Appendix 22

Natural Character, Landscape and Visual Effects Assessment

Eastern Busway

EB3 Commercial and EB4 Link Road

Natural Character, Landscape and Visual Effects Assessment

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Eastern Busway

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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
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
km	Kilometre(s)
m	Metre(s)
m^2	Square Metre(s)
m^3	Cubic Metre(s)
MCA	Multi Criteria Analysis
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
ONF	Outstanding Natural Feature
ONL	Outstanding Natural Landscape
RTN	Rapid Transit Network
RMA	Resource Management Act 1991
SEA	Significant Ecological Area

Executive Summary

This report is a review and assessment of landscape and visual effects associated with the construction and operation of the Eastern Busway 3 Commercial (EB3C) and Eastern Busway 4 Link Road (EB4L) stages of the Eastern Busway Project (the Project).

The Project involves a package of works associated with the establishment of a busway. The Project is focused 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 will be delivered in several stages.

This report addresses works packages associated with two stages: EB3C – Gossamer Drive to Botany, including two Bridges (Bridge A and Bridge B), the Burswood Bus Station and EB4L, connecting EB3C to Te Irirangi Drive and Town Centre Drive.

Key elements of the proposed EB3C works include the construction of Bridge A and Bridge B, a noise wall 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).

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

EB3C

Landform (topography) will be affected, principally due to grading required to accommodate the proposed road levels and surfaces. Much of the earthworks beyond the margins of Pakuranga Creek and tributaries will occur alongside the existing road corridors or within residential areas where landform values are considered to be lower (due to their modified characteristics). Effects during construction are anticipated to be low adverse, reducing to very low following construction.

Pakuranga Creek will be impacted as part of the works and these effects are considered to be high during construction, before reducing to moderate during operation. Works in relation to the tributaries of Pakuranga Creek will reduce from moderate to low following construction. Landscape values of these areas are in part already compromised due to their modified context through existing infrastructure (e.g. the Tī Rākau Drive Bridge and nearby pipe bridge) and commercial activities (e.g. Mobil branded service station).

Vegetation effects during construction will involve the removal of terrestrial, estuarine, and riparian vegetation within EB3C's footprint resulting in moderate adverse effects, becoming beneficial effects following mitigation planting.

In relation to direct landscape effects on open spaces[1] Works will also impact open space (Burswood Esplanade Reserve and Bard Place Reserve). Effects will be moderate-high and moderate during

[1] Effects on public open space values are considered in the Open Space Assessment which is separate to this report.

construction. These would reduce to low-moderate for Burswood Esplanade Reserve and low adverse for Bard Place Reserve following construction.

In relation to landscape features, it is considered effects will range from moderate to moderate-high for open space features and moderate-high for works relating to the CMA, margins of Pakuranga Creek and its tributaries. Following construction, any residual effects will be moderate-low in relation to open space features and moderate for waterways being the Pakuranga Creek and its tributaries.

Effects on urban development and land use will reduce from moderate adverse to some beneficial effects. Natural character effects during construction are anticipated to range from very low to moderate adverse. Following construction, any residual effects will be low adverse.

In considering visual effects, the greatest visual effects are anticipated to be on those residential viewing audiences adjacent to the construction of EB3C and these adverse effects are expected to range from low to high. The most elevated effects are considered to be those adjoining the project to the north and those to the northwest at lower elevations, across Pakuranga Creek. Following construction, effects will ultimately reduce however those to the northwest would experience residual effects considered moderate-high. A number of residents directly north of the commercial area would experience residual effects up to moderate adverse following construction.

EB4L

Landform effects will principally be the result of earthworks relating to the creation of the busway along the northern portion of Guys Reserve and Whaka Maumahara reserves. Earthworks will result in low adverse effects, with slight reductions to very low during operation.

Effects on vegetation are anticipated to be moderate, prior to any mitigation planting. Following planting, effects are anticipated to be very low adverse – acknowledging that some areas are unable to be replanted due to the footprint of the project structures.

Open space will be heavily impacted during construction, these areas will be occupied as the project is being completed and will include laydown areas as well as project elements. As such, effects on the open space would be moderate for Guys Reserve and high for Whaka Maumahara Reserve. Following construction, residual adverse effects of low are anticipated due to the continued occupation of parts of these areas.

Landscape features would be affected during construction, as described above, effects on open space will be moderate and high. Following construction, effects are considered to be low on these open space features. Any residual effects on water features (stormwater pond and tributary of Pakuranga Creek within Guys Reserve), will be low.

Effects on urban development and land use will occur as a result of the occupation of open space, during construction and operation. Effects during construction are considered to be moderate, reducing to low, acknowledging that the proposed cycleway and footpath will contribute to the uses of these open space areas and provide for connectivity through both reserves.

Natural character effects will be limited to up to low during construction, reducing to very low adverse during operation.

In relation to visual effects, the greatest visual effects during construction will be on residential viewing audiences. Residents at Cottesmore Place, Guys Road and Waihi Way will experience up to moderate-

high adverse effects. During operation, effects will reduce, with the greatest effects being low-moderate adverse for the specified residential viewing audiences.

Whilst adverse effects will occur as a result of the proposed EB3C and EB4L works, a number of mitigation measures have been recommended to ensure any adverse natural character, landscape or visual amenity effects are appropriately minimised and managed. Once the Project is completed and the proposed mitigation measures (such as tree planting) have been established, whilst the Project will result in a level of change to the receiving environment, it is considered that the Project will achieve high quality design and environmental outcomes whilst meeting the Project Objectives.

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, and includes:

- 5 km of two-lane busway
- Two new bridges for buses across Pakuranga Creek (Bridges A and B)
- A new bridge for buses crossing Guys Reserve and Whaka Maumahara Reserve (Bridge C)
- 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 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 the Botany Town Centre, including a link road through Guys Reserve and Whaka Maumahara Reserve to Te Irirangi Drive/Town Centre Drive **(this Assessment)**.

The overall Project alignment is shown in Figure 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.

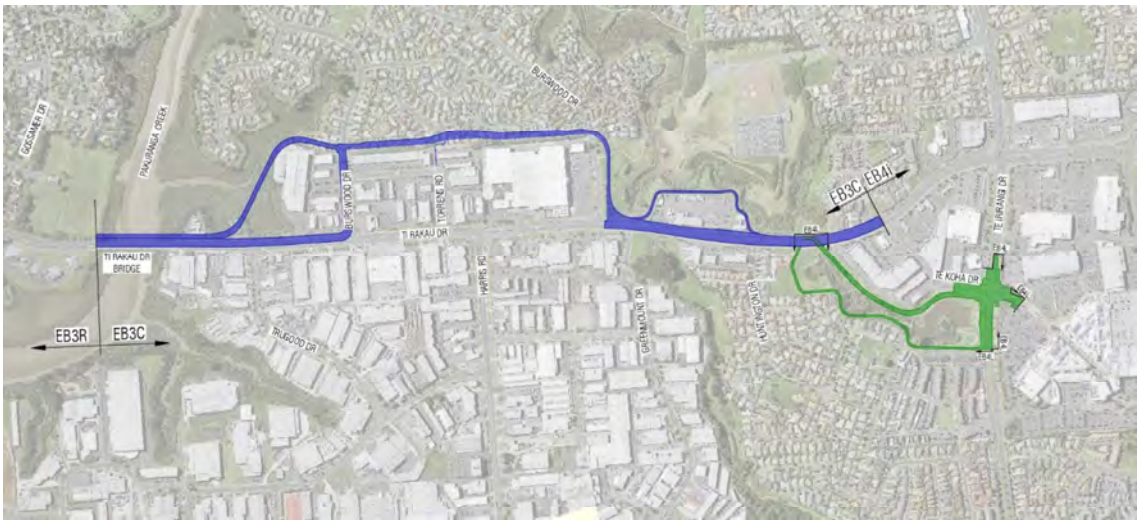

Figure 2-1. Eastern Busway 3 Commercial and 4 Link Road Project Extent

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 reserves[2] and privately held land within the proposed works footprint (refer Figure 2-2). The extent of works for EB3C runs between Riverhills Park (i.e., adjacent to the terminus of the 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 abutments[3] 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 4m^2 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 549m^2 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

[2] Including Burswood Esplanade Reserve and Bard Place Reserve
[3] 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 /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.

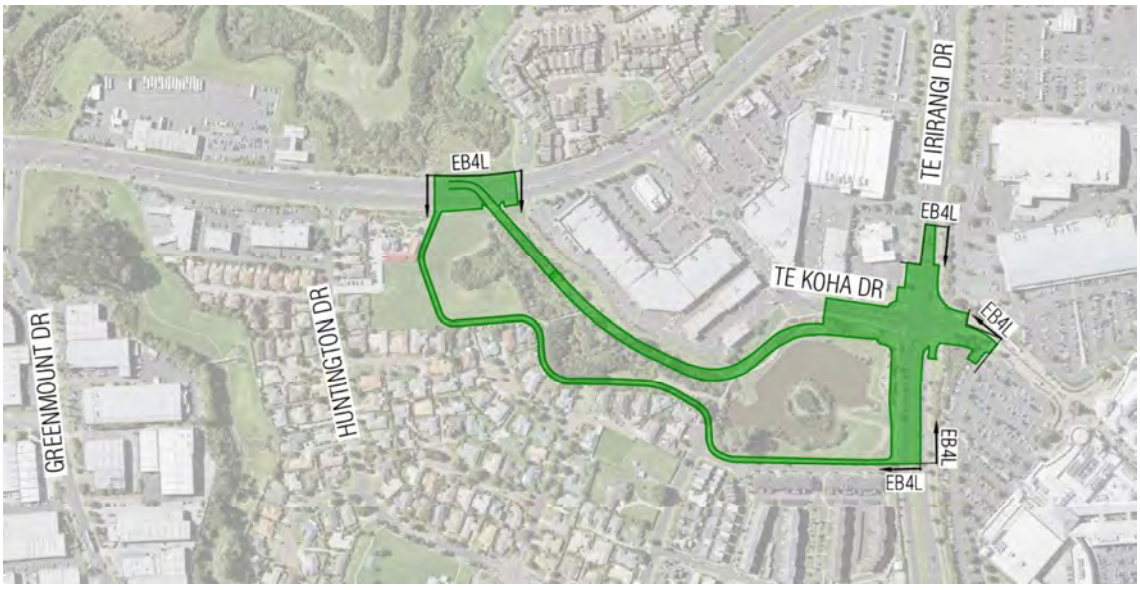

Figure 2-3. Eastern Busway 4 Link Road Project Area

3 Specialist Assessment

Chapter Summary
This assessment considers the natural character, landscape and visual effects in relation to the EB3C and EB4L sections of the Project. *The assessment includes a description of the receiving environment, an assessment of the natural character, landscape and visual effects in addition to the considered mitigation measures.* *The reasons for consent are set out in the EB3C/EB4L AEE.*

3.1 Assessment Content

This report describes the assessment of natural character, landscape and visual effects associated with the operation and construction of the EB3C and EB4L sections of the Project.

Its purpose is to inform the AEE relating to the Notice of Requirements, and required regional consents and consents required under National Environment Standards for EB3C and EB4L. This Assessment also identifies the ways in which adverse effects will be appropriately minimised and managed.

This Natural Character, Landscape and Visual Effects assessment involves:

- An outline of the assessment methodology and analysis of natural character, landscape and visual amenity effects
- A description of the receiving environment relevant to this Assessment
- An assessment of the natural character, landscape and visual effects of EB3C and EB4L during construction
- An assessment of the natural character, landscape and visual effects of EB3C and EB4L during operation
- A description of the mitigation measures required to managing adverse natural character, landscape and visual effects.

3.2 Specific Project Elements

The specific elements of EB3C and EB4L that are particularly relevant to this Assessment are identified below.

3.2.1 EB3C

- Laydown yard/ construction compounds and project offices– notably at 242 Tī Rākau Drive (Mobil service station) and Burswood Esplanade Reserve
- Construction compounds and satellite offices
- Construction activities in relation to EB3C works
- A secondary bridge across Pakuranga Creek, broadly parallel with the Tī Rākau Drive Bridge. This bridge will support the proposed busway and cycleway (Bridge A). Pile scour protection (if required by hydrodynamic modelling) will occupy approximately 147m^2 of benthic habitat (CMA)
- A bridge from 254 Tī Rākau Drive (the PetStop branded store) to the back of 262 Tī Rākau Drive (Chinatown), supporting the busway (Bridge B). A MSE embankment at the northern end of the

bridge behind Chinatown, will also be required and partially fall within the CMA, requiring 549m^2 of reclamation
- Construction of new and upgrade of existing stormwater outfalls discharging into a tributary of Pakuranga Creek in the Burswood Esplanade Reserve
- A widened portion of Tī Rākau Drive to support the busway and cycleway
- The construction of intersections along the western and eastern arms of Burswood Drive to accommodate the busway and cycleway that will need to cross this road
- The construction of the busway to the north of existing commercial properties off Torrens Road and Tī Rākau Drive. The busway will be located where existing residential properties are located along Burswood Drive, Tullis Place, Dulwich Place and Heathridge Place
- The construction of the busway and cycleway within the western portion of Burswood Esplanade Reserve to the east of Bunnings Warehouse
- The construction of the cycleway around the Howick and Eastern Bus Depot, Gull service station and Bard Place Reserve
- The widening of a portion of Tī Rākau Drive between Burswood Drive and Tiger Drive.

3.2.2 EB4L

- Laydown yard/ construction compounds and project offices – notably in the northwestern portion of Guys Reserve and southern portion of Whaka Maumahara Reserve
- Construction activities in relation to EB4L works
- Construction of cycleway and footpath along southern portion of Guys Reserve and Whaka Maumahara
- Construction of busway including Bridge C along northern portion of Guys Reserve and Whaka Maumahara.

3.3 Reasons for Consent

Consent matters are set out in the EB3C and EB4L AEE. Consent matters addressed within this Assessment relate to construction of three bridge structures, vegetation clearance, works associated with the upgrading or installation of stormwater outfalls and works within open space zoned land and the CMA. Earthworks and other construction-related activities will also result in temporary visual and landscape effects. It is noted that the demolition of residential and commercial buildings are permitted activities.

4 Methodology and Analysis

Chapter Summary

The below methodology is in line with the Te Tangi A Te Manu, Aotearoa New Zealand Landscape Assessment Guidelines (2022). Prior to undertaking the assessment, a desktop analysis was undertaken. This was followed by an on-site analysis involving multiple site visits along the route of the Project.

An assessment of natural character, landscape and visual effects then followed which considers the Project and change in relation to the receiving environment.

This assessment has been undertaken and peer reviewed by NZILA registered landscape architects with reference to the Te Tangi A Te Manu, Aotearoa New Zealand Landscape Assessment Guidelines (2022) and Quality Planning Landscape Guidance Note[4] and its signposts to examples of best practice.

4.1 Familiarisation of EB3C, EB4L and the Existing Environment

4.1.1 Desktop Analysis of the EB3C, EB4L and the Existing Environment

Prior to conducting the Assessment, a desktop study was completed which included a review of the relevant information relating to the landscape and visual aspects of EB3C and EB4L. This information included:

- The statutory setting and understanding of permitted baseline as discussed in the AEE
- Base map data (such as contours and aerial photography)
- EB3C and EB4L Terrestrial and Freshwater Ecological Effects Assessment
- EB3C and EB4L Marine and Coastal Ecological Effects Assessment
- EB3C and EB4L Arboricultural Effects Assessment
- EB3C and EB4L Reference Design Drawings
- EB3C and EB4L Construction Methodology.

4.1.2 On-Site Analysis of EB3C, EB4L and Existing Environment

Following the desktop study, and to further understand both the works area and the surrounding context, a number of site visits have been undertaken. Site visits were undertaken on 31/01/2017, 27/11/2018, 09/04/2021 and 16/03/2023. These site visits focused on gaining an understanding of the natural and built attributes of the area and its locality, visual catchment and viewing audiences, as well as the physical and spatial effects EB3C and EB4L may have on the existing environment.

4.2 Assessment of Effects

The effects covered in this Assessment, include changes to landscape attributes and values, character, and visual amenity (i.e. viewing audiences and their outlook) in addition to natural character effects in relation to the coastal environment as well as freshwater bodies and their margins.

While natural character, landscape and visual effects assessments are closely related, they form separate procedures. The assessment of natural character effects considers the characteristics, qualities and associated degree of modification relating specifically to waterbodies and their margins, including

[4] https://www.qualityplanning.org.nz/node/802

the coastal environment. The assessment of the potential effects on landscape considers effects on landscape character and values. The assessment of visual effects considers how changes to the physical landscape affect the viewing audience.

The types of effects can be summarised as follows:

- Natural Character Effects: Change in the characteristics or qualities including the level of natural character
- Landscape Effects: Change in the physical landscape, which may affect its characteristics and/or values
- Visual Effects: Change to views which may affect the visual amenity and values experienced by people.

The planning context (i.e. the urban form permitted within the Project area by the AUP(OP)), existing landscape resource and locations from which a development or change is visible, all inform the 'baseline' for landscape and visual effects assessments. To assess effects, the first step requires identification of the landscape's character and values including the attributes on which such values depend. This requires that the landscape is first described, including an understanding of relevant physical, sensory and associative landscape dimensions. This process, known as landscape characterisation, is the basic tool for understanding landscape character and may involve subdividing the landscape into character areas or types. The condition of the landscape (i.e. the state of an individual area of landscape or landscape feature) should also be described and a judgement made on the value or importance of the potentially affected landscape.

5 Existing Environment

Chapter Summary
This chapter provides a summary of the landscape characteristics, and their values present in areas potentially impacted by EB3C and EB4L. The description of the existing environment is based on information obtained during a desktop review and subsequent site visits over a period of years as the proposed EB3C and EB4L alignments were developed.

5.1 Eastern Busway 3 Commercial

5.1.1 EB3C Location

The EB3C portion of the Project is primarily focused around an area to the north of Tī Rākau Drive reaching from the western interface of Pakuranga Creek with Tī Rākau Drive in the west, to Guys Reserve to the east, Tī Rākau Drive to the south, and Burswood Drive, Tullis Place, Dulwich Place and Heathridge Place to the north. The Site is defined by the extent of the EB3C NoR boundary.

EB3C will connect to EB3R which is located on land to the west of Pakuranga Creek, immediately south of Riverhills Park. It then includes parts of the CMA, and the coastal interface of Pakuranga Creek to the north of the Tī Rākau Drive Bridge. The EB3C Project footprint also includes three commercial properties along the northern side of Tī Rākau Drive which include 242 (Mobil service station), 254 (PetStop pet store), and 262 (Chinatown). EB3C also includes a portion of the Tī Rākau Road corridor between the Pakuranga Creek and Burswood Drive. EB3C continues along the western extent of Burswood Drive (within the road corridor), before reaching the back of (northern boundary) the existing commercial properties. EB3C then includes the length of residential properties which abut the northern extent of the commercial properties along Burswood Drive, Tullis Place, Dulwich Place and Heathridge Place.

EB3C then includes the western portion of Burswood Esplanade Reserve, which is located opposite Bunnings Warehouse. The site includes a section of Tī Rākau Drive between the eastern end of Burswood Drive to a location near Tiger Drive. EB3C also includes a narrow area to the north of the Howick and Eastern Bus Depot (380 Tī Rākau Drive) and the Gull branded service station (386 Tī Rākau Drive).

5.1.2 Landscape Characteristics and Values

5.1.2.1 Landform

Notwithstanding the coastal edge with Pakuranga Creek and margins of the Pakuranga Creek tributary, (within Burswood Esplanade Reserve), the topography of the Site is relatively flat, sitting at around the 10m RL mark. The topography then drops quickly via a steep slope to sea level where it meets Pakuranga Creek. The Burswood Esplanade margin meanders through a portion of the Site north of Tī Rākau Drive and East of Burswood Drive whereby the landform drops down to an approximate 2m RL level[5].

[5] Source Auckland Council GEO Maps, NZ Vertical Datum 2016. NZVD2016

5.1.2.2 *Pakuranga Creek*

EB3C is located within the Pakuranga Creek stormwater catchment[6]. The catchment captures stormwater runoff from the local roads, suburban streets and private properties including residential, commercial, open space and road reserves [7].

Figure 5-1. Pakuranga Creek

5.1.2.3 *Open Space and Vegetation*

There are two areas of public open space within EB3C which are Burswood Esplanade Reserve and Bard Place Reserve which form a contiguous public open space. These areas of public space have landscape values, as well as functioning as green stormwater management infrastructure for the surrounding mixed residential and commercial community in addition to providing amenity values. A separate Open Space Assessment has also been prepared which should be read in conjunction with this report.

<u>Burswood Esplanade Reserve</u>

The western end of Burswood Esplanade Reserve is primarily characterised by a roughly 20m wide ribbon of open space, which follows the margins of the Pakuranga Creek, and connects with a larger area of open space between Burswood Drive and Tī Rākau Drive in the east. (Refer Figure 4 (Open Space and Vegetation in the LVA Figure Set)). The open space remains broadly uninterrupted around Burswood Drive's interface with Pakuranga Creek, to the rear of Chinatown and consists of a mown edge and narrow strip of riparian planting intermixed with mangroves. Tree and shrub vegetation (mostly exotic weed species) covers the Esplanade Reserve where it adjoins Chinatown. The spatial extent of the Burswood Esplanade Reserve then widens between Burswood Drive and the Howick and

[6] Source, Auckland Council GEO Maps website. Unique ID 50050
[7] The catchment is over 2918 Ha in size

Eastern Bus depot, including a generous mown area. Vegetation also exists between Burswood Drive and the Howick and Eastern Bus Depot, including riparian planting along the interface to the narrowed portion of Pakuranga Creek and a tributary of the creek with is culverted under Tī Rākau Drive, originating from the Greenmount Drainage Reserve.

Figure 5-2. Burswood Esplanade Reserve

Two disconnected portions of Burswood Esplanade Reserve are also located to the north of Tī Rākau Drive abutting Pakuranga Creek. These ribbons of land are associated with the Mobil branded service station and PetStop store. Formal public access to these areas is not present. These portions of open space are characterised by the steep banks that descend from approximately 7m RL to the foreshore. These steep banks are vegetated with a range of native, exotic and pest species.

Bard Place Reserve

Bard Place Reserve is located to the east of the Burswood Esplanade Reserve and together these areas read as one connected network of open space. This reserve is bound by a residential street (Tiger Drive), on its eastern interface. The northern boundary meets residential properties along Bard Place, which also supports pedestrian access. The southern boundary of the reserve meets Tī Rākau Drive, where pedestrian access is also provided. The western boundary of the reserve abuts Burswood Esplanade Reserve in addition to land occupied by Transpower's Pakuranga substation. In terms of characteristics, the reserve mirrors the form of Burswood Esplanade Reserve, with a mix of riparian planting and mown lawn areas. Some trees have been planted randomly throughout the reserve. Some bench seats are present along its eastern edge. A pipe bridge also bisects the reserve from Tiger Drive to the Pakuranga Transpower Substation.

Vegetation

In relation to vegetation, the road reserve of Tī Rākau Drive features grass berms and a range of tree species. However, these trees are sporadically planted along the berms of the road and include species such as Pohutukawa (*Metrosideros excelsa)* (in groups within wide grass berms, California Palm (*Washingtonia robusta),* Queen Palm *(Syagrus romanzoffiana)* and Kāpuka (*Griselinia littoralis).*

Figure 5-3. Typical vegetation along Tī Rākau Drive

The riparian margin of Burswood Esplanade Reserve, between the Mobil service station (242 Tī Rākau Drive) and Chinatown (262 Tī Rākau Drive) has a mix of native riparian species (in addition to exotic species). Pest species also exist along this interface. The CMA of Pakuranga Creek is almost entirely occupied by native mangroves and extensive tidal mudbanks, apart from a central channel. (Refer Figure 4 (Open Space and Vegetation in the LVA Figure Set).

Residential properties to the north, and behind commercial properties between the two ends of Burswood Esplanade Reserve, predominantly contain areas of mown lawn. Some trees are present at these properties, in addition to garden ornamentals. However, exotic species predominate through these residential areas.

The eastern portion of Burswood Esplanade Reserve, east of Bunnings Warehouse, contains large mown areas of lawn, contributing to its open space characteristics. Tree stands are present, most notably Titoki. Where the landform descends towards the stream network, there is native riparian vegetation, such as TīKōuka (*Cordyline australis)* and Tarata or Lemonwood (*Pittosporum eugenioides)*. Pest species are also present, including Pampus.

5.1.2.4 *Landscape Features*

The local landscape features of EB3C are considered to include the open space values of Burswood Esplanade Reserve and Bard Place Reserve. Connected to these are the tributaries that link to Pakuranga Creek. Pakuranga Creek, including the intertidal areas which interface with the esplanade reserves, is also considered to be an important landscape feature.

5.1.2.5 *Urban Development and Land Use*

The EB3C section of the Project is located along the Tī Rākau Drive Road corridor and local land uses are primarily light industrial / commercial in character. These land uses extend along both sides of Tī Rākau Drive from Pakuranga Creek to the eastern arm of Burswood Drive and beyond to the wider industrial area of East Tāmaki.

Residential land sits to the north of the commercial uses, with a mix of one and two-storey dwellings from the 1990s/2000s. This residential area is surrounded by Pakuranga Creek and its tributaries on its western, eastern and northern sides. The landform of the Burswood Peninsula and subdivision pattern resulted in a number of properties bordering the coastal edge. The provision of the Burswood Esplanade Reserve featuring along the coastal interface between the residential lots and Pakuranga Creek, provides amenity and recreational values for the neighbouring residents. This residential area is essentially accessed via Burswood Drive which is a loop road with both arms of the road originating from Tī Rākau Drive.

The three reserves which EB3C interacts with (Burswood Esplanade Reserve, Bard Place Reserve and Guys Reserve), provide an interconnected network of open space through the area.

5.1.3 Statutory Context

5.1.3.1 *The Resource Management Act 1991*

Part 2 of the Resource Management Act 1991 (RMA) sets out the purpose and principles of the Act. Section 5 states that the purpose of the RMA is to promote the sustainable management of natural and physical resources.

Section 6 sets out the matters of importance that must be recognised and provided for in achieving the purpose of the RMA. The preservation of the natural character of the coastal environment (including the coastal marine area), and its protection from inappropriate subdivision, use and development is identified in section 6(a) as a matter of national importance. This is relevant to this assessment as portions of EB3C are located within the coastal environment, in addition to wetlands, streams and their margins. Additionally, the protection of outstanding natural features and outstanding natural landscapes from inappropriate subdivision, use and development is identified as a matter of national importance in section 6(b). There are no outstanding natural features or landscapes identified on or adjacent to the proposal site or within the wider landscape context.

Section 7 identifies a range of matters that shall be given particular regard to in achieving the purpose of the RMA. Section 7(c), which relates to the maintenance and enhancement of amenity values, is particularly relevant to this Assessment.

Section 8 states that the principles of the Treaty of Waitangi are to be taken into account.

5.1.3.2 New Zealand Coastal Policy Statement

The purpose of the New Zealand Coastal Policy Statement 2010 (NZCPS) is to state the objectives and policies in order to achieve the purpose of the RMA in relation to the coastal environment of New Zealand. The NZCPS therefore includes a number of policies which are relevant to this Assessment, given the proposal's location within the coastal environment. The policies which are considered particularly relevant to this Assessment are policies 13 and 15, as detailed below:

Policy 13 Preservation of natural character

To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use, and development:

(a) avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character; and

(b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment…

Policy 15 Natural features and natural landscapes

To protect the natural features and natural landscapes (including seascapes) of the coastal environment from inappropriate subdivision, use, and development:

(a) avoid adverse effects of activities on outstanding natural features and outstanding natural landscapes in the coastal environment; and

(b) avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on other natural features and natural landscapes in the coastal environment.

5.1.3.3 AUP(OP) Zoning

The Proposal passes through 6 different AUP(OP) Zones. These are:

- Coastal
    - Coastal Transition Zone
    - General Coastal Marine Zone
- Open Space
    - Conservation Zone
    - Informal Recreation Zone
- Residential
    - Mixed Housing Suburban
    - Terrace Housing and Apartment Buildings Zone
- Business
    - Mixed Use Zone
    - Light Industry Zone

5.1.3.4 Notable Trees

There are no Notable Trees within the EB3C section or its immediate context.

5.1.3.5 *Outstanding Natural Features and Landscapes*

There are no Outstanding Natural Features or Landscapes located within the EB3C section or in its immediate context.

5.1.3.6 *Significant Ecological Areas*

EB3C will interact with one Marine Significant Ecological Area which spans the CMA of Pakuranga Creek (SEA- M2 45b). The Marine Ecology and Coastal Avifauna Effects Assessment discusses the condition of this environment.

5.1.4 Natural Character of EB3C

The key abiotic attributes of the EB3C area include its geology, water catchments and landform, all of which have been formed predominantly by geological and coastal processes. EB3C is located within a managed water catchment in so far that it is an urbanised environment which contains stormwater management devices. For this project, natural character areas include both the coastal environment and the margins of the Pakuranga Creek, its tributaries and associated wetlands. The identified wetlands are further described in the Terrestrial and Freshwater Ecological Effects Assessment. These wetlands are focused along the tributaries of Pakuranga Creek within Burswood Esplanade Reserve and Bard Place Reserve to the north of the proposed busway.

A number of culverts, pipe bridges and outfalls currently exist along the foreshore and CMA of Pakuranga Creek and its tributaries which demonstrates that there is a level of human influence and modification. Notwithstanding this, Pakuranga Creek, its tributaries and wetlands are natural features, and their abiotic attributes remain legible within the urbanised environment. In relation to the Pakuranga Creek, there is a dominance of silt and clay sediment with elevated stormwater contaminants at some sites[8]. The identified streams in Burswood Esplanade Reserve and Bard Place Reserve are hard bottomed with fine-silted sediment deposition. All streams show active erosion and moderate degree of instream hydrologic heterogeneity. Overall, it is considered that the abiotic attributes of Pakuranga Creek, its tributaries and nearby wetlands in Burswood Esplanade Reserve and Bard Place Reserve are moderate.

In considering biotic attributes, a mix of native and exotic vegetation species exist within these features. Fish species records within freshwater environments are dominated by 'Non-threatened' native and exotic species of low ecological value (Refer Terrestrial and Freshwater Ecological Effects Assessment). It is considered the mangrove forest sections of the CMA exhibit characteristics that makes these areas of "moderate" value (from a Natural Character Perspective), and it is noted that the estuarine environment falls within the Marine SEA (M2) overlay. Wetland and tributaries of Pakuranga Creek demonstrate varying degrees of biotic attributes including wetlands dominated by exotic species, as well as others that contain species of conservation significance (refer Terrestrial and Freshwater Ecological Effects Assessment). Overall, it is considered that the biotic attributes of the receiving environment are moderate.

In relation to experiential attributes, these are impacted by human influences through the mown and managed esplanade edge near the CMA, in addition to the mown (park environment) near the tributaries and wetlands. Human structures such as the existing Tī Rākau Drive Bridge, Watercare's pipe

[8] Refer Stormwater Effects Assessment

bridge and existing residential and commercial properties also impact on the experiential attributes. With the above considered, the experiential natural character level is considered moderate.

5.1.5 Visual Catchment and Viewing Audiences

The proposed visibility of EB3C will capture a number of different viewing audiences.

Traveling Viewing Audiences

These include road users along Tī Rākau Drive who will observe EB3C at the western and eastern ends in particular. Those road users along Burswood Drive, accessing the residential suburb of Burswood, will also experience change in views. This is particularly true where the Project crosses road corridors and where change will occur in the eastern portion of Burswood Esplanade Reserve.

Occupational Viewing Audiences and Visitors to Business Premises

Light industrial / commercial viewing audiences will also observe the Project, although most works will occur to the rear of those sites. Moreover, these viewing audiences tend to be focused in internalised properties and don't have publicly used open spaces near the coastal edge. These include but are not limited to Chipmunks Playland, Woodbine Marine, Family Boats, The Chocolate Cake Company, MM Brands, Chinatown, - Guan Café, Pier Beauty, Winnie Hair Studio, Storage Box Support Office, Dawsons Lawyers and Notaries and Lighting Plus. In eastern portions, those within outside areas of Piccolo Park Kindergarten will have views toward the works and permanent project components.

Residential Viewing Audiences

Residential viewing audiences, particularly those along the interface of the project within Burswood will have views of the project. Residents across Pakuranga Creek including those along Davington Way and Ifield Court (both within the Burswood suburb), in addition to those in Pakuranga Heights such as Wanaka Place and potentially Riverhills Avenue (elevated portions), will have views of EB3C. These will be focussed towards aspects of the project within Pakuranga Creek.

Figure 5-4. Typical Residential interface with Burswood Esplanade Reserve opposite China Town

Residents directly to the north of EB3C (also within the Burswood subdivision) will obtain proximate views of the proposal. Notably these include those along Burswood Drive such as 201, 203 to the west and 23 and 28 to the east. Residents along Heathridge Place and Dulwich place will also be in close proximity to EB3C. Beyond the suburb of Burswood, residents, along Tiger Drive on the northern side of Tī Rākau Drive, also Huntington Drive and Saidia Place, to the south of Tī Rākau Drive, will have views towards works within Bard Place Reserve.

Recreational Viewing Audiences

Recreational viewing audiences include those within the EB3C area (i.e. Burswood Esplanade Reserve and Bard Place Reserve), in addition to those at Riverhills Park, looking out across Pakuranga Creek towards Chinatown.

5.2 Eastern Busway 4L

5.2.1 EB4L Location

The EB4L portion of the project primarily takes place within Guys Reserve and Whaka Maumahara Reserve, although works within the existing road reserve and Botany Town Centre Land (for intersection improvements), will also occur. The affected reserves lie between Tī Rākau Drive, to the north, and Te Irirangi Drive, to the east. The works will be focused in the northern portion of the reserve's boundaries, alongside the southern boundary of The Hub and Te Koha Road, which services The Hub from Te Irirangi Drive.

The Hub includes a number of retail and food outlets including a food court (Eat New Asian), furniture stores such as Bedpost and Victor's Choice Furniture as well as vehicle servicing premises such as Tyre

City, Pit Stop, Repco and Vehicle Testing New Zealand Limited (VTNZ) to name a few. The built arrangement of The Hub is a loose 'U' Shape with many retail stores fronting north toward the main car park. Vehicle servicing premises are fronted to the south. In addition to entrances along the southern portion of the Hub, a service lane runs along the rear of front facing businesses, opposite the northeastern portion of Guys Reserve. Hunting & Fishing New Zealand, located toward the eastern portion is accessed off Te Koha Road and the Z service station which it neighbours, is accessed from Te Irirangi Drive.

Guys Reserve is focused around a centrally running tributary which flows north and connects to the tributary of Pakuranga Creek within Bard Reserve and Burswood Esplanade Reserve. A stormwater pond features in the centre of Whaka Maumahara which is surrounded by planting and mown grass.

To the south of these reserves is residential development which is predominantly standalone houses along the boundary of Guys Reserve, and multi storey residential to the south of Whaka Maumahara Reserve.

5.2.2 Landscape Characteristics and Values

5.2.2.1 Landform

The landform characteristics within the reserves have been influenced by their hydrological functions (as explained below). The tributary of Pakuranga Creek runs centrally within the linear land parcel of Guys Reserve. This has created a small gully along the reserve's length. The northern and southern boundaries of the reserve are at approximately 15mRL where they adjoin neighbouring properties. The landform has a more gradual slope in the western portion where it meets residential properties at the northern end of Cottesmore Place.

The landform of Whaka Maumahara Reserve was modified through the creation of a stormwater detention pond in the late 1990's – early 2000's. The landform therefore reflects a 'bowl like' characteristic which opens out towards the west where it meets Guys Reserve. The edge of the reserve meets Te Koha Road, Te Irirangi Drive and Waihi Way at around the 16mRL contour and drops to approximately 11mRL at its lowest point. A small island feature exists in the centre of the pond and rises to approximately 14mRL.

The area associated with the intersection improvements is within Te Irirangi Drive carriageway and Town Centre Drive, the entrance to Botany Town Centre. The landform characteristics here are of a modified road environment which features an increase in elevation from Te Irirangi Drive towards the Botany Town Centre. Vegetated mounds occupy either side of Town Centre Drive.

5.2.2.2 Hydrology

EB4L is located within the Pakuranga Creek stormwater catchment. Run off collects into Whaka Maumahara via an interconnected stormwater network, including run off from Logan Carr Reserve and Gillard Reserve to the east. Water is piped into the Waka Maumahara stormwater pond from beneath Te Irirangi Drive. A weir and small culvert exists between the two reserves, feeding into the tributary within Guys Reserve. Water is then piped beneath Tī Rākau Drive before connecting into Bard Place Reserve.

Figure 5-5. Whaka Maumahara stormwater pond and culvert beneath Te Irirangi Drive

5.2.2.3 Open Space and Vegetation

Guys Reserve

Guys Reserve is broadly linear in nature and is characterised by the central running tributary and vegetated riparian margins. A wastewater pipe bridge crosses the tributary at an approximate mid-point in the reserve. Vegetation is primarily focused around the tributary and mown grass occupies much of the balance of the land. Whilst formal recreation facilities are not provided, some formed pathways exist along the southern end of the reserve providing access for residents along Cottesmore Place.

Figure 5-6. Looking north between riparian planting (left) and boundary planting with The Hub (right), in vicinity of proposed busway

Whaka Maumahara Reserve

Whaka Maumahara Reserve is characterised by the stormwater pond and island feature which take up the majority of the open space. Some areas of riparian margin planting exist along the edge of the stormwater pond, and island. Planting along the northern portion of the reserve has been established which provides a vegetated backdrop between a seating area and the Hub. Some planting, including trees, exists in the eastern portion alongside Te Irirangi Drive. A small footbridge located between the two reserves provides pedestrian access across the tributary and pond weir/ discharge point.

Vegetation

Both reserves contain mown grass areas, most notably around the edges. Riparian planting, has established, particularly within Guys Reserve. Both reserves indicate some weed and pest species along the margins of the waterbodies. Native planting has been established including Pohutukawa (*Metrosideros excelsa)*, Cabbage trees (*Cordyline australis)* and various amenity grasses and shrubs such as taupata (*Coprosma repens)* and shrubby Tororaro (*muehlenbeckia astonii)*.

Vegetation associated with Te Irirangi Drive/ Town Centre Drive intersection includes planting associated with Botany Town Centre to create a vegetated frontage, supporting the narrative of the development. Planting includes a number of native species such as Pohutukawa (*Metrosideros excelsa)*, Tītoki (*Alectryon excelsus*) and flax/Harakeke (*Phormium tenax*) which occupy a raised planted buffer set behind a feature rock wall. Liquidamber trees (*Liquidamber styaciflua*) line either side of Botany Town Centre Drive and a narrow central median supports New Zealand Iris / Tukauki or Mikoikoi (*Libertia Grandiflora*) and Canna lilies (Canna indica).

5.2.2.4 *Urban Development and Land Use*

The EB4L section of the project is primarily located within the open space areas of Guys Reserve and Whaka Maumahara Reserve. These reserves provide somewhat of a buffer between residential zoned land to the south, and the commercial land at the Hub, to the north. East of the Project, across Te Irirangi Drive is Botany Town Centre which is a key retail focal point of the wider area. The two reserves, together with Bard Place Reserve and Burswood Esplanade Reserve comprise of an interconnected network of open space throughout the area.

The proposed works which relate to the Te Irirangi Drive/ Town Centre Drive intersection sit within the Metropolitan Centre Zone, which forms part of the wider Botany Town Centre.

5.2.3 Statutory Context

To avoid unnecessary repetition, please refer to section 5.1.3.1 for a description of the relevant statutory context. It is noted that whilst the NZCPS is not directly relevant to the EB4L works as it is considered outside of the coastal environment, there is still a requirement to consider natural character as part of section 6a of the RMA.

5.2.3.1 *AUP(OP) Zoning*

The Proposal passes through 3 different AUP(OP) Zones. These are:

- Open Space
    - Conservation Zone
    - Informal Recreation Zone
- Business – Metropolitan Centre Zone

5.2.3.2 *Notable Trees*

There are no Notable Trees within the EB4L section or its immediate context.

5.2.3.3 *Outstanding Natural Features and Landscapes*

There are no Outstanding Natural Features or Landscapes located within the EB4L section or in its immediate context.

5.2.3.4 *Significant Ecological Areas*

There are no SEA's located within the EB4L section or in its immediate context.

5.2.4 Natural Character of the Site

The key abiotic attributes of the EB4L area include its geology, water catchments and landform. It is not considered that EB4L is located in the coastal environment, however both Guys Reserve and Whaka Maumahara include tributaries of Pakuranga Creek, wetlands and margins which are to be considered. EB4L is located within a managed water catchment in so far that it is an urbanised environment which contains stormwater management devices. These include a number of culverts and a man-made stormwater pond, all of which demonstrate that there is a level of human influence and modification. The tributary of Pakuranga Creek and the wetlands along the watercourse's margins are however considered to be a natural feature, and their abiotic attributes remain legible within the urbanised

environment. This includes the presence of indigenous vegetation and the presence of running water. It should be noted however that the tributary has undergone an element of modification, particularly at the head of the tributary near Whaka Maumahara where a weir/culvert exists, in addition to where the tributary passes beneath Tī Rākau Drive via a culvert. Overall, it is considered that the abiotic attributes are moderate. In relation to experiential attributes, whilst the tributary and wetlands demonstrate aspects of naturalness, which includes the presence of indigenous vegetation, and the sights and sound of flowing water, it is however considered the urbanised context of the tributary influences the experiential attributes to low.

5.2.5 Visual Catchment and Viewing Audiences

The proposed visibility of EB4L will capture a number of different viewing audiences.

Travelling Viewing Audiences

These include road users of Tī Rākau Drive, Te Koha Road, Te Irirangi Drive, Waihi Way, Kirikiri Lane, Cottesmore Place, Guys Road, and Town Centre Drive. Viewing audiences on internal roads of the Hub will also attain views which includes the service road which is broadly aligned to the Hub's southern boundary.

Occupational Viewing Audiences and Visitors to Business Premises

Commercial/ retail viewing audiences to the north within The Hub and those in the western most portion of Botany Town Centre (Briscoes) will observe the Project from proximate locations. It should be noted that many of the premises within The Hub and those within Briscoes are inwards focused and therefore views are likely to be experienced for short durations as visitors and workers enter and exit the premises.

Figure 5-7. View of some of the commercial businesses along the southern portion of The Hub

Visitors to Piccolo Park, a childcare centre along Tī Rākau Drive, will obtain east facing views of the Project, particularly where EB4L is located within Guys Reserve.

Residential Viewing Audiences

Residential viewing audiences are most notably those to the south although some views from northern locations may be obtained. Residents located in properties at the southern end of Tiger Drive and Spalding Rise may obtain views towards the northern portion of the Project where it meets Tī Rākau Drive.

Residential viewing audiences that adjoin Guys Reserve's western boundary occupy 2 and 3 storey terrace dwellings. Views from these properties overlook Guys Reserve and will include views of the Project. Residential viewing audiences along the northern portion of Guys Road and Cottesmore Place which form Guys Reserve's southern boundary tend to be single store dwellings with fenced boundary interfaces with the reserves. Views to Guys Reserve are more limited, although remain attainable. Residential 2 and 3 storey properties also occur along Kirikiri Lane and Waihi Way, to the south of Whaka Maumahara. These residents will obtain views of the Project both within Guys Reserve and also Whaka Maumahara Reserve.

Figure 5-8. Residential properties (and Piccolo Park childcare), along north western edge of Guys Reserve

Figure 5-9. Residential viewing audiences along Waihi Way opposite Whaka Maumahara

Recreational Viewing Audiences

Recreational viewing audiences include those within the Project area (i.e. Guys Reserve and Whaka Maumahara), in addition to those at Bard Place Reserve to the north of Tī Rākau Drive. It is however acknowledged that during the construction phase of EB4L, there will be no public access at Guys Reserve and Whaka Maumahara, and therefore visual effects on this particular type of viewing audience is only considered during the Operation Phase as viewing audiences will not exist during construction.

6 Assessment of Natural Character, Landscape and Visual Effects

Chapter Summary

This chapter summarises the potential effects of the construction and operational phases of EB3C and EB4L following mitigation.

EB3C

The EB3C works involve construction activities which include two bridges, two areas of reclamation, works within residential and open space areas and works alongside Tī Rākau Drive. The works will ultimately create a dedicated busway with a station, in addition to a cycleway.

Changes to the landform will principally be the result of grading to accommodate the proposed road levels and surfaces. Much of the earthworks beyond the margins of Pakuranga Creek and tributaries will occur alongside the existing road corridors or within modified residential areas where landform values are considered to be lower (due to their modified characteristics). Overall landform effects during construction are anticipated to be low adverse. During operation, following completion of the project, and considering the permanent (but limited) change to the topographical values, it is considered effects will be very low adverse.

Direct landscape effects on Pakuranga Creek are considered to be high during construction, particularly in relation to Bridge A and Bridge B. These effects would reduce to moderate during operation, following the removal of staging bridges. Works in relation to the tributaries of Pakuranga Creek will result in moderate effects during construction, reducing to low following construction.

Vegetation effects during construction will involve the removal of terrestrial, estuarine and riparian vegetation within EB3C's footprint. Overall, it is considered that adverse landscape effects during construction would be of a moderate level. Following construction and mitigation planting it is expected that any residual effects will be beneficial.

In relation to open space construction, works will take place alongside, or in Burswood Esplanade Reserve and Bard Place Reserve. With respect to Burswood Esplanade Reserve, it is considered the removal of open space and dilution of the current (and potential) interconnectivity and legibility of the reserve during construction will result in adverse effects considered to be moderate-high. Effects on Bard Place Reserve will be similar in nature to those within Burswood Esplanade Reserve and overall, it is considered effects will be moderate adverse during construction. Following construction, the project would permanently occupy parts of these open spaces, resulting in a land use change. Permanent adverse effects on open spaces will occur through the busway encroachment, however, balanced with the provision for a cycleway through the reserve in addition to new planting, any residual adverse effects will be low-moderate for Burswood Esplanade Reserve and Low adverse for Bard Place Reserve.

In relation to landscape features, it is considered effects will range from moderate to moderate-high for open space features and moderate-high for works relating to the CMA, margins of Pakuranga Creek and its tributaries. Following construction, any residual effects will be moderate-low in relation to open space features and moderate for waterways being the Pakuranga Creek and its tributaries.

Effects on urban development and land use during construction are considered to be moderate adverse, particularly in relation to the occupation of open space during construction being incongruent to the activities and structures expected in such areas. During operation, aspects of EB3C will become integrated with existing land uses and as such effects are considered to be beneficial. Where the Project deviates into the Pakuranga Creek or public open space, such effects are considered to be moderate adverse.

Natural character effects during construction are anticipated to range from very low to moderate adverse. Following construction, any residual effects will be low adverse.

In considering visual effects, the greatest visual effects are anticipated to be on those residential viewing audiences adjacent to the construction of EB3C and these adverse effects are expected to range from low

to high. The most elevated effects are considered to be those adjoining the project to the north and those to the northwest at lower elevations, across Pakuranga Creek. Following construction, effects will ultimately reduce however those to the northwest would experience residual effects considered moderate-high. A number of residents directly north of the commercial area would experience residual effects up to moderate adverse following construction.

EB4L
The EB4L works involve construction activities associated with a busway, cycleway and footpath and related stormwater works within Guys Reserve and Whaka Maumahara Reserve. Upgrades to the Te Irirangi Drive/ *Town Centre Drive intersection (associated with Botany Town Centre), are also proposed.*

Changes to the landform will principally be the result of earthworks relating to the creation of the busway along the northern portion of the reserves. Earthworks in relation to other elements such as the cycleway, any drainage works, and intersection improvements would be secondary. Overall, during construction, effects are anticipated to be low adverse. Following construction, these effects would broadly remain (as earthworks would be a permanent change) and as such effects would be very low to low adverse.

Effects on vegetation during construction would be due to the removal of terrestrial and riparian vegetation within EB4L's footprint. These effects are anticipated to be moderate, prior to any mitigation planting. Following planting, effects are anticipated to be very low adverse – acknowledging that some areas are unable to be replanted due to the footprint of the project structures.

Open space will be heavily impacted during construction, these areas will be occupied as the project is being completed and will include laydown areas as well as project elements. As such, effects on the open space would be moderate for Guys reserve and high for Whaka Maumahara Reserve. Following construction, residual adverse effects of low are anticipated to remain due to the continued occupation of these areas.

Landscape features would be affected during construction, as covered above, effects on open space will be moderate and high. Following construction, effects are considered to be low on these open space features. Any residual effects on water features (stormwater pond and tributary of Pakuranga Creek within Guys Reserve), will be low.

Effects on urban development and land use will be resultant for the occupation of open space, during construction and operation. Effects during construction are considered to be moderate, reducing to low, acknowledging that the proposed cycleway and footpath will contribute to the uses of these open space areas and provide for connectivity through both reserves.

Natural character effects will be limited to up to low during construction, reducing to very low adverse during operation.

In relation to visual effects, the greatest visual effects during construction will be on certain residential viewing audiences and recreational viewing audiences. Residents at Cottesmore Place, Guys Road and Waihi Way will experience up to moderate-high adverse effects. Recreational viewing audiences will experience high adverse visual effects. During operation, effects will reduce. The greatest effects will be low-moderate adverse for those aforementioned residents and very low for recreational viewing audiences.

6.1 Construction Effects

6.1.1 Eastern Busway 3 Commercial

6.1.1.1 Summary of Construction Activities within the Existing Environment

The anticipated works in this area consist of a number of construction activities to complete major built elements pertinent to EB3C. A construction methodology has been prepared as part of the application

and has been reviewed as part of preparing this assessment. The following points summarise the key construction activities as a result of the EB3C Project:

- Presence of laydown yard/ construction compounds and project offices – notably at 242 Tī Rākau Drive (Mobil service station) and Burswood Esplanade Reserve
- Construction activities relating to bridge structures across Pakuranga Creek (Bridge A and Bridge B). This includes temporary staging consisting of piles driven into the ground, structural steel work and a precast concrete deck, that will be removed once the permanent bridges are completed. Temporary occupation of the CMA for bridge staging will involve approximately 23m^2 and 22m^2 for Bridge A and Bridge B respectively
- Permanent occupation for the bridge piles will be 22m^2 (14m^2 for Bridge A and 8m^2 for Bridge B). Permanent occupation for the Bridge A eastern abutment will be approximately 30m^2 and 64m^2 for the Bridge B northern abutment rip rap. Pile scour protection for Bridge A (if required by hydrodynamic modelling) will occupy approximately 147m^2 of benthic habitat. A 549m^2 reclamation is required for Bridge B. Permanent occupation for the four coastal stormwater outfalls is 100m^2 (25m^2 per outfall)
- In terms of bridge heights, Bridge A will be comparable to the existing Tī Rākau Drive Bridge which crosses Pakuranga Creek. The level of Bridge B will be approximately RL 6.5m to RL 7.1m at the bridge abutments and will tie into the adjoining landform.
- A number of retaining walls (RW301 to RW312, refer to General Arrangement Plans), will be required for the Project. The walls will be designed to be incorporated into the adjacent environment through material selection and planting.
- An area of 400m^2 within the CMA is required for the construction of four stormwater upgrades/new outfalls (100m^2 per outfall)
- Temporary construction area approximately 70m^2 for construction of retaining wall (RW304) between 242 and 254 Tī Rākau Drive. The section of the retaining wall within the CMA is approximately 2m long and is 2m from the boundary of the CMA. There is approximately 4 m^3 of fill behind the retaining wall that will be required in the CMA as a reclamation
- Partial widening of a portion of Tī Rākau Drive and Burswood Drive to facilitate the proposed cycleway
- Construction of the busway and cycleway to the north of commercial properties accessed via Burswood Drive and Torrens Road. This will involve demolition of 50 dwellings and 3 non-residential buildings, removal of vegetation (including trees within private and council owned land), earthworks and presence of construction equipment
- Construction of a 2.4m high Noise wall between the busway and cycleway
- Earthworks will occur within the construction footprint, including approximately 2 ha of land-based works and 0.5 ha of coastal works
- Vegetation removal to allow construction of Bridge A and Bridge B, both of which are within the CMA and coastal interface. Overall, loss of marine vegetation during construction will be:
    - 100m^2 for each of the stormwater outfalls (400m^2 in total)
    - 710m^2 for the construction of bridge structures[9]
    - 70m^2 for the temporary works associated with the retaining wall (RW304) supporting the reclamation

[9] This includes vegetation clearance for abutments, piles and scour protection and 549m^2 of reclamation for Bridge B and vegetation clearance associated with the construction staging bridges

Overall, permanent loss of marine vegetation will be:

- loss of 25m^2 for each stormwater outfall structure (100m^2 in total)
- 678m^2 for the permanent bridge piers and abutments[10]
- 4m^2 permanent loss for the reclamation supported by the retaining wall (RW304)

- Construction of permanent stormwater outfalls. Notably between 242 & 254 Tī Rākau Drive, 260 Tī Rākau Drive, Burswood Drive (3 outfalls) and Tī Rākau Drive (near eastern abutment)
- Street enhancements along portions of Tī Rākau Drive.

6.1.1.2 Landscape Effects

The construction effects on the landscape arise from the physical changes to the receiving environment which may change its characteristics or qualities. The physical change during construction of EB3C may include changes to the landform, vegetation, open space, landscape features and land use. The change in these attributes, in addition to the presence of elements and activities associated with construction (i.e. construction machinery and laydown areas, stockpiles etc.) can also temporarily change the character of an area.

Landform

Changes to the landform will principally be the result of grading to accommodate the proposed road levels and surfaces. Much of the earthworks beyond the margins of Pakuranga Creek and tributaries will occur alongside the existing road corridors or within modified residential areas where landform values are considered to be lower (due to their modified characteristics). Although construction effects are considered, the change to this landscape would be permanent and would affect a wide area across the site. Nevertheless, it is not considered that there would be a loss of any landform features of note within the site or wider context as the topographical characteristics of the landform are within developed areas. It is therefore determined that the effects on the landform during construction would be **low** adverse.

Pakuranga Creek and Tributaries

The construction of Bridge A and Bridge B will result in the greatest effects due to the modification of the Pakuranga Creek bed and foreshore through the creation of bridge abutments. This will include mechanically stabilised earth (MSE) walls (particularly at the northern end of Bridge B), pilling, and temporary staging structures. Temporary staging for Bridge A will occupy 23m^2 of the CMA and temporary staging for Bridge B will occupy 22m^2. Temporary staging platforms will be located on top of the temporary piles (i.e. not within the CMA), and will be of a similar height to the decks of Bridge A and Bridge B. Pile scour protection for Bridge A will occupy approximately 147m^2 and the eastern abutment will occupy 30m^2 of the CMA. Permanent reclamation will occur between 242 and 254 Tī Rākau Drive in addition to a 549m^2 area required for Bridge B and the four stormwater outfalls totalling 100m^2. Landscape values of these areas are in part already compromised due to their modified context through existing infrastructure (e.g. the Tī Rākau Drive Bridge and nearby pipe bridge) and commercial activities (e.g. the Mobil branded service station). Notwithstanding this, the coastal embankment and creek bed are considered to hold high landscape values including a historic quarry (R11/1263 Donnelly's Quarry)[11] As such adverse landscape effects during construction within Pakuranga Creek are considered **high**.

[10] The calculation includes the 549m^2 reclamation for Bridge B
[11] AUP(OP) Reference McCallum's Wharf and Quarry R11_1263

Works near the tributaries of Pakuranga Creek, within Burswood Esplanade Reserve, will include modification to the stream margins to facilitate the Project. Works will be required in an area west of the Howick and Eastern Bus Depot, where a retaining wall will be constructed near the stream margins. An area immediately north of the bus depot will also be impacted by the EB3C Project. This is due to the project route (notably the cycleway) following the northern extent of the bus depot. A retaining wall will be required along the margin of the tributary. Two more areas to the east of the bus depot will also require works within the margins of the tributary, with retaining walls proposed. It is considered that the use of retaining walls will reduce the extent of earthworks into the channel of the tributary. Notwithstanding this, works within the natural contours of the tributary margins will result in adverse effects considered to be **moderate**.

Vegetation

Effects on vegetation during construction would result from the removal of terrestrial, estuarine and riparian vegetation within EB3C's footprint. This includes indigenous and low value exotic pest species. Vegetation that is considered to have low landscape value will be removed within the residential area north of the Burswood commercial area, with this vegetation primarily being lawn, garden ornamentals and specimen trees. Areas of exotic pasture within Burswood Esplanade Reserve will also be removed to accommodate EB3C.

Some mangroves within Pakuranga Creek will be removed to enable the construction of Bridge A and Bridge B. These mangrove areas are within a Marine SEA[12]. Additionally, in respect of the bridges, riparian vegetation (a mix of indigenous and exotic species) will be removed in the location and vicinity of the eastern and western abutments of Bridge A, and the northern and southern abutments of Bridge B.

Limited areas of riparian vegetation will also be affected along the eastern end of the tributary of Pakuranga Creek within Burswood Esplanade Reserve, as well as some native trees within the reserve's open areas (particularly near the eastern arm of Burswood Drive). After considering the adverse effects generated from indigenous vegetation removal, and positive effects from exotic pest vegetation removal, overall it is considered that adverse effects during construction would be of a **moderate** level. However, it is recognised that these adverse effects would be appropriately managed through new planting (covered in operational effects) and natural recolonisation of the creek by mangroves.

Open Space

Construction works in relation to EB3C include works alongside, or in a number of, areas of open space within the vicinity of Burswood Esplanade Reserve and Bard Place Reserve.

Burswood Esplanade Reserve

Works within Burswood Esplanade Reserve will take place in a number of areas. To the west, works will occur within a small area of the 20 m wide ribbon of open space which adjoins Pakuranga Creek (near the northern abutment of the Bridge B). The extent of works will be relatively discrete where it occurs at the southern termination of the reserve space as it meets Chinatown. This will involve the removal of a limited area of open space (approximately 300m^2) which will be occupied by the busway.

More extensive works within Burswood Esplanade Reserve will occur to the east, beyond the eastern arm of Burswood Drive. Works will require the removal of open space in the vicinity of the road corridor and northern side of the bus depot. This will ultimately reduce the size of the informal open space area,

[12] AUP(OP) reference SEA-m2-45b.

as well as dilute the legibility of the open space as a passive land use along the Pakuranga Creek tributary and Tī Rākau Drive road frontage. The presence of the busway as it is constructed will also impact the interconnectivity of open space between Bard Reserve and Guys Reserve which will be further bisected by EB3C. The only formalised pedestrian access will also be bisected as part of the Project and will result in temporary effects in this regard (noting that a pedestrian connection will be reinstated).

With the above in mind, it is considered the removal of open space and dilution of the current (and potential) interconnectivity and legibility of the reserve during construction will result in adverse effects considered to be **moderate-high**.

Bard Place Reserve

During construction, effects in Bard Place Reserve will be similar in nature to those within Burswood Esplanade, in that the cycleway portion of the project will effectively encroach into the open space. This area will however be relativity limited and remain alongside (and connected to) the Tī Rākau Drive corridor. The reserve will continue to front Tī Rākau Drive and remain as a legible landscape feature. Formalised pathways within the reserve will remain as they are at present, providing pedestrian access from Tī Rākau Drive to Tiger Drive. Overall, during construction and taking into account the permanent removal of a portion of open space, it is considered effects will be **moderate**.

Landscape Features

As described, the local landscape features are considered to be the areas of open space and waterways which influence the project. With consideration of open space, the above assessment concludes **moderate-high** and **moderate** effects during construction. The legibility and interconnectivity of these spaces will be impacted by the project through the partial occupation of these spaces and nature of activities that will temporarily affect people's association and appreciation of these open space features.

Works within the CMA, along the margins of Pakuranga Creek and its tributaries will also result in effects on the significance and meaning of these features. Aspects of Pakuranga Creek, its distinctiveness and representation of a natural environment, connecting the upstream landscape to the Tāmaki River and Waitematā Harbour will be slightly reduced due to the occupation of portions of the creek by Bridges A and B in addition to temporary staging bridges, and construction equipment. However, the presence of the existing infrastructure (i.e Tī Rākau Drive Bridge, Pakuranga Creek pipe bridge, and high voltage transmission lines), already characterise the creek and its tributaries. The broad 'grouping' of these elements will cumulatively impact this local area. Overall, it is considered that effects on this landscape feature will be **moderate-high** during construction.

Urban Development and Land Use

During construction, the Project will introduce some activities within land use environments where such works are not typically anticipated or expected. Works within the Pakuranga Creek, particularly the Bridge B due to its deviation from the Tī Rākau Drive corridor, will signal an intensification of infrastructure elements within the natural waterway. Works within the residential area behind the light industrial land will also signalise a level of construction intensity and activity not typically anticipated within the area. This will effectively form a new interface between industrial activities and residential activities. The change will also result in a new 'edge' of development, a transport corridor, following the removal of residential properties which currently occupy the interface with industrial land.

The occupation of open space areas during construction will be incongruent to the activities and structures that would be expected within such areas. Furthermore, the construction of the busway will impact the provision of open space.

With the above considered, any effects on urban development and land use during construction will be **moderate** adverse.

6.1.1.3 Natural Character

In considering the abiotic effects on the natural character values during construction, the greatest effects will be on the Pakuranga Creek due to the proposed bridges (including construction of these elements), proposed Bridge B embankment, in addition the area of proposed reclamation between 242 and 254 Tī Rākau Drive. Modifications to existing stormwater outfalls are also proposed along the tributary of Pakuranga Creek. There will however be no direct effects to the wetland footprints, although it is noted that works will occur within 10m of one natural inland wetland. In relation to the outfalls, the water catchment is part of a modified and managed catchment system due to prior urbanisation. These changes will occur where localised modification has already taken place (i.e. the abiotic natural character level of these areas has already been reduced and/or impacted through the development of the area). It is considered this localised change during construction will result in **low-moderate** adverse effects on the abiotic attributes of the Pakuranga Creek and its tributaries. Any adverse effects on the abiotic attributes of the wetlands will be **very low**.

The works will impact localised mangrove and indigenous habitats in limited areas along the coastal interface and CMA. In relation to natural character effects, it is considered that **low-moderate** adverse effects on the biotic values will be generated in these localised areas during construction, noting that these effects will be temporary in nature.

In relation to experiential attributes, it is considered that these will be reduced due to the presence of development and structures. The proposed construction activities including bridge structures and upgrade of outfalls within this modified environment will result in **moderate** adverse effects on the experiential natural character attributes.

6.1.1.4 Visual Effects

The temporary visual amenity effects associated with EB3C, are likely to arise from the presence of construction activities, elements and structures. These temporary effects would affect a range of viewing audiences which are located within, adjacent to, and within the wider vicinity of the EB3C section of the area.

<u>Travelling Viewing Audiences</u>

These viewing audiences are located along the road corridors and footpaths of the receiving environment, including those which are travelling in vehicles, on foot, or on alternative modes of transport (such as bicycles). It is considered that due to the activities these viewing audiences are engaged in, their sensitivity to change would be lower.

Change for these viewing audiences during construction would be high given the visual interruptions from construction activities and machinery, most notably within the CMA and within open space when viewed from the road. These viewing audiences would be transient in nature and experience this change for a short duration of time in defined sections along the road corridors (e.g. along sections of Tī Rākau Drive or Burswood Drive). Due to the momentary encounter the viewing audiences will

experience with construction works and the nature of the existing environment they are experiencing, it is determined that the temporary adverse visual effects on these viewing audiences would be **low**.

Occupational Viewing Audiences and Visitors to Business Premises

These viewing audiences are focussed within the areas where commercial activities are established within the receiving environment. In the western portion of the project, these include those workers and visitors in commercial businesses along Tī Rākau Drive in the vicinity of Pakuranga Creek, such as those along the southern portion of the corridor including Chipmunks Playland, Family Boats, and MM Brands, as well as those in Chinatown. These viewing audiences would obtain views of construction works. Most notably these include the bridge structures (including Bridge B embankment and area of reclamation between 242 and 254 Tī Rākau Drive), in addition to the construction of the cycleway which splits from the Tī Rākau Drive Bridge and runs north along a portion of Burswood Drive. These businesses primarily comprise an assortment of large warehouse buildings with limited visibility to the road corridor. Those locations that do provide visibility, including those such as Family Boats where a component of business occurs in outdoor yards will have the greatest opportunity to view the works.

For those that have views towards the site, it is considered that these will be seen in the context of a developed urban environment and will form an extension of infrastructure improvements to the area. It is considered that construction will be seen as a 'distraction' in the limited views attainable from within these premises and therefore any effects will be **low** during construction.

As EB3C wraps around the back (north) of the light industrial zone, works will occur in the direction of the back of house or loading bay areas of the local businesses. As EB3C begins its return towards Tī Rākau Drive near Bunnings Warehouse, works will be observed as people enter and exit the business for brief moments and any such effects in relation to amenity values will be no more than **low** adverse.

Commercial business along the eastern portion of the project, along Tī Rākau Drive, include those at the corner of Greenmount Drive (Warehouse Stationary), the bus depot, a block of business on the opposite side of the road (e.g. Lighting Plus and Animates), in addition to a kindergarten and the back of eastern businesses of The Hub. The greatest change will be visible for those near the corner of Burswood Drive and Tī Rākau Drive, where works will occur within the reserve. Works will also be discernible for those where the proposed cycleway returns to Tī Rākau Drive (within Bard Reserve). However, these works will be seen alongside or in the immediate vicinity of the existing Tī Rākau Drive road corridor and the visible construction works will be clearly linked to infrastructure improvements along the arterial route. With this in mind, it is considered any effects on these commercial viewing audiences during construction will be **low** adverse.

Residential Viewing Audiences

Elevated residential viewing audiences to the northwest (such as Riverhills Avenue and Heron Place) would have the opportunity to view portions of the works, particularly within Pakuranga Creek. These works would be seen from a reasonable distance in an urban context and views of the works will be partial due to intervening vegetation. Furthermore, they will be part of a wider view drawing in the surrounding urban context. Works will also be backdropped by the commercial/light industrial businesses beyond. With the above in mind, it is considered any effects during construction would be no more than **low** adverse for these elevated viewing audiences.

For those residential viewing audiences to the northwest, at lower elevations (Wanaka Place, Davington Way, Ifield Court and Lutana Place), views of the works will again be focused on the construction of the bridge structures across Pakuranga Creek in addition to the proposed Bridge B embankment. The low

elevational views will mean that construction machinery and permanent structures will appear more dominant. Combined with their proximate views (particularly those on the eastern banks of Pakuranga Creek), this will result in more elevated adverse effects. Those along Davington Way and Ifield Court will be most proximate to the works and will experience the greatest amount of change. Works may take up a large portion of their south-eastern views and whilst backdropped by the Tī Rākau Drive Bridge and nearby light industrial businesses, the foreground amenity values of Pakuranga Creek will be reduced. As such, construction effects for these residents will be **high**.

The distribution of residential viewing audiences to the north of the light industrial area will be altered due to the presence of EB3C along the southern extent of the residential area. A number of properties that were formerly adjacent to other residential properties (removed for the busway) will instead be adjacent to the works. This includes those along Burswood Drive, Tullis Place, Dulwich Place, Heathridge Place and Midvale Place. Construction will occur within a relatively narrow working corridor between existing/ retained residential dwellings and the light industrial land to the south. In some instances, existing roads will provide a buffer element between works and residential properties. However, it is acknowledged that there will be properties that will effectively interface with the Project.

During construction, it is considered that there is the potential to be up to **high** adverse effects to these immediate residents. It is noted that construction will go through various peaks and troughs of activity, while certain construction activities may generate more elevated levels of adverse effects (e.g. demolition of houses, earthworks and excavators as well as machinery for installation of noise walls). It is considered that effects will be reduced for residents that do not 'front' the working corridor. Intervening properties will provide some level of visual screening to construction works. It is therefore considered that for those residential properties that do not interface with the works, up to **low-moderate** effects will be generated during construction.

Residential viewing audiences to the east include those along Tiger Drive and those set back along Huntingdon Drive and in the northern portion of Cottesmore Place. During construction, a small number of residents to the south of Tī Rākau Drive (i.e. those along Huntington Drive, Sandia Place and Cottesmore Place) may have the opportunity to view some works associated with EB3C. Those along the southeastern portion of Tiger Drive will also have the opportunity to view works. The construction activities that will likely be visible will be focused on works in the vicinity of the bus depot. For those along Huntington Drive, any effects are considered to be **very low** during construction as visibility will be limited and seen alongside the road corridor environment.

Similarly, those along the northern portion of Cottesmore Place will observe limited change with works associated with EB3C, and such change will remain in the vicinity of the road corridor. For those residents along Tiger Drive, although works will occur in the local vicinity of their properties, construction will be observed along the road corridor, as well as alongside the Gull branded service station and the bus depot. Bard Place Reserve will also remain as an open space buffer to the works so any effects during construction are anticipated to be **low** adverse.

Recreational Viewing Audiences

Recreational viewing audiences are located across a wide area and are considered to be those viewing audiences engaged within recreational activities in public reserves[13]. For this assessment, the recreational viewing audiences are considered to be those located in the areas zoned as "Open Space" under the AUP(OP). These include those viewing audiences which are engaged in informal and formal

[13] It should be noted that effects for people walking or cycling within transport corridors are not considered under recreational viewing audiences and are instead considered in the traveling viewing audiences section.

outdoor recreation. These areas specifically include Burswood Esplanade Reserve and Bard Place Reserve.

Burswood Esplanade Reserve

Viewing audiences in Burswood Esplanade Reserve would experience some visual disruption due to the presence of construction machinery, earthworks and other such construction activities (in addition to the proposed construction yard within the reserve itself). Formalised access near Burswood Drive will also be impacted during the works, reducing viewing audiences' ability to utilise this open space. The reserve is located alongside a busy arterial route (Tī Rākau Drive) and is backdropped by commercial and industrial activities, in addition to Transpower's Pakuranga substation. Transmission lines also bisect this reserve. These features together reduce some of the reserves open space amenity values. Construction within the context of this environment and broadly alongside existing infrastructure, will mean that effects are somewhat lessened. As such, it is considered effects on these park users will be **moderate**.

Bard Place Reserve

Similar effects have been considered regarding Bard Place Reserve. This reserve is essentially formed by an offset from a tributary to Pakuranga Creek and is surrounded by infrastructure. The works will occur in the vicinity of existing infrastructure (i.e. Tī Rākau Drive road corridor) and would not impact the core of the space, considered to more focused adjacent to Tiger Drive. Access to the reserve will be retained from Tī Rākau Drive and therefore viewing audiences will continue to utilise the space as it is at present. Views of the works for these viewing audiences will be a visual distraction, however in considering the context of the works (near Tī Rākau Drive and the bus depot), it is considered that any effects will be no more than **low-moderate** during construction for these viewing audiences.

6.1.2 Eastern Busway 4L

6.1.2.1 Summary of Construction Activities within the Existing Environment

The anticipated works in this area consist of a number of construction activities to complete major built elements pertinent to EB4L. A construction methodology has been prepared as part of the application and has been reviewed as part of preparing this assessment. The following points summarise the key construction activities as a result of the EB4L Project:

- Presence of laydown yard/ construction compounds and project offices – northwestern portion of Guys Reserve and southern portion of Whaka Maumahara Reserve
- Construction of the busway (including Bridge C) in the northern portion of Guys Reserve and Whaka Maumahara. This includes retained portions and an elevated bridge structure (Bridge C). This will involve earthworks in addition to vegetation removal and presence of construction equipment
- The height of Bridge C varies along its total length. The greatest height is expected to be where Bridge C occupies land to the northwest of the Whaka Maumahara Stormwater Pond. It is expected that in this location the height of the bridge will be approximately between 1 to 2m above the adjoining ground height of The Hub
- A number of retaining walls (RW400 to RW407 and RW422, refer to General Arrangement Plans), will be required for the Project. The walls will be designed to be incorporated into the adjacent environment through material selection and planting
- Upgrades to the Te Irirangi Drive/ Town Centre Drive intersection, which will involve vegetation removal (within Botany Town Centre property). These improvements will include features such

as traffic signals, signs, pedestrian crossings, lane markings and new kerb alignment and pavement widening in Town Centre Drive to allow for an additional left turn lane

- Construction of the cycleway and pathway around the southern and eastern perimeter of the reserve on Ti Irirangi Drive (a minor extent of the cycleway retaining wall will be located in Whaka Maumahara Reserve)
- A new stormwater outfall (including rip rap) and pipeline will be constructed in 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 and adjacent to Te Irirangi Drive. This new connection will discharge via an existing outfall into the existing stormwater pond within the Whaka Maumahara Reserve. Vegetation clearance will be required as part of these works
- Revegetation and enhancement planting within both reserves and replacement planting at the Te Irirangi Drive/ Town Centre Drive intersection, to be designed in collaboration with Botany Town Centre, as part of the works.

6.1.2.2 *Landscape Effects*

The construction effects on the landscape arise from the physical changes to the receiving environment which may change its characteristics or qualities. The physical change during construction of EB4L may include changes to the landform, vegetation, open space, landscape features and land use. The change in these attributes, in addition to the presence of elements and activities associated with construction (i.e. construction machinery and laydown areas, stockpiles etc.) can also temporarily change the character of an area.

Landform

Changes to the landform will be as a result of earthworks (including cut and fill) in relation to the Guys Reserve Bridge C, in addition to the formation of the cycleway and pedestrian footpath. As the works are predominantly located along the edges of the reserves, the effects on the characteristic landform features of the reserves will remain legible. These are the minor gully within Guys Reserve, and the 'bowl-like' topography of Whaka Maumahara.

Retaining of the busway is limited to the northern portion of Guys Reserve as a piled bridge structure is proposed for the remaining portion. This will reduce earthworks along the northern portion of the open space. Some retaining will be required along the proposed cycleway and footpath (southern portion of Guys Reserve and southern and eastern portion of Whaka Maumahara Reserve) although these areas are limited and will reduce the extent of works that encroach into vegetated areas.

Earthworks in relation to the Te Irirangi Drive/ Town Centre Drive intersection will be limited and associated with earthworks within the carriageway and modified landscape berms.

Overall, it is considered that the effects on the landform during construction would be **low** adverse.

Vegetation

Landscape effects associated with vegetation removal during construction would be due to the removal of terrestrial and riparian vegetation within EB4L's footprint. Some areas of mown grass will be impacted due to the construction of project elements, in addition to the provision of a lay-down area in the northwestern portion of Guys Reserve and southern portion of Whaka Maumahara Reserve. Some vegetation which occurs along the northern margins of the Guys Reserve Stream to Pakuranga Creek will be removed, which also includes works in relation to the new stormwater outfall (including rip rap)

and pipeline. Whilst native vegetation will be removed as part of EB4L, it is noted that the riparian margin of Guys Reserve contains numerous weeds and pest species such as bind weed, gorse and tobacco weed. Other, less invasive exotic vegetation will also be removed.

Vegetation removal within Whaka Maumahara will predominantly occur along the northern portion nearby the Te Koha Road boundary where native vegetation has been planted behind a formalised seating area. A limited area of vegetation (approx. 50m^2) will also be removed in relation to the new pipeline near Te Irirangi Drive.

Te Irirangi Drive/Town Centre Drive improvements will require the removal of up to approximately 70m^2 of vegetation. Vegetation here would have been established for the purpose of the Botany Town Centre and removal will include a mix of native and exotic species.

In summary vegetation removal within the EB4L footprint is relatively limited in spatial extent and will affect native vegetation which is not particularly mature (appears to have been planted in 2009-2010) and contains a number of exotic species in addition to weed and invasive species. The areas of vegetation are also not part of a terrestrial SEA. With the above considered, it is determined that the adverse effects during construction (prior to mitigation planting), will be **moderate**.

Open Space

Guys Reserve

Works within Guys Reserve will tend to occur around the periphery of the open space. The construction of the cycleway and footpath will require removal of grass areas and some vegetation. The proposed busway will also require removal of mown grass and vegetation along the upper banks of the tributary of Pakuranga Creek. An existing footpath between Cottesmore Place will be impacted, but upgraded (to include cycleway and pedestrian capacity). Impacts on informal grass areas are considered limited, as this tends to occur along the edges of the park, although it is noted that a construction area will occur in the northwestern portion. It is considered that the adverse effects during construction will be **moderate**.

Whaka Maumahara

Works will occur across a large portion of the reserve, effectively temporarily occupying much of the open space. A laydown area will also be present in the southeastern portion of the works near Waihi Way and Te Irirangi Drive. Works within Whaka Maumahara will result in the removal of a seating area in the northwestern portion of the park and impact access through the park between The Hub and Guys Road, including residential properties to the south. Some areas of vegetation will also be removed, most notably in the northern area of the park where planting occurs behind a public seating area, in addition to some vegetation (including trees) in the eastern portion near Te Irirangi Drive. Works will therefore impact the open space characteristics of the reserve in addition to its functionality during construction. With the above in mind, it is considered that effects will be **high** during construction.

Landscape Features

The local landscape features of EB4L are considered to be the areas of open space and associated tributary of Pakuranga Creek. The Stormwater Pond, although a man-made feature, also provides some amenity value. With consideration of open space, the above assessment concludes **moderate** and **high** effects during construction. The legibility and interconnectivity of these spaces will be impacted by the project through the occupation of these spaces and nature of activities that will temporarily affect people's association and appreciation of these open space features.

Urban Development and Land Use

Apart from the limited upgrade to the Te Irirangi Drive/Town Centre Drive intersection, much of the construction of EB4L will take place within Open Space zoning, and it is considered that the nature and scale of construction will be incongruent to the activities and structures typically expected in such areas. The construction of the busway will signalise an encroachment of a road corridor into open space and for these reasons it is considered adverse effects during construction will be **moderate**.

6.1.2.3 *Natural Character*

In considering the abiotic effects on the natural character values during construction, these will be relatively limited. Works will avoid the tributary and wetlands and earthworks tend to occur in areas away from the margins of the waterbodies. Therefore, effects on the abiotic attributes during construction will be **very low**. In terms of biotic effects, vegetation will be removed along the margin of the tributary to Pakuranga Creek and wetland, however this will be limited. The Guys Reserve retaining wall and Bridge C will be located as far north as practicable to avoid these features and minimise impacts on the vegetated margins. Where vegetation removal does occur, including works in relation to the new stormwater outfall in Guys Reserve, vegetation consists of common native stock intermixed with exotic species in addition to pest and weed species. During construction and prior to mitigation planting, it is considered effects on biotic attributes will be **low**.

Effects on experiential attributes will also be limited, in part due to the fact that the managed urban reserve environment has already influenced and reduced experiential levels. Moreover, works within the margins will be limited. Notwithstanding this, the presence of a major construction project will signalise the increased presence of human activity and occupation within the area and as such effects are considered to be **low**.

6.1.2.4 *Visual Effects*

Travelling Viewing Audiences

These viewing audiences are located along the road corridors and footpaths of the receiving environment, including those which are travelling in vehicles, on foot, or on alternative modes of transport (such as bicycles). It is considered that due to the activities these viewing audiences are engaged within, their sensitivity to change would be lower.

Most road users would be traveling along Tī Rākau Drive or Te Irirangi Drive and would experience the view towards construction for a brief moment as they pass the site or wait at signalised intersections. Those along local roads to the south would experience views of the works taking place in the foreground of The Hub. For all instances, it is considered that whilst a large portion of the works will be observed within open space, it will be seen within the developed urban context and observed for brief moments at a time. With the above considered, the temporary adverse visual effects during construction will be **low**.

Occupational Viewing Audiences and Visitors to Business Premises

These viewing audiences are focused north and west of the project and have the opportunity to obtain stationary views (rather than transitory/moving views). These include those at The Hub and Piccolo Park in addition to those within Briscoes (part of Botany Town Centre). Notwithstanding this, these premises tend to be inward focussed. Moreover, the frontage, main entrance to the retail premises of The Hub is on the eastern side of the building away from Guys Reserve therefore views are not focused toward the majority of the works associated with EB4L.

Furthermore, viewing audiences in Briscoes, located within the Botany Town Centre, are positioned northeast of a landscaped edge to the car park. This landscaped edge (which will be retained), features ground covers, shrubs and trees and therefore views from Briscoes will remain limited.

Viewing audiences at Piccolo Park Kindergarten will have more opportunities to observe the works from outdoor areas. The main construction areas will be associated with the Guys Reserve retaining wall and Bridge C, which are part of the busway component. A construction area to the east of this viewing audience will form the primary change in view due to its proximity. Whilst views towards EB4L will be obtained, activities within the premises remain broadly inward focused and are located along a busy arterial road corridor, influencing the quality of their existing outlook. With the above in mind, it is considered there will be adverse effects up to **low** in relation to the premises at The Hub and Briscoes and **low-moderate** effects in relation to Piccolo Park Kindergarten.

Residential Viewing Audiences

Residential viewing audiences to the south include those along Waihi Way, Kirikiri Lane, the northern end of Guys Road and the northern side of Cottesmore Place and Saidia Place. Works would occur in the foreground of these views where the proposed cycleway and footpath will be constructed along the southern portions of Guys Reserve and Whaka Maumahara. A proposed laydown area in the southeastern portion of the reserve will also be present. In the case of those along Waihi Way, the road corridor between the residents and the reserve will provide a level of setback from the works (approximately 12m from the reserve boundary and Waihi Way properties. For those along the northern portion of Guys Reserve, notably 175 Guys Road, in addition to those along the northern side of Cottesmore Place, for construction of the footpath and cycleway, there will be limited separation between these works and the northern boundary of these properties. Vegetation removal is required along this section of the reserve for the formation of these pathways and removal of vegetation will have the potential to reveal more views of the back of The Hub, in addition to associated works relating to the Busway Bridge C.

It is expected that those identified viewing audiences to the south will obtain views of the Bridge C construction along the northern portion of both reserves. Those along Waihi Way, will obtain the most unobstructed views which will include the construction laydown area, cycleway and Busway/ Bridge C. The greatest effects during construction will be on those residents at 175 Guys Road, 25, 27, 29 and 31 Cottesmore Place and units within 27 Waihi Way due to their proximity to the busway construction (approximately 90m), cycleway/footpath alignment and construction laydown areas. Those at 175 Guys Road and 25, 27,29 and 31 Cottesmore Place and 27 Waihi Way will experience **moderate-high** adverse effects during construction. Other viewing audiences along Cottesmore Place are anticipated to experience **moderate** adverse effects during construction.

Residential viewing audiences along the northeastern portion of Huntington Drive include terraced houses at 47 Huntington Drive. 14 terrace properties overlook Guys Reserve, and their respective rear gardens meet the Reserve Boundary. These buildings range from 2 and 3 storeys and views towards the reserve are unobstructed. Works in relation to the cycleway and footpath will occur adjacent to this viewing audience's eastern boundary, however it is considered these works are unlikely to substantially reduce the amenity value that the reserve currently provides. A proposed construction area in the northern portion of Guys Reserve will however impact these resident's outlook into the reserve. The construction of the busway, particularly the retaining wall portion and Bridge C within Guys Reserve will contribute to reducing the amenity values for these viewing audiences, however it is noted that these particular works will occur some 100m away. With the above in mind, it is considered that adverse

effects during construction for these viewing audiences along Huntington Way will be **moderate** adverse.

Side yard views of the works may be attainable for those in terrace buildings to the south of Tiger Drive and Spalding Rise. Views are however already characterised by the Tī Rākau Drive road corridor and views towards the EB4L works will be limited to the northern portion only, forming a small part of their overall outlooks. This may include the construction area in the northern portion of Guys Reserve, in addition to the busway construction and to a lesser extent the cycleway and footpath along the western boundary of Guys Reserve. With the above in mind, works will result in **low** adverse effects for these viewing audiences.

Recreational Viewing Audiences

During construction there will not be any public access to both Guys Reserve and Whaka Maumahara. Therefore, there will be no recreational viewing audiences within these reserves that will experience visual effects.

For those at Bard Place Reserve, to the north, partial views of the works within Guys Reserve will be attainable. These viewing audiences will however observe works from across Tī Rākau Drive and such effects will be slightly reduced as the reserve does not form a large portion of their view. It should be noted however that the legibility of this open space, and perceived interconnectivity between Bard Place Reserve and Guys Reserve will be reduced with the presence of construction activity. With the above considered, those viewing audiences in the southern portion of Bard Place Reserve will experience **low** adverse effects during construction.

6.2 Operational Effects

6.2.1 Eastern Busway 3 Commercial

6.2.1.1 Summary of Changes to Existing Environment for EB3C

The following points summarise the key changes to the existing environment as a result of the EB3C Project:

- Presence of the Bridge A (*Proposed*) and Bridge B (*Proposed*) within a section of Pakuranga Creek.
    - This will include two bridge structures which span Pakuranga Creek at different locations
    - Formed embankment associated with Bridge B
    - May include scour protection for Bridge A if modelling indicates that is necessary
    - Estuarine vegetation reinstatement will occur at the stormwater outfalls and retaining walls
    - New shrub and tree planting will occur within the decommissioned (Mobil) service station site
    - New vegetation, including trees, will be established at the abutments of Bridge B and along the coastal edge to the west of Chinatown.
- Widened portions of Tī Rākau Drive to accommodate the cycleway. This will occur to the west of Burswood Drive and east of Huntington Drive
- New tree planting and landscaping along the central median of Tī Rākau Drive along the length of the Project