of plans dated to around 1882 (**Figure 6.14**, above**)** and 1891 (**Figure 6.11**, above) shows that the area in which site R11/2213 is located was in allotment 20, to the northwest of allotment 19. A street that later became Smale Street is identifiable within allotment 20 on both these plans, and is seen to extend to the coastline. This is not the case today, as the eastern end of Smale Street currently finishes at Hawea Road (compare **Figure 6.32**). Another plan dated to 1882 (**Figure 6.33**) shows early stone walls in the area on a similar alignment, defining the boundaries of allotment 19, but these are further to the southeast and east in the area of the current Great North Road Interchange, and are not the stone wall R11/2213. However, an early 20th century plan (**Figure 6.34**) shows an 'old stone wall' along what was then Seymour Street and later became Smale Street, in approximately the area of R11/2213. This end of Smale Street no longer exists, but evidently a part of the wall that once ran along it still survives.

It has not been possible to establish the date of R11/2213 on the basis of historic plans. The wall was built on a similar alignment to Smale, Miller and Albert Streets and reflects the orientation of the property divisions and roads in this area (see **Figure 6.32** and **Figure 6.14**). It is likely to be of similar date to the 19th century walls to the east and southeast shown on the 1882 plan (**Figure 6.33**), but this cannot be confirmed. It is now an isolated feature in an otherwise modern landscape, and has lost its historical context. It has been suggested that the wall was constructed to keep stock out of the mudflats and to halt erosion or keep the tide out of low lying pasture (Bioresearches 2010: 17). The latter two suggestions seem less likely explanations, but the wall may well have been built to keep stock in.

The drystone wall is on the boundary of the construction footprint and will be partly (at its western end) affected by SH16 tie-in works **(Figure 6.10, Figure 6.35**). The wall is accessed by a walkway that extends from the end of Smale St towards the mangrove swamp at the intertidal zone of the Waitemata Harbour. The walkway is adjacent to property boundaries, running in an east-west direction. On the other side of the path is a public green grass belt that separates the walkway and properties from the motorway. The grassed area is terraced, and slopes steeply towards the motorway, and at its base is a stream, that divides the grassed area in two. The stream flows out into the Waitemata Harbour and has created a marshland around its edges. The stone wall is located on a spur of dry land that stands within this marshy intertidal zone. The wall extends west for approximately 130m, along the dry land and into the wet mangrove zone at the edge of Waitemata Harbour.

The underlying geology of the area is volcanic in origin, and the construction of wall R11/2133 reflects the local geology, being made from roughly hewn basalt or basalt cobbles. The historic basalt quarry within the Star Mill/Garrett Tannery site R11/2191 is located nearby to the southeast of site R11/2213, on the southern side of the motorway, and it is possible that the stone for the wall was obtained from this local source.

The historic drystone wall clearly relates to the early European pastoral landscape. It is possible that local Maori would also have utilised the underlying basalt, prior to European land use, for garden boundary walls in this area. However, due to subsequent changes in land use in the Waterview/Point Chevalier area, including European farming and industry and subsequent intense residential development, any evidence of this would probably have been destroyed.

The wall today is a 130m long dry stone wall on a small island of dry land within a mangrove swamp and small drainage channel that empties into the Waitemata Harbour, some of the area being very overgrown (**Figure 6.36**, **Figure 6.37**). The wall is typically between 1m and 1.2m high, c.1.2m wide at base and 0.6m wide at top. However at the western end the wall narrows and reduces in height and extends for c.4-5m into the mangroves and mudflats (this section being c.0.8m wide and c.0.4m high).

Two sections of the wall were examined in detail (**Figure 6.35**). A description of the construction type and condition of the wall based on this examination is provided in **Appendix C**. Section 1 was found to be in moderate condition with some evidence of rebuilding (**Figure 6.38**). Section 2 was in very good condition with little evidence of repair (**Figure 6.39**).

Figure 6.32: Modern street map, showing approximate location of stone wall R11/2213

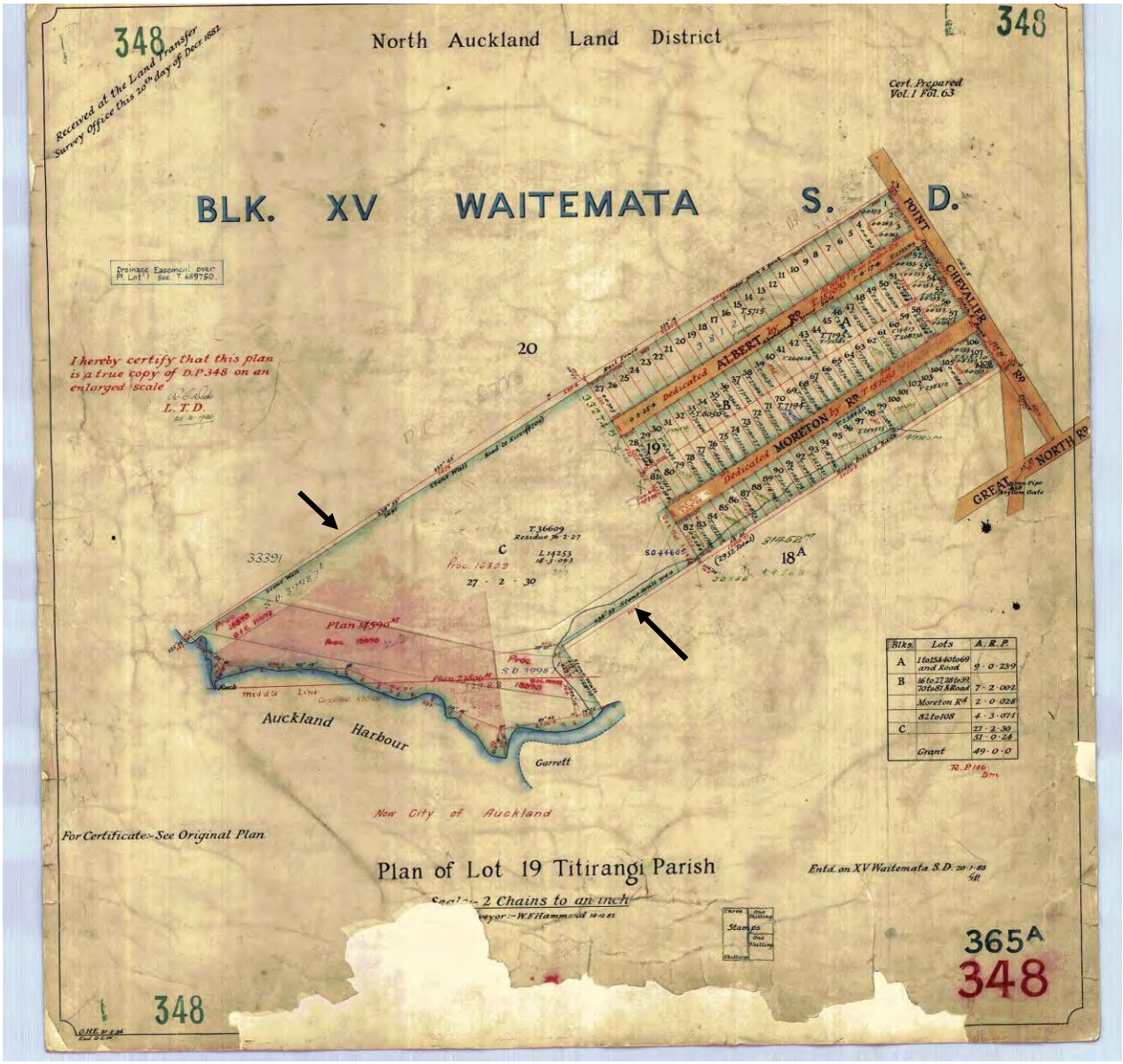

Figure 6.33: DP 348 dated 1882 showing stone walls (arrowed) on the boundaries of allotment 19 (compare Figure 6.11 above) across what is now the Great North Road Interchange

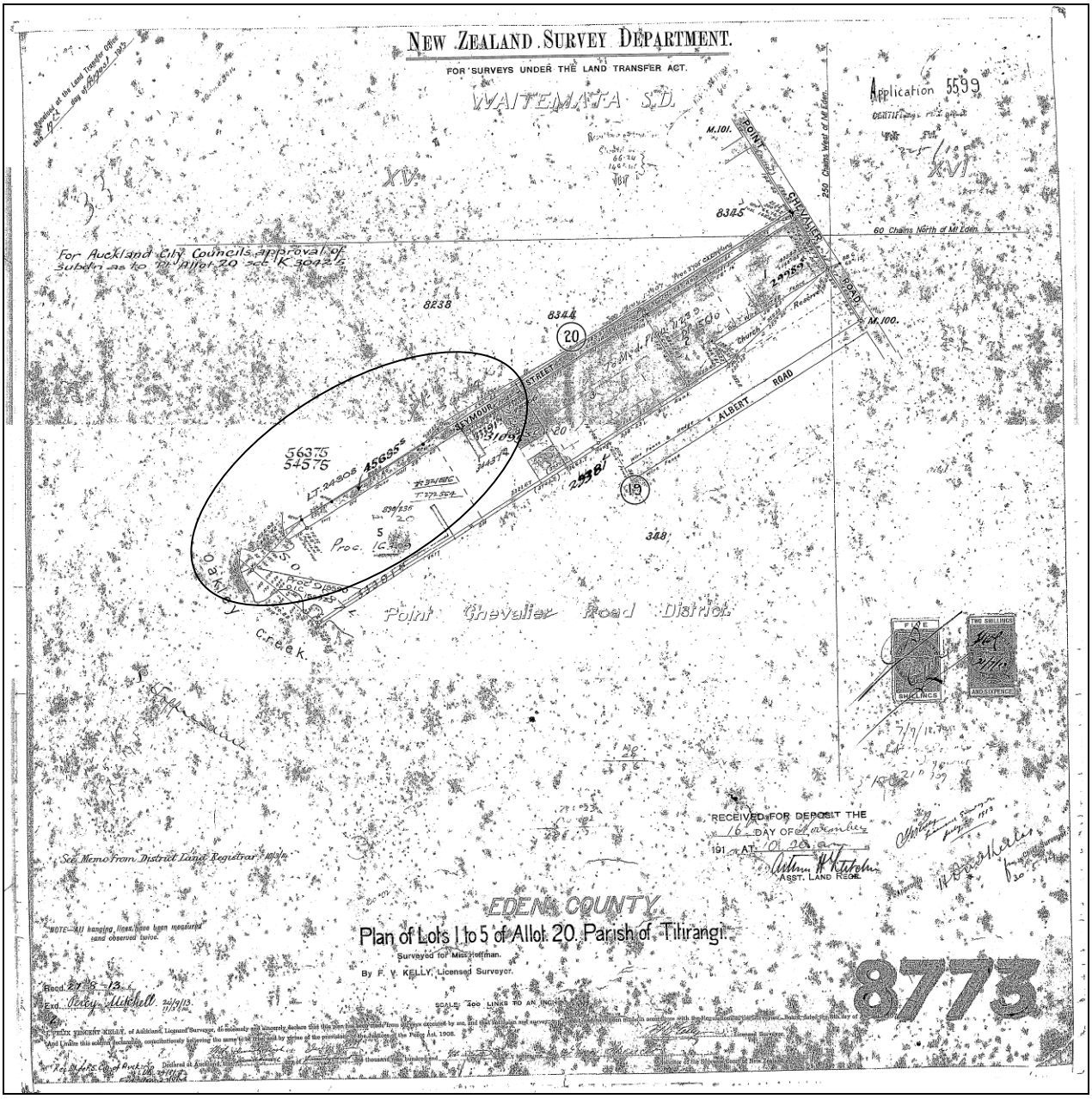

Figure 6.34: DP 8773 (north of DP 348) dated 1913, showing a stone wall north of Albert Road along Seymour Street (which was later renamed Smale Street) (compare Figure 6.33). This wall appears to be R11/2213, although the street no longer extends this far

Figure 6.35: Location of stone wall R11/2213, and wall sections surveyed in detail

Figure 6.36: View of the location of the eastern end of stone wall R11/2213 (arrowed), and vegetation growth

Figure 6.37: Recording R11/2213

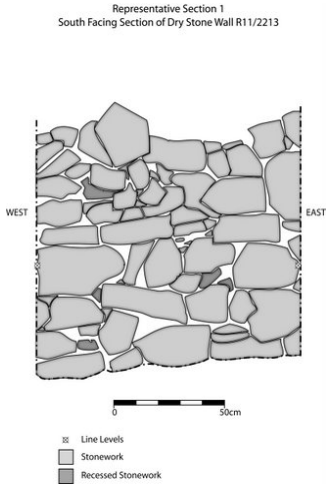

Figure 6.38: R11/2213 stone wall Section 1

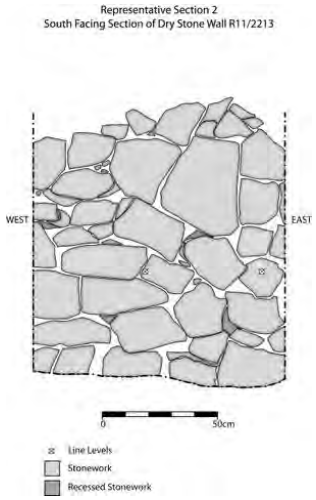

Figure 6.39: R11/2213 Section 2

6.5.4 Carrington Hospital

Carrington Hospital, now part of the Unitec complex at Point Chevalier, was built in 1865. It was variously known as the Whau Asylum, the Avondale Mental Hospital, the Avondale Lunatic Asylum, and the Oakley Mental Hospital.

Allotment 30 (see **Figure 6.11**, above), an area of 30 acres, was acquired by the Auckland Provincial Council in 1863, and in the following year it was proposed that a new Mental Hospital (replacing one in the Auckland Domain) should be built there. The main block of the hospital was a large brick building, and it was opened in 1867. More land was subsequently acquired to the south of the original block of land, including allotments 31-33. It became the largest such facility in the country and by 1900 had a staff of 31 men and 21 women (Dragicevich 2007: 9-10).

At the time it was built it was considered to be the largest building in New Zealand. The original building was designed by James Wrigley (a well known Auckland architect who also designed the Northern Club in Princes St), and in accordance with its main purpose of 'confining' mental patients, it was an impressive prison-like structure with a frontage of polychromatic brickwork, a slate roof and gothic windows (now replaced). The red and yellow bricks used in its construction were made on the site and at Dr Pollen's brickworks on the Rosebank Peninsula. It was gutted by fire in 1877, but was reconstructed and added to without altering the facades. It has had numerous additions since that date, but all have been largely in keeping with the design of the original main block (Salmond Architects n.d.; ARC CHI no.2504).

In 1986 it was registered as a Category 1 Historic Place under the Historic Places Act by the NZHPT (reg. No. 96), and is a Category A scheduled item in the Auckland City District Plan (D04-1). The building itself is well outside the construction footprint, but the scheduled surrounds extend to the existing motorway and will come partly within the footprint, which extends slightly to the south of the existing motorway (see **Figure 6.10).**

6.5.5 Military Camp

Druskovich (Bioresearches 2010: 18) noted the approximate location of a former artillery camp dating to the period of the Land Wars within the Unitec (former Carrington Hospital) grounds. The information on the camp comes from Walker (1961: 11) who stated that '*Captain Mercer with a battery of six guns was encamped on the site of the Mental Hospital'*. They fired at targets a mile away towards Point Chevalier (where an artillery range was noted in early plans). Druskovich found nothing to indicate where the camp may have been located, and considered it likely that it was either where the motorway is located, or between it and the hospital buildings.

6.6 Sector 6 (SH16 to St Lukes)

There are no known archaeological sites within Sector 6 (Figure 6.40). Review of historic plans by Druskovich (Bioresearches 2010) indicated that this area was largely farmland prior to 1900. Earthworks have been carried out over most of the construction footprint.

Figure 6.40: Sector 6 construction footprint

6.7 Sectors 7 and 8 (Great North Road Underpass/Avondale Heights Tunnel)

A number of archaeological sites have been recorded close to the banks of Oakley Creek, an important communication route between the coast and inland areas such as Owairaka (Mt Albert) in the past (see **Figure 6.41, Figure 6.42, Table 8**). Along or close to the creek (in most cases on the eastern bank) there are many sites relating to Maori occupation, including midden, pits and terraces. There are also sites relating to early European industry and farming, including a possible mill site and drystone walls.

This Oakley Creek area was identified at an early stage in the project as an area of archaeological sensitivity, particularly along the northern part of these sections, where the Maori habitation sites are scheduled in the Auckland City District Plan (item D04-19). The cut and cover section of the underpass in Sector 7, however, is to the west of these sites and the remainder of the route in Sectors 7 and 8 will be tunnelled to create the underpass and would not affect any of the sites. Three midden sites (R11/519-520, 2109 and 2497) and one series of drystone walls thought to be part of a stockyard (R11/2207) are located above the boundaries of the subsurface tunnel footprint.

One site (R11/2383, a hole or cutting in the stream bank) is within the Oakley Creek Esplanade Reserve construction yard, but close to its boundary, and can be avoided.

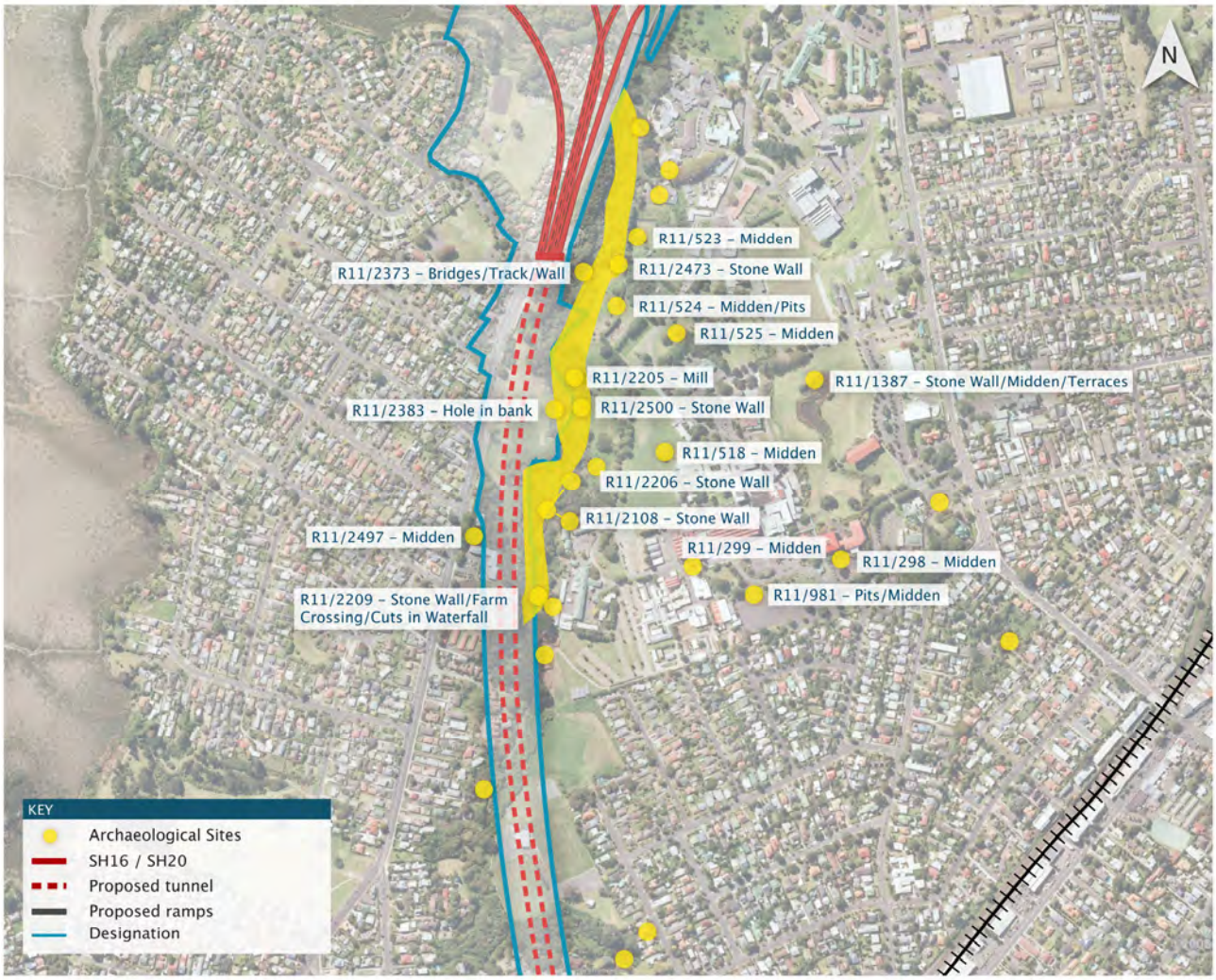

Figure 6.41: Locations of recorded archaeological sites in Sector 7 in relation to the construction footprint

Figure 6.42: Locations of recorded archaeological sites near Sector 8 in relation to the construction footprint

Table 8: Summary description of recorded sites in Sectors 7 and 8

Site	Description	Condition	Relationship to Construction Footprint
R11/518 Midden	This site was recorded in 1975 on the east side of Oakley Creek, just inside the Oakley hospital grounds. Described as a small surface exposure of shell fragments c.2m x2m below a fence. By 2003 the fence had gone and the site could not be relocated.	Either destroyed or obscured by vegetation	East of construction footprint
R11/519 Midden	This is the same site as R11/520. On the eastern bank of Oakley Creek, in Oakley Hospital grounds, on an 18m x 11m protrusion of the flat bank top towards the	Some erosion and slumping	Above eastern boundary of subsurface construction footprint

	creek edge. In 1975 it was described as a minute area of exposed shell 1m in diameter x 0.25m deep. Resurvey in 2003 established that midden was also scattered along the bank between this site and R11/520 over at least a 38m x10m area, and that further subsurface deposits were present		
R11/520 Midden	This is the same site as R11/519 – see above. Originally described in 1975 as an extensive slump deposit over 25m, with the main deposit probably still in situ under topsoil	Some erosion and slumping	Above eastern boundary of subsurface construction footprint
R11/524 Midden/ Pits	On the east bank of Oakley Creek. Slumped midden (c.9m x 14m area). Vaguely defined pits observed under vegetation in 1981 were not visible in 2003, by which time the area was regularly mown.	Some erosion and slumping	East of construction footprint
R11/525 Midden	On the east bank of Oakley Creek. In 1981 it was described as a very small scatter of shells by the path leading into the paddock on the southern side of the gateway into the southern block of Oakley Hospital. It was not visible when revisited in 2009, as the area was obscured by vegetation	Not known	East of construction footprint
R11/2108 Stone Wall	Stone walls between Unitec and Oakley Creek alongside a path where a footbridge crosses Creek below the falls. A remnant drystone wall runs parallel to the Creek for c.80m, and is cut through by the Oakley Creek walkway. Its height is depleted in places especially at the northern end. At the southern end is another wall at right angles to the first, running for 30m to Unitec – this then intersects with a 20m drystone retaining wall at the top of the bank. Other drystone walling of more recent date has also been added	Good	East of construction footprint
R11/2109	On the eastern side of Oakley Creek. It was recorded in 2000 as a fragmentary and	Destroyed	Above western boundary of subsurface construction

Midden	redeposited shell midden, with some blue bottle glass and small pieces of broken china also visible. It is thought to have been a former midden destroyed by recent earthworks		footprint
R11/2205 Mill	The site consists of drystone platforms on both sides of Oakley Creek. On the eastern side the platform is 1.5m high and 5m wide, with two drystone walls extending east for about 25m from the platform. A boiler is also present, and about 20m downstream an old riveted rusting coalbox was noted. On the western side was a smaller platform and stone edging, and a track that may once have been a dray track rising to Great North Road. There has been some damage to the site from a stormwater drain. The description of these remains as a mill must remain tentative as there is no indication of any mill race or dam and most of the associated artefacts are amongst general rubbish dumped down the bank from the hospital over many decades. Nor are there any archival references to a mill in this location.	Good	East of construction footprint
R11/2206 Stone Wall	A drystone basalt wall running perpendicular to Oakley Creek, rising up the valley's bank, within Unitec grounds. 1.5m wide and 1m tall, covered in vegetation	Good to excellent	East of construction footprint
R11/2207 Stockyard/Pen	A series of drystone walls adjacent to the eastern bank of Oakley Creek over an area of c.30mx40m. The walls ranged from 0.2m to 1.3m in height and 0.5m to 2m in width. They are thought to relate to 19th century farming, and may have served as a rudimentary stockyard or pen	Mainly good to excellent, but some areas damaged	Above eastern boundary of subsurface construction footprint
R11/2208 Stone Wall	Drystone basalt wall forming the boundary between Phyllis St Reserve and residential properties on Newcastle Terrace. Likely to have been a 19th century paddock or boundary fence, typically c.1m high and	Mainly good to excellent, in places rebuilt or added to	East of construction footprint

	0.9m across		
R11/2209 Stone Wall/ Farm Crossing?/ Stone Cuttings	Located at a waterfall and basin below, on Oakley Creek. A curved drystone retaining wall runs for 30m around the eastern side of the creek, c.1.2m tall and 0.5m wide, depleting to 0.4m in height at the northern end. To the north of the wall is a collapsed creek crossing, of more recent date, built of basalt encased with iron reinforced concrete. The waterfall bedrock has a channel cut into it and cuttings for piles are found across it.	Wall mainly good to excellent, farm crossing(?) broken and subject to flood damage, sandstone cuttings eroding	East of construction footprint
R11/2210 Pit/ Terraces	On the eastern side of Oakley Creek on slopes high above the waterfall. The site consists of two terraces, one with a pit on it. Both terraces are uneven and may be slumps, but appear to be built. The banks above have material which includes shell fragments bulldozed from the Unitec grounds and pushed down the banks. May have been part of the R11/519-520 site	Fair	East of construction footprint
R11/2211 Stone Wall	Originally recorded as a 19th century stone wall, but on later inspection found to be a post 1925 feature	n/a	East of construction footprint
R11/2247 Historic Quarry/ Railway Bridge/ Embankment	The quarry is a large hollow basin recently occupied by homeless people between the railway lines and Oakley Creek near Pak & Save. The quarry is indicated on 1914 plan DP9656. The quarry face has a 25cm square hole to slot in a beam and some large iron pipes on the slopes above. The base of an old rail bridge for crossing Oakley Creek is located near the current bridge on the eastern side of the creek (concrete with square hole), and a drystone faced embankment with a flat top is located behind this, with small sections of rail visible, indicating an earlier railway alignment	Fair, but overgrown	West of construction footprint
R11/2248 Midden	On the eastern side of Oakley Creek, in the backyard of 8 Phyllis St. Mainly cockle and	Disturbed by gardening	East of construction footprint

	pipi with some scallop, and charcoal flecks		
R11/2373 Bridges/Track/ Wall	Two sets of bridge abutments, one of 19th century date built of local basalt, the other probably mid 20th century of concrete. There is also a large drystone retaining wall on the eastern side of the creek where a track has been cut leading to the bridges	Only bridge abutments survive, wall damaged by tree roots	East of construction footprint
R11/2383 Hole in bank	In the western bank of Oakley Creek is a hole c.1m deep, 1m wide, 1.5m high, deliberately constructed. It may have been dug to widen the creek flat for a nearby possible mill site (R11/2205), or it may relate to pre-European occupation	Good	Within Oakley Creek Esplanade Reserve construction footprint
R11/2473 Stone Wall	On the eastern side of Oakley Creek. A drystone wall c.7.7m long, 1.2m high, retaining a track that was probably associated with site R11/2373	Excellent	East of construction footprint
R11/2497 Midden	On the western side of Oakley Creek, near the walkway connecting the student accommodation block to the walkway between Oakley Creek and Great North Road. Small remnant cockle and oyster midden less than 0.5x0.5m in size.	Largely destroyed by earthworks	Above western boundary of subsurface construction footprint
R11/2500 Stone Wall	On the eastern side of Oakley Creek. A drystone wall possibly built in two phases	Good	East of construction footprint

6.8 Sector 9 (Alan Wood Reserve)

There are no known archaeological sites within Sector 9 (**Figure 6.43**), although an artefact findspot (R11/57) has been recorded to the southwest (approximately midway between Sector 9 and Mt Roskill). The artefacts recovered were described as wooden implements for maize grinding from the 'mission swamp'. Much of this area is former swampland unsuitable for human habitation in the past, as noted in the original survey report (and as shown in **Figure 6.44**). The only archaeological evidence that might be present in areas of former swamp would be isolated artefacts, although the likelihood of any being discovered is considered 'low to remote' (Bioresearches 2010). The route in these sectors was surveyed in 2003, and no sites were identified. Private properties were not inspected but it is unlikely that any archaeological sites would be present. There has been considerable modification from development in the south-eastern part of Sector 9.

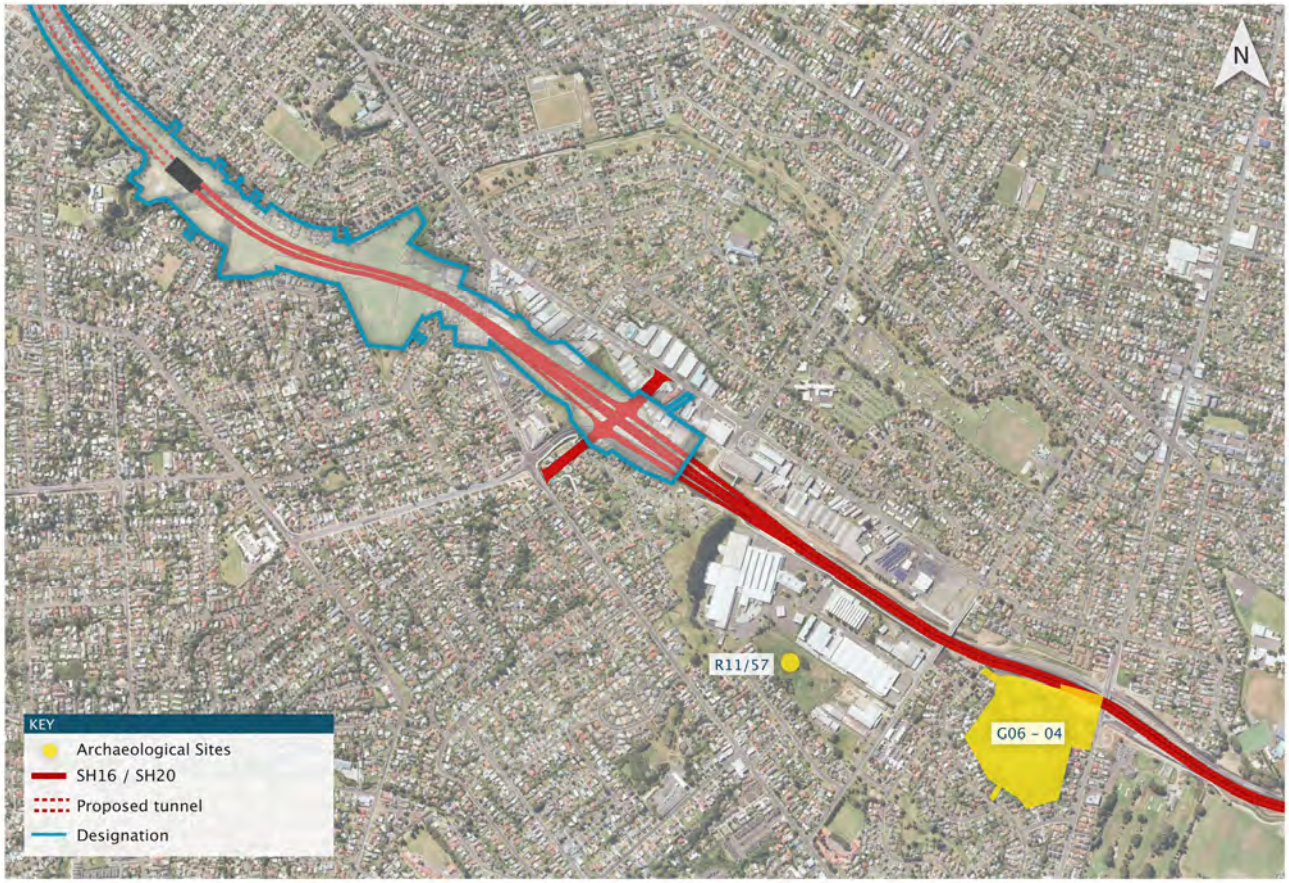

Figure 6.43: Construction footprint in Sector 9

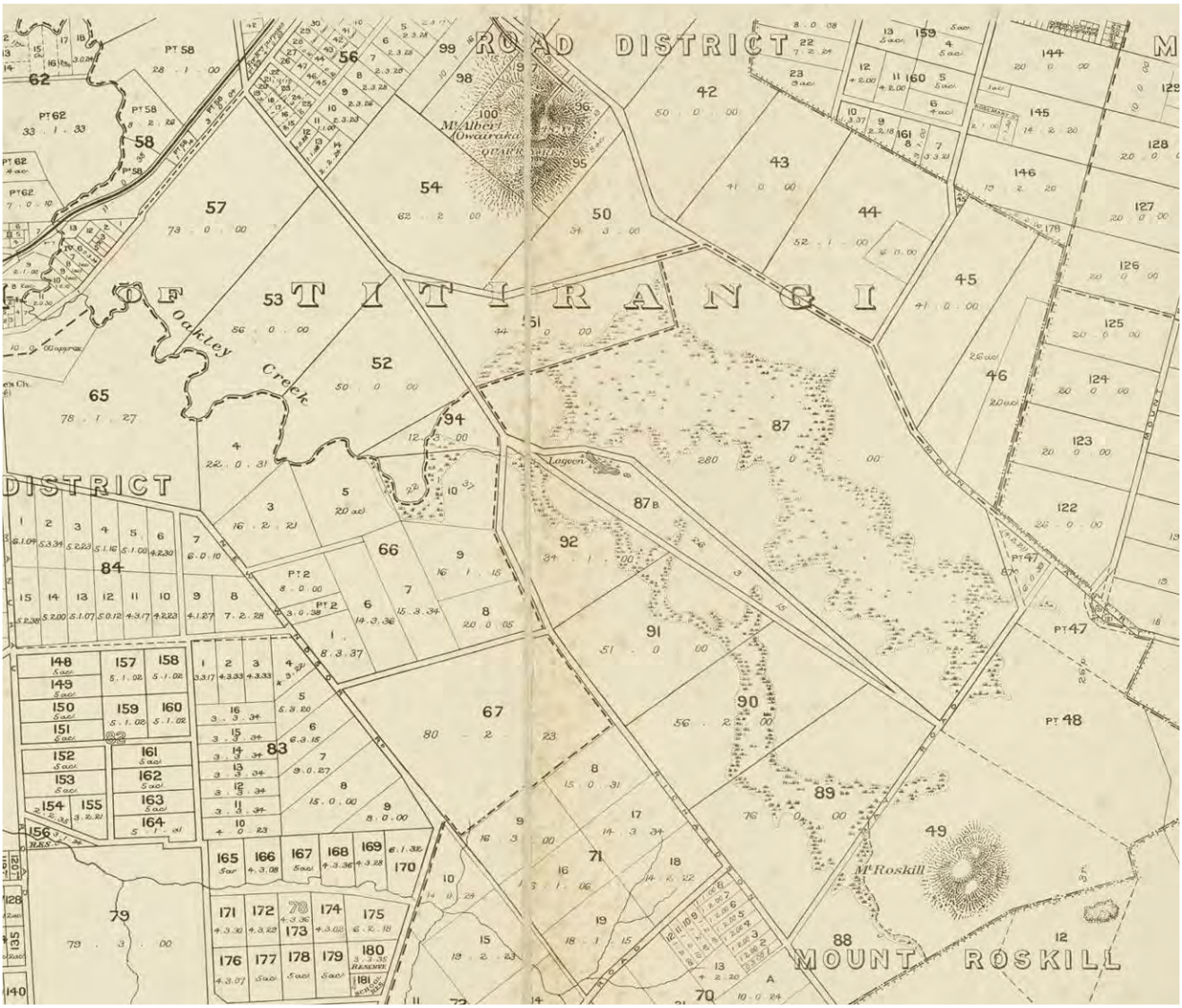

Figure 6.44: Detail from 1892 plan, showing swampland to the northwest of Mt Roskill (Eden Roll 46, Auckland Public Library NZ Maps 4786)

7. Assessment of Effects

7.1 Maori Cultural Values

This is an assessment of effects on archaeological values and does not include an assessment of Maori cultural values. Such assessments should only be made by tangata whenua. Maori cultural concerns are likely to encompass a wider range of values than those associated with archaeological sites.

The works will affect some archaeological sites with Maori cultural associations. Specific consultation with tangata whenua will be required in relation to effects on these sites. Consultation with tangata whenua is ongoing and cultural values will be documented elsewhere.

7.2 Archaeological Value and Significance

Assessment of the effects of the project on archaeological values must be based on an understanding of the archaeological value and significance of the sites within the project area. The archaeological value of sites is based on the extent to which they can provide information relating to local, regional and national history through the use of archaeological techniques. Archaeological value depends on factors such as the complexity, condition, rarity, date, and context of sites. Generally pa and large settlement sites are more complex and have higher information potential than small midden sites (unless of very early date), for example, while a demonstrated relationship between a group of sites increases the value and significance of the individual sites. The surviving extent and condition of sites are the main factors in their ability to provide information through archaeological investigation.

The archaeological value and significance of the recorded sites within the project area is variable. Some of the recorded sites have been destroyed (e.g. some of the sites in Sector 3 and Sector 5 that were affected by previous roading works) or are of minimal archaeological significance (e.g. small eroded midden or a historic landing where no physical remains are apparent), while others still retain components capable of providing significant information relating to the history of Auckland (for example the mill/tannery/quarry site and earlier Maori settlement site in the Waterview Inlet Heritage Area in Sector 5). The significance of individual sites that have the potential to be affected by the project is discussed further below.

Archaeological sites may also have heritage landscape value as visible elements within the landscape, and a range of associative values such as cultural value to Maori or other groups, historical value, amenity value, and educational potential.

The heritage significance of some of the archaeological sites and one heritage building in the vicinity of the project area has been recognised in the relevant District or Regional Plans or by registration under the HPA (see **Table 9**). However, not all sites assessed as having heritage significance are currently scheduled or registered.

Table 9: Scheduled or registered archaeological sites and heritage buildings within or close to the construction footprint

Sector	Site	Scheduled/Registered
1	R11/1724 Auckland Brick & Tile Co. brickworks and wharf site, Harbourview Estate, Te Atatu Peninsula	Waitakere City District Plan, item 327 Auckland Regional Plan: Coastal, Schedule 2, item 333
3	R11/2504 Tramway and limeworks, Pollen Island	Auckland Regional Plan: Coastal, Schedule 2, item 636
5	R11/2191 Thomas's Mill (Star Mills)/Garrett Brothers Tannery/Quarry site, Waterview	Auckland Regional Plan: Coastal, Schedule 2, item 177 (sea walls)
5	Carrington/Oakley Hospital, 1-62 Carrington Rd	Auckland City District Plan Isthmus Section, item D04-1, Category A (building and surrounds extending up to the existing motorway) NZHPT Category I registered Historic Place no.96
5, 7	Oakley Creek Maori habitation sites (not individually defined)	Auckland City District Plan Isthmus Section, item D04-19

7.2.1 Sites Relating to Maori Occupation

While there are numerous recorded archaeological sites relating to earlier Maori occupation within the project area, past development and roading works have taken their toll, destroying or damaging many of them.

This applies to most of the sites on the Rosebank Peninsula (Sector 3), where the midden sites have largely been modified or destroyed and now have limited archaeological value in terms of the information they could provide (particularly R11/74, 1698, 2212, 2253 and 2550). The exception to this is site R11/2507, a recently recorded midden in relatively good condition, and there may still be intact subsurface deposits or features at sites R11/444 and 2216. However, even these sites can only be considered to be of limited archaeological significance in terms of their size and information potential. The sites on the peninsula probably represent seasonal rather than permanent occupation, based on gathering the local resources. These would mainly have been fish and shellfish, but the Whau portage was also known to have been a favoured area for catching Godwits (Simmons 1987:10, cited by Druskovich).

In Sector 1 the five midden sites (R11/458, 459, 460, 2503 and 2549) recorded to the north and south of the construction footprint are less damaged than most of those of the Rosebank Peninsula, but are generally small

and eroding or stock trampled deposits that must also be considered to be of limited archaeological significance. However, R11/459 and 2503 may be associated with further archaeological evidence on the banks above the slopes in which they are visible.

The sites along the Waterview Inlet and Oakley Creek to the south of the Great North Road Interchange have greater archaeological value, both individually, because many still retain intact deposits, and collectively as an associated group of sites that have retained their context within the landscape.

Those on the east bank of Oakley Creek are scheduled as a group in the Auckland City District Plan, although the condition of some of the sites is damaged or currently unknown. These sites are located mainly on the eastern bank of Oakley Creek, and demonstrate a greater range of settlement features, including pits and terraces, as well as midden. They comprise midden sites R11/521, 522, 523 in Sector 5; and in Sectors 7 and 8 midden sites R11/518, 519-520, 525, 2109, 2248, 2497, midden/pit site R11/524 and pit/terrace site R11/2210.

The settlement area to the north of the Waterview Inlet (R11/2203, with possibly associated midden sites R11/2202 and 2459), although not currently scheduled, has a greater complexity of features than any of the other sites recorded further up or down the creek, including terracing, pits, midden, stone mounds and karaka trees (which are often associated with Maori settlement), and probably represents longer term (or more frequent) occupation. The features themselves have moderate archaeological significance (in particular R11/2459, which has largely been destroyed by quarrying), but should be seen as part of a significant Waterview Inlet Heritage Area that also includes the Star Mill/Garrett Tannery/Quarry site R11/2191 (see below).

Other midden sites on the north and south banks of the Waterview Inlet to the west of the settlement, however, have limited archaeological value. On the north these comprise R11/2214 and 2215 within the Great North Road Interchange area, which have probably been destroyed, and R11/2204 which is eroding and in poor condition. To the south of the inlet the sites comprise: R11/2199, 2200 and 2201 (which have been damaged by track cuttings and the extent of any intact remains is unknown); R11/2231 (which is in poor condition) and R11/1452 (the current condition of which is unknown).

7.2.2 Sites Related to Dr Daniel Pollen on the Rosebank Peninsula

The association of sites with noted individuals adds to their archaeological and historical significance. In the 1850s the northern end of Rosebank Peninsula was acquired by Dr Daniel Pollen, a medical doctor and entrepreneur who was at one stage Premier of New Zealand. The sites of his house (R11/1699), associated landing (R11/2508) and brickworks (R11/1509) have been recorded on the peninsula. Significant archaeological remains of these sites, however, are only likely to have survived at the brickworks site (Best 1993), which is located some distance from SH16 (it is to the south of the area shown in **Figure 6.8**).

The house site R11/1699 was excavated when the Rosebank Road off-ramp was constructed, probably removing all of the archaeological remains, and there are no visible remains of the landing. These two sites are therefore of limited archaeological value and significance.

7.2.3 Star Mill/Garrett Tannery/Quarry Site (R11/2191)

The flourmill, tannery and quarry site retains substantial archaeological remains relating to all three industries, and has the potential to provide significant information relating to the history of the area and wider region. It is the only known flourmill site in Auckland City with any significant surviving remains. It is technologically significant because it was one of relatively few early water-powered flourmills in Auckland City, and because it was later adapted for use as a bark mill for the tannery operation. It is historically significant because of its early date (the original flourmill having been established in 1859); its association with known individuals (John Thomas and the Garrett Brothers); the way its history reflects the economic vicissitudes of the 19th century; and its socioeconomic contribution to the development of the Point Chevalier/Waterview area.

The significance of the site was recently (September 2008) assessed by Clough & Associates for Auckland City Council as part of a wider review of archaeological sites in Auckland City, using significance evaluation criteria developed for the project (Bickler, Clough and Tatton 2009). For the purposes of that assessment the site also included the Maori habitation elements R11/2203 (settlement), R11/2202 (midden/karaka trees) and 2459 (midden). The site was assigned a score of 100, indicating that it merits scheduling on the District Plan under Category A. While it cannot compare with nationally significant flourmill sites that have more substantial structural remains and/or greater association with significant historical events[5], it is considered to be a site of regional significance, and its basalt retaining walls are scheduled in the Auckland Regional Plan: Coastal (Category 2). If any remains of the former mill workers' houses along Cowley Street/Great North Road, or of the former mill race that ran through this area, have survived they would be considered a significant component of this site.

7.2.4 Stone Wall (R11/2213)

Stone has been utilised by populations for thousands of years for the construction of walls. In New Zealand, early settlers and farmers utilised the stone around them to construct walls that reflected the technique utilised in their home country, imprinting land division and property boundaries onto the land from early on in the development of Auckland City. Like Maori stone walls before them, walls built by early European settlers were often constructed from stone obtained through land clearance, though quarrying of stone was also practiced (as in the local basalt quarry within site R11/2191).

There are a number of recorded stone walls in the general project area, but R11/2213 in Sector 5 is one of the most extensive and best preserved examples (for other stone walls see section 7.2.5). It is an example of a type that was once commonly used for field or property boundaries over the volcanic fields of the isthmus. The wall almost certainly dates to the latter half of the 19th century. Druskovich (Bioresearches 2010) regards the extension of the wall into the mudflats as a unique feature, but this has not been confirmed through a comparative study, which would be beyond the scope of this assessment. Dry stone walling going down to the coast would certainly be rarer than normal field or property boundaries, and the c.130m remnant wall

[5] For example, Clark's Flourmill in Maheno (Otago region), Kawana Flourmill and Pipiriki Flourmill in the Manawatu-Wanganui Region, and the Phoenix Flourmill (Otago region). In the Auckland region, the Riverhead Mill has more substantial remains than the Star Mill, although much of what is there today relates to the later use of the flourmill as a paper mill in the early 20th century (Clough et al. 2005).

R11/2213 is significant locally (further afield in south Auckland there are other examples, such as those around Mangere Mountain, Puketutu and Otuataua).

However, the significance of the wall is reduced by its lack of context. As noted in a comparative assessment of the Cryers Road stone walls (East Tamaki) by Clough and Prince (2003:10): "the trend in heritage preservation is to encapsulate context or heritage landscapes rather than solitary items in an incongruous environment". R11/2213 is an isolated feature in a landscape that has already been significantly altered by the construction of SH16 and residential subdivision. No other archaeological features associated with the wall have been identified nearby. The archaeological significance of the site has previously been assessed by Clough & Associates for Auckland City Council (August 2008). The site was assigned a moderate heritage score, but did not meet the threshold for scheduling. It has some archaeological, historical and amenity value as a visible remnant of the earlier landscape.

7.2.5 Other Early European Archaeological Sites

Many of the recorded archaeological sites dating to the early European period are stone walls. Except for R11/2213 (discussed above), they are located close to Oakley Creek and are remnants of farming activities, property (or field) boundary walls, or retaining walls. They comprise R11/2108 (a freestanding wall); R11/2206 (a boundary wall); R11/2207 (a series of drystone walls thought to have been part of a stockyard or pen); R11/2208 (a boundary wall); R11/2209 (a curved retaining wall); R11/2373 (a retaining wall and bridge abutments); R11/2473 (a retaining wall) and R11/2500 (a freestanding wall). The majority are in good condition, but R11/2207, R11/2209 and R11/2373 have damaged sections, while R11/2208 has been partly rebuilt and added to. Like R11/2213 (discussed in section 7.2.4), these walls have some archaeological, historical and amenity value as visible remnants of the earlier landscape. While their context has been retained to a greater extent than that of R11/2213, they do not form a coherent and closely related group within the landscape and are considered to be of moderate heritage significance. Another recorded historic stone wall (R11/2211) was later found to be a post 1925 feature and is not considered to have any archaeological significance.

The other recorded sites along Oakley Creek consist of R11/2205 (a possible mill site with platforms retained by drystone walls and a boiler); R11/2224 (an even more tentatively identified mill site consisting of an octagonal concrete structure); and R11/2247 (a historic quarry, railway bridge and embankment). These sites are of moderate archaeological significance, and further research would be required to determine their historical significance. Site R11/2383 is a cutting or hole in the stream bank, the date and purpose of which is unknown – it has little if any archaeological value.

There are two early European sites recorded in Sector 1: R11/1724, which is the site of the Auckland Brick & Tile works; and R11/1375, remnants of a historic drainage system comprising manuka bundles and brick fragments. The Auckland Brick & Tile site has been bulldozed, and partly investigated, but is still considered to have moderate to high archaeological value in terms of the information it could provide. It has been scheduled in the Waitakere City District Plan (item 327, and in the Auckland Regional Plan: Coastal, Schedule 2, item 333). The historic drainage is of more limited archaeological significance, as it would be unlikely to provide much further information, although historic research might establish more detail.

In Sector 2 the location of an abandoned hulk (the *Edith*) has been recorded to the south of the construction footprint, but it is not considered to be an archaeological site. The vessel was constructed in 1905 and abandoned after 1925. No remains of the hulk are known to have survived.

On the Rosebank Peninsula, in addition to the sites referred to above that relate to Dr Daniel Pollen (section 7.2.2), there is a former tramway site (R11/2504), and two landing sites (R11/2505 and 2506). The tramway relates to limeworks operating on Pollen Island in the 1920s, and is a scheduled heritage site in the Auckland Regional Plan: Coastal (Schedule 2, item 636). The two landings consist of a low earthen platform possibly associated with the tramway (R11/2505) and a cutting into the foreshore bank of unknown date (R11/2506). While interesting features within the landscape, these landings have limited archaeological potential in terms of the information they could provide.

7.2.6 Structural Remains in Harbourview-Orangihina Park

The concrete foundation and brick foundations noted in the Park are not recorded archaeological sites. The concrete foundation, possibly related to a former cowshed and windmill, is identified in Waitakere City Council's Harbourview-Orangihina Open Space Management Plan (2003) as a site of potential historical interest. The brick foundations are in poor and fragmentary condition. The date of these features has not been confirmed and they are considered to be of little archaeological significance.

7.2.7 Carrington Hospital

The heritage significance of Carrington/Oakley Hospital, built in 1865 and now part of the Unitec complex, is well recognised. It has been registered as a Category I Historic Place by the NZHPT and the building and its surrounds (which extend up to the existing motorway) are scheduled as a Category A heritage item in the Auckland City District Plan.

7.2.8 Military Camp

The location of the former artillery camp dating to the period of the Land Wars was probably within the Unitec (former Carrington Hospital) grounds, but this cannot be confirmed as there are only vague references to its location somewhere near the hospital. There are no known physical remains of the camp and it does not therefore meet the criteria of an archaeological site.

7.2.9 Oakley Creek Heritage Landscape

The complex of sites located on the banks of the Waterview Inlet and the rest of Oakley Creek down to the Alan Wood Reserve can be considered a significant heritage landscape. While the pre-European sites along the eastern bank of Oakley Creek have been grouped and recognised as a heritage area in the Auckland City District Plan (scheduled item D04-19), the heritage landscape also includes many sites related to early European settlement and industry along the creek and inlet, as well as sites relating to Maori habitation to the northwest, on the north and south banks of the Waterview/Oakley Creek inlet.

The Waterview Inlet Heritage Area (sites R11/2191, 2202, 2203 and 2459) north and south of the inlet comprises a significant part of this landscape. The spatial association of Maori settlement with early historic industrial elements adds to the significance of this part of Oakley Creek.

The archaeological sites along Oakley Creek demonstrate the significance of the creek as a route through to the Maori settlement at Owairaka (Mt Albert) and its surrounding volcanic soils, but in its upper catchment the creek also reaches Puketapapa (Mt Roskill) and conceivably could have functioned as a route through to Onehunga and the Manukau Harbour. The area should be recognised as a significant heritage landscape with the potential to provide archaeological information relating not only to Maori occupation along Oakley Creek over a few centuries, but also to later early European settlement and industry.

Oakley Creek is one of a number of important waterways leading into the harbour (others include the Whau and Rangitopuni), which were essential to transport and communication in pre- and early European times and for early colonial industry, and which have significant remains of both Maori and early European settlement associated with them.

7.3 Effects of Proposal

7.3.1 Sector 1 (Te Atatu Interchange)

The proposal will have no effects on any of the recorded archaeological sites in Sector 1 (midden sites R11/458, 459, 460, 2503 and 2549, historic drainage site R11/1375, and the brickworks site R11/1724), which are all outside the proposed construction footprint. A concrete foundation noted as a heritage feature in the Harbour-Orangihina Park Management Plan (2003) and a brick foundation noted by Druskovich (see **Figure 6.1**) are both located within the park, but the proposed construction yard will occupy only part of the park, to the north of the brick foundation, and to the south of the concrete foundation, so neither of these features would be affected.

7.3.2 Sector 2 (Whau River)

There will be no effects on any archaeological remains in this sector. The only heritage site recorded in this sector is the abandoned hulk, the *Edith*, which was recorded to the south of the construction footprint and which is considered to have been destroyed as it does not appear to have any surviving remains.

7.3.3 Sector 3 (Rosebank Peninsula)

Works in this sector will affect the locations of a number of recorded archaeological sites relating to both Maori and early European settlement. However, most of the previously recorded sites have been destroyed or severely modified through earlier motorway construction or erosion.

The destroyed or heavily modified sites that come within or on the boundary of the construction footprint are R11/74, R11/444, R11/1698, R11/1699, R11/2212, R11/2216, R11/2253 and R11/2550. There may still be surviving subsurface remains associated with some of these sites (in particular at sites R11/444 and 2216), which would be damaged or destroyed by the proposed works, but if so these would be of limited extent and significance and any potential effects would therefore be considered minor.

The works will also affect the location of site R11/2508, the historic landing site associated with Dr Pollen's house. However, as there are no known archaeological remains of this site, the effects are considered to be minor (or less than minor).

To the north of the motorway, site R11/2506 (Landing) is on the boundary of the construction footprint and site R11/2507 (Midden) just to the north. These sites should not be affected by works if care is taken during construction. It is recommended that these sites are fenced off or demarcated for the duration of construction work.

Sites R11/2504 (the historic tramway) and a third landing site (R11/2505) are just outside the construction footprint and again will not be affected if care is taken. It is recommended that these sites also are fenced off for the duration of construction work.

Overall, there will be minimal effects on known archaeological remains on the Rosebank Peninsula. However, monitoring and investigation of sites affected by the construction of the motorway ramps at Patiki and Rosebank Roads did reveal the potential for further unrecorded subsurface remains to be exposed in any areas that have not already been modified by motorway construction.

7.3.4 Sector 4 (Reclamation)

Works in this sector will not affect any known archaeological remains. The three recorded archaeological midden sites (R11/2199, 2200 and 2201) are located on the southern bank of the Waterview Inlet and well to the west of where Ramp 2 crosses the Inlet.

7.3.5 Sector 5 (Great North Road Interchange)

Works in this sector will impact to some extent on the significant Waterview Inlet Heritage Area where sites R11/2191 (Star Mill/ Garrett Tannery/quarry), R11/2203 (Maori settlement), and R11/2202 (midden/karaka trees) and 2459 (midden) are located. The features of the site complex have been largely avoided by placing the supporting piers for Ramps 1-4 on the periphery of the known features of the mill/tannery and Maori settlement sites (**Figure 6.45**). However, access and machine movement during construction will need to be carefully managed to minimise adverse effects.

Ramps 3 and 4 on the southern side of the inlet will not affect any known features of the mill/tannery site, as they are located to the east of these features. These ramps, and Ramp 1, do cross the area north of Cowley Street and west of Great North Road, which was also part of the mill/tannery property, but no archaeological features have been confirmed in this area. Monitoring during earthworks here has been recommended, however, in case subsurface archaeological remains are present.

North of the Inlet some quarry features (benching, terracing, indeterminate mounds) within the Waterview Inlet Heritage Area will be affected by the piers for Ramps 3 and 4 and by construction access, and Ramp 2 on the western edge of the Heritage Area will impact on a quarry drive or ramp. However, no known features relating to the mill or tannery will be affected.

Ramp construction will not affect the known extent of settlement site R11/2203, or midden site R11/2202. However, midden site R11/2459 is located not far to the east of Ramp 4 and has the potential to be affected. It is only visible in a small (c.2m x 2m) area on a steep bank (where it should be possible to avoid effects). However, if it is affected the adverse effects would be considered minimal in view of the very limited archaeological value of the site.

The cycleway will be located to the north of the archaeological features and will not impact on them.

Pedestrian walkways through the Waterview Inlet Heritage Area and reinstatement of the former bridge connecting the northern and southern banks of the Waterview Inlet are proposed as mitigation (see section 8). These will be planned to avoid known features as far as possible, with areas of boardwalk used to protect midden deposits where it is necessary to cross them, but there would be some minor physical effects on the Heritage Area, for example through placement of posts supporting boardwalks. Further consultation with the NZHPT, tangata whenua, and Auckland Council (currently Auckland City and the ARC) will be required before plans are finalised. Again, care will need to be taken during construction to minimise adverse effects.

The historic bridge culvert beneath Great North Road will not be affected.

In addition to some physical effects, adverse visual effects on the Waterview Inlet Heritage Area from the presence of the overhead ramps will be unavoidable. Overall, the effects of the project on this heritage area are considered to be significant, taking into account its heritage significance. However, proposed mitigation (see Section 8) in the form of improved access to the site from walkways, reinstatement of the bridge, interpretative signage and improved vegetation management would be a positive effect of the project.

The proposed SH16 widening and tie-in works near the Great North Road Interchange will impact on the western end of the stone wall (R11/2213), which is considered to be of moderate archaeological and heritage significance (**Figure 6.46**). The works will potentially destroy up to 30m of the 130m wall. There is also some potential for destabilisation of parts of the remaining wall as a result of machine movement unless care is taken to minimise impacts. It is recommended that as much of the wall as possible is preserved, and that measures are taken to avoid destabilising the remainder. Any indirect damage during construction could be remedied by reconstruction of the affected parts of the wall (under the supervision of a heritage professional).

Works will also impact on the locations of two recorded midden sites within the current Great North Road Interchange (R11/2214 and 2215). However, these sites have probably already been destroyed and have no known intact deposits. They are of limited if any archaeological significance and any effects would be minor. A third midden site (R11/2204), although just within the construction footprint, is located on the bank and mudflats on the northern side of the inlet, and will not be affected.

Two midden sites (R11/1452 and 2231) recorded south of the inlet and west of Ramp 2 will not be affected.

There is some potential for effects on unrecorded subsurface archaeological remains in any previously unmodified areas close to the north and south banks of the Waterview Inlet, along which a number of archaeological sites have been recorded.

There will be no effects on any of any of the Maori occupation sites on the eastern side of Oakley Creek in this sector (R11/521, 522, 523) or on the possible mill site (R11/2224) close to these sites.

The works will not impact on the scheduled Carrington Hospital building but will affect a small part of its scheduled surrounds, which extend up to the motorway (see **Figure 6.10**). The area involved is small, and there would be no effects on any known heritage values. Nor will there be any effects on any known remains of the 1861 artillery camp recorded in this general area, as its precise location, and whether any subsurface remains have survived, are unknown.

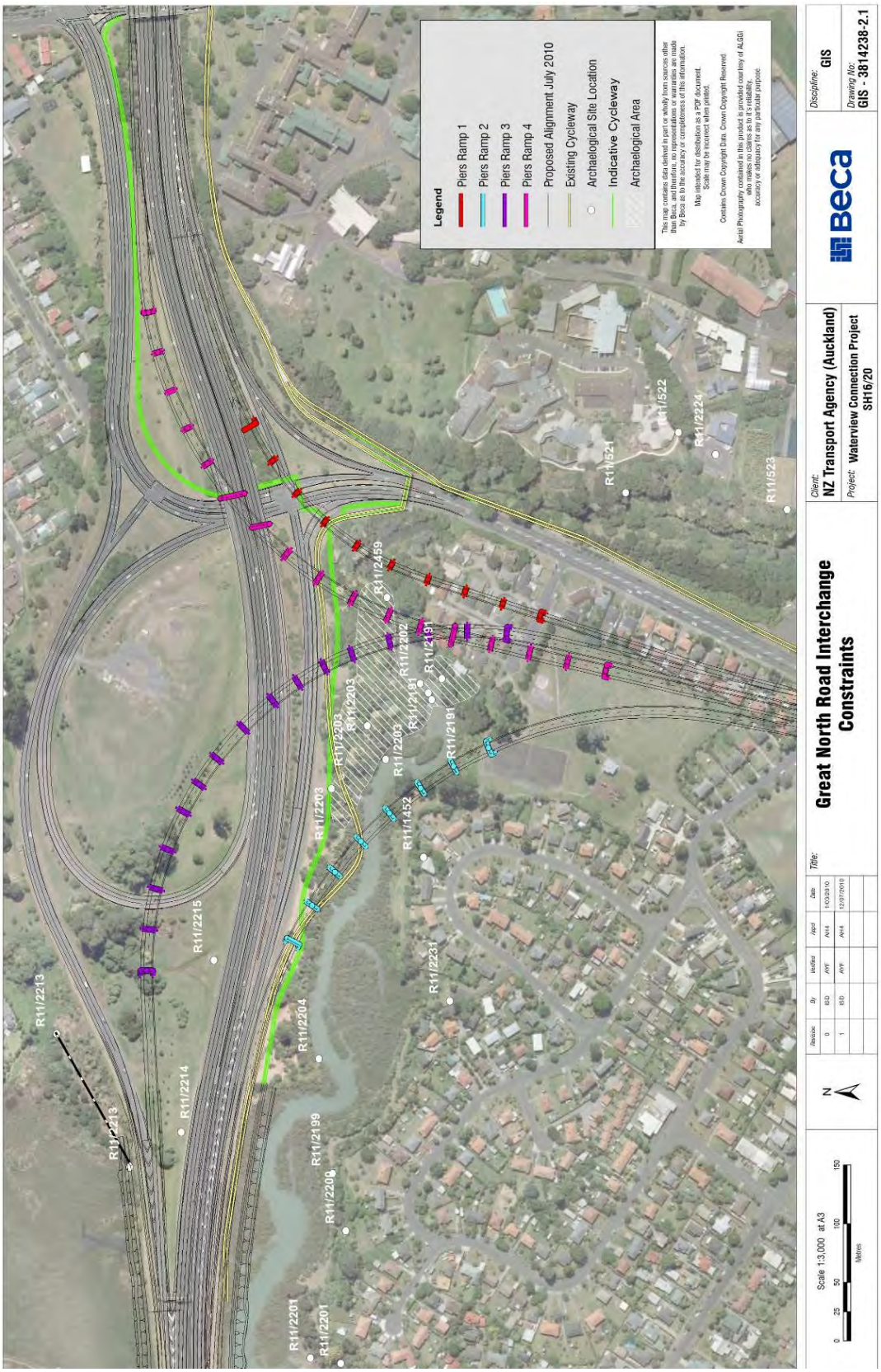

Figure 6.45: Proposed Interchange in relation to sites R11/2191 (Star Mill/Garrett Brothers Tannery/Quarry), R11/2203 (Settlement), R11/2202 (Midden/Karaka Trees) and R11/2459 (Midden)

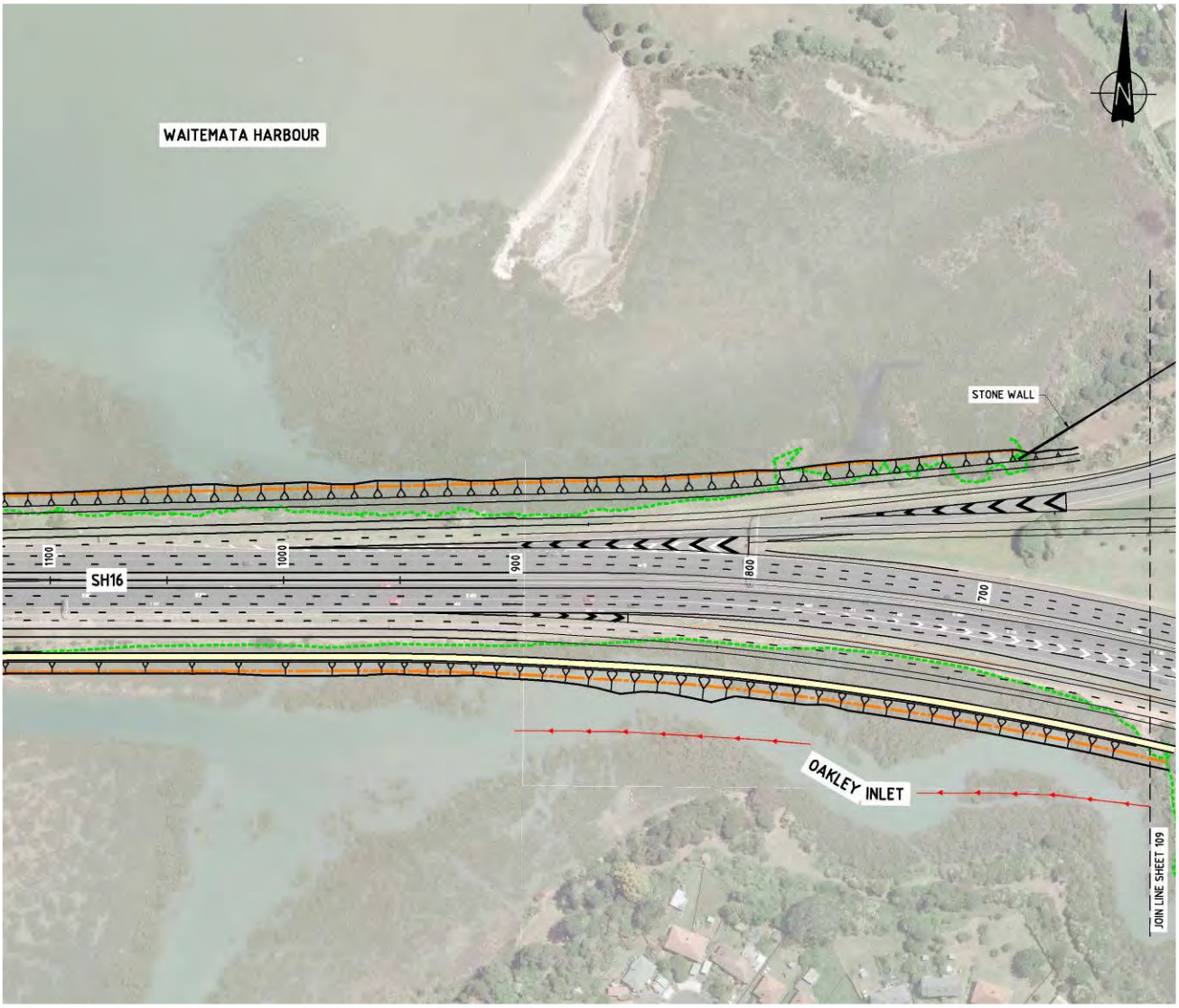

Figure 6.46: View of proposed tie-in works in relation to stone wall R11/2213

7.3.6 Sector 6 (SH16 to St Lukes)

Works in this sector will not affect any known archaeological remains, as no archaeological sites have been recorded in this sector.

7.3.7 Sectors 7 and 8 (Great North Road Underpass/Avondale Heights Tunnel)

The proposed works will not affect any of the recorded sites in these Sectors. While there are numerous sites recorded along Oakley Creek, relating to both Maori and early European occupation (R11/518, 519-520, 524, 525, 2108, 2109, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2247, 2248, 2373, 2383, 2473, 2497 and 2500), most are located on the eastern side of the creek, to the east of and unaffected by the cut and cover section in Sector 7, and would not be affected by the deep tunnel in the rest of Sector 7 and in Sector 8.

One midden site (R11/519-520) and a stone wall/stockpen site (R11/2207) are located above the eastern boundary of the deep tunnel in Sector 8, and two midden sites (R11/2109 and 2497) are located above the western boundary of the deep tunnel. None of these sites will be affected, nor would any adverse effects from vibrations during construction be expected.

One of the sites (R11/2382, a hole in the bank of unknown date and origin) is recorded within the proposed construction yard in Oakley Creek Esplanade Reserve, but is close to the boundary and could be avoided.

7.3.8 Sector 9 (Alan Wood Reserve)

Works in this sector will not affect any known archaeological remains, as no archaeological sites have been recorded in this sector.

7.3.9 Potential for Effects on Unrecorded Archaeological Sites

In addition to effects on known sites, there is always some potential for unidentified subsurface archaeological remains to be exposed during construction, especially in areas where sites are known to be present. If any such remains are exposed in the course of construction they would be destroyed. Because much of the project area has previously been developed, or modified by earlier roading works, or is along reclaimed causeways, the potential for intact unrecorded subsurface remains is significantly reduced.

On the Te Atatu Peninsula (Sector 1) archaeological sites have been identified nearby and it is possible that archaeological remains may be uncovered during earthworks. However, the potential for this is low and any sites exposed are unlikely to be of much archaeological significance.

On the Rosebank Peninsula (Sector 4) a number of sites (mainly midden) have been recorded and it is possible that additional subsurface deposits related to the recorded sites may be exposed. Any such deposits are likely to be of limited significance.

On Traherne Island in Sector 4 it is considered unlikely that any sites would be present, as the island would not have been a particularly suitable settlement location, and no sites were identified through field survey. However, the possibility cannot be completely excluded.

In Sector 5 (Great North Road Interchange) a number of archaeological sites have been recorded. There is some potential for additional subsurface midden deposits close to the banks of the Waterview Inlet. There is also some potential for unrecorded remains relating to the original mill workers' houses adjacent to Great North Road north of Cowley Street, or other structures in the area north of Cowley Street and west of Great North Road relating to the mill/tannery, which should be investigated during and after removal of the modern houses to establish whether any remains are present.

It is unlikely that there are any remains relating to the 19th century artillery camp in the grounds of the former Carrington Hospital close to the motorway in Sector 5, but the possibility cannot be excluded.

There is little potential for unrecorded archaeology in Sector 6.

In Sector 7 the cut and cover underpass has little potential for exposing unrecorded sites, but the proposed construction yard in Oakley Creek Esplanade Reserve has slightly more potential. Although almost all sites have been recorded on the eastern bank of the creek, a few features have been recorded on the western bank (including a hole of uncertain origin dug into the bank within the Reserve, recorded as R11/2383), and it is possible that unrecorded archaeological deposits or features may still be present close to the creek.

There is no potential for archaeological remains to be exposed in Sector 8 (the Avondale Heights Deep Tunnel) and little in Sector 9 (Alan Wood Reserve), with the possible exception of artefacts buried in the former swamp.

7.3.10 Heritage Landscape Effects

Although there will be minor physical effects on archaeological remains around the Great North Road Interchange, the main effects on the Waterview Inlet/Oakley Creek heritage landscape will be visual effects in the vicinity of the Great North Road Interchange. The sites recorded on the eastern bank of Oakley Creek will be unaffected, while adverse physical effects on the Waterview Inlet Heritage Area (R11/2191, 2202, 2203, 2459) on the north and south banks of the Waterview Inlet will be limited, with the known features of this site complex largely avoided. Ramps 3 and 4 will pass over the eastern part of this heritage area, with Ramps 2 and 1 located not far to the west and east of the area respectively. This will inevitably have visual effects on the site complex. However, this heritage area currently has no (or no easy) public access and is completely screened by vegetation. Features can only be observed at close range. The project has the potential to significantly increase public access to and appreciation of this area through the proposed walkways and footbridge connection between north and south banks, interpretation signage and vegetation management proposed by way of mitigation (Section 8). While the project will have visual and minor physical effects on this site it will not prevent the heritage landscape from being read and understood.

Any appreciation of the continuity of the landscape from the inlet to the creek running down the eastern side of Great North Road is already compromised by the existing road network in this area. This, however, will be improved by the linking the heritage area on the north and south banks of the Waterview Inlet with existing walkways along Oakley Creek east of Great North Road.

Removal of part of the historic stone wall in Sector 5 will also have some effects on the heritage landscape, but these are considered minor as the wall has lost its landscape context.

7.3.11 Summary of Effects

The effects of the project on archaeological and other heritage sites are summarised in **Table 10**, which lists the recorded archaeological sites, their current condition and the effects on the sites of the proposed Western Ring Route Waterview Connection project.

The project will have no adverse effects on any significant archaeological remains outside the Great North Road Interchange area (Sector 5).

In this Sector a heritage area of regional significance containing sites R11/2191 (Star Mill/ Garrett Tannery/quarry), R11/2203 (Maori settlement), R11/2202 (midden/karaka trees) and 2459 (midden) will be modified. Depending on machine access and construction methodology relating to the piers for Ramps 3 and 4, physical effects on the site complex should be minor, and will mainly affect quarry features. However, there

will be adverse visual effects from the presence of motorway ramps passing over and adjacent to the site complex and overall the effects must be considered significant. There may also be some minor physical effects from walkways proposed as mitigation. In this Sector, part of a stone wall (R11/2213) of moderate significance will also be affected.

Rosebank Peninsula is the only other area where recorded archaeological sites are located within areas affected by the proposed works. However these sites have for the most part already been destroyed or modified and are of limited archaeological value.

The significant group of sites recorded on the eastern bank of the Oakley Creek will not be affected.

Overall, effects on the Waterview Inlet and Oakley Creek heritage landscape (which includes the series of sites along Oakley Creek east of Great North Road) will be limited in terms of physical impacts, and are mainly visual, with motorway ramps carried over and adjacent to the significant Waterview Inlet Heritage Area in Sector 5. However, access to and appreciation of the heritage landscape will be improved by the proposed walkways, bridge connection and interpretation signage.

Effects on unrecorded subsurface deposits are possible (mainly in Sectors 1, 3, 5, and 7), but if such deposits are present they are unlikely to be extensive or significant. A possible exception to this would be any remains of the millworkers' houses, former mill race or other structures in the area north of Cowley Street and west of Great North Road which, if present, would have the potential to provide significant information relating to site R11/2191.

Table 10: Effects on sites in project area

NZAA	Site Type	Condition	Effects
Sector 1 (Te Atatu Interchange)			
R11/458	Midden (Shell)	Fair, some trampling	None
R11/459	Midden (Shell)	Fair, eroding	None
R11/460	Midden (Shell)	Good, partly excavated	None
R11/1375	Drains (Historic)	Fair, eroding	None
R11/1724	Brickworks	Fair, partly excavated	None
R11/2503	Midden	Poor, eroding	None
R11/2549	Midden	Poor	None
n/a	Concrete foundation	Fair	Within construction footprint but outside construction yard – not affected

n/a	Brick foundation	Poor	Within construction footprint but outside construction yard – not affected
Sector 2 (Whau River)			
ARC CHI 202	Hulk (*Edith*)	Destroyed	None
Sector 3 (Rosebank Peninsula)			
R11/74	Settlement	Destroyed	Effects only if associated subsurface deposits are present
R11/444	Midden (Shell)	Heavily modified, possible intact deposits/features	Subsurface deposits likely to be destroyed
R11/1698	Midden (Shell)	Excavated/destroyed	Effects only if associated subsurface deposits are present
R11/1699	Building Site (Historic)	Excavated/destroyed	Effects only if associated subsurface deposits are present
R11/2212	Midden	Destroyed	None
R11/2216	Midden	Disturbed, possible intact deposits	Subsurface deposits likely to be destroyed
R11/2253	Midden	Damaged or destroyed	Effects only if associated subsurface deposits are present
R11/2504	Tramway	Good	None (just outside construction footprint)
R11/2505	Landing	Good	None (just outside construction footprint)
R11/2506	Landing	Moderate, some erosion	On the boundary of the construction footprint, but unlikely to be affected if care is taken during construction
R11/2507	Midden	Moderate	Just outside the boundary of the construction footprint. Unlikely to be affected if care is taken during construction
R11/2508	Landing	Not known	If any physical remains are present, they would be destroyed

R11/2550	Midden	Poor	Subsurface deposits likely to be damaged/ destroyed
Sector 4 (Reclamation)			
R11/2199	Midden	Damaged, extent unknown	None
R11/2200	Midden	Damaged, extent unknown	None
R11/2201	Midden	Damaged, extent unknown	None
Sector 5 (Great North Road Interchange)			
R11/521	Midden/Karaka	Fair	None
R11/522	Midden	Not known (?buried)	None
R11/523	Midden	Not known (?buried)	None
R11/1452	Midden	Not known (?buried)	None
R11/2191	Flourmill/Tannery/ Quarry	Good	Most known features of site avoided, some damage to eastern and extreme western part of site from ramp piers and access; care will be required during construction. Possible minor effects from walkways, reinstatement of bridge, and remedial work proposed as mitigation. Adverse visual effects from overhead ramps
R11/2202	Midden/Karaka Trees	Good	Avoided by construction works Possible minor effects from walkways proposed as mitigation
R11/2203	Settlement	Good	Avoided by construction works Possible minor effects from walkways proposed as mitigation
R11/2204	Midden	Poor, eroding	None
R11/2213	Dry stone Wall	Excellent	Impact on part of wall

R11/2214	Midden	Probably destroyed	Effects only if intact subsurface deposits are present
R11/2215	Midden	Probably destroyed	Effects only if intact subsurface deposits are present
R11/2224	Mill	Good, but rubbish dumping	None
R11/2231	Midden	Poor	None
R11/2459	Midden	Poor, eroding	Possible effects from access to ramp construction
n/a	Carrington Hospital	In use as part of Unitec	None (except for surrounds near motorway)
n/a	Military Camp	Location not known	No impact on any known features
Sectors 7 & 8 (Great North Road Underpass & Avondale Heights Tunnel)			
R11/518	Midden	Destroyed or under vegetation	None
R11/519	Midden	Fair, some erosion/slumping	None
R11/520	Midden	Same site as R11/519	None
R11/524	Midden/Pits	Fair, some slumping/erosion	None
R11/525	Midden	Not known	None
R11/2108	Stone Wall	Good	None
R11/2109	Midden	Destroyed	None
R11/2205	Mill	Good	None
R11/2206	Stone Wall	Good-excellent	None
R11/2207	Stockyard/Pen	Good-excellent, some damage	None
R11/2208	Stone Wall	Good-excellent, some re-building	None
R11/2209	Stone Wall/ Farm	Good-excellent, some	None

	Crossing	damage	
R11/2210	Pit/Terraces	Fair	None
R11/2211	'Stone wall'	Not a site	None
R11/2247	Historic Quarry/ Railway Bridge/ Embankment	Fair	None
R11/2248	Midden	Disturbed by gardening	None
R11/2373	Bridges/Track/Wall	Fair, damage to wall	None
R11/2383	Hole in bank	Good	None
R11/2473	Stone Wall	Excellent	None
R11/2497	Midden	Largely destroyed	None
R11/2500	Stone Wall	Good	None

7.4 Resource Management Act 1991

The historic heritage requirements of the RMA are set out in Section 3.1. The NZTA has addressed its duty to avoid, remedy and mitigate adverse effects on historic heritage by:

- Commissioning archaeological surveys and assessments to identify archaeological and other heritage sites that have the potential to be affected by the project;
- Taking the locations of significant archaeological sites into account in the design of the project (including redesign of the ramp configuration over the Waterview Inlet Heritage Area to avoid the main concentration of features); and
- Where effects cannot be avoided, providing for appropriate mitigation as set out in section 8 of this report.

The project will have some impact on recorded archaeological sites and possibly on additional unrecorded subsurface archaeological remains. The majority of the known sites are of limited archaeological value, but as the project will affect a former mill/tannery/quarry site of regional heritage significance within a heritage area that also includes Maori settlement sites, and a stone wall of moderate heritage significance, adverse effects on historic heritage are considered to be significant. However, there is considerable potential for mitigation (see Section 8), and provided the proposed measures are adopted the effects of the project on heritage values would be considered acceptable.

Two heritage items scheduled on district or regional plans will be affected:

- The seawalls of site R11/2191 will be affected by remedial work/restoration proposed as mitigation (Item 177, Schedule 2, Auckland Regional Plan: Coastal), but these would be positive rather than adverse effects; and

- The surrounds of the Carrington/Oakley Hospital (item D04-1, Category A, Auckland City District Plan Isthmus Section) will be slightly encroached on, although without impacting any known heritage elements.

As the archaeological sites that will or might be impacted on are subject to the provisions of the Historic Places Act 1993, it is recommended that an advice note regarding the provisions of the Act be included in any resource consents granted.

7.5 Historic Places Act 1993

The archaeological requirements of the HPA are set out in Section 3.2. An Authority to modify the following sites affected or potentially affected by the project (including a number that have probably been destroyed), or that may be affected to a minor extent by vegetation clearance and amenity works in Sector 5, will be required:

- R11/74 (settlement);

- R11/444 (midden);

- R11/1698 (midden);

- R11/1699 (historic building site);

- R11/2191 (flourmill/tannery/quarry);

- R11/2202 (midden/karaka trees) (possible minor effects from amenity works);

- R11/2203 (settlement) (possible minor effects from amenity works);

- R11/2213 (stone wall);

- R11/2214 (midden);

- R11/2215 (midden);

- R11/2216 (midden);

- R11/2253 (midden);

- R11/2459 (midden);

- R11/2508 (landing); and
- R11/2550 (midden).

If additional unrecorded remains are exposed elsewhere, an Authority will be required. It is therefore recommended that a general Authority is applied for under Section 12 of the Act and obtained prior to the start of works so that any remains encountered within the project area can be recorded immediately. This would minimise delays once works are underway. An Archaeological Research Strategy and Monitoring Plan will be required as part of the application, as will further consultation with tangata whenua relating to pre-European sites affected by the project.

8. Recommended Mitigation

Various measures are proposed to mitigate the effects or potential effects of the project on archaeological and other heritage values. Where effects on known archaeological sites cannot be avoided, proposed mitigation measures include standard archaeological mitigation investigation and recording of any affected archaeological remains under Authority from the NZHPT, in order to obtain information which will contribute to our knowledge of the history and archaeology of the area.

The possibility of impacts on unidentified subsurface archaeological remains exposed during development can be mitigated by developing and implementing Accidental Discovery Protocols and detailing these in the Construction Environmental Management Plan (CEMP). An Archaeological Site Management Plan which includes appropriate Accidental Discovery Protocols has been prepared (**Appendix D**) and will be included in the CEMP. The protocols require that if any archaeological features or deposits, human remains or taonga are exposed during construction, work will cease in the immediate vicinity and the project archaeologist and (where appropriate) tangata whenua representative(s) will be contacted. Archaeological features or deposits would then be investigated and recorded in accordance with the conditions of a general Authority to modify archaeological sites issued by the NZHPT. The Authority should be obtained in advance of any earthworks to minimise delays should archaeological remains be exposed once works are under way.

Training of contractors and subcontractors in the archaeological requirements of the project will also be required, and this is provided for in the Archaeological Site Management Plan contained within the CEMP (**Appendix D**).

8.1 Sector 1 (Te Atatu Interchange)

None of the recorded archaeological sites are located within the proposed construction footprint, the concrete and brick foundation have been avoided by the construction yard, and it is considered unlikely that any unrecorded subsurface archaeological remains would be exposed in this Sector. However, the possibility will be provided for through Accidental Discovery Protocols detailed in the Archaeological Site Management Plan contained within the CEMP (**Appendix D**).

8.2 Sector 3 (Rosebank Peninsula)

The remaining archaeological sites on the northern end of the Rosebank Peninsula are generally in poor shape, having undergone major modification by previous road works and other developments. None of the sites likely to be impacted by the widening of SH16 can be considered to be of high archaeological value today, and any previously unrecorded remains exposed during earthworks are also likely to be of limited extent and significance. However, the area may still contain archaeological features or deposits with the potential to provide information on the Maori and early European history of the peninsula. Mitigation should therefore be focused on extending our knowledge of the history of this area. No radiocarbon dates for this area have been obtained during previous work in the area and questions over the length and nature of occupation in pre-European times remain. It is recommended that:

1. Earthworks in all areas previously unmodified by motorway construction should be monitored by an archaeologist and any remains exposed should be investigated and recorded.

2. Sampling of archaeological sites to provide radiocarbon dates to contextualise the results should be undertaken, with consideration given to sampling of adjacent sites if no suitable material is exposed.

3. Recorded archaeological sites R11/2504, 2505, 2506 and 2507 located on or just outside the northern boundary of the construction footprint should be fenced off prior to any works being carried out to ensure that they are not damaged by heavy machinery during construction works.

All works, investigation and recording affecting archaeological sites will require an Authority from the NZHPT.

8.3 Sector 5 (Great North Road Interchange)

Work in this sector will impact to some extent on significant heritage remains, notably in the Waterview Inlet Heritage Area (sites R11/2191, R11/2202, R11/2203 and R11/2459), and also on the stone wall (R11/2213). The following mitigation measures are proposed.

8.3.1 Waterview Inlet Heritage Area (Sites R11/2191, R11/2202, R11/2203, R11/2459)

The effects on the Waterview Inlet Heritage Area from pier and ramp construction and visual effects should be mitigated in a number of ways:

1. All works carried out within the area, including vegetation removal, should be monitored by an archaeologist and any affected archaeological remains investigated and recorded in detail.

2. Machine access and construction works in this area should be planned in such a way as to minimise adverse effects on archaeological features.

3. During and following removal of the houses north of Cowley Street and west of Great North Road in the area where the mill workers' cottages and former mill race were once located, investigations should be carried out to establish whether any archaeological remains have survived and to record them if present. Any information relating to the cottages, mill race or other remains relating to the mill/tannery would add significantly to our understanding of this heritage area.

4. Remedial or limited restoration works should be carried out to the basalt walls, wheel pit and bridge abutment, to specifications prepared by a heritage professional, to ensure their long term preservation.

5. A vegetation management plan should be prepared and implemented to remove vegetation that is damaging archaeological features and to protect and enhance features with appropriate vegetation cover.

6. Public access issues should be addressed. The significant heritage remains in this area are currently inaccessible to the public, and the historic bridge connection between the north and south banks of the Waterview Inlet has been lost. It is also currently difficult to appreciate the Waterview Inlet/Oakley Creek heritage landscape in its entirety as any sense of continuity between the eastern and western parts of the creek has been significantly compromised by Great North Road, which separates them.

7. Interpretation signage should be provided for public information and education purposes

A draft landscape concept plan has been developed to set out principles for reserve restoration in this area. Considerations include public access, vegetation management and site preservation as mitigation for effects on this heritage area. The final details of the plan should be subject to further discussion with the project archaeologist, tangata whenua, NZHPT and the Auckland Council (currently Auckland City and the ARC). Consideration shall be given to the following elements:

- A combined cycleway and walkway connection between SH16 and SH 20, running to the north of the known archaeological features.

- Walkways connected to the main walkway/cycleway and the existing walkway along Oakley Creek east of Great North Road, would be provided through the site, winding between the known features but having little impact on them. Where the walkway traverses areas of midden, boardwalks would be used to minimise impacts.

- A bridge linking the northern and southern banks of the inlet would be reinstated in the original location, restoring the historical connection between the two parts of the Waterview Inlet Heritage Area and making both parts easily accessible.

- Vegetation clearance would be carried out, exposing archaeological features such as low walls, quarry terraces and pits. Their amenity value would be enhanced and archaeological integrity protected through appropriate planting with grass or shallow rooting vegetation.

- The main area of surviving Maori settlement features (R11/2203) would be shielded from public access to protect them against damage from pedestrian use.

- The karaka grove would be maintained and enhanced.

- On the south bank the main area of the mill site and surviving remains would be defined by a gabion wall, highlighting the significant area of the sea walls, wheel pit, foundations and boiler. This would be an appropriate location for interpretation signage.

All archaeological investigation, landscaping, restoration and remedial works affecting the archaeological remains will require an Authority issued by the NZHPT.

It is understood that any remedial works to the sea walls and for the reinstatement of the bridge would require consent from the Auckland Council, as the sea walls are scheduled in the Auckland Regional Plan: Coastal.

8.3.2 Site R11/2213 (Stone Wall)

The drystone wall is a feature of moderate heritage significance. It is one of the longest and best preserved of the recorded early European stone walls in the vicinity of the project area. While it would be preferable to avoid this feature, as this is not feasible in terms of the engineering requirements of the project, the following mitigation measures are recommended:

1. If it is necessary to demolish part of the wall, the stone should be used for repairing the remainder of the wall, and any surplus stone offered to Auckland City Council for use in repairing other historic stone walls within reserves such as those along the Oakley Creek.

2. Effects on the remainder of the wall should be minimised as far as possible by keeping heavy machinery that might destabilise it as far away from the wall as possible, and demarcating the section to be preserved with waratahs and an adequate buffer area prior to earthworks.

3. The remainder of the wall should be carefully cleared of vegetation growth and repaired where necessary to a specification prepared by a heritage professional. It should be left exposed to view, and a vegetation management and maintenance plan developed.

All works affecting the wall (whether demolition or repair) will require an Authority from the NZHPT.

8.3.3 Other Archaeological Sites

Sector 5 works will also impact on the recorded locations of two midden sites (R11/2214 and 2215) within the current Great North Road Interchange. These appear to have been destroyed, but any works in their vicinity should be monitored by an archaeologist to confirm their current status and record any intact remains if present.

In addition all works in previously unmodified areas near the banks of the Waterview Inlet should be monitored by an archaeologist, as areas adjacent to the inlet have the most potential for unrecorded archaeological remains.

The potential for unrecorded archaeological remains elsewhere in this sector is low, but the possibility can be provided for through Accidental Discovery Protocols detailed in the Archaeological Site Management Plan contained within the CEMP (**Appendix D**).

8.4 Sector 7 (Great North Road Underpass)

No known archaeological sites will be affected by works in this sector, and for the most part there is little potential for any previously unidentified archaeological remains to be exposed. The exception is within the construction yard in the Oakley Creek Esplanade Reserve, where a recorded archaeological site (R11/2383, a hole in the stream bank of unknown origin) is located. This site is on the boundary of the construction yard, and should be fenced off to ensure that it is not damaged.

It is also possible that other unrecorded archaeological remains may be present in the Oakley Creek Esplanade Reserve. A number of sites have been recorded along Oakley Creek, and although almost all of these are located on the eastern side of the creek, the possibility of additional archaeological remains on the western side cannot be excluded.

It is therefore recommended that any works involving ground disturbance in the construction yard are monitored by an archaeologist to establish whether any subsurface remains are present, and to record any that may be exposed.

All works affecting archaeological remains will require an Authority from the NZHPT.

8.5 Other Sectors

The potential for any archaeological remains to be exposed in Sector 2 (Whau River), Sector 4 (Reclamation), Sector 6 (SH16 to St Lukes), Sector 8 (Avondale Heights Tunnel) and Sector 9 (Alan Wood Reserve) is very low. However, the possibility should be provided for through Accidental Discovery Protocols detailed in the in the Archaeological Site Management Plan contained within the CEMP (**Appendix D**).

8.6 Conclusion

In most sectors there will little or no effect on any significant archaeological sites, and the effects that have been identified can be appropriately mitigated through standard archaeological monitoring and investigation under an Authority from the NZHPT, and by protecting sites in close proximity to construction works by fencing them off for the duration of the project.

Only in Sector 5 will there be any significant effects on archaeology, in the form of visual and minor physical effects on the Waterview Inlet Heritage Area, and demolition of part of a historic stone wall. It is appropriate that in this sector, in addition to standard archaeological mitigation, a range of other measures should also be adopted. The additional recommended mitigation would involve improved public access to the Waterview Inlet Heritage area via footpaths and through reinstatement of the bridge that historically connected the north and south banks of the Inlet; appropriate vegetation management; remedial works to deteriorating historic structures; and interpretation signage. In the case of the wall affected by SH16 tie-in works, it would involve repairs to the remainder of the wall and vegetation control. Provided these measures are adopted and implemented, the adverse effects of the project would be considered acceptable and the improved access to, and condition of, the Waterview Inlet Heritage Area would have positive heritage benefits.

Effects on unrecorded sites exposed during construction, while possible, are unlikely to be significant, and would be appropriately managed through Accidental Discovery Protocols, which have been included in the Archaeological Site Management Plan to be contained within the CEMP (**Appendix D**).

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APPENDIX A

Bioresearches Report 'NZ Transport Agency Western Ring Route Waterview Connection. Draft Archaeological Survey Report March 2010 (by Brent Druskovich)

APPENDIX B

Site R11/2191, Geophysical Survey Results (by Matt Watson, ScanTec Ltd)

APPENDIX C

Site R11/2213, Detailed Wall Survey Results (by Brigid Gallagher)

APPENDIX D

Archaeological Site Management Plan