

Appendix 25

Archaeological Effects Assessment

Eastern Busway EB3 Commercial and EB4 Link Road

Archaeological Effects Assessment

Document Number: EB-RP-3C4L-PL-000004



Quality Information

Document Number: EB-RP-3C4L-PL-000004

Document History and Status			
Rev	Date	Author	Status
A	15.06.2023	Arden Cruickshank	Final

Document Approval					
Rev	Action	Name	Position	Date	Signature
A	Reviewed by	Matthew Campbell	Director CFG Heritage	15.06.2023	<i>M.C. Campbell</i>
B	Reviewed by	Roger McDonald	Alliance Principal Planner	18.08.2023	On file
1	Approved by	Jarrod Snowsill	Alliance RMA Planning Lead	31.08.2023	On file

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List of Abbreviations and Definitions

Abbreviation and Definitions	Description
AEE	Assessment of Effects on the Environment
AUP(OP)	Auckland Unitary Plan (Operative in Part) (Updated 20 July 2023)
BPO	Best practicable option
CEMP	Construction Environmental Management Plan
CHI	Auckland Council Cultural Heritage Inventory
CMA	Coastal Marine Area
EB1	Eastern Busway 1 (Panmure to Pakuranga)
EB2	Eastern Busway 2 (Pakuranga Town Centre)
EB3C	Eastern Busway 3 Commercial (Pakuranga Creek to Botany)
EB3R	Eastern Busway 3 Residential (SEART to Pakuranga Creek)
EB4L	Eastern Busway 4 Link Road (link between Tī Rākau Drive and Te Irirangi Drive, Botany Town Centre)
EBA	Eastern Busway Alliance
HHEP	Historic Heritage Scheduled Extent of Place
HHMP	Historic Heritage Management Plan
HNZPT	Heritage New Zealand Pouhere Taonga
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
km	Kilometre(s)
m	Metre(s)
m ²	Square Metre(s)
m ³	Cubic Metre(s)
MCA	Multi Criteria Analysis
MSE	Mechanically Stabilised Earth (walls)
NES - CS	Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011
NES - FW	Resource Management (National Environmental Standards for Freshwater) Regulations 2020
NPS - FM	National Policy Statement for Freshwater Management 2020
NPS - UD	National Policy Statement for Urban Development 2020
NZAA	New Zealand Archaeological Association
NZCPS	New Zealand Coastal Policy Statement 2010
NoR	Notice of Requirement
PWA	Public Works Act 1981
RTN	Rapid Transit Network
RMA	Resource Management Act 1991
SSMW	Sites and Places of Significance to Mana Whenua
SRF	New Zealand Archaeological Association Site Record Form
SRS	New Zealand Archaeological Association Site Recording Scheme

Executive Summary

The purpose of this report is to provide an assessment of the archaeological and heritage effects of the Eastern Busway 3 Commercial (EB3C) and Eastern Busway 4 Link Road (EB4L) sections of the Eastern Busway Project (the Project).

Key elements of the proposed EB3C works include the construction of two bridges (Bridges A and B), noise walls and retaining walls, stormwater drainage, and a cycleway. The proposed EB3C bridge structures, new and upgraded stormwater outfalls and two areas of reclamation require works in the coastal marine area (CMA).

The proposed EB4L footprint traverses parts of Guys Reserve and Whaka Maumahara Reserve and includes road widening at the intersection of Te Irirangi and Town Centre Drive. Key elements of the proposed works include a bridge structure (Bridge C), retaining walls, stormwater drainage, and a new walking and cycling pathway.

A desktop assessment was undertaken, followed by an initial field survey carried out by Arden Cruickshank of CFG Heritage Ltd in November 2018. Further targeted field surveys were undertaken in October 2021, October 2022 and December 2022 focussing on the offline busway section of EB3C which was not assessed in 2018. An additional survey was undertaken in February 2023 for the EB4L section of works.

Botany was heavily developed in the 1980-2000s, and although there were archaeological surveys done through this area prior to this development which recorded archaeological sites, the level of involvement of archaeologists in these developments has been limited. In many cases, works have destroyed archaeological sites without archaeological investigations being undertaken. Although many of the sites recorded within EB3C's proposed footprint have been destroyed as a result of prior development, it is likely that there are still sub-surface archaeological deposits present. In situ subsurface archaeological deposits, such as midden/oven sites, may be present in the project footprint, particularly near waterways such as those adjacent to Burswood Reserve.

There is one recorded archaeological site in the extent of works of the Project, R11/1263, Donnelly's Quarry, which is subject to the Historic Heritage and Special Character overlay extent of place [(2114), McCallum's Wharf and Quarry R11_1263] in the AUP (OP) which will be encroached by works. Although works have been designed to avoid the known features of this archaeological site, there is the potential that associated (yet unknown) features may be encountered during the proposed works.

As there is potential for unknown features associated with R11/1263 and other unknown archaeological sites to be encountered and damaged or destroyed during works, it is recommended that an authority to undertake an activity that will or may modify or damage R11/1263 and any previously unrecorded archaeological sites that may be encountered within the extent of EB3C and EB4L be applied for from Heritage New Zealand Pouhere Taonga (HNZPT) under Section 44 of the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA). In addition to the Archaeological Authority, an Historic Heritage Management Plan (HHMP) should be developed for the project (including EB3C and EB4L) to guide works to appropriately manage effects on archaeological and heritage characteristics.

By undertaking the mitigation above, the potential effects on archaeology and heritage characteristics are considered to be less than minor for the Project.

1 Introduction

1.1 Overview of the Eastern Busway Project

The Project is a package of works focusing on promoting an integrated, multi-modal transport system to support population and economic growth in Southeast Auckland. This involves the provision of a greater number of improved public transport choices and aims to enhance the safety, quality and attractiveness of public transport and walking and cycling environments. The Project includes:

- 5 km of two-lane busway
- Two new bridges (Bridges A and B) for buses across Pakuranga Creek
- A new bridge (Bridge C) for buses crossing Guys Reserve and Whaka Maumahara Reserve
- Improved active mode infrastructure (walking and cycling) along the length of the busway
- Three intermediate bus stations
- Two major interchange bus stations.

The Project forms part of the previous Auckland Manukau Eastern Transport Initiative (AMETI) programme (the programme) which includes a dedicated busway and bus stations between Panmure, Pakuranga and Botany town centres. The dedicated busway will provide an efficient rapid transit network (RTN) service between the town centres, while local bus networks will continue to provide more direct local connections within the town centre areas. The Project also includes new walking and cycling facilities, as well as modifications and improvements to the road network.

The programme includes the following works which do not form part of the Eastern Busway Project:

- Panmure Bus and Rail Station and construction of Te Horeta Road (completed)
- Eastern Busway 1 (EB1) – Panmure to Pakuranga (completed).

The Eastern Busway project consists of the following packages:

- Early Works Consents – William Roberts Road (WRR) extension from Reeves Road to Tī Rākau Drive (LUC60401706); and Project Construction Yard at 169 – 173 Pakuranga Road (LUC60403744).
- Eastern Busway 2 (EB2) – Pakuranga Town Centre, including the Reeves Road Flyover (RRF) and Pakuranga Bus Station
- Eastern Busway 3 Residential (EB3R) – Tī Rākau Drive from the South-Eastern Arterial (SEART) to Pakuranga Creek, including Edgewater and Gossamer Intermediate Bus Stations
- Eastern Busway 3 Commercial (EB3C) – which commences from Riverhills Park along Tī Rākau Drive to Botany, including two new bridges and an offline bus route through Burswood (**this assessment**)
- Eastern Busway 4 Link Road (EB4L) – Guys Reserve to Botany Town Centre, including a link road through Guys and Whaka Maumahara Reserves to Te Irirangi Drive/Town Centre Drive intersection (**this assessment**).

The overall full extent of the wider Project is shown in Figure 1-1 below.

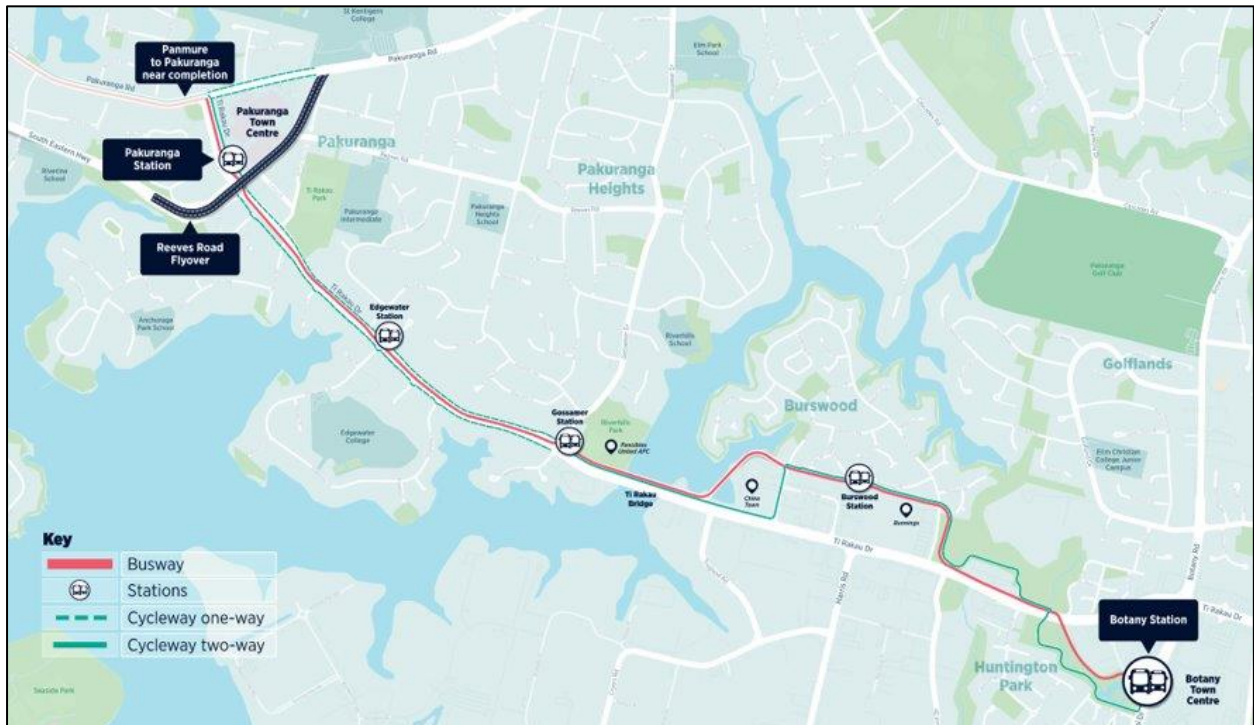


Figure 1-1 Project alignment

1.2 Project Objectives

The Project objectives are:

1. Provide a multimodal transport corridor that connects Pakuranga and Botany to the wider network and increases choice of transport options.
2. Provide transport infrastructure that integrates with existing land use and supports a quality, compact urban form.
3. Contribute to accessibility and place shaping by providing better transport connections between, within, and to the town centres.
4. Provide transport infrastructure that improves linkages, journey time and reliability of the public transport network.
5. Provide transport infrastructure that is safe for everyone.
6. “Provide or Safeguard future” transport infrastructure at (or in the vicinity of) Botany Town Centre to support the development of strategic public transport connection to Auckland Airport.

2 Proposal Description

The following sections provide a brief description of both EB3C and EB4L. These descriptions consist of the construction and operation of both EB3C and EB4L packages, with further details provided in the AEE and Notices of Requirement (NoRs). A full set of proposed plans is attached to the AEE.

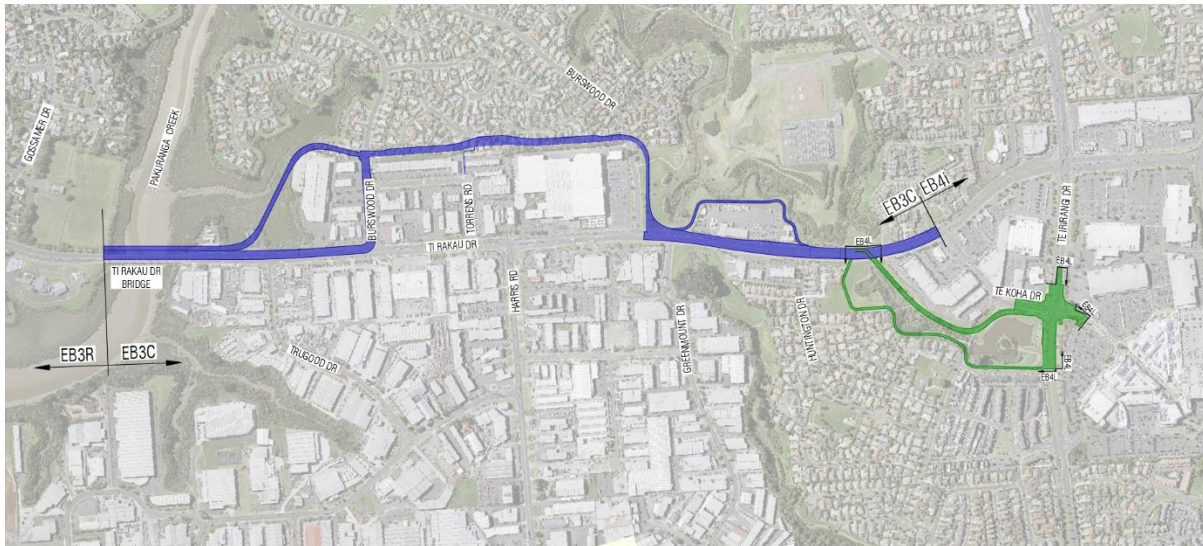


Figure 2-1 Eastern Busway 3 Commercial and 4 Link Road Project Extent

2.1 Eastern Busway 3 Commercial

The proposed EB3C works will involve the establishment of an ‘off-line’ busway, cycleway, and associated stormwater upgrades. These works will take place within existing road reserves, Council reserves¹ and privately held land within the proposed works footprint (refer Figure 2-1). The extent of works for EB3C runs between Riverhills Park (i.e., adjacent to the terminus of the earlier EB3R package) in the west to Guys Reserve in the east, through the suburbs of Burswood and East Tāmaki.

The busway will be largely off-line (i.e., outside the current Tī Rākau Drive corridor), first crossing Pakuranga Creek by way of a new two-lane bridge (Bridge A) including abutments² and scour protection. It will then cross a coastal headland at 242 Tī Rākau Drive (a Mobil branded service station), and then an embayment within which a retaining wall, and a 4m² coastal reclamation will be constructed. The busway will cross a second headland at 254 Tī Rākau Drive (currently occupied by a pet store), before crossing a mangrove filled bay to the west of 262 Tī Rākau Drive (the ‘Chinatown’ retail business) via a second bridge (Bridge B). Bridge B will include two abutments with scour protection. Bridge B will require construction of a reinforced embankment at its northern end which includes imported fill, rip rap and permanent wick drains, and a 549m² coastal reclamation. In parallel, a retaining wall will be constructed to the eastern side of the embankment. Following this, the busway runs between the commercial area and residential area north of Tī Rākau Drive, crossing several residential sites. The busway also crosses Burswood Drive twice, with raised signalised crossings established to control both the busway and road traffic.

A new ‘intermediate’ style bus station will be established at Burswood, before the busway then crosses over Burswood Esplanade Reserve and onto a widened Tī Rākau Drive (by the Howick and Eastern bus

¹ Including Burswood Esplanade Reserve and Bard Place Reserve

² The western abutment and associated scour protection was included in the EB3R consenting package

depot). The busway will then run beside the eastbound lanes of Tī Rākau Drive, before crossing over Tī Rākau Drive to connect with EB4L at Guys Reserve.

The busway will include a new cycleway, which will largely run parallel to the busway for most of this section of the Project. The exceptions to this include Bridge B, between 254 Tī Rākau Drive and Burswood Esplanade (west) – for this section the cycleway will continue along Tī Rākau Drive before turning into Burswood Drive West, as well as where the cycleway runs behind the Howick and Eastern bus depot.

Other works included in EB3C are the relocation of existing utility services, the provision of new or upgraded stormwater infrastructure and open space upgrades. Stormwater works will involve new outfalls discharging to Pakuranga Creek (and its tributaries) and rain gardens.

Lastly, EB3C involves the establishment of two laydown areas, one at 242 Tī Rākau Drive and the other within the boundaries of Burswood Esplanade Reserve. Both laydown areas are located on land that will be occupied by the Project upon its completion.



Figure 2-2 Eastern Busway 3 Commercial Project Area

2.2 Eastern Busway 4 Link Road

The EB4L works will involve the establishment of an ‘off-line’ dedicated two-way busway, shared pathway and stormwater upgrades. These works will take place in Guys Reserve, Whaka Maumahara Reserve, existing road reserve and Botany Town Centre land for the intersection improvements on Town Centre Drive.

EB4L commences south of Tī Rākau Drive, crossing through Guys Reserve, Whaka Maumahara Reserve and ending at the intersection of Te Irirangi Drive/Town Centre Drive.

The works will primarily involve the construction of a new two-way busway corridor which will run along the eastern side of Guys Reserve and Whaka Maumahara Reserve to provide access for bus services between Pakuranga and Botany. The two-way busway is designed to integrate with EB3C and be a continuation of the EB3C busway.

This section of the busway will feature a bridge (Bridge C) approximately 350m long. This bridge is needed due to the sloping topography of the Reserves.

The busway will then connect to Te Irirangi Drive, following alterations to the existing Te Irirangi Drive/Te Koha Road/Town Centre Drive intersection.

A shared pathway and minor retaining walls will also be constructed along the southern and western boundaries of Guys Reserve and Whaka Maumahara Reserve. The shared pathway will connect to existing walkways and will terminate at Te Irirangi Drive.

A new shared pathway and retaining wall will also be constructed along the western boundary of Te Irirangi Drive and is partially located within the Whaka Maumahara Reserve.

A new stormwater outfall (including riprap) will be constructed within Guys Reserve. The outfall will discharge stormwater over scour protection prior to its entry into a tributary of Pakuranga Creek. Additionally, a new stormwater connection will be constructed in Whaka Maumahara Reserve, adjacent to Te Irirangi Drive. This new connection will discharge via an existing outfall into the existing stormwater pond within the Reserve.

A construction laydown area will also be established within Guys Reserve, adjacent to Tī Rākau Drive and 47C Huntington Drive. A second laydown area will be established in Whaka Maumahara Reserve, between the existing stormwater pond and Te Irirangi Drive. Construction access will also be gained from Te Koha Road beside VTNZ’s vehicle inspection premise located at 451 Tī Rākau Drive.

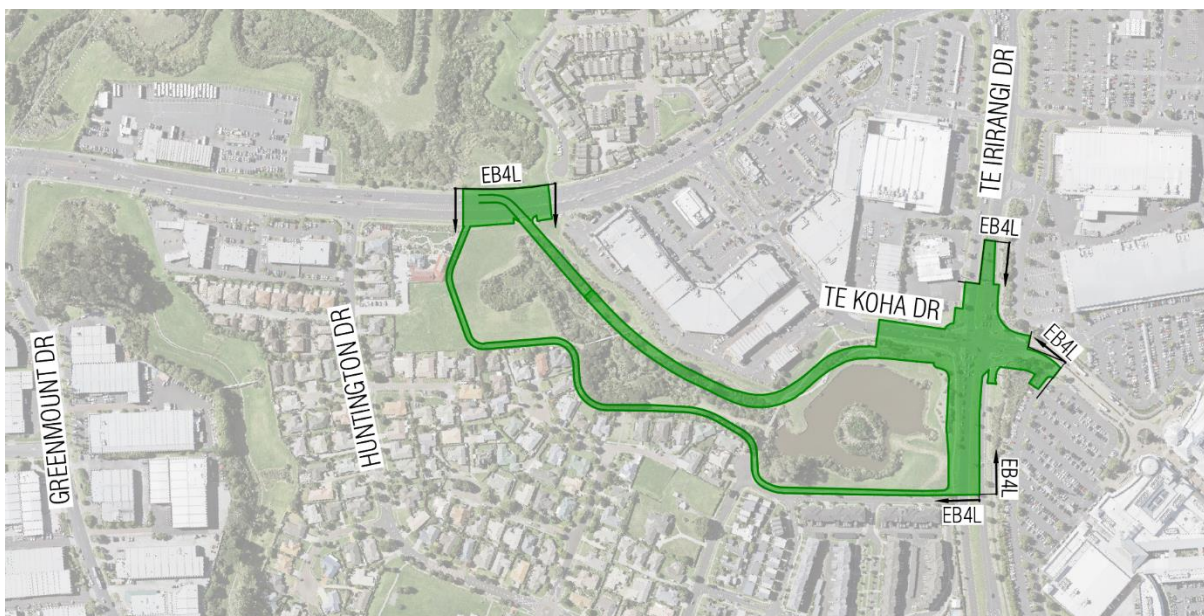


Figure 2-3 Eastern Busway 4 Link Road Project Area

3 Specialist Assessment

Chapter Summary

The EB3C and EB4L project area was subject to archaeological surveys in the 1970s and 1980s. Much of the development since then has been undertaken without archaeological input so the condition, extent and nature of potential archaeological sites is not known, and many of them have been destroyed as a result of previous development. It is possible that obscured archaeological sites and features exist within the proposed works area.

3.1 Assessment Content

This report describes the assessment of archaeological effects associated with the operation and construction of EB3C and EB4L.

Its purpose is to inform the AEE relating to the Notices of Requirement (NoRs), required regional consents and consents required under National Environment Standards for EB3C and EB4L, as well as identify the ways in which any adverse effects will be appropriately minimised and managed.

This archaeological assessment:

- provides a summary of the desktop research undertaken to guide archaeological field surveys of EB3C and EB4L
- reports the findings of field surveys of EB3C and EB4L including specific focus on Donnelly's Quarry (R11/1263) and its associated scheduled extent (2114)
- identifies, based on this research and findings of field surveys, any archaeological constraints on the proposed works associated with EB3C and EB4L

3.2 Specific Project Elements

The proposed works consist of several elements including dedicated bus and cycleways, three bridges, road widening and stormwater infrastructure improvements. Construction for EB3C and EB4L will require ground disturbance which has the potential to affect archaeological and heritage sites located within these areas, whether recorded or not.

Botany is a relatively recent suburb, with development of the area primarily undertaken in the past 40 years. The development of the area that EB3C and EB4L runs through, being more recent than EB2 and EB3R, is reflected in the occurrence of recorded archaeological sites through the proposed works area. In comparison there is a notable lack of recorded sites through the EB2 and EB3R areas where development was largely undertaken in the 1960s, prior to systematic archaeological surveys being commonplace.

This later development of Botany also contrasts with the archaeological landscape identified during EB1 through Panmure, where both pre-European Māori and pre-1900 historic settlement was recorded and visible during the assessment stage (Felgate 2017). This led to a more methodological approach to the management of archaeological sites for EB1, but it should be noted that additional sites, especially related to pre-European Māori occupation were identified during construction (Sian Keith pers. coms).

Figure 3-1 below shows archaeological sites, CHI items, sites of significance to mana whenua and scheduled extents near and within the EB3C and EB4L project area.



Figure 3-1 Archaeological sites, CHI items, sites of significance to mana whenua and historic heritage scheduled extents of place near and within EB3C and EB4L project areas.

3.3 Reasons for Consent

3.3.1 Heritage New Zealand Pouhere Taonga Act 2014

All archaeological sites, whether recorded or not, are protected by the provisions of the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA) and may not be destroyed, damaged, or modified without an authority issued by Heritage New Zealand Pouhere Taonga (HNZPT).³

- An archaeological site is defined in the HNZPT Act as:⁴
 - Any place in New Zealand, including any building or structure (or part of a building or structure), that:
 - Was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900;
 - Provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and
 - Includes a site for which a declaration is made under section 43(1) of the HNZPT Act.

The EBA will apply to HNZPT for an authority under section 44 of the HNZPT Act to cover the extent of works for EB3C and EB4L, to ensure that appropriate management of archaeological sites is undertaken during construction in accordance with the HNZPT Act.

³ HNZPT Act, section 42 provides overarching protection for archaeological sites, subject to a valid authority.

⁴ HNZPT Act, section 6.

3.3.2 Resource Management Act 1991

Historic heritage is defined under the Resource Management Act 1991 (RMA) as:⁵

- Those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, deriving from archaeological, architectural, cultural, historic, scientific, or technological qualities; and
- Includes:
 - Historic sites, structures, places, and areas;
 - Archaeological sites;
 - Sites of significance to Māori, including wāhi tapu; and
 - Surroundings associated with the natural and physical resources.

These categories are not mutually exclusive, and some archaeological sites may also include above ground structures or also be places that are of significance to Māori.

Under the RMA, the protection of historic heritage from inappropriate subdivision, use, and development is identified as a Part 2 matter of national importance (section 6(f)). There is also a general duty under section 17 of the RMA to avoid, remedy or mitigate any adverse effects on the environment arising from an activity, which includes effects on historic heritage.

Where a resource consent is required or a notice of requirement is prepared for any activity impacting historic heritage, the assessment of effects is required to address cultural and historic heritage matters.

3.3.3 Auckland Unitary Plan (Operative in Part)

The AUP(OP) contains a number of applicable provisions regarding historic heritage. In the AUP(OP), archaeological sites are defined in accordance with the definitions outlined in the HNZPT Act.

A scheduled historic heritage place can be an individual feature, or encompass multiple features and/or properties, and may include public land, land covered by water and any body of water. A historic heritage place may include; cultural landscapes, buildings, structures, monuments, gardens and plantings, archaeological sites and features, traditional sites, sacred places, townscapes, streetscapes and settlements.

This report assesses an historic quarry (R11/1263) (scheduled extent 2114) which is located immediately west of Chinatown. This Quarry has been incorrectly referred to as McCallum's Wharf in the Auckland Council Cultural Heritage Inventory. Due to the potential confusion with the McCallum brothers wharf in Panmure, this quarry and its associated quays will be referred to as Donnelly's Quarry, the original owner.

Any structures within this scheduled extent would ordinarily be considered a restricted discretionary activity as outlined in Chapter D.17 (Table D17.4.1 (A10)) of the AUP(OP)⁶.

⁵ RMA, section 2.

⁶ A Notice of Requirement is being sought for works within EB3C and EB4L so Chapter D.17 (Table D17.4.1 (A10)) of the AUP (OP) is not directly relevant in this instance. However, it provides a useful reference point for this Assessment.

4 Methodology and Analysis

Chapter Summary

This chapter presents the methodology utilised for desktop research, field survey and the limitations of both. It then discusses past land use; and archaeological survey and investigations which have previously been undertaken in the Project area. It finally presents the results of the field survey undertaken for this report based on the information garnered from the desktop research.

4.1 Assessment Methodology

4.1.1 Research

Our assessment is based on the following records:

- Records of archaeological sites in the general vicinity were accessed from the New Zealand Archaeological Association Site Recording Scheme through ArchSite (archsite.org.nz) and incorporated into the project GIS
- The HNZPT digital library was searched for records of archaeological investigations in the area. Old maps and survey plans held by Land Information New Zealand (LINZ) were accessed using QuickMap
- Felgate, M. W., 2017. *Archaeological Assessment, Eastern Busway 1*, s.l.: Unpublished report prepared for HNZPT and Auckland Transport
- Aerial Photographs held by LINZ, Auckland Council and in other online archives were searched
- Local soil information was searched on the S-Map Online database maintained by Landcare Research (<https://smap.landcareresearch.co.nz/>)
- Potential pre-1900 vegetation based on soil information was obtained from the Land Resource Information Systems database (<https://iris.scinfo.org.nz/>)
- Old newspaper articles were accessed through the Papers Past online database (<http://paperspast.natlib.govt.nz/cgi-bin/paperspast>)
- The Auckland Council cultural heritage inventory (CHI) and the Auckland Council GeoMaps GIS viewer were searched for any areas of cultural significance in the vicinity
- Auckland Council AUP (OP) Map Viewer
- Plans for the extent of works for the project were provided by EBA (22 August 2022)
- Eastern Busway EB3C and EB4L Stormwater Effects Assessment (Document number EB-RP-3C4L-PL-000016)
- Eastern Busway EB3C and EB4L Terrestrial and Freshwater Ecological Effects Assessment (Document number EB-RP-3C4L-PL-000017).

4.1.2 Fieldwork

An initial site survey of the entire extent of EB3C was undertaken on 23 November 2018 by Arden Cruickshank of CFG Heritage Ltd. Additional targeted surveys were undertaken in October 2021, October 2022, December 2022 of EB3C by Brendan Kneebone, Danielle Trilford and Hayley Glover of CFG Heritage Ltd. A further survey of EB4L was undertaken in February 2023 by Arden Cruickshank of CFG Heritage Ltd.

4.1.2.1 Stormwater discharge points

There are new and upgraded stormwater outfalls required for the project. One outfall (Outfall 09-1), which will be located 5 m west of the scheduled extent for Donnelly's Quarry is discussed further below (Figure 4-3). The remainder of the Project's stormwater works will be located outside of the scheduled extent for Donnelly's Quarry.

4.1.2.2 Historic reclamations and silted up inlets

Aerial photographs from the 1940s were obtained of the area, georeferenced into the project GIS and compared to the current coastline. Several places were identified that are within the scope of the proposed works where inlets and creeks have been either subject to silting or intentional reclamations (with culverts in some cases).

4.1.3 Limitations and accuracy of data

Archaeological sites have been recorded since the 1950s and the quality of site information is variable. Sites were initially recorded on 100-yard grid references, which were converted to 100 m grid references as the map data became metricated in the 1980s. This has led to sites potentially only having a 200 m accuracy.

Since the mid-1990s sites recorded by hand-held GPS are generally located to ± 5 m. To ensure all archaeological sites that could be impacted by works are assessed, a 200 m buffer was placed around the proposed extent of works and all sites contained within that buffer were subject to desktop analysis to see if they are likely to encroach into the proposed extent of works. Any sites within 200 m of the NoRs which could not be ruled out by this method will be considered as within the NoRs until able to be proven otherwise.

The majority of the EB3C and EB4L area has been developed for residential and commercial uses, with dwellings, roading and commercial buildings present within the EB3C and EB4L footprint. The remainder of EB3C and EB4L consists of council reserves which have been heavily modified through contouring and the condition of the ground surface beneath these areas cannot be assessed. Essentially this assessment is to inform the AEE as to where it is possible, or likely to encounter, archaeological or heritage sites for the purpose of avoiding, remedying or mitigating effects on such sites.

This Archeological report provides an assessment of the tangible archaeological and heritage values within the EB3C and EB4L proposed extent of works including the historic heritage overlay extent of place⁷. The report does not address Te Ao Māori or intangible values associated with the cultural landscape. Only mana whenua can comment on these values.

4.1.4 Archaeological assessment of effects

The assessment of archaeological affects in this report utilises the HNZPT criteria for assessing archaeological values as discussed in NZHPT (2006). These include:

- Condition
- Rarity
- Contextual Value
- Information Potential
- Amenity Value

⁷ Historic Heritage Overlay Extent of Place 2114, McCallum's Wharf and Quarry (R11_1263)

- Cultural Associations.

4.2 Assessment Analysis

4.2.1 Desktop Research

4.2.1.1 *Pre-European Māori land use*

The background of larger scale early pre-European Māori settlement patterns and land use in the area has been covered extensively in the EB1 archaeological assessment (Felgate 2017), so will only be briefly summarised here.

Māori have a long history in Tāmaki, with the earliest archaeological evidence in the area dating to the 13th century. Many of these sites are along coastal areas such as along the Tāmaki River and its inlets, used for exploitation of food resources, and transportation.

The Ōtāhuhu Portage (also known as Te Toangakiōtāhuhu and Te Tapotū o Tainui) is located just west of the Pakuranga Creek, along the current Portage Road alignment. It is roughly 1 km long and was the shortest portage between the Tāmaki River and the Manukau Harbour, providing a link between the Pacific Ocean and the Tasman Sea (Sullivan 1986:12, Furey 1983:3). This, along with other portages between the Waitematā and Manukau negated the need to travel around Cape Reinga and should be viewed as highly significant thoroughfares.

Further up the Tāmaki River is Mokoia Pā, which was surrounded by one of the largest Māori populations that early European voyagers encountered in Aotearoa. In the 1820s it was described as being approximately 1.8 km in length and 900 m wide, with large established structures that were not observed elsewhere. Other reports from this time mentioned multiple villages along the Tāmaki River, but specific information on the Pakuranga side seemed limited to noting that there was flax present (Felgate 2017).

On the eastern side of the Pakuranga Creek where EB3C and EB4L are located is a large lava field associated with Te Puke o Tara and Mātanginui, known collectively as the East Tāmaki Volcanic Field (Rickard 1985). This area was well researched by Rickard and others in the 1980s prior to development in the area, where an extensive stone field system was recorded with growing structures, walls and other related horticultural areas observed. Unfortunately, much of this has been destroyed through development in the interim and fine-grained mapping and recording do not seem to exist for this once extensive gardening area.

4.2.1.2 *Early European land use*

Following centuries of Māori settlement in East Tāmaki, organised European settlement began during the 1850s with the Crown sale of blocks of land to new immigrants for farming. By the early 1860s, all the farms surveyed around the Pakuranga Creek, as part of the Parish of Pakuranga, had been sold by the Crown, except for two allotments, 32 and 33. These two allotments were noted as set aside as a native reserve. Roads in the area terminated abruptly at Pakuranga Creek and its tributaries, suggesting access to river landings as a principal mode of transport. These two allotments would later house the most prominent early industry in Pakuranga.

Allotments 32 and 33 were amalgamated as the 267-acre Te Wharau Block (renumbered in land records as 393N Parish of Pakuranga) and title to the land was claimed before the Native Land Court by Te Keene Tangaroa and Te Hāpimana in October 1867. In late 1870, Edward Prior Donnelly began

negotiations to lease the Te Wharau Block from Te Keene Tangaroa and Te Hāpimana. On 16 August 1876, Donnelly paid £50 to Te Keene Tangaroa and Tiriti Rangiherehere (who succeeded Te Hāpimana, on the death of the latter, by order of the Native Land Court in May 1876) ⁸ for five acres of the 267 acre farm, at the inlet off the Pakuranga Creek.⁹ On the same day, Donnelly leased the same five acres to Alexander Robertson “*with the stone quarries, pits, liberties and privileges therein specified for the term of two years subject to payment of certain royalties and to the performance of certain conditions.*” At some point between 1871 and 1876 it appears that Donnelly had started to open up the lava field on the property for quarrying and stone supply, but probably leased the operations to others.

This quarry had a number of structures built, including stone jetties and at least one quay. Although some reports talk about a wharf being present, it appears that it is likely confused with the wharf that the McCallum Brothers purchased off the Panmure Town Board in the 1920s.

Elsewhere in Pakuranga, clearance of bush and scrub as well as surface rock deposits allowed for grazing stock and building of dry-stone boundary walls. Post and rail fences were constructed, shelter belts of macrocarpa and gum trees were planted, as were hedges of gorse, privet and barberry. While most of the land was used for sheep and dairy grazing, extensive tracts were planted for oats, potatoes, wheat, barley and vegetables (Judge 2017). Many of these early boundaries have since been eliminated through subsequent urbanisation.

4.2.1.3 Previous archaeological work in the project area

During the 1970s the New Zealand Historic Places Trust (now known as Heritage New Zealand Pouhere Taonga) funded several systematic site surveys within priority coastal areas in the Auckland region that were at risk from increasing use and development (Baquié and Lawlor 1995). Many of the sites located along the banks of Pakuranga Creek were recorded at this time.

The 1980s saw an increase in more intensive surveys focussing on specific areas where there was significant threat of both residential and industrial development. Rickard (1985) undertook an in-depth field survey of a small portion of the East Tamaki Volcanic Field to the east of the Project area and recorded a number of gardening features, including stone mounds and gardens. Although this survey only covered a small area of undisturbed ground, it was surmised that prior to the development of the area in the 1960s, an extensive Māori horticultural complex would have existed in the vicinity of these volcanic fields.

Slocombe and Robinson undertook a survey of the Te Wharau Block in 1986, covering a large portion of the Project area. Twelve archaeological sites were recorded as a result of this survey, including Donnelly’s 19th century basalt quarry (which was subsequently recorded as R11/1263). A further inspection was undertaken by Ian Lawlor in 1993 of the Te Wharau Block, especially around R11/1263, with an assessment of effects undertaken of the quarry by Frederickson in 1995 for development to the east of the site.

A survey was undertaken by Clough and Associates in 2010 from the Pakuranga Substation to Penrose for a new electricity transmission line. A portion of this survey included Tī Rākau Drive, but no archaeological material appeared to be located along the proposed route where it aligned with EB3C.

Clough and Associates also undertook an archaeological investigation of the Guy Homestead and grounds on the inside corner of EB3C and EB4L, prior to it being moved to its current location and

⁸ R6.502-3, BAJZ A1660 23641 Box 10 R22763391, Archives New Zealand

⁹ 21M.383, BAJZ A1660 23641 Box 748 R22764129, Archives New Zealand

renovated (2010). The report alludes to the previous houses that were built prior to the homestead may be beneath Tī Rākau Drive. Further investigations into the Guy Homestead property were undertaken by CFG Heritage in 2019, but no further evidence of the pre-1900 homestead was found (Ussher 2019).

4.2.1.4 Recorded archaeological and heritage sites in EB3C and EB4L

Based on an initial screening, there were 14 recorded archaeological sites and one CHI item, identified within 200 m of the proposed works area (Table 1 and Figure 4-1). Two of these have associated scheduled extents and two have associated site of significance to mana whenua extents (SSMW). CHI item 20075 is recorded in the CHI with an incorrect location and is actually a duplicate of R11/1391, located approximately 425 m northeast of its CHI location (Figure 4-1). This error was corrected in Plan Change 4 to the AUP (OP) (Schedule ID 022) but has not been updated in the CHI database. This site has been discounted from any further discussion in this assessment.

In addition to CHI item 20075, we were able to initially discount five archaeological sites as being outside of the extent of EB3C and EB4L works. The remaining nine required further investigation and are discussed below.

Table 1. Initial screening list of NZAA and CHI Sites within 200 m of proposed works.

NZAA	CHI item	Scheduled extent	SSMW	Type	Name	Comment	Response
	20075			Urupā		Incorrect location, outside proposed extent of works ¹⁰	No further investigation required
R11/1263	4510	2114		Quarry	[Donnelly's] McCallums Wharf and Quarry	Within proposed extent of works	Further investigation required
R11/1391	4596		22	Urupā		Outside proposed extent of works	No further investigation required
R11/1511	11547			Midden		Potentially within extent of works	Further investigation required
R11/1512	11548					Potentially within extent of works	Further investigation required
R11/1513	11569			Stone Alignment		Within proposed extent of works	Further investigation required
R11/1515	4585			Quarry	Te Wharau Quarry	Within proposed extent of works	Further investigation required
R11/1516	11595			Midden		Within proposed extent of works	Further investigation required
R11/1517	11549			Midden		Within proposed extent of works	Further investigation required
R11/1639	20077		24	Urupā		Potentially within extent of works	Further investigation required
R11/2381	17053			Midden		Not a site	No further investigation required

¹⁰ This CHI item was erroneous and was moved to its correct location in Plan Change 4.

NZAA	CHI item	Scheduled extent	SSMW	Type	Name	Comment	Response
R11/238 2	17062			Midden		Not a site	No further investigation required
R11/239 8	17570			Hedge		Outside proposed extent of works	No further investigation required
R11/286 6	2799	1350		Historic Homestead	Guys Homestead	Outside proposed extent of works	No further investigation required
R11/295 7	20218			Midden		Potentially within extent of works	Further investigation required

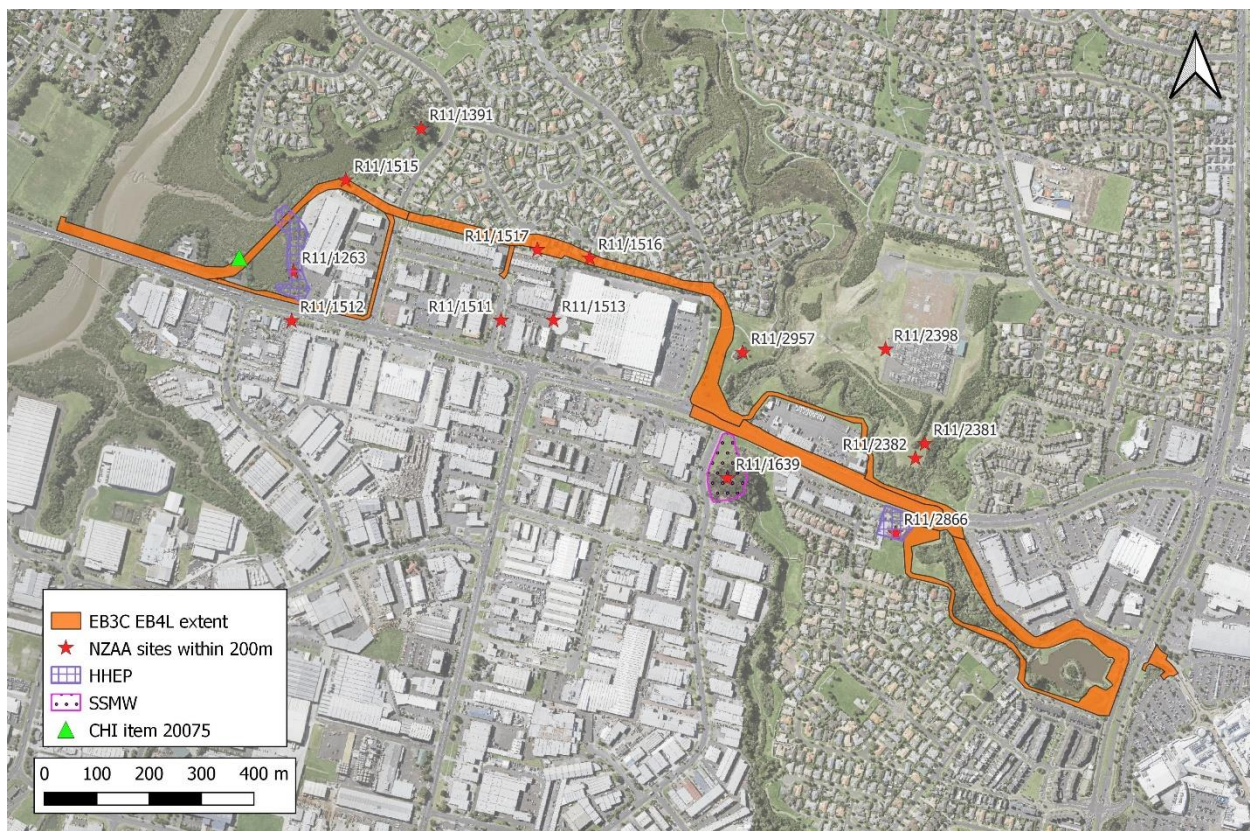


Figure 4-1 Recorded archaeological sites, CHI items, HHMP and SSMW within 200 m of proposed works area based on initial screening.

R11/1263 Donnelly's Quarry

This site was initially recorded by Vivien Rickard in 1986 as a stone quarry and jetty, although the description in the site record would indicate that they served more as quays, where scows were landed and launched at high tide, rather than jutting out into Pakuranga Creek. It was alluded to in the site record that it was probably built in the 1860s, but extensive research by Lisa Truttman indicates that the timeframe for active quarrying at the site extends from c. 1874 to 1886.

There has been some confusion as to the name and purpose of the quarry, due to similar names being attached to land and commercial ventures in the area. The quarry was owned and most likely operated by Edward Donnelly who owned the land at the time it was in use. The name 'McCallum's Quarry' was given to the site by Slocombe and Robinson (1986) after the landowners of the Te Wharau Block at the time, which appears to have led to confusion as to the nature and elements of the site by Judge (2012).

Judge (2012) refers to the quarry as McCullum's quarry and wharf, which actually appears to be the Panmure wharf which was purchased by the McCallum Brothers in 1926 from the Panmure Town Board. There does not appear to be any evidence of there being a wharf at the site, and the McCallum family who owned the property from 1945 to 1995 never used it as a commercial quarry. Due to the potential confusion with McCallum's wharf in Panmure, we refer to this site as Donnelly's Quarry.

Although the site was visited in 2012, only a sketch map of the site was made, with no accurate mapping of its features. Due to the vagueness of the extent, a site visit and mapping of the features was undertaken as part of this assessment. This is discussed in the fieldwork section of this report. As a result of the 2012 assessment, this site was scheduled (item 2114) as a Category B Historic Heritage place based on its historical and knowledge values in the AUP(OP). The associated HHEP was created based on Judge (2012) and included in the AUP(OP).

R11/1511 Midden

This site was recorded in 1986 by Slocombe and Robinson as a sparse, tuangi (*Austrovenus stutchburyi*) dominated midden deposit in a lava flow. Due to the nature of the deposit, it was not possible to provide any further detail. The grid reference for the site in the SRS is incorrect, with the location described by Slocombe and Robinson approximately 100 m north-east (Slocombe and Robinson 1986). This places it in the Business Park at 28 Torrens Road (Figure 4-2) and it can be assumed that this site has been destroyed. This location will not be affected by works.

R11/1512

This site was also recorded in 1986 by Slocombe and Robinson as a midden that consists mainly of fragmented tuangi over a 1 m² area. The grid reference for the site in the SRS is incorrect, with the location described by Slocombe and Robinson approximately 75 m north-east (Slocombe and Robinson 1986). This places it in the carpark of 272E Tī Rākau Drive (Figure 4-2) and it can be assumed that this site has been destroyed. This location will not be affected by works.

R11/1513

This site was also recorded in 1986 by Slocombe and Robinson as a stone alignment assumed to be associated with wetland gardening. The grid reference for the site in the NZAA SRS is incorrect, with the location described by Slocombe and Robinson approximately 135 m north-west (Slocombe and Robinson 1986). This places it in the carpark of 15 Torrens Road (Figure 4-2) and it can be assumed that this site has been destroyed. This location will not be affected by works.

R11/1515 Te Wharau Quarry

This site was also recorded in 1986 by Slocombe and Robinson as a stone working quarry associated with R11/1263. The aids to relocation in the SRF do not line up with the grid reference provided by Slocombe and Robinson (1986). The site record discusses an urupā (R11/1391) and pine plantation which indicates that the site is further north and outside the Project area (Figure 4-2).

R11/1516

This site was also recorded in 1986 by Slocombe and Robinson as a midden and terrace located on a volcanic outcrop. The midden was dense and consisted of tuangi and tītiko (*Amphibola crenata*). The grid reference for the site in the SRS was corrected in 2015 by Rachel Ford based on Slocombe and Robinson (1986). This location was subject to a housing development in the 1990s and this site can be considered destroyed and will not be affected by works.

R11/1517

This site was also recorded in 1986 by Slocombe and Robinson as a midden and stone alignment located on a volcanic outcrop. The midden consisted of tuangi and was associated with cooking. The stone alignment has been attributed to horticulture. The grid reference for the site in the SRS was corrected in 2015 by Rachel Ford based on Slocombe and Robinson (1986). This location was subject to a housing development in the 1990s and this site can be considered destroyed and will not be affected by works.

R11/1639

This site was initially recorded in 1988 by Brenda Sewell as a wāhi tapu. The description essentially identifies the same area as marked in the SSMW. It also mentions midden but does not describe the species present. The area around the wāhi tapu has been modified through development and road construction. The remaining extent of the wāhi tapu is outside the extent of works and will not be affected by works.

R11/2957

This site was initially recorded by Russell Foster in 2014 as a tuangi dominated midden over an area of 10 x 25 m beneath a cluster of karaka trees planted in the early 2000s. At the time Foster assumed it was archaeological due to the rocky outcrop in which it was located compared to the disturbed area of the reserve surrounding it. This was recorded with a handheld GPS unit so can be considered accurate. This location may be affected by works associated with the tie-in for the busway into Tī Rākau Drive.

Summary

Of the 14 recorded sites within 200 m of the extent of works, five were able to be excluded during the initial screening phase (Table 1). The remaining nine sites were subject to further research, and it was determined that five have been destroyed by subsequent development and two are outside the extent of works. The locations of the remaining two sites (R11/1263 and R11/2957) were visited and will be discussed below in the field survey section of this report.

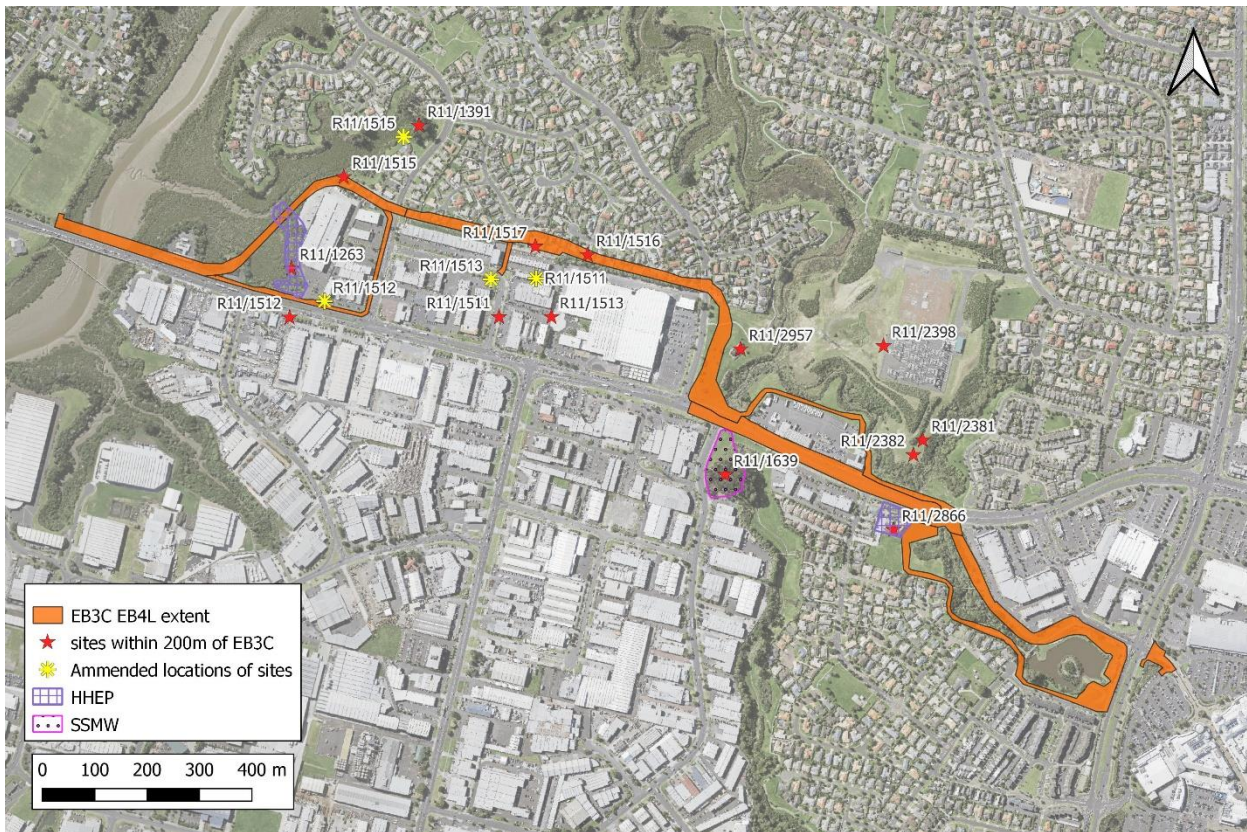


Figure 4-2 Sites studied during desktop research with amended locations where appropriate.

4.2.2 Field Survey

4.2.2.1 Stormwater outfalls (existing and new)

There are two new stormwater outfalls in the CMA (Outfall 01A-1 and Outfall 09-1), and one new outfall (Outfall 1-1) in a tributary of the Pakuranga Creek (Figure 4-3) identified during desk top analysis which had a higher risk of encountering previously unrecorded archaeological sites due to their proximity to water. These areas were later surveyed, and no archaeological features were identified at these locations, but they have also been heavily modified, and it is possible that sub-surface archaeological features may be obscured. Outfall 09-1 was originally going to be located within the HHEP for Donnelly's Quarry but during the design process it was moved 5 m north of the HHEP to avoid it (Figure 6-1). It should be noted that there are no noticeable features associated with the quarry visible near this outfall, or its original location. The remainder of the proposed stormwater design will be utilising existing infrastructure which will be upgraded. There is also the potential for sub-surface archaeological features to be exposed during the upgrading of this infrastructure.



Figure 4-3 location of higher archaeological risk stormwater outfalls.

4.2.2.2 R11/1263 Donnelly's Quarry

This site was visited and mapped by RTK GPS by Danielle Trilford and Hayley Glover of CFG Heritage Ltd on 5 December 2022. There was dense vegetation coverage across the extent of the site, but the main features identified by Judge (2012) were able to be relocated and mapped, along with some additional elements.

Seawall

The seawall consists of a single course of basalt blocks 40 m long which connects the three quays. This runs parallel to the shore.

Northern quay

This quay is low, and almost level with the water. It consists of a drystone construction similar to the seawall and southern quay, with larger boulders surrounded by smaller cobbles.

Central quay

This is a distinctive stone structure that is different to the northern and southern quays and the seawall. Whereas those elements consisted of drystone construction, this has been concreted together and sits on top of the seawall. It is approximately 2.5 m high from the creek bed and the front (west) face of it is in good condition. Large regular sized blocks were used, averaging around 0.5 x 0.5 m in size. Behind the well-preserved face is a hollowed-out gap, where it looks like part of the quay structure has been removed. The eastern extent of the quay could not be determined, but it looks like there was probably a platform and ramp made from rubble. This appears to postdate the other stone structures and due to its height compared to the other elements, may have been constructed to service a larger vessel.

Southern quay

This consists of large irregular drystone boulders and cobbles on the western face, with cobbles filling space behind it. The exact extent of this quay is difficult to determine due to vegetation coverage and as it blends into the seawall.

Central reduction area

The central stone reduction area consists of flaked material from the final dressing of kerbstones and is located near to the central and southern quays. This area has two main visible deposits, but it is assumed further deposits of it are obscured by vegetation.

Stockpiles

Three stockpiles of large blocks are visible, with two of them in the northern extent of the site and one in the southern end. The true extent of these was not able to be determined due to vegetation coverage, but the northernmost and southernmost extents are contained within the quarry face.

Quarry face

The quarry face is approximately 145 m long, and creates the northern, eastern and southern extents of the site. It varies in height up to approximately 3 m.

It is difficult to determine the condition of the site as it is heavily vegetated, but the visible elements range from poor to good condition. This is not only reflected in the construction techniques (dry stone versus concreted blocks) but likely the age of the elements, with the central quay obviously the most recent of the built elements.

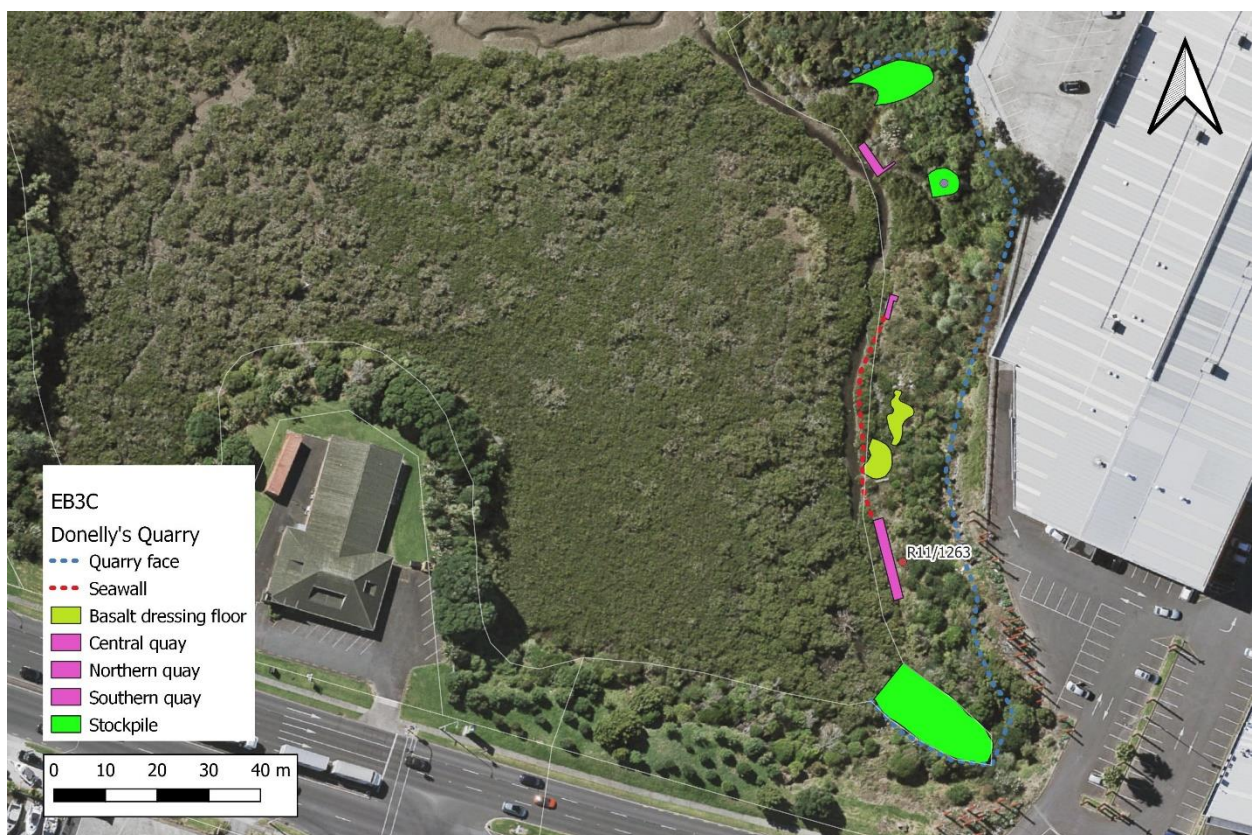


Figure 4-4 Features and extent of R11/1263 Donnelly's Wharf



Figure 4-5 View west from northern quay showing dry stone construction. Photo scale = 0.5m.



Figure 4-6 View north of central quay. Photo scale = 0.5m.



Figure 4-7 Northernmost stockpile of rock. note some are semi dressed. photo scale = 0.5 m.

R11/2957

This site location was visited by Brendan Kneebone of CFG Heritage Ltd in October 2021. The karaka trees are still present, along with the rocky outcrops described by Foster in 2014. The area in the vicinity of this site was intermittently probed and one spade test pit was dug to check for any subsurface deposits in the vicinity of R12/2957. The test pit showed that the ground in this area had been modified and features a mottled topsoil and clay mix. No evidence of R12/2957 was observed during this inspection.

4.2.2.3 HNZPTA Section 56 Authority

An exploratory authority under section 56 of the HNZPTA was granted (2020/170) to undertake vegetation clearance to record the quarry. The authority was granted in case archaeological features were disturbed during the clearance. No vegetation clearance was required for the recording, so the authority was not enacted.

4.2.2.4 Summary

Of the two sites identified as being within the extent of works during the desktop research stage, only one (R11/1263) was able to be identified. No further archaeological sites were identified during the surveys, and it is likely that the modification that has occurred in the reserves in the past 30 years, especially at the Burswood Esplanade reserve and Guys Reserve would have obscured any archaeological sites which may exist within them.

5 Existing Environment

Chapter Summary

This chapter presents an overview of the EB3C and EB4L area, including the geology and potential pre-clearance vegetation. This helps to identify areas where the remains of pre-European Māori land uses may exist. Due to their similarities, EB3C and EB4L are discussed together.

5.1 Eastern Busway EB3C and EB4L

EB3C runs through a mix of residential and commercial development on the eastern side of the Pakuranga Creek, an estuarine inlet which converges with the Tāmaki River, separating the Pakuranga and Te Wharau Peninsulas. The EB3C and EB4L project area mainly consists of alluvial deposits from the Puketoka formation, with a large basalt lava flow dominating EB3C associated with Matanginui / Green Hill, a volcanic cone which has been largely quarried away and now serves as a landfill (Edbrooke 2001). This lava flow, along with those from Te Puke ō Tara and Stysks Swamp are collectively referred to as the East Tāmaki Volcanic Area, a pre-European Māori gardening area which has been heavily modified and largely destroyed through recent development of the area (Rickard 1983).

The soils in this section are a mix of poorly to imperfectly drained silty loams and clay surrounding a large area of well-draining melanic clays and loams associated with the lava flows from Matanginui / Green Hill (Figure 5-1). The melanic soils which dominate the EB3C section would have supported pre-European Māori horticulture, but the gleys associated with the inlet where EB4L is located would have been less ideal.

As discussed in the terrestrial and freshwater assessment for EB3C and EB4L, prior to forest clearance and land modification, historical forest cover would have been representative of characteristic North Island lowland forest with abundant taraire (*Beilschmiedia tarairi*) and puriri (*Vitex lucens*) (McEwen 1987). The dominant historical terrestrial ecosystem types (Singers & Rogers 2014) in the area have been classified as:

- Puriri, taraire forest (WF7.2) - which occurs on volcanic fields with underlying basalt geology and skeletal soils
- Kahikatea, puriri forest (WF7.3) – which occurs on alluvial terraces on recent fluvial soils
- Mangrove forest and scrub (SA1.6) – which is in coastal areas and the upper tidal areas of estuaries. Species would include salt-marsh ribbonwood, harakeke, coastal tree daisy, ngaio, and kōwhai, manuka, and cabbage trees on the estuarine margins.

The ‘puriri forest’ is described as a broadleaved forest with abundant puriri (*Vitex lucens*) and occasional podocarps; (Singers & Rogers 2014). Within the Project area WF7.2 would have dominated on the higher ground and WF7.3 within the riparian margins of the stream corridors. Where saline influence was present, (within Burswood Reserve) coastal forest and scrub would have dominated.

Historically, the area would have supported a diverse range of invertebrates, amphibians, reptiles, birds and bats (Singers et al., 2017), which would have been exploited and utilised by Māori.

The Pakuranga Creek provides access to the project area from the Tāmaki River, with a number of inlets that were suitable for landing and launching locations and access to fresh water for Māori and

Europeans alike. Even where these areas have been obscured through reclamation, sedimentation or construction, it is possible that sub surface archaeological deposits may still exist.

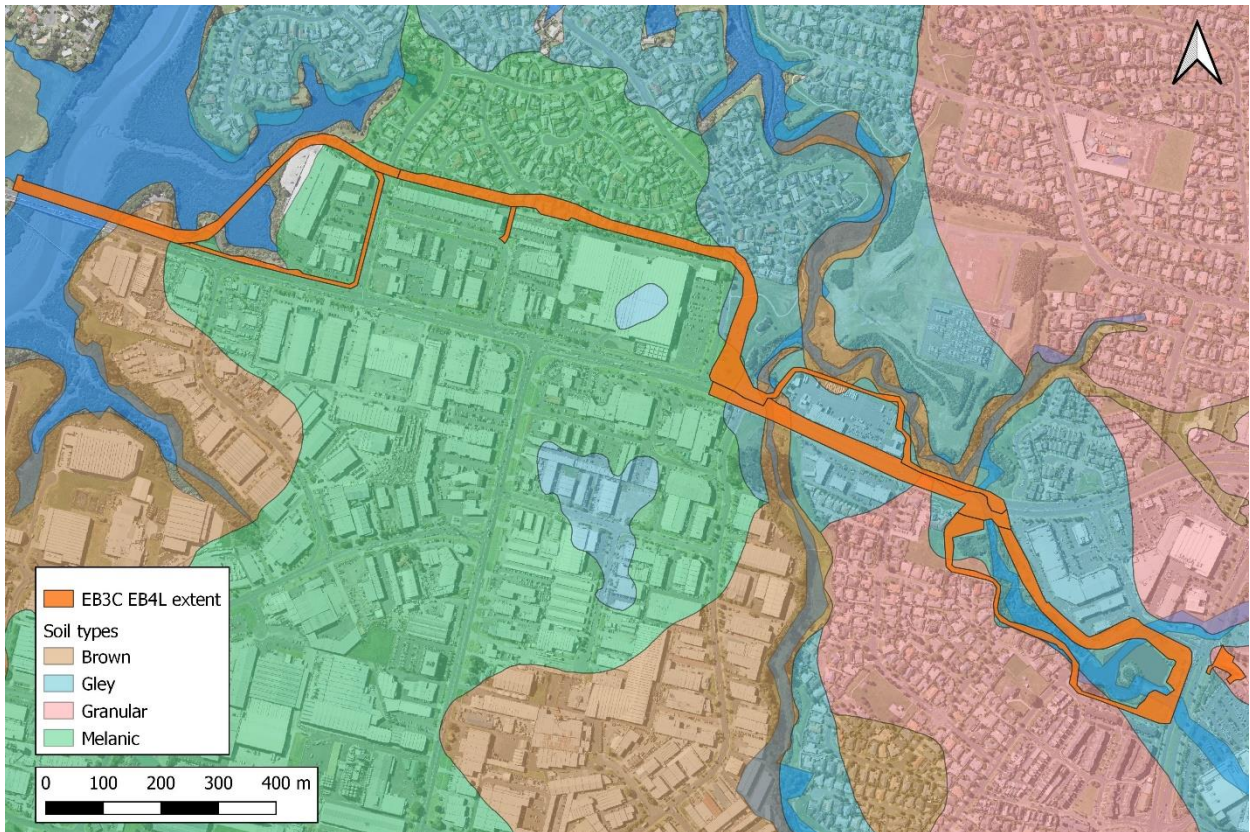


Figure 5-1 Soil map of EB3C and EB4L.

6 Assessment of Effects

Chapter Summary

This chapter assesses the known and potential archaeological values associated with the works to be undertaken in EB3C and EB4L. Only construction has the potential to affect the archaeological sites, so operational effects have not been assessed.

6.1 Construction

There was only one site identified within the extent of works which could be affected by works associated with the construction of Bridge B within EB3C, R11/1263, Donnelly's Quarry. Donnelly's Quarry is scheduled as a Category B historic heritage place (item 2114) in the AUP(OP).

R11/1263 is assessed using two sets of criteria; those set out in the HNZPT (2019), and the criteria set out in Chapter D17 of the AUP (OP) (the AUP(OP) Criteria).

There is also the potential for previously unrecorded Pre-European Māori cooking sites to be identified during works, especially within the council reserves surrounding the tributaries of the Pakuranga Creek. These potential pre-European Māori cooking sites will only be assessed following those set out in the HNZPT (2019).

It is noted that the values that have been assessed in this section only relate to archaeological and heritage values. Other interested parties, in particular mana whenua, may hold different values regarding the proposed works.

6.1.1.1 Assessment of values

R11/2163 Donnelly's Quarry

HNZPT Criteria

Condition	The site is densely vegetated, with elements identified as having, good, poor and unknown conditions.
Rarity	Historic quarries that are still intact are relatively rare.
Context	The Tāmaki River was an important waterway, both during pre-European and historic periods. This site represents a phase of the use of this waterway to provide building materials for Auckland.
Information	There is the potential for information to be gained about 19th century quarrying and stone dressing techniques.
Amenity	The site is currently densely vegetated. There is the possibility for the site to be cleaned up and interpretive signage could be used to inform the public about the site.
Cultural	This site is associated with early European settlement in Auckland.

AUP (OP) Criteria

Donnelly's Quarry is scheduled in the AUP(OP) as a Category B Historic Heritage Place (2114). Additional archaeological controls apply, and these require that other than minor listed works, no excavation may occur without resource consent.

Proposed Bridge B will sit within the scheduled extent. Any structures within this scheduled extent would ordinarily be considered a restricted discretionary activity as outlined in Chapter D.17 (Table D17.4.1 (A10)) of the AUP (OP)¹¹.

It is noted that a small area of reclamation for Bridge B (approx. 12m²) will sit within the scheduled extent of the quarry but will not impact on any of the identified features associated with the quarry. Refer to the general arrangement drawings for more information regarding the extent of reclamation. It should also be noted that the reclamation area within the scheduled extent is a non-complying activity as stated in Chapter F2 (F2.19.1 [A4]) of the AUP(OP).

The Council assessment criteria from Chapter D.17.8.2 provide a useful guide for the assessment of the proposed works for Bridge B within the scheduled extent:

Council Assessment Criteria	Comment
(a) whether the proposed works will result in adverse effects (including cumulative adverse effects) on the heritage values of the place and the extent to which adverse effects are avoided, remedied or mitigated;	The proposed works will not result in adverse effects (including cumulative adverse effects) on heritage values. The scheduled extent that was created around the quarry is indicative and does not accurately represent the visible features of the quarry which have since been mapped as part of this assessment. Although the embankment for Bridge B comes close to one of the features in the scheduled extent, it should avoid it as the proposed embankment works have been designed to avoid the features identified in the scheduled extent shown in Figure 4-4. In the unlikely event it is deemed during detailed design that it will not, the feature will require recording and removal. Refer to Figure 6.1 showing the Bridge B design relative to the identified features in the scheduled extent. Please also refer to Section 6.1.1.2 Assessment of Effects.
(b) whether the proposed works will maintain or enhance the heritage values of the place, including by: (i) avoiding or minimising the loss of fabric that contributes to the significance of the place; (ii) removing features that compromise the heritage values of the place;	The proposed works will maintain the main features of the heritage place with the northern stockpile which may be impacted. Removal of invasive flora species will help improve the overall aesthetic of the heritage place. By avoiding the known features, the embankment avoids significant adverse effects on the place,

¹¹ EB3C will be authorised by way of a Notice of Requirement so Chapter D.17 (Table D17.4.1 (A10)) of the AUP (OP) is not relevant in this instance.

<p>(iii) avoiding significant adverse effects on the place, having regard to the matters set out in B5 Historic heritage and special character;</p> <p>(iv) complementing the form and fabric which contributes to, or is associated with, the heritage values of the place; and</p> <p>(v) recovering or revealing the heritage values of the place.</p>	<p>especially associated with its historical and knowledge values.</p>
<p>(c) whether the proposed works will compromise the ability to interpret features within the place and the relationship of the place to other scheduled historic heritage places;</p>	<p>The proposed vegetation removal will enhance the ability to interpret the features within the heritage place.</p>
<p>(d) whether the proposed works, including the cumulative effects of proposed works, will result in adverse effects on the overall significance of the place such that it no longer meets the significance thresholds for which it was scheduled;</p>	<p>The proposed works will not affect the overall significance of the heritage place and it will still meet the threshold for scheduling based on its historical and knowledge values.</p>
<p>(e) whether the proposed works will be undertaken in accordance with good practice conservation principles and methods appropriate to the heritage values of the place;</p>	<p>The works will be undertaken in accordance with good practice conservation principles and methods. The works have been designed to be of minimal impact, with proposed works designed to avoid known features as much as practicable. An HHMP will be developed and approved by HNZPT as part of the archaeological authority process and will be implemented on site.</p>
<p>(f) whether the proposal contributes to, or encourages, the long-term viability and/or ongoing functional use of the place;</p>	<p>The area is not publicly accessible and this will not be changed through construction and operation of the bridge.</p>
<p>(g) whether modifications to buildings, structures, or features specifically for seismic strengthening:</p> <p>(i) consider any practicable alternative methods available to achieve the necessary seismic standard that will reduce the extent of adverse effects on the significance of the place; and</p> <p>(ii) take into account the circumstances relating to the ongoing use and retention of the place that affect the level of seismic resilience that is necessary to be achieved.</p>	<p>Does not apply.</p>

<p>(h) whether the proposed relocation of features, within or beyond scheduled extents of place, in addition to the criteria above;</p> <p>(i) is necessary in order to provide for significant public benefit that could not otherwise be achieved; and</p> <p>(ii) the significant public benefit outweighs the retention of the feature in its existing location within the extent of place.</p>	<p>Does not apply.</p>
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Potential midden/oven sites

Condition	The condition of these sites is unknown, but it is possible that in situ features associated with food preparation are located near the tributaries of the Pakuranga Creek.
Rarity	Midden/oven sites are common both regionally and nationally.
Context	The Tāmaki River was an important waterway for Māori, providing access into the growing areas around Botany, and also its connection between the Manukau and Waitematā Harbours via the Te Toangakiōtāhuhu portage at Ōtāhuhu.
Information	There is the potential for scientific information to be recovered by archaeological means if in situ archaeological material associated with this site is uncovered during works.
Amenity	No amenity values are known. Any potential archaeological information could be presented to the public using interpretive materials.
Cultural	This site is associated with mana whenua.

6.1.1.2 Assessment of Effects

There was only one site identified within the extent of works which could be affected by works, R11/1263, Donnelly’s Quarry. There is a Mechanically Stabilised Earth (MSE) embankment which will encroach into the scheduled extent of the Quarry.

The embankment is approximately 3000 m² in total ground coverage, with approximately 415 m² within the Scheduled Extent of the Quarry (Figure 6-1). It will require ground disturbance up to 2m deep to be rebuilt with hardfill. The extent of the embankment will require wicks installed at 800 mm and 1200 mm centres to a depth of 8 m to promote drainage and assist settlement. Therefore, works will occur across the extent of the embankment and within the area located within the scheduled extent for Donnelly’s Quarry.

A retaining wall has been designed for the embankment to minimise the ground disturbance near the recorded features of the quarry. This has kept the extent of works outside the recorded extent of the northernmost stockpile of stone. The retaining wall will be built using driven sheet piles and will form part of the northern abutment of Bridge B.

As described earlier in this report, stormwater outfall 09-1 was initially designed within the scheduled extent, but this has been shifted west of the scheduled extent (Figure 6-1) to avoid disturbance and discharge in the scheduled extent.

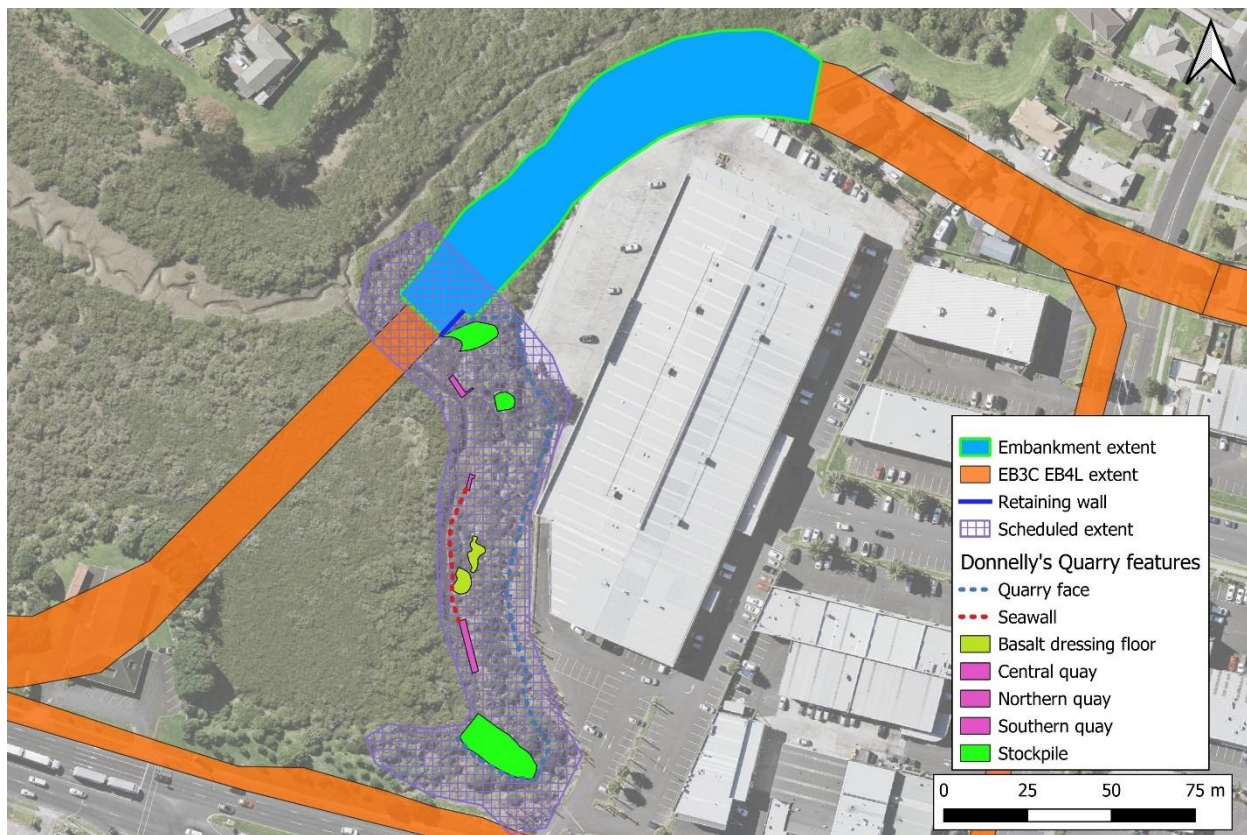


Figure 6-1 Extent of works near R11/1263 Donnelly's Quarry.

The remainder of proposed works involve road widening, service upgrades and pavement replacement. Due to the nature of these works, the avoidance of any unknown archaeological features within the site that are encountered is unlikely to be achievable and those unknown features will be modified or destroyed. The most likely unrecorded site type to be encountered during construction would be pre-European Māori midden and oven sites. An HHMP will be prepared and submitted as part of an application for a general authority to modify or destroy archaeological sites under section 44 of the HNZPTA. If such sites could not be avoided by works and needed to be destroyed in part or in full, archaeological monitoring, recording, and sampling would be required to mitigate some of the effects in accordance with the HNZPTA Authority.

It is noted that a small area of reclamation will sit within the scheduled extent of the quarry but will not impact on any of the identified features associated with the quarry. Refer to the general arrangement drawings for more information regarding the extent of reclamation. It should also be noted that the reclamation area within the scheduled extent is a non-complying activity as stated in Chapter F2 (F2.19.1 [A4]) of the AUP(OP).

6.2 Final Design/ Operation

6.2.1 EB3C and EB4L

There are no additional known effects on archaeological or historic heritage sites for EB3C and EB4L associated with operation of the busway on its completion.

7 Mitigation and recommendations

Chapter Summary

This chapter discusses recommended mitigation to address the potential construction effects on the archaeological landscape of the project area.

It is recommended that a general authority to modify or destroy R11/1263 and any previously unrecorded archaeological sites under section 44 of the HNZPTA is obtained and an Historic Heritage Management Plan (HHMP) developed alongside this to help guide works and aid in the induction and training of contractors to identify potential archaeological or historic heritage items. It is recommended that the HHMP will also indicate areas where archaeological and historic heritage monitoring or inspections will be undertaken (Figure 7-1). The HHMP will also address the opportunity to update the CHI with information sourced through the period of construction works. It is recommended that the HHMP be implemented for the duration of construction works.

Any earthworks undertaken near to previously recorded archaeological sites, inlets or previous coastline obscured by reclaimed land should be closely monitored by an archaeologist to ensure any potential sub-surface archaeological features are not missed. Any archaeological material encountered within the EB3C and EB4L project area during construction that cannot be avoided can be mitigated by undertaking archaeological investigation and recording utilising standard archaeological practice. This would include detailed notes and photographic recording, as well as stratigraphic drawings, maps, and sampling of artefacts / material to be retained for analysis where necessary.

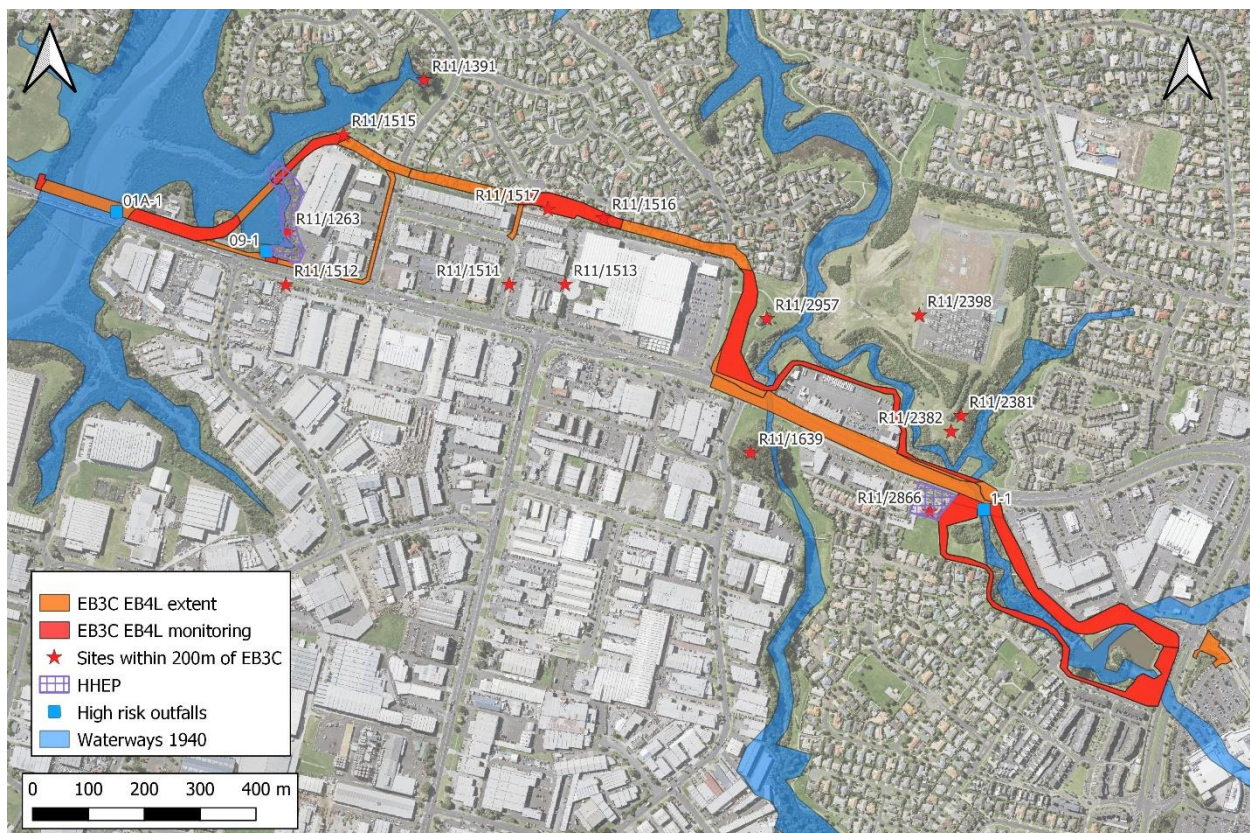


Figure 7-1 Map showing areas where archaeological monitoring or investigation should be undertaken during works.

8 Conclusions

Chapter Summary

An authority to modify R11/1263 and any previously unrecorded sites within EB3C will be applied for from HNZPT under Section 44 of the HNZPTA.

As part of the HNZPT authority application process, an historic heritage management plan will be created to guide works, including vegetation removal and archaeological inspection prior to works, to help indicate areas where archaeological monitoring and/or investigation will be required.

In addition, an HHMP will be prepared for the project as part of the proposed NoR conditions to clearly outline induction requirements for contractors (and sub-contractors) and procedures for archaeological monitoring, inspection, and investigation.

There is one archaeological site in the extent of works of the Project, R11/1263, Donnelly's Quarry, which is subject to the Historic Heritage and Special Character overlay extent of place [(2114), McCallum's Wharf and Quarry R11/1263] in the AUP (OP). The known features of this site will be avoided by works, but the proposed embankment works for Bridge B will encroach into the scheduled extent for this site. Although works have been specifically designed to avoid the known features of this site, there is the potential that associated (yet unknown) features may be encountered during the proposed works.

No further in situ archaeological sites or heritage sites were identified during the field survey. However, it is possible that previously unrecorded sites may be obscured and could be encountered during works especially near the tributaries of the Pakuranga Creek. The area has been occupied and farmed by European settlers since the 1850s and it seems probable that some evidence of this occupation may also be present.

Due to the risk of encountering evidence related to R11/1263 and pre-European Māori land use, we recommend applying for an authority from HNZPT under Section 44 of the HNZPT Act (2014) to cover the areas of EB3C and EB4L to ensure that if anything is encountered, it is managed appropriately in accordance with the HNZPT Act. In addition, an HHMP will be prepared for the project as part of the proposed NoR conditions to clearly outline induction requirements for contractors (and sub-contractors) and procedures for archaeological and historic heritage monitoring, inspection, and investigation. This will allow for any archaeological and historic heritage evidence that is encountered to be appropriately mitigated.

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