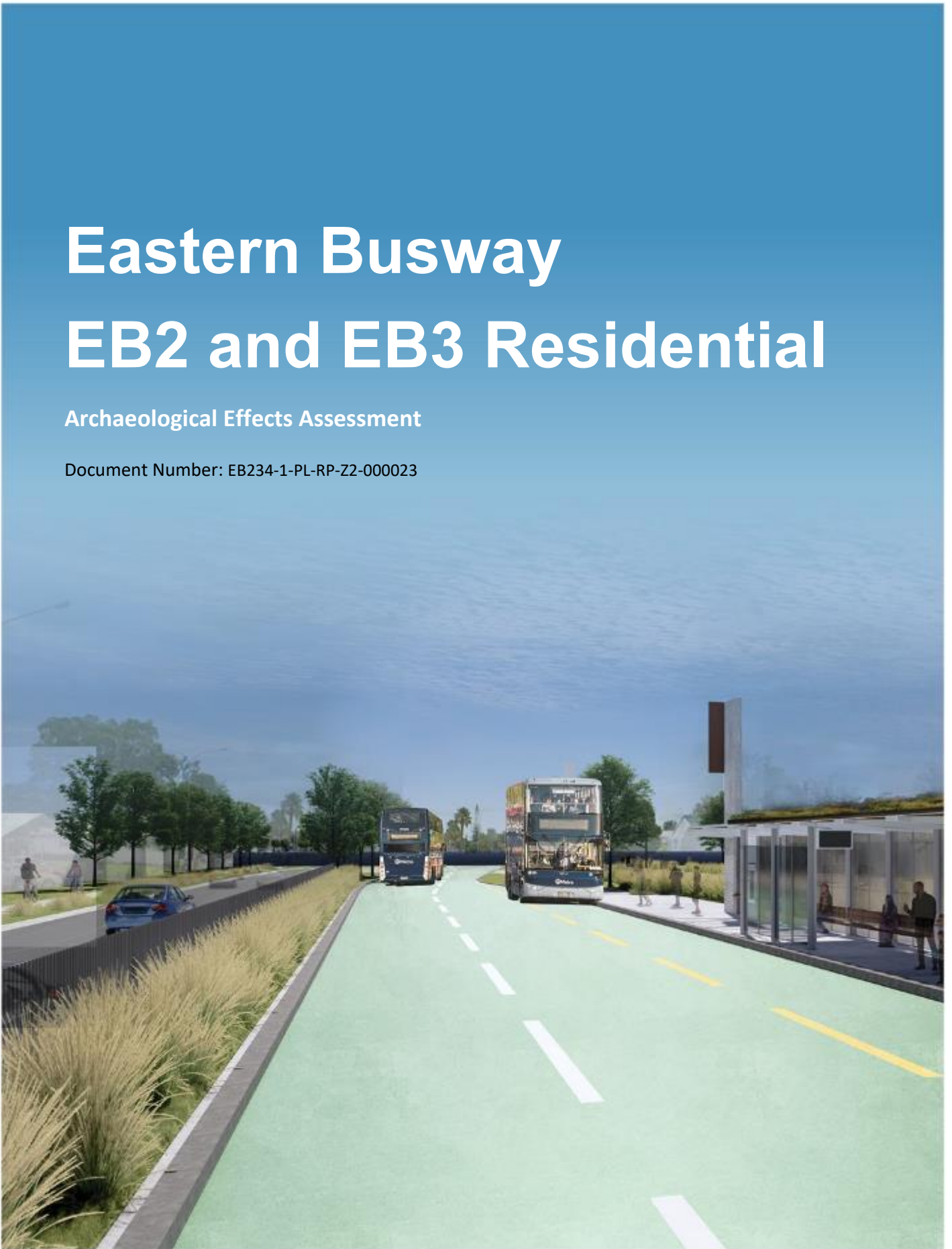


Eastern Busway

EB2 and EB3 Residential

Archaeological Effects Assessment

Document Number: EB234-1-PL-RP-Z2-000023



Quality Information

Document Number: EB234-1-PL-RP-Z2-000023

Document History and Status			
Rev	Date	Author	Status
A	20.06.2022	Arden Cruickshank and Hayley Glover	Final

Document Approval					
Rev	Action	Name	Position	Date	Signature
A	Reviewed by	Arden Cruickshank	Senior archaeologist	20.06.2022	On file
1	Approved by	Roger McDonald	Principal Alliance Planner	18.07.2022	On file

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List of Abbreviations and Definitions

Abbreviation and Definitions	Description
AEE	Assessment of Environmental Effects
AMP	Archaeological Management Plan
AUP(OP)	Auckland Unitary Plan (Operative in part) 2016
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)
EB3 Commercial/ EB3C	Eastern Busway 3 (Pakuranga Creek to Botany)
EB3 Residential/ EB3R	Eastern Busway 3 (SEART to Pakuranga Creek)
EB4	Eastern Busway 4 (link between Ti Rakau Drive and Te Irirangi Drive, Botany Town Centre Station)
EBA	Eastern Busway Alliance
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
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
NZCPS	New Zealand Coastal Policy Statement 2010
NoR	Notice of Requirement
PWA	Public Works Act 1981
RTN	Rapid Transit Network
RRF	Reeves Road Flyover
RMA	Resource Management Act 1991

Executive Summary

This report assesses potential archaeological and heritage effects of sections EB2 and EB3R of the Eastern Busway Project. A desktop assessment was undertaken, followed by an initial field survey carried out by Arden Cruickshank of CFG Heritage Ltd in November 2018. A further targeted field survey was undertaken in March 2022 focussing on stormwater outfalls that were not able to be assessed in 2018. The proposed works areas are under recorded archaeologically, with no recorded sites within 200m of the proposed EB2 and EB3R works. Pakuranga was heavily developed in the 1960s prior to any systematic archaeological surveys being undertaken, and it is likely that there are still sub-surface archaeological deposits present within the Pakuranga peninsula. In situ subsurface archaeological deposits, such as midden/oven sites, may be present within the project footprint, particularly near waterways.

As there is potential for unrecorded archaeological sites to be encountered and damaged or destroyed during works, it is recommended that an authority to destroy, damage or modify any previously unrecorded archaeological sites, that may be encountered within the extent of EB2/EB3R be applied for from Heritage New Zealand Pouhere Taonga (HNZPT) under Section 44 of the Heritage New Zealand Pouhere Taonga Act 2014.

By undertaking the mitigation above, the potential effects on archaeology can be considered less than minor for this project.

1 Introduction

1.1 Overview of the Eastern Busway Project

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 South East 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:

- 5km of two-lane busway
- New bridge for buses across Pakuranga Creek
- 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 Ti Rakau 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 (**this Assessment**)
- Eastern Busway 3 Residential (EB3R) – Ti Rakau Drive from the South Eastern Arterial (SEART) to Pakuranga Creek, including Edgewater and Gossamer Intermediate Bus Stations (**this Assessment**)
- Eastern Busway 3 Commercial (EB3 Commercial) – Gossamer Drive to Guys Reserve, including two new bridges, and an offline bus route through Burswood
- Eastern Busway 4 – Guys Reserve to a new bus station in the Botany Town Centre, including a link road through Guys Reserve.

The overall Project is shown in Figure 1 below.

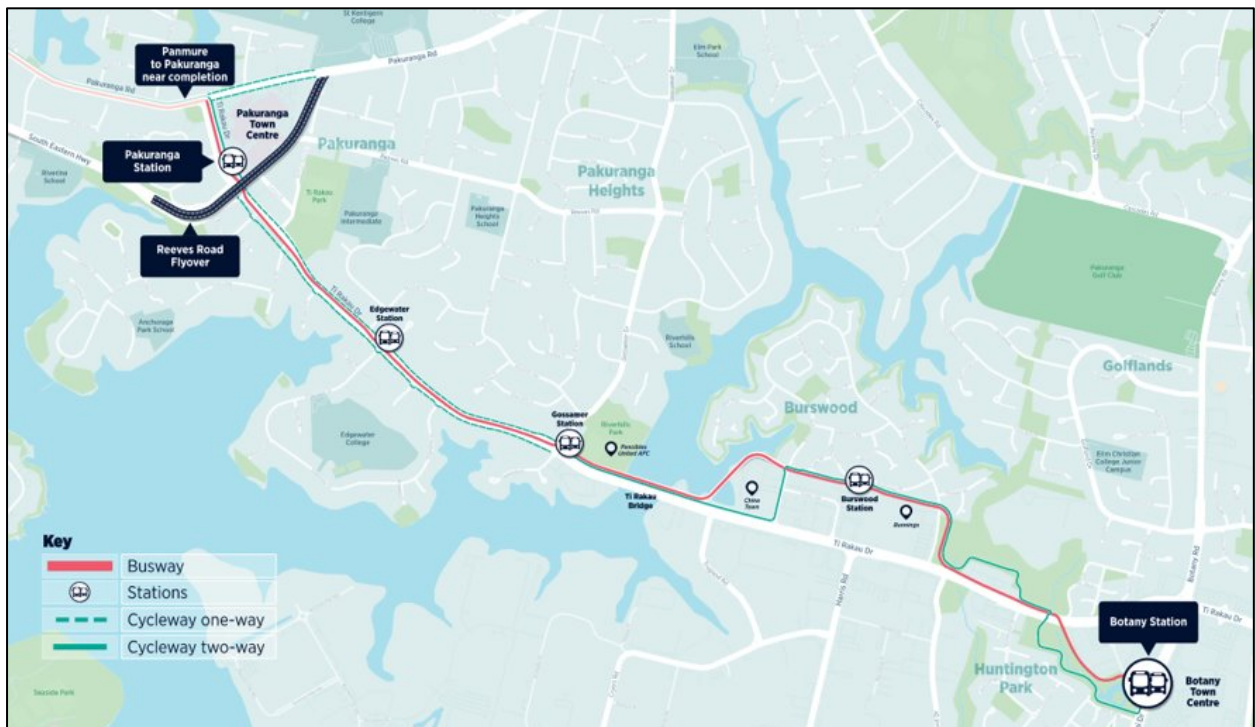


Figure 1. Project alignment

1.2 Project Objectives

The Project objectives are:

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

The Project Objectives have been considered in relation to this assessment, with that particularly relevant to the assessment being Objective 1, as there is potential to affect or modify recorded and unrecorded archaeological and/or heritage sites.

2 Proposal Description

The below is a summary of the works proposed within the EB2 and EB3R packages. Refer to the AEE for additional detail on the works proposed.

2.1 Eastern Busway 2

The EB2 section of the Project commences from the intersection of Ti Rakau Drive and Pakuranga Road, connecting with EB1, and traverses west along Ti Rakau Drive to the intersection of SEART. The north-south extent of EB2 is between SEART and Pakuranga Road along Reeves Road and William Roberts Road. The main components of EB2 are described below.

2.1.1 Busway and Pakuranga Town Centre Bus Station

A segregated dedicated two-way busway is proposed along Ti Rakau Drive to provide prioritised access for bus services between Pakuranga Town Centre and Botany. From Pakuranga Road to SEART, the busway will run on the northern side of Ti Rakau Drive.

The proposed Pakuranga bus station is a key facility for services running to and from the Panmure Station Interchange, Howick, Highland Park, Eastern Beach, Bucklands Beach and Sunnyhills. The bus station will be located along the northern side of Ti Rakau Drive, on land currently occupied for Pakuranga Plaza and 26 Ti Rakau Drive. The bus station will feature two platforms and will contain a mixture of street furniture and structures, including bus shelters, electronic messaging signage and seating. New proposed pedestrian crossings will provide connections to the bus station and Pakuranga Plaza. Modifications to the Ti Rakau Drive median strip, landscaping, and general traffic lane reconfiguration will enable safe and efficient bus movement for the busway once it becomes operative.

2.1.2 Reeves Road Flyover (RRF)

The RRF will provide two general traffic lanes in each direction connecting SEART to Pakuranga Road, to reduce local traffic congestion along Pakuranga Road and Ti Rakau Drive. The RRF will start opposite Paul Place Reserve, pass over Ti Rakau Drive and Reeves Road, before finishing at a new intersection with Pakuranga Road. Traffic lanes for the RRF will be elevated and run through the centre of SEART, requiring the relocation of the SEART off-ramp to the north of the existing off-ramp.

2.1.3 Walking and Cycling Facilities

EB2 includes improvements to active transport infrastructure and connections. This includes a new cycleway, improved footpaths, and new pedestrian crossings. These works will improve the safety and connectivity of walking and cycling links across Pakuranga Town Centre.

2.1.4 Supporting Works

A range of works will be undertaken in support of the EB2 package. This includes the relocation of network utility services, new street lighting, earthworks, removal of vegetation, landscaping, stormwater upgrades, environmental restoration and mitigation and temporary construction sites.

2.2 Eastern Busway 3 Residential

The EB3R section of the busway is a continuation of EB2 from the intersection of SEART and Ti Rakau Drive, with the proposed dedicated busway proceeding centrally along Ti Rakau Drive towards Gossamer Drive and Riverhills Park in the east. EB3R will largely occur within land vested as road or land currently owned by Auckland Transport. The construction of EB3R will take a staged approach to minimize disruption to the existing road network and its users. The main components of EB3R have been described below.

2.2.1 Edgewater and Gossamer Intermediate Bus Stations

EB3R includes two intermediate bus stations on Ti Rakau Drive, located within the vicinity of Edgewater Drive and Gossamer Drive. Both stations will have separate platforms for eastbound and westbound bus movements. A range of street furniture and structures will also be constructed, such as modular bus shelters pedestrian linkages, electronic messaging signage, seating and cycling storage facilities.

2.2.2 Western Bridge Abutment

EB3R includes construction of the western bridge abutment for a new future bridge across Pakuranga Creek. The abutment will be located within the area that is currently the southeastern section of Riverhills Park. Only the bridge abutment is included in the EB3R package of works. The remaining parts of the bridge will form part of the EB3C approval package.

2.2.3 Walking and Cycling Facilities

Provision has been made for walking and cycling along the route of EB3R. This includes footpaths and uni-directional cycleways located on either side of Ti Rakau Drive from SEART to Gossamer Drive. Signalised pedestrian crossings will be provided at key intersections along Ti Rakau Drive, including adjacent to the proposed Edgewater bus station.

2.2.4 Associated changes the road network

The proposed changes to the road network include lane arrangement and intersection reconfigurations and changes to the parking arrangement and access to Edgewater Drive Shops. Changes are also proposed to the access arrangements for residential properties along the EB3R alignment. New westbound lanes for general traffic will be established within the land which has been acquired by Auckland Transport and will be vested as road once it becomes operative, as the busway alignment replaces the existing westbound lanes.

2.2.5 Supporting Works

A range of works will be undertaken in support of the EB3R package. This includes the relocation of network utility services, new street lighting, removal of vegetation, earthworks, landscaping, stormwater upgrades, environmental restoration and mitigation and temporary construction sites.

3 Specialist Assessment

Chapter Summary

There is potential for works on EB2 and EB3R to affect unrecorded archaeological sites as minimal archaeological survey was done prior to the development of Pakuranga. All works including ground disturbance have potential to impact unrecorded sites, especially those proposed to be near the coastline and waterways.

3.1 Assessment Content

This report describes the assessment of archaeological effects associated with the operation and construction of EB2 and EB3R sections of the Eastern Busway Project.

Its purpose is to inform the AEE relating to the Notice of Requirement (NoR), and required regional consents and consents required under National Environment Standards for EB2; and the AEE and district and regional consents applications for EB3R and identify the ways in which any adverse effects will be mitigated.

This archaeological assessment:

- Identifies any archaeological constraints on the proposed works associated with EB2 and EB3R
- Will support an application to HNZPT for an archaeological authority to undertake the project.

3.2 Specific Project Elements

The proposed works consist of several elements; including dedicated bus and cycleways, a flyover, the western bridge abutment for the new Ti Rakau Bridge, road widening and additional stormwater discharge points. Construction will require ground disturbance which has the potential of affecting archaeological and heritage sites, whether recorded or not.

Pakuranga and Botany are relatively recent suburbs, with development of the area primarily being undertaken in the past 50 years. Unfortunately, archaeological protections were not in place until the Historic Places Act 1980 was enacted so much of the development along the route of EB2 and EB3R was not subject to archaeological investigation or survey prior to development. This has led to much of Pakuranga, including the coastline along the Tāmaki River and Pakuranga Creek being devoid of recorded archaeological sites. As is shown on Figure 2 below, there are no recorded archaeological sites within the EB2 area or within the residential section of the EB3R area, but unrecorded sites may be present and could be affected by works.

This later development of Pakuranga and Botany contrasts with the archaeological landscape identified during EB1 through Panmure, where both pre-European Māori and pre-1900 historic settlement was recorded and visible for 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 2. Archaeological sites around EB2 and EB3R.

3.2.1 Eastern Busway 2 (EB2)

EB2 comprises of a four-lane flyover between Pakuranga Road and Pakuranga Highway and changes to the local road network around Pakuranga Town Centre including provision of upgraded walking and cycling facilities. It includes a segregated busway along the north-eastern side of Ti Rakau Drive from Pakuranga Road to Reeves Road/ SEART. A major interchange bus station is proposed at Pakuranga Town Centre. An overview of EB2 is shown in Figure 1.

3.2.1.1 Busway and Pakuranga Town Centre Bus Station (EB2)

A segregated dedicated two-way busway is proposed along Ti Rakau Drive to provide prioritised access for bus services between Pakuranga Town Centre and Botany. From Pakuranga Road to just east of William Roberts Road the busway will run along the north-eastern side of Ti Rakau Drive. Just west of William Roberts Road the busway joins with a central running busway along Ti Rakau Drive (EB3R). The busway will connect with the Eastern Busway 1 (EB1) component at the Pakuranga Road/Ti Rakau Drive intersection.

Pakuranga bus station will be located in the south-western corner of the Pakuranga Town Centre on the eastern side of Ti Rakau Drive between Aylesbury Street and Reeves Road. Widening of the corridor along Ti Rakau Drive is required to accommodate the new busway, revised general traffic arrangements, pedestrian and cyclist facilities and Pakuranga bus station.

3.2.1.2 *Reeves Road Flyover (EB2)*

The RRF will provide two general traffic lanes in each direction connecting Pakuranga Highway to Pakuranga Road where William Roberts Road currently intersects Pakuranga Road. Where the RRF meets Pakuranga Road the intersection will be modified to prioritise vehicular movements between RRF and Pakuranga Road to the east with Pakuranga Road teeing into the new Reeves Road Pakuranga Road intersection.

Underneath RRF on Reeves Road a new public space will be created providing an activated space and connection between Pakuranga Town Centre and the community and recreational facilities south-east of the Town Centre.

3.2.1.3 *Walking and Cycling Facilities (EB2)*

A bi-directional off road cycleway and footpath is proposed as a continuation from EB1 on the northern side of Pakuranga Road to near the entrance with Saint Kentigern College. A shared path is provided along the southern side of Pakuranga Road from Ti Rakau Drive to the intersection with RRF.

A bi-directional off road cycleway is provided along the north-eastern side of Ti Rakau Drive, joining the EB1 cycling facilities via a signalised crossing at Pakuranga Road. A shared path is provided on the south-western side of Ti Rakau Drive along the length of the corridor.

Upgraded pedestrian and cyclist facilities are provided along local roads in the area.

3.2.1.4 *Associated changes to the Road Network (EB2)*

Associated changes to the road network are required to accommodate the dedicated busway, RRF, walking and cycling facilities, and to maintain and provide access to properties. The changes to the road network include:

- Extension of William Roberts Road to meet Ti Rakau Drive
- Closure of William Roberts Road at Pakuranga Road
- Extension of Cortina Place to meet the new William Roberts Road
- Realigning Aylesbury Street with Palm Avenue
- Realigning Mattson Road
- Side street tie in works at Palm Avenue, Reeves Road, Ayr Road and Tiraumea Drive.

3.2.1.5 *Ancillary Works (EB2)*

Ancillary works include the relocation of network utility services, removal of vegetation, stormwater treatment, environmental restoration, and mitigation (e.g., planting and noise barriers), temporary construction and storage areas and other ancillary structures and activities associated with these works.

3.2.2 Eastern Busway 3 Residential (EB3R)

The EB3R component of the Project is located approximately between Roseburn Place and Gossamer Drive. The improvement works will include part of a new dedicated 3.6km long urban busway along the centre of Ti Rakau Drive from Mattson Road to Te Koha Road, Bus Stations at Marriot Road and Gossamer Drive, walking and cycling facilities, ancillary changes to the road network, and ancillary works. An overview of EB3R is shown below in Figure 1.

3.2.2.1 Cycleway, Shared Path, Road Upgrades

A bi-directional off road cycleway is proposed along the northern side of Ti Rakau Drive and a shared path is proposed on the southern side and is continued from EB2 along the entire length of EB3. A footpath adjacent to the bi-directional cycleway runs along the northern side of Ti Rakau Drive.

Two general traffic lanes are provided in each direction adjacent to the centre running dedicated busway. Intersection reconfigurations are required to accommodate the widening associated with the introduction of the central running busway and upgraded general traffic arrangements.

3.2.2.2 Ancillary Works

Ancillary works for EB3R include the relocation of network utilities services, removal of vegetation, stormwater treatment, environmental restoration, and mitigation (e.g., planting and noise barriers), temporary construction, storage areas, other ancillary structures and activities associated with these works.

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 (HNZPT Act) and may not be destroyed, damaged, or modified without an authority issued by Heritage New Zealand Pouhere Taonga (Heritage NZ).

- An archaeological site is defined in the HNZPT Act as:
 - 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 Project will be applying for an archaeological authority under section 44 of the HNZPT Act to cover the extent of works for EB2 and EB3R to ensure that effective management of recorded and unrecorded archaeological sites within the extent of works is undertaken during construction.

3.3.2 Resource Management Act 1991

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

- 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
- Historic heritage includes:
 - Historic sites, structures, places, and areas
 - Archaeological sites
 - Sites of significance to Māori, including wāhi tapu
 - 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 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

There are no scheduled sites or historic heritage areas within the proposed extent of works for EB2 and EB3R, and no reasons for consent are triggered under section D17.4 of the AUP(OP).

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
- Plans for the extent of works for the project were provided by Jarrod Snowsill of EBA (18 January 2022).

4.1.2 Fieldwork

A site survey was undertaken on 23 November 2018 by Arden Cruickshank of CFG Heritage Ltd of EB2 and EB3R with a further targeted field survey undertaken in March 2022 around some stormwater discharge points that were not able to be assessed properly previously due to vegetation obscuring the ground surface. Due to the large scale and heavily built-up nature of EB2 and EB3R, areas of interest such as inlets and creeks, were specifically targeted to see if any evidence of pre-European or historic evidence of occupation is present.

4.1.2.1 Stormwater discharge points

There are eight new or modifications to existing stormwater discharge points identified on the plans for EB2 and EB3R which could impact archaeological sites, recorded or not. These are listed below (Table 1) and shown in Figures 5 and 6 and were inspected during the field survey to see if any archaeological sites are present in their vicinity.

Table 1 List of Stormwater discharge points identified within the project.

Discharge point	Easting	Northing
MCC_P98066C	1766083	5912961
MCC_108673	1766248	5912872
89-18	1766286	5912863
MCC_108699	1766867	5912574
MCC_108703	1766966	5912433
MCC_108707	1767049	5912357
MCC_108718	1767449	5912017
MCC_108738	1767610	5911943
MCC_108746	1768133	5911809

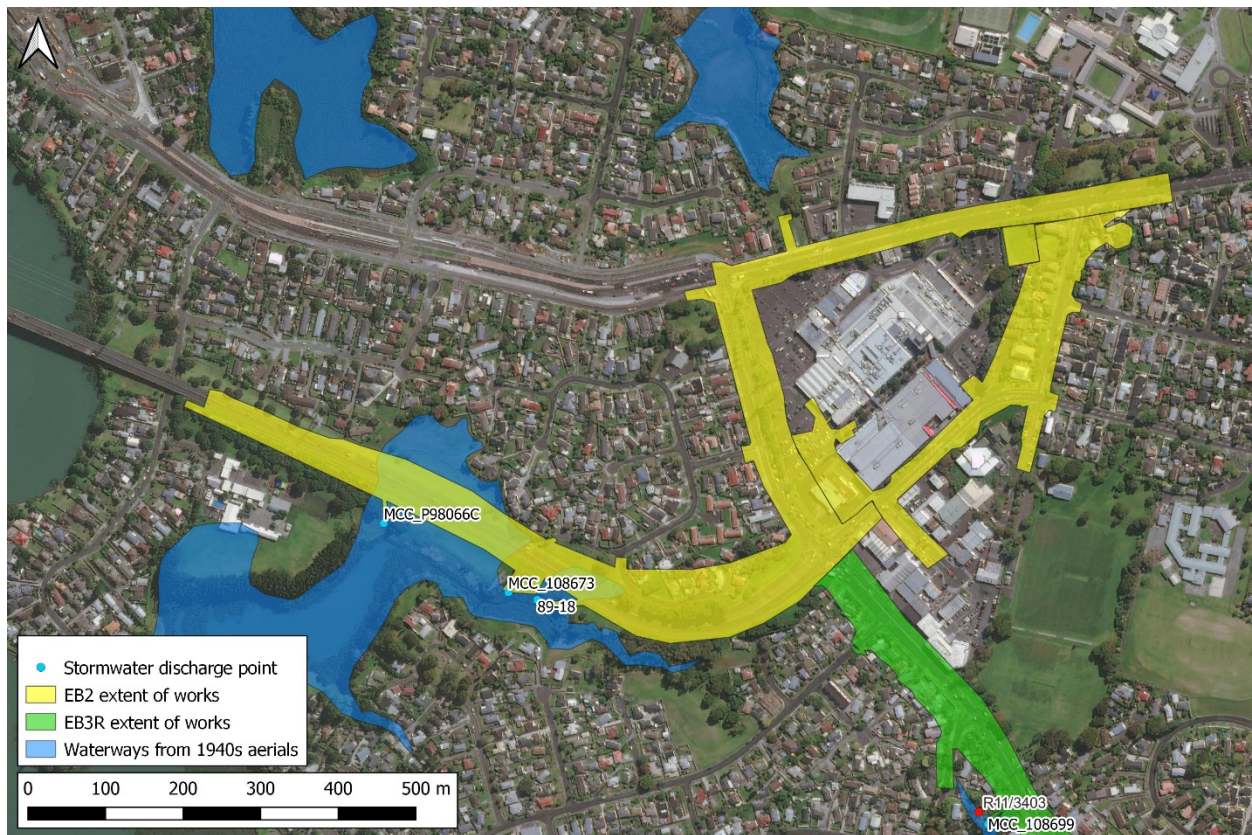


Figure 3. Stormwater discharge points in EB2.



Figure 4. Stormwater discharge points in EB3R.

4.1.2.2 HNZPTA Section 56 Authority

Four of the stormwater discharge points within EB2 and EB3R were originally obscured by vegetation and vegetation clearance was proposed to expose the areas to better assess potential effects from this project. This vegetation clearance was organised for March 2022 but was not required as the understorey had depleted since the first visit making the ground surface visible.

4.1.2.3 Reclamations and silted up inlets

Aerial photographs from the 1940s were obtained of the area, manually georeferenced and compared to the current coastline. Several places were identified that are within the scope of the proposed project area where inlets and creeks have been either subject to silting or intentional reclamations (with culverts in some cases). These are also visible in Figures 5 and 6.

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 100m grid references as the map data became metricated in the 1980s. This has led to sites potentially only having a 200m accuracy.

Since the mid-1990s sites recorded by hand-held GPS are generally located to $\pm 5m$. To ensure all archaeological sites that could be impacted by works are assessed, a 200m 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 200m of the NoR which could not be ruled out by this method will be considered as within the NoR until able to be proven otherwise.

The majority of the EB2/3R area has been developed for residential and commercial use, with houses and pavement covering much of the project footprint. There are areas, especially along Ti Rakau Drive where cut and fill is evident, but the condition of the ground surface beneath these areas cannot be assessed. Essentially this assessment aims to identify areas where remnants of archaeological sites exist, whether in situ or not, to help guide the rest of the project as to where it is possible, or likely to encounter, archaeological or heritage sites. Some areas which were identified during desktop research as warranting archaeological inspection were not able to be accessed, and these are discussed in more detail below.

This assessment is concerned primarily with archaeological sites, with any notable trees being assessed by a relevant expert in a separate report.

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
- Cultural Associations.

4.2 Assessment Analysis

4.2.1 Desktop Research

4.2.1.1 Pre-European Māori land use

Background into 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 (also known as Te Toangakiōtāhuhu and Te Tapotū o Tainui) Portage; 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 (Sullivan 1986:12, Furey 1986:3) 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 Pa, which was surrounded by one of the largest Māori populations early European voyagers had encountered in New Zealand. In the 1820s it was described as being approximately 1.8 km in length and 900m 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).

Despite all this evidence of Māori settlement along the Tāmaki river, there is a severe lack of recorded archaeological sites on the Pakuranga peninsula which is unlikely to be a true representation of pre-European land use. This area was subject to intensive modification in the 1960s, which would have obscured much of the landscape before any archaeological survey was able to be undertaken.

On the eastern side of the Pakuranga Creek is a large lava field associated with Te Puke o Tara and Mātānginui, 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 were 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 vast 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, which were noted as set aside as a native reserve. Roads in the area terminated abruptly at the 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) ¹ for five acres of the 267-acre farm, at the inlet off the Pakuranga Creek.² 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.”

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, and 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 also utilised for production of oats, potatoes, wheat, barley, and vegetables (Judge, 2017). Many of these early boundaries have since been obliterated through development.

4.2.1.3 *Previous archaeological work in the project area*

During the 1970s the New Zealand Historic Places Trust (now known as HNZPT) funded several systematic site surveys within priority coastal areas in the Auckland region that were at risk from increasing use and development (Baquie & 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

¹ R6.502-3, BAJZ A1660 23641 Box 10 R22763391, Archives New Zealand

² 21M.383, BAJZ A1660 23641 Box 748 R22764129, Archives New Zealand

field survey of a small portion of the East Tāmaki Volcanic Field to the east of the EB3, and recorded several 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, a vast Māori horticultural complex would have existed in the vicinity of these volcanic fields.

A survey was undertaken by Clough and Associates in 2010 from the Pakuranga Substation to Penrose for a replacement underground power cable. A portion of this survey included Ti Rakau Drive, but no archaeological material appeared to be located along the proposed route where it aligned with EB2 or EB3.

Although there have been several archaeological investigations within the project area, there have been none which have adequately covered the entire project area. Most archaeological surveys and investigations have been undertaken on the eastern side of the Pakuranga Creek, with no systematic survey appearing to have been undertaken on the Pakuranga Peninsula.

4.2.1.4 Recorded archaeological and heritage sites in EB2 and EB3R

Prior to this assessment, there are no recorded archaeological sites within 200m of EB2 and EB3R, as sites were not recorded prior to development taking place in the area. In addition to the single archaeological site identified during field work (R11/3403) the potential for encountering unrecorded archaeological sites is addressed in the mitigation and recommendations sections below.

4.2.2 Field Survey

Field surveys were undertaken on 23 November 2018 and March 2022 by Arden Cruickshank of CFG Heritage Ltd. EB2/3R were surveyed from north to south with particular emphasis on those areas where stormwater discharge points are likely to impact inlets and creeks, being the least modified parts of the landscape through most of EB2/3R.

The majority of the EB2/3R area has been developed for residential and commercial use, with houses and pavement covering much of the project footprint. There are areas, especially along Ti Rakau Drive where cut and fill is evident, but the condition of the ground surface beneath these areas cannot be assessed.

4.2.2.1 EB2 Stormwater discharge points

MCC_P98066C, MCC_108673, and 89-18 were accessed from the Pakuranga Highway. The area where the proposed discharge points are to be located has been heavily modified through reclamation and road building (Figure 3). The inlet directly south of them was checked, but no visible archaeological material identified (Figure 5).



Figure 5. View from stormwater discharge point 89-18 towards Dale Crescent. This area is all reclamation which may contain sub surface archaeological deposits associated with the original coastline.

4.2.2.2 EB3R Stormwater discharge points

MCC_108699

MCC_108699 was accessed through an alley way between 6 and 8 Mattson Road. The inlet was heavily vegetated with invasive weeds and possibly some natives in 2018, but in 2022 much of this understorey had been controlled by council and had good ground visibility. Portions of the remaining vegetation was parted with a rake which exposed evidence of slumping down the bank. Natural ground surface was not visible.

Redeposited midden was within an area where vegetation had been cleared, possibly by council contractors. This midden was visible for 1.0 x 0.5 m and consisted of whole and fragmented tuangi cockle and gastropods (Figure 6). This was within the same slumping material as the rest of the bank, which indicates it probably originated in the backyard of 63A Ti Rakau Drive. This redeposited midden has been recorded in the NZAA SRS as R11/3403 (Figure 7).



Figure 6. Close-up of fragmented midden R11/3403 visible within council reserve. Probe handle = 0.45 m.

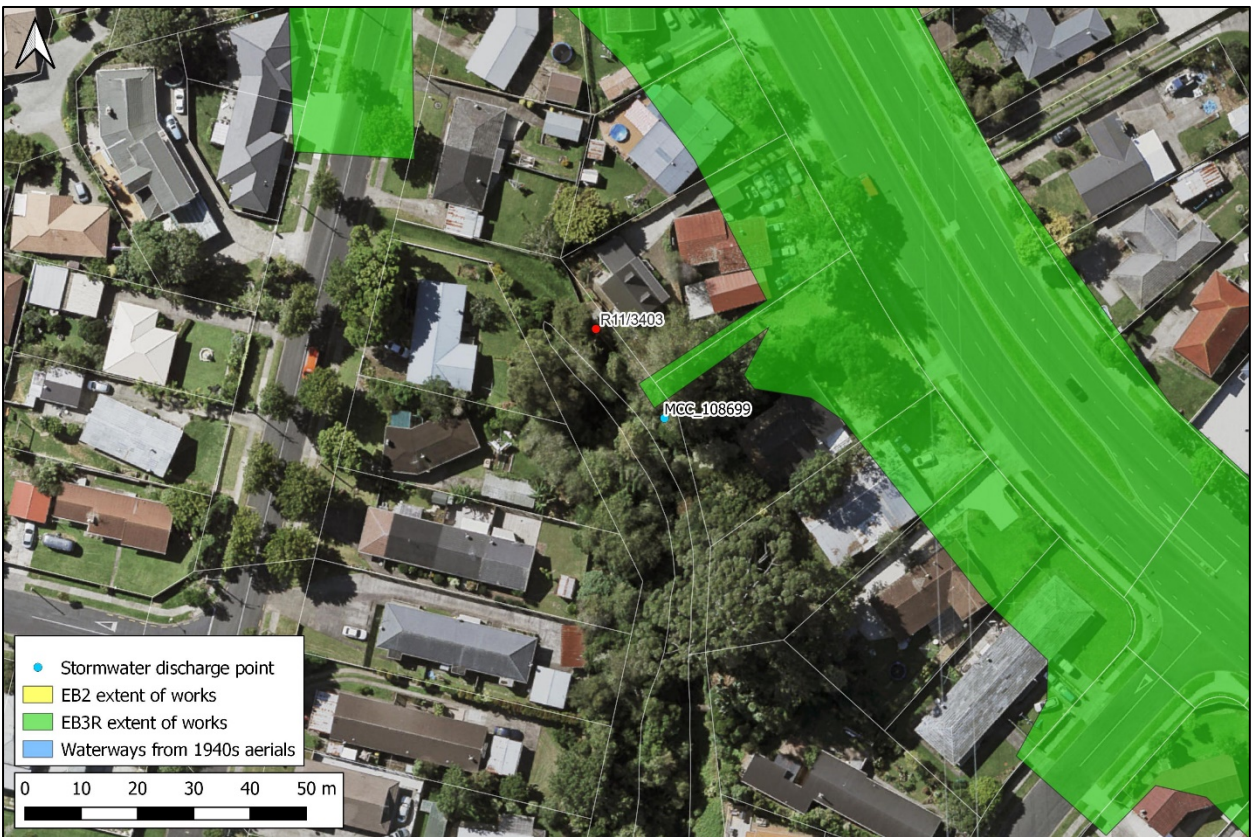


Figure 7. Location of R11/3403 within council reserve.

MCC_108703

MCC_108703 was not visited during the field surveys but is at the edge of a reclaimed area at the original coastline.

MCC_108707

MCC_108707 was accessed through the backyard of 97 Ti Rakau Drive. This portion of the inlet had been infilled or dammed in the past and consisted of redeposited soil and rubbish. Probing proved inconclusive, but it appeared that the slump material is at least 500 mm deep and possibly more than 1 m. No archaeological material was noted within this discharge point.



Figure 8. Ground surface near outflow MCC_108707. Probe handle =0.45m.

MCC_108718

MCC_108718 was accessed through 151 Ti Rakau Drive. The proposed outflow is within the inlet but will require trenching through the bank. The bank itself is steep and no archaeological material was noted. The backyard of 151 Ti Rakau Drive was intermittently probed but this proved inconclusive. The backyard appears to have poor drainage so would not have been ideal for permanent settlement but may have been suitable for seasonal use (Figure 9 and Figure 10). No archaeological material was noted within the vicinity of this discharge point.



Figure 9. Backyard of 151 Ti Rakau Drive where stormwater discharge will be trenched through.



Figure 10. Mangrove portion of inlet where stormwater discharge MCC_108718 will be located.

MCC_108738

MCC_108738 was accessed between 171 and 173 Ti Rakau Drive. The area is mainly in grass, with some smaller plants and a large willow where the outflow is proposed (Figure 11). During the 2018 survey this area was overgrown, but subsequent stormwater works has exposed the area. An access track has been cut into the esplanade reserve, presumably associated with the stormwater upgrades. This cut is up to 1m deep and exposed redeposited soil and rubbish (Figure 12). The natural ground surface does not appear to have been exposed during these works. The depth of reclaim/filling in this area is not able to be established, but it is assumed that it is associated with levelling of the neighbouring properties for the creation of house platforms. No evidence of archaeological material was identified in the vicinity of this discharge point.



Figure 11. Recently cleared area around MCC_108738 for stormwater upgrades.



Figure 12. cut made for digger access showing up to 1 m of fill.

MCC_108746 (Riverhills Outfall)

MCC_108746 is within the reclaimed and built-up portion of Riverhills Park. It is directly next to the original stream bank (Figure 14), so it is possible that sub-surface archaeological deposits may be exposed during works. No evidence of archaeological material was identified in the vicinity of this discharge point.

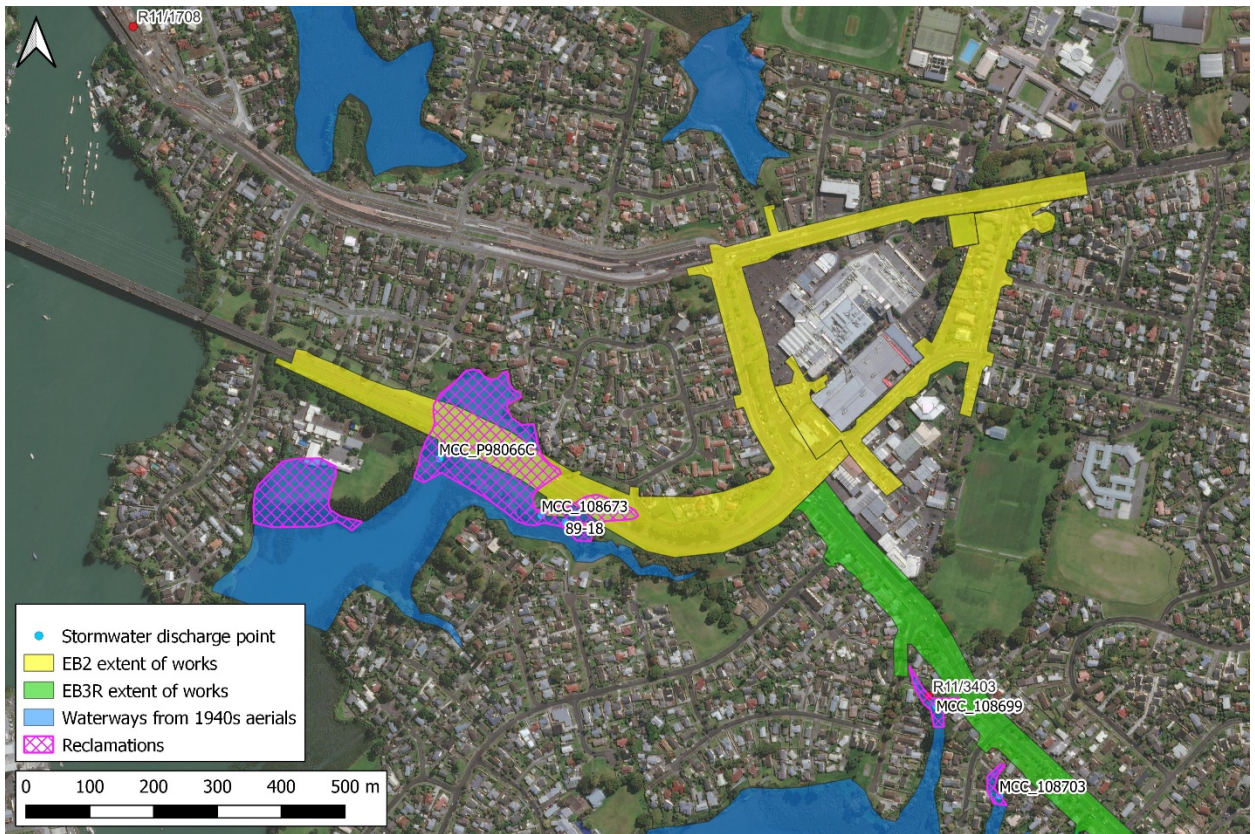


Figure 13. EB2 showing areas where silting or reclamation has obscured inlets and proposed stormwater discharge points.



Figure 14. EB3R showing areas where silting or reclamation has obscured inlets and proposed stormwater discharge points.

4.2.2.3 *HNZPTA Section 56 Authority*

Because no ground disturbance was required for the survey of these stormwater outflows we did not enact any of the conditions of the Section 56 Authority that was applied for this project. This authority is still active and will be used in the EB3C site investigations.

4.2.2.4 *Summary*

The inlets in which these proposed stormwater discharge locations are situated have been subject to silting, infilling and vegetation coverage which has affected visibility. One area of redeposited midden was identified near MCC_108699 and has been recorded as R11/3403 in the NZAA SRS. This shell midden most likely originated within the extent of 63A Ti Rakau Drive and is an indicator of likely archaeological features in the vicinity.

No other evidence of archaeological material was identified along the route, but there is the potential for previously unrecorded archaeological sites to be encountered during construction especially within 50m of the inlets.

5 Existing Environment

Chapter Summary

This chapter presents an overview of the build area, including the geology and potential pre-clearance vegetation. This helps to identify areas where pre-European Māori land use may exist.

5.1 Eastern Busway 2

EB2 is located within a peninsula bounded by the Tāmaki River and Pakuranga Creek. The project area mainly consists of Alluvial deposits from the Puketoka formation, on the eastern slope of a ridge consisting of East Coast Bays Sandstone and mudstone formations, gently sloping towards the Tāmaki River (Edbrooke 2001).

Due to the urban environment of EB2, localised soil information is not available on S-Map, but it can be assumed that it would be similar to the surrounding area described by Felgate (2017) and as demonstrated by the underlying geology. It is likely that the area where EB2 is located contains orthic gleys and granular soils which range from poorly to imperfectly drained. The potential historic vegetation of EB2 as described by LRIS is likely to have been a lowland forest mix of kahikatea, puketea and tawa trees, which again indicates the poorly drained nature of the alluvial soils. These areas however would have been exploited by Māori for birds, timber, and foraged edibles. The relatively low elevation of EB2 (approximately 5m above sea level) combined with these soils would indicate that the proposed extent of EB2 would not have been suitable for Māori horticulture or storage, but this may have been undertaken on the slopes to the east of the project area. In depth geotechnical testing is being undertaken as a separate report for this project and the results of this testing may however indicate discrete areas which would have been suitable for cultivation or storage.

Estuarine inlets and channels provided food gathering areas to Māori and transport routes, especially where tidal channels were large enough to allow canoe access. The Tāmaki River was one of the most important access routes in Tāmaki, providing access to the Otahuhu Portage, the narrowest and most prominent portage in Auckland. This portage meant that it was not necessary to paddle around the top of the north island, saving time and energy, especially for west coast populations seeking the high-quality lithic resources of the east coast of the North Island.

The Tāmaki river and its inlets proved to be just as useful for early European settlers in the area, with many of the first roads in the area terminating at the water, indicating areas where ferries and scows would have landed.

EB2 has a number of estuarine and tidal inlets present within the project footprint which could have provided easy 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 exist near these inlets.

5.2 Eastern Busway 3 Residential

EB3R abuts Pakuranga Creek; an estuarine inlet which converges with the Tāmaki River, separating the Pakuranga and Te Wharau Peninsulas. The EB3R area mainly consists of Alluvial deposits from the Puketoka formation. Localised soil information for EB3R is not available on S-Map, but it can be assumed that it is similar to that described for EB2 above.

The potential historic vegetation of EB3R as described by LRIS is similar to that of EB2 and is likely to be a lowland forest mix of kahikatea, puketea and tawa trees, but it is likely that alternative species were growing within the Melanic soils. These Melanic soils would have supported Māori horticulture.

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 exist near these inlets.

6 Assessment of Archaeological Effects

Chapter Summary

This chapter assesses the known and potential archaeological values associated with the works to be undertaken in EB2 and EB3R. Only construction has the potential to affect the archaeological sites, so operational effects have not been assessed.

6.1 Construction

6.1.1 Eastern Busway 2

No evidence of pre-1900 archaeology or heritage, or significant 20th century heritage was found within the proposed area of works during historic research, field survey or vegetation clearance for stormwater outflows. The high number of sites along the Tāmaki River and those recorded during systematic surveys on the eastern side of the Pakuranga River in the 1980s indicate that the Tāmaki River and Pakuranga Creek were an important resource for both Māori and early European settlers. While little evidence has been found, it is possible that small archaeological sites exist within the dense vegetation, especially within the inlets or within the properties that back onto the inlets. The most likely site type to exist within the properties would be midden/oven which are the most common site types encountered along the Tāmaki river and its tributaries. 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 the effects.

There are no scheduled sites or historic heritage areas within the proposed extent of works for EB2, so no assessment under section D17.4 of the AUP OP is required.

The following assessment of values and significance relates to the archaeological values of R11/3403. Other interested parties, in particular mana whenua, may hold different values regarding the proposed area of works.

6.1.1.1 Assessment of values

R11/3403

Condition	The portion of this site that was identified is redeposited, but it is possible that in situ material still exists.
Rarity	Midden/Oven sites are a common site type, both regionally and nationally.
Context	The Tāmaki River was an important waterway, and there is evidence of the creek being used for navigation and access in both pre-European and historic periods. Any in situ material associated with this site would have contextual value linked to Māori settlement and movement patterns.
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*

The proposed works involve road widening, service upgrades and pavement replacement. Due to the nature of the works, avoidance of any sites encountered is unlikely to be achievable and those portions of the site 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 AMP will be created and submitted as part of a general authority to modify or destroy archaeological sites under section 44 of the HNZPTA, which will outline levels of recording, sampling, and reporting according to current archaeological practice.

6.1.2 **Eastern Busway 3 Residential**

One archaeological site consisting of redeposited midden (R11/3403) was found in the council reserve behind 63a Ti Rakau Drive, and likely originated from that property. No additional evidence of pre-1900 archaeology or heritage, or significant 20th century heritage was found within the proposed area of works during historic research, field survey or vegetation clearance for stormwater outflows. The high number of sites along the Tāmaki River and those recorded during systematic surveys on the eastern side of the Pakuranga River in the 1980s indicate that the Tāmaki River and Pakuranga Creek were an important resource for both Māori and early European settlers. While no evidence has been found, it is possible that small archaeological sites exist within the dense vegetation, especially within the inlets or on the properties overlooking the inlets. The most likely site type to exist within the properties would be midden/oven type sites which are the most common site types encountered along the Tāmaki River and its tributaries. 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.

As there are no scheduled sites or historic heritage areas within the proposed extent of works for EB3R, no assessment under section D17.4 of the AUP OP is required.

The following assessment of values and significance relate only to potential archaeological values of EB3R, and not a specific site. No archaeological sites have been recorded in the proposed area of works and this assessment does not relate to any sites in the New Zealand Archaeological Association Site Recording Scheme. The type of site which is most likely to be identified during works would be midden and cooking areas, and these are most likely to be close to the inlets. Other interested parties, in particular mana whenua, may hold different values regarding the proposed area of works.

6.1.2.1 *Assessment of values*

Condition Condition of potential sites is unknown.

Rarity The most likely site type to be uncovered during works would be midden/oven sites along the creek. Midden/Oven sites are a common site type, both regionally and nationally.

Context The Tāmaki River was an important waterway, and there is evidence of the creek being used for navigation and access in both pre-European and historic periods. Any potential site would have contextual value linked to Māori settlement and movement patterns.

Information	There is the potential for scientific information to be recovered by archaeological means if archaeological material is uncovered during works.
Amenity	No amenity values are known. Any potential archaeological information could be presented to the public using interpretive materials.
Cultural	Cultural association is unknown.

6.1.2.2 *Assessment of Effects*

The proposed works involve road widening, service upgrades and pavement replacement. There is also a bridge abutment to be built for the western portion of a new Ti Rakau Bridge in preparation for EB3C works. This bridge abutment, along with the stormwater outflows will occur within the CMA. Due to the nature of the works, avoidance of any potential sites encountered is unlikely to be achievable. This includes any in situ portions of R11/3403 or previously unrecorded archaeological sites encountered within EB3R. An AMP will be created and submitted as part of a general authority under section 44 of the HNZPTA, which will outline levels of recording, sampling, and reporting according to current archaeological practice.

6.2 Final Design/ Operation

6.2.1 Eastern Busway 2

There are no known operational effects on archaeological or historic heritage sites for EB2.

6.2.2 Eastern Busway 3 Residential

There are no known operational effects on archaeological or historic heritage sites for EB3R.

6.2.3 Cumulative Effects

No operational effects on archaeological sites.

7 Mitigation

Chapter Summary

This chapter discusses mitigation that may be required due to the potential effect's construction will have on the archaeological landscape of the project area.

Proposed mitigation for works in both EB2 and EB3R are the same. As noted above, a general authority to modify or destroy archaeological sites under section 44 of the HNZPTA will be obtained and an archaeological works plan used alongside this to help guide works, aid in the induction and training of contractors to identify potential archaeological or historic heritage items and indicate areas where archaeological monitoring or inspections should be undertaken.

Any earthworks to be undertaken near to 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 this section of the build that cannot be avoided will require systematic recording by an archaeologist in accordance with the requirements of an HNZPT authority. 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.

8 Recommendations and Conclusions

Chapter Summary

An authority to modify or destroy R11/3403 and any previously unrecorded sites within EB2 and EB3R will be applied for from HNZPT under Section 44 of the HNZPTA.

As part of the HNZPT authority application process, an archaeological 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.

8.1 Recommendations

An authority to modify or destroy any previously unrecorded archaeological sites within the Project corridor should be applied for from Heritage New Zealand under Section 44 of the HNZPT Act (2014). The Authority should be obtained in advance of any earthworks commencing to minimise delays should archaeological remains be exposed once works are under way. An AMP will be submitted alongside the HNZPT authority application and will be implemented before and during construction of the Project, to guide works including induction requirements for contractors (and sub-contractors) and procedures for archaeological monitoring, inspection, and investigation.

The AMP will address the opportunity to update the Cultural Heritage Inventory (CHI) with information sourced through the period of construction works.

Where effects on known (or unknown) archaeological sites cannot be avoided, undertaking archaeological investigation, and recording utilising standard archaeological practice of any affected archaeological sites should be undertaken in accordance with the Authority.

8.2 Conclusions

There was one redeposited midden (R11/3403) identified within the extent of EB3R, but no in situ archaeological sites or heritage sites were identified during the field survey. However, the area was heavily developed in the 1960s prior to any systematic archaeological surveys being undertaken in Pakuranga, and it is likely that there are still sub-surface archaeological deposits present within the Pakuranga peninsula. While no evidence of in situ archaeological features has been found, it is probable that small archaeological sites exist within the study area, particularly along the costal margin and close to inlets. 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 pre-European Māori and historic land use, we recommend applying for an authority from HNZPT under Section 44 of the HNZPT Act (2014) to cover the areas of EB2 and EB3R to ensure that if anything is encountered it can be dealt with in a timely fashion. An AMP will be prepared for the project as part of the application process to clearly outline induction requirements for contractors (and sub-contractors) and procedures for archaeological monitoring, inspection, and investigation.

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