Report

AMETI – STAGE 2A (Panmure to Pakuranga): Further Options Assessment 2015

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Quality Assurance

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Contents

Glossary

AC	Auckland Council
ACC	Auckland City Council
AMETI	Auckland Manukau Eastern Transport Initiative
AP	Auckland Plan
ARTA	Auckland Regional Transport Authority
ARC	Auckland Regional Council
AT	Auckland Transport
CBD	Central Business District
CCO	Council Controlled Organisation
CMA	Coastal Marine Area
ETC	Eastern Transport Corridor
FOA	Further Options Assessment
HCV	Heavy Commercial Vehicles
ITP	Integrated Transport Plan
LGACA	Local Government (Auckland Council) Act 2009
LTMA	Land Transport Management Amendment Act
MCA	Multi Criteria Analysis
MCC	Manukau City Council
NoR	Notice(s) of Requirement
NZCPS	New Zealand Coastal Policy Statement
NZTA	New Zealand Transport Agency
ONF	Outstanding Natural Feature
PT	Public Transport
PAUP	Proposed Auckland Unitary Plan

QTN	Quality Transport Network
RA	Requiring Authority
RLTP	Regional Land Transport Programme
RLTS	Auckland Regional Land Transport Strategy 2010-2040
RMA	Resource Management Act 1991
RONS	Roads of National Significance
RTN	Rapid Transit Network
SOI	Statement of Intent (Auckland Transport)
SEART	South Eastern Arterial
TDM	Travel Demand Management
WW2	World War II
Vph	Vehicles per hour

1. Executive Summary

1.1 Introduction

The eastern suburbs of Auckland (Panmure, Pakuranga and Botany) are identified as being areas of significant urban growth and development within the Auckland Plan (AP). In order to provide for the anticipated growth and unlock the economic potential of the area, the AP outlines that there is a pressing demand for transport investment that will respond to and integrate with the existing and proposed land use. The AP has specifically recognised the Auckland Manukau Eastern Transport Initiative (AMETI) as a key project that will provide *"a strategic link between the eastern suburbs, unlocking the economic potential of the area"* (the Auckland Plan, 2012).

In October 2010, Auckland Transport (AT) was established as a result of the amalgamation of the region's Councils and the Auckland Regional Transport Authority (ARTA).

AT inherited AMETI from the three partners that had developed the project, Auckland City Council (ACC), Manukau City Council (MCC) and ARTA.

AMETI is designed to improve alternative modes of transport for the eastern suburbs beyond the reliance on private vehicles and to assist in easing the congestion on roads. Together with improved bus priority, AMETI will support enhanced connections to the city, as well as to other eastern suburbs and will result in a higher level of integration between all transport modes.

AMETI has been divided into a number of planned stages for delivery. AMETI Stage 1, which included the upgrade of Panmure Rail Station (rail and bus interchange) and the construction of Te Horeta Road, is now complete.

This Further Options Assessment (FOA) report focuses on AMETI Stage 2A (Panmure to Pakuranga)[1]. This stage of the project includes the provision of a multi modal transport corridor providing improved connections and accessibility between Panmure and Pakuranga town centres for all transport users.

This report has been prepared to inform the alternatives assessment required for lodgement of a Notice of Requirement (NoR) under the Resource Management Act 1991 (RMA) in respect to enabling the construction, operation and maintenance of a multi modal transport corridor between Panmure and Pakuranga town centres. It provides a summary of the alternative route alignments considered, details the option evaluation process, identifies the preferred option and demonstrates that the preferred option is reasonably necessary for achieving the AMETI Stage 2A Project Objectives.

1.2 AMETI Stage 2A Project Objectives

The objectives are:

- Contributing to place shaping in Panmure and Pakuranga town centres by providing better connections and accessibility between these centres for all transport users, including public transport users, pedestrians and cyclists;
- Providing transport infrastructure that integrates with land uses and supports a quality compact urban form in Panmure and Pakuranga;

[1] referred to in this report as the 'AMETI Stage 2A Project' or 'the Project'

- Providing transport infrastructure that improves linkages, relieves network constraints and improves journey time, frequency and reliability of the transport network overall;
- Improving the efficiency and resilience of the transport network between Panmure and Pakuranga by providing a dedicated route for public transport to and from the eastern suburbs;
- Maximising the benefits of investment in transport infrastructure by extending network connections and delivering network improvements;
- Providing a multi modal transport corridor that connects Panmure and Pakuranga to increase access to a choice of transport options; and
- Creating a corridor that is safe for all road users, including public transport passengers, cyclists and pedestrians.

1.3 Evaluation and Assessment methodology

The evaluation methodology undertaken for this report included:

- Reviewing historical alignment options previously considered for the Project between 2003 and 2013;
- Screening all previously considered options to discount any that do not meet the AMETI Stage 2A Project Objectives;
- Consolidating and refining the remaining options, including removing duplicated options and adding further options not previously considered;
- Developing an evaluation framework, including assessing the options against criteria specific to the environmental context of the Project;
- Undertaking a detailed multi-criteria analysis (MCA) of the shortlisted options, using a five point scoring scale and involving a range of internal AT representatives and independent subject matter experts; and
- Evaluating and analysing the MCA to select the preferred option.

The evaluation included four Workshops. The assessment was not comparative against other options; rather each option was considered in regard to whether or not it met the AMETI Stage 2A Project Objectives and the potential effects on the existing environment of the project area. A significant adverse score did not necessarily mean that the effects could not be designed or mitigated, rather the assessment is a reflection of the overall impact based on conceptual route alignment plans.

1.4 Option Analysis and Development

The AMETI Project Team reviewed historical documents dating back to 2003 (with regard to the section from Panmure Roundabout through to Ti Rakau Drive) and collated the alignment options considered over this period. As a result 33 options were identified and could be put forward for assessment during Workshop 1.

The long list of options were broadly grouped as:

- Options that were explored as part of the ETC (2003-2005);
- Options that were explored for AMETI (2006-2007); and
- Options that were explored as part of the refinement of the 2007 preferred route (2010-2013).

Following Workshop 1, it was agreed that the 2003-2004 options (11 in total) could be discounted from any further assessment, on the basis that the options were broad and no longer aligned with the intent of AT with regard to providing alternative modes of transport for the eastern suburbs (beyond the reliance on private vehicles) and to assist in easing the congestion on roads. A further option (provision of a busway between Panmure and Pakuranga via Queens Road and Kerswill Place) was identified to be included and taken forward as an option to be assessed.

In addition, the option to use the existing Pakuranga Highway as an alternative route to Panmure for the busway (for buses), was considered and discussed. This potential option was dismissed as it did not meet the Project Objectives. In particular, the route would not provide the required public transport benefits.

The alternative of routing buses along Pakuranga Highway/ South Eastern Arterial (SEART) to Sylvia Park was ruled out because of the difficulty in providing a seamless interchange at Sylvia Park station, congestion and lack of opportunity for bus priority along SEART, and the complete lack of frontage activity on Pakuranga Highway/ SEART and the consequent disconnect from the communities through which the busway passes, compared to the Pakuranga Road/ Lagoon Drive route.

Bus services from Howick and Botany will connect with rail services at Panmure, utilising the new Panmure Rail Station to allow seamless interchange between buses and rail modes for connection on to the CBD. It is forecast that 30%-50% of passengers from Howick and Botany will transfer to rail at Panmure, with the rest continuing on bus services along Ellerslie-Panmure Highway to Ellerslie and Newmarket, the CBD Learning Quarter and other destinations.

At the conclusion of Workshop 1, 23 options were identified that met the Project Objectives and were progressed for further assessment and refinement.

During Workshop 2, the 23 options were assessed at a high level to identify any overlaps or duplications of options. As a result, 10 options were discarded. The AMETI Project Team then further interrogated the design elements of the 13 remaining options and identified that a further three options could be discarded on the basis that they either duplicated a similar scheme or would result in double counting effects already covered by another option.

The remaining 10 options taken forward for analysis were (refer to Appendix 3 for plans of each of the options):

Option 1 Two general traffic lanes and kerbside bus lanes along Pakuranga Road and Lagoon Drive and no change to the existing Panmure Bridge. Duplication of the Pakuranga (Waipuna) Bridge and Pakuranga Highway.

Option 2 Two general traffic lanes and kerbside bus lanes along Pakuranga Road and Lagoon Drive and no change to the existing Panmure Bridge. A new bridge between the Panmure and Pakuranga Bridges, re-alignment to the north of Pakuranga Road and creation of an extensive one-way road system.

Option 3 Four general traffic lanes along Pakuranga Road, two general traffic lanes on Lagoon Drive and kerbside bus lanes. A new separate pedestrian/cycle bridge on the southern side of

the existing Panmure Bridge.

Option 4 Four general traffic lanes along Pakuranga Road, two general traffic lanes on Lagoon Drive and kerbside bus lanes and a new separate pedestrian/cycle bridge between Queens Road and Kerswill Place.

Option 5 Four general traffic lanes along Pakuranga Road, two general traffic lanes on Lagoon Drive and kerbside bus lanes. A new separate pedestrian/cycle bridge on both sides of the existing Panmure Bridge.

Option 6 Four general traffic lanes along Pakuranga Road, two general traffic lanes on Lagoon Drive and a dedicated north side busway. Panmure Bridge widening to accommodate three lanes, a contra-flow bus lane (one lane total) and shared pedestrian/cycle lane.

Option 7 Four general traffic lanes along Pakuranga Road, two general traffic lanes on Lagoon Drive and a dedicated north side busway. A new busway bridge and shared pedestrian/cycle facilities on northern side of the existing Panmure Bridge.

Option 8 Four general traffic lanes along Pakuranga Road, two general traffic lanes on Lagoon Drive and kerbside bus lanes. Panmure Bridge widening to accommodate three traffic lanes, two shoulder bus lanes and a shared pedestrian/cycle lane.

Option 9 Four general traffic lanes along Pakuranga Road and two general traffic lanes on Lagoon Drive and a dedicated north side busway using the existing Panmure Bridge (including shared pedestrian/cycle facilities). A new general traffic bridge to the south of the existing bridge.

Option 10 Four general traffic lanes on Lagoon Drive and Pakuranga Road. A dedicated north side busway on Pakuranga Road between Ti Rakau Drive and Kerswill Place. A separate busway bridge (including shared pedestrian/cycle facilities) between Queens Road and Kerswill Place. Shared carriageway use along Queens Road and Kerswill Place.

These options were assessed, scored individually and then collectively assessed as part of MCA Workshop 3. At the conclusion of Workshop 3, a draft MCA spreadsheet was completed.

A fourth Workshop was held and comprised a smaller focus group. During this Workshop, the draft MCA was evaluated and analysed. Two alternative alignment options which were considered to be feasible, were identified to be included for further assessment. These are referred to as Options 11 and 12 (refer to Appendix 3 for plans of each of the options):

Option 11 Four general traffic lanes along Pakuranga Road, two general traffic lanes on Lagoon Drive and kerbside bus lanes. A new separate pedestrian/cycle bridge on northern side of Panmure Bridge.

Option 12 Four general traffic lanes along Pakuranga Road, two general traffic lanes on Lagoon Drive and a dedicated north side busway. Four general traffic lanes with priority for bus use plus a pedestrian/cycle bridge on northern side provided across the Tamaki River.

1.5 Final Analysis

1.5.1 Options initially dismissed

Options 1, 2 and 10 scored adversely against some of the Project Objectives, this was despite 'passing' the initial screening process in Workshop 1. For an option to be taken forward it must meet the requiring authority's Project Objectives. Given these options did not score positively against some of the objectives they were dismissed from further analysis.

Option 9 scored very well against the Project Objectives but had a significant adverse score for policy compliance. This criterion relates to compliance with high level RMA policies including National and Regional Policy Statements. This option would result in adverse effects on the Outstanding Natural Feature (ONF) of the Panmure Basin. In accordance with the New Zealand Coastal Policy Statement (NZCPS) adverse effects on ONFs must be avoided. On this basis Option 9 was dismissed from further analysis.

1.5.2 Options further analysed

The remaining options taken forward were Options 3, 4, 5, 6, 8, 11 and 12. All these options provide four traffic lanes along Pakuranga Road and two general traffic lanes along Lagoon Drive, plus either kerbside bus lanes (Options 3, 4, 5, 8 and 11) or a dedicated busway on the northern side of the corridor (Options 6, 7 and 12). The key differences between these options arise from the lane configurations across the Tamaki River. These remaining options were also assessed against consentability, future proofing, temporary and permanent effects criteria (as discussed below).

1.5.3 Kerbside bus lane Options 3, 5 and 8

These options all have a footprint to the south of the existing Panmure Bridge. This footprint was assessed as 'minor adverse' under the policy compliance criterion due to potential adverse effects on the ONF. For the same reason these options scored adversely against the landscapes/ natural features and scheduled tree criteria.

Mana whenua engagement undertaken in parallel to the MCA process also indicated a strong preference against any southward movement due to potential effects on the trees and cultural values associated with the location.

In terms of future-proofing for replacement of the existing bridge (which will be required in 20 years), these options would provide some improvement to the existing situation, but their limited capacity (one to two lanes) would result in significant traffic effects (reduction in the number of lanes from 3 to 1 or 2). For these reasons Options 3, 5 and 8 were not preferred.

1.5.4 Kerbside bus lane Options 4 and 11

Options 4 and 11 were assessed as 'minor positive' against the Project Objectives. These options would provide kerbside bus lanes along the Project length, apart from the bridge. Consequentially, additional capacity would not be provided at the Tamaki River crossing, except for pedestrians and cyclists.

In terms of future-proofing for the replacement of the existing bridge, Options 4 and 11 would not safely enable traffic to cross the Tamaki River during its replacement. This is expected to cause 'significant adverse' traffic effects on the transport network that would be very difficult to mitigate. In addition, Option 4 would require traffic to traverse through Queens Road and Kerswill Place. This would require re-design and reconstruction of these roads to cater for the likely volumes of traffic. For these reasons Options 4 and 11 were not preferred.

1.5.5 Dedicated busway Options 6, 7 and 12

These options all share similar characteristics in that they propose a north side dedicated bus facility. They differ in their design configuration at the Tamaki River crossing. Options 6 and 12 have an overall equivalent width of five lanes whereas Option 7 has six lanes (the specific bridge configurations under each option are set out above).

Options 6 and 12 were assessed as 'significant positive' in terms of the Project Objectives, with the exception of Project Objectives S3 and S4. These were assessed as 'minor positive' due to the restricted ability of buses to cross the Tamaki River (one lane or sharing general traffic lanes).

Option 7 was assessed as 'significant positive' in terms of all the Project Objectives because it would provide the optimised level of service, the least service disruptions, sufficient capacity for and separation of all modes of traffic and therefore would integrate with the surrounding land use, contribute to place shaping and leverage investment in the Panmure Rail Station, AMETI Stage 1 and wider rail improvement projects.

Generally, Options 6, 7 and 12 all have the same scores for the social and environmental criteria with two exceptions - cultural landscapes and future-proofing.

Under the cultural landscapes criterion, Option 7 was assessed as 'significant adverse', whereas Options 6 and 12 were 'minor adverse'. This difference being the wider overall bridge footprint for Option 7 (essentially three rather than two lanes) was determined to be the tipping point for a minor to significant effect on the wider cultural landscape. This significant effect is not considered a fundamental flaw in the option. It would, however, require focused design attention and engagement with mana whenua to provide a solution that could appropriately mitigate these effects.

For the assessment against the future-proofing criterion, Options 6 and 12 would be similar or marginally better that the previously dismissed options. The additional lanes will reduce peak time congestion and adverse temporary traffic effects compared to the existing situation, where no lanes would be provided, meant these options were assessed as having 'minor positive' effects.

Option 7, however, provides the ability to replicate the existing three lane tidal arrangement and consequently, this option would provide sufficient traffic capacity across the Tamaki River during replacement works, therefore minimising these potentially 'significant adverse' effects.

For these reasons, Options 6 and 12 were not preferred and Option 7 was selected as the preferred option.

1.5.6 Preferred Option

Option 7 was selected as it provides four general traffic lanes along Pakuranga Road, two general traffic lanes on Lagoon Drive, a dedicated north side busway and a new busway bridge and shared pedestrian/cycle facilities on the northern side of the existing Panmure Bridge.

Option 7 scored the most positively overall in relation to the Project Objectives, because it would provide the optimised level of service, the least service disruptions, and sufficient capacity for and separation of all modes of traffic and therefore would integrate well with the surrounding land uses, contribute to place shaping and leverage investment in other transport infrastructure projects in the vicinity.

Although Option 7 performed less well against the temporary and permanent effects criteria than the kerbside bus lane options, the adverse effects are expected to be able to be avoided (through design)

or mitigated. These would be addressed though the development of the design and consenting process.

While Option 7 performed well against the future-proofing criterion, as it would provide three traffic lanes during replacement of the existing bridge, it does result in potentially 'significant adverse' cultural effects on Mokoia Pā from the new bridge footprint.

Achieving adequate mitigation of these cultural effects will be fundamental to the success of the project. Ongoing engagement with mana whenua will enable the identification of appropriate mitigation solutions to address the cultural effects which result as an outcome of this option.

2. Introduction and Purpose of this Report

The eastern suburbs of Auckland (Panmure, Pakuranga and Botany) are identified in the AP as areas of significant urban growth and development. In order to provide for the anticipated growth and unlock the economic potential of the area there is a pressing demand for transport investment that will respond to and integrate with the existing and proposed land use. The AP specifically recognises AMETI as a key project that will provide *"a strategic link between the eastern suburbs, unlocking the economic potential of the area"* (the Auckland Plan, 2012).

The existing network hierarchy network of the eastern suburbs is not well-defined. There is limited transport choice (with a heavy reliance on cars), poorly integrated land use and transport provision, and heavy congestion with associated unreliable journey times. As an example, the 2.4km corridor between Pakuranga and Panmure currently carries around 40,000 vehicles per day. Congestion at peak times can result in travel times of over 40 minutes (Investment and Operations Committee Paper (NZTA 2011)).

AMETI is designed to improve alternative modes of transport for the eastern suburbs beyond the reliance on private vehicles and to assist in easing the congestion on roads. Together with improved bus priority, AMETI will support enhanced connections to the city, as well as to other eastern suburbs and will result in a higher level of integration between all transport modes. AMETI has been progressively developed and refined since 2006 but overall, has always been focused on developing an integrated multi modal transport system that supports population and economic growth in East Auckland and Manukau.

In 2010, AT accepted responsibility for the delivery of AMETI as a result of the amalgamation of ACC, MCC and ARTA. The AT Board resolved to secure the route through designations pursuant to Section 168 of the Resource Management Act 1991 (RMA) to ensure land is protected for future construction, operation and maintenance of AMETI.

AMETI is divided into a number of different stages for delivery (refer to Figure 1 below); AMETI Stage 1, includes the recent upgrade of Panmure Rail Station (rail and bus interchange) and the construction of Te Horeta Road.

AMETI Stage 2A, the focus of this report, includes the provision of a multi modal transport corridor providing for better connections and accessibility between Panmure and Pakuranga town centres for all transport users. It includes improvements to the road network, passenger transport with the provision of a segregated urban busway between Panmure and Pakuranga town centres and links to Panmure Rail Station, as well as providing for connected cycle and pedestrian linkages.

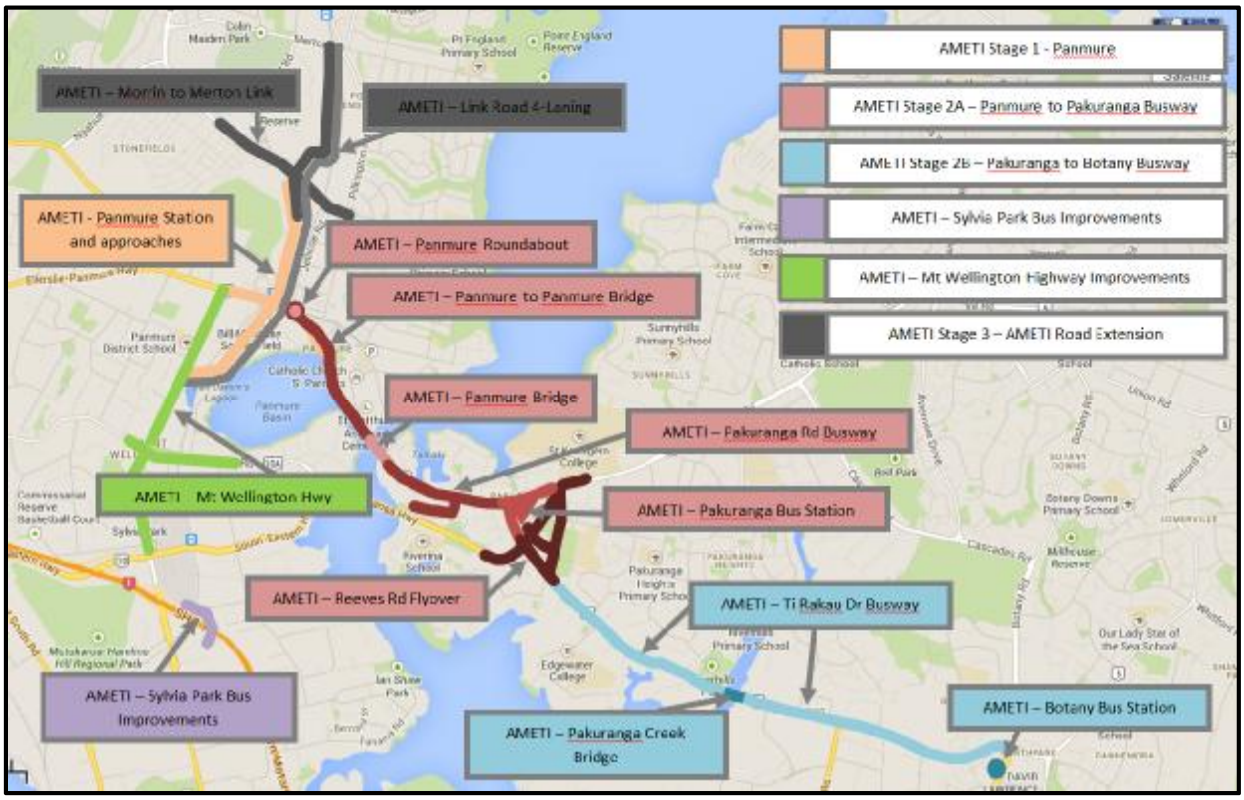
Future stages, following Stage 2A, will deliver the overall AMETI project and will include work in the vicinity of Sylvia Park as well as further improvements around Pakuranga Town Centre and connections to Botany.

This FOA has been prepared to support the alternatives assessment required for the lodgement of the NoR documentation for AMETI Stage 2A. This has involved assessing all the relevant and feasible alignment options[2] against AT's 2014 Project Objectives and documenting the process and outcomes.

[2] A detailed review of historical AMETI documents was undertaken as part of this report and is included in Appendix 1

The assessment is required to confirm that the alignment and associated works are reasonably necessary for achieving the purpose and principles of the RMA and the Project Objectives.

Figure 1 – AMETI Project Extent



Source: The Auckland Transport Programme Initiation Document (AMETI) 2014

3. Project Rationale

3.1 Strategic Direction of Transport Solutions for Auckland

3.1.1 Auckland Transport's Functions and Obligations

AT is a Council-Controlled Organisation (CCO) of AC responsible for managing and controlling Auckland's transport system in accordance with the Local Government (Auckland Council) Act 2009 (LGACA). AT's purpose as set out in section 39 of the LGACA is *"to contribute to an effective, efficient and safe Auckland land transport system in the public interest"*.

Sections 45 and 46 of the LGACA outline AT's functions and powers in respect of the land transport system and AT's role as the Road Controlling Authority. AT is also deemed a Requiring Authority (RA) as a network utility operator under Section 167 of the RMA for transport purposes (LGACA Section 47).

In addition, AT is responsible for preparing the Regional Land Transport Plan for Auckland in accordance with the Land Transport Management Act 2003 13(2)(a) as per LGACA. Section 45(a).

In order to meet its legislative requirements, AT also has a number of other statutory and non-statutory strategic plans, documents and policies which it must consider when planning infrastructure.

AMETI Stage 2A is consistent with these plans and policies, a number of which are discussed in further detail below.

3.1.2 Auckland Transport's Statement of Intent

AT's strategic approach and priorities are outlined in its Statement of Intent (SOI) 2014-2017. This document recognises the important partnership between AT and AC in the delivery of shared outcomes, and that the success of each organisation is dependent on the actions of the other partner.

To align to the strategic direction in the AP, AT's overarching outcome identified in its SOI is "*Auckland's transport system is effective, efficient and safe"*[3]. To deliver such a transport system, AT has identified the following impacts that it aims to achieve over the 2014-2017 period:

- Better use of transport resources to maximise return on existing assets;
- Increased customer satisfaction with transport infrastructure and services;
- Auckland's transport network moves people and goods efficiently;
- Increased access to a wider range of transport choices;
- Improved safety of Auckland's transport system; and
- Reduced adverse environmental effects from Auckland's Transport system.

The SOI also contains an AT Programme of Action for the 2014-2017 period comprising activities and initiatives aimed at achieving the aforementioned outcome and impacts. AMETI is included in the programme as a priority for optimising investment across transport modes and as part of integrating transport planning and investment with land development.

3.1.3 Land Transport Management Act 2003

The Land Transport Management Act 2003 (as amended by the Land Transport Management Amendment Act 2013, (LTMA)) is the statue for New Zealand's land transport planning and funding system.

The purpose of the LTMA outlined in section 3 of the Act is *"to contribute to an effective, efficient, and safe land transport system in the public interest"*.

AMETI has been designed to ensure that the project is consistent with the purpose of the LTMA as it will provide a more efficient, integrated, safe and responsive route for the public. The Project will ease the current congestion on the existing road network in the eastern suburbs, provide for greater modal choice and will also increase safety and resilience.

At Panmure, the Project allows for the future replacement of the existing road bridge across the Tamaki River, thus contributing to an integrated transport system and through linking with the rail network optimises investment across transport modes.

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[3] Auckland Transport Statement of Intent: 2014 to 2017 (page 6)

The Project is also seen to be responsive to supporting economic development and residential growth in the area.

3.1.4 Connecting New Zealand Transport Strategy (2011-2021)

Central Government's objective with the New Zealand Transport Strategy (NZTS) is to create an effective, efficient, safe, secure, accessible and resilient transport system that supports the growth of our country's economy, in order to deliver greater prosperity, security and opportunities for all New Zealanders. The roading network is described as the *'backbone'* of the domestic transport system and is identified as a crucial aspect of everyday life for New Zealanders.

The strategy identifies that regional roading projects play an integral role in enhancing regional economic growth, reducing bottlenecks around regional centres and improving route security and safety. Further, the strategy identifies that developing and maintaining regional and local transport networks is an important enabler of growth.

The AMETI project is specifically referenced in the Strategy as being a regionally significant activity that "*will improve the efficiency of public transport in eastern Auckland, and forms part of the wider project improving connectivity with the south-eastern growth areas"*[4].

3.1.5 Auckland Plan

Auckland is New Zealand's largest and fastest growing region, and it is predicted to grow by over one million people by 2040. The AP sets out the 30 year spatial framework for the growth and development of Auckland to become the world's most liveable city.

An additional 400,000 houses as well as supporting infrastructure, businesses and services are required to support this growth. The AP acknowledges that the transport system is crucial to achieving this vision.

The overarching strategic direction for transport within the AP is to create better connections and accessibility with targets of:

- Doubling public transport trips from 70 million trips in 2012 to 140 million trips by 2022;
- Increasing the proportion of trips made by public transport into the city centre during the morning peak, from 47% of all vehicular trips in 2011 to 70% by 2040;
- Reducing car crash fatalities and serious injuries from 506 (2010) to no more than 410 in 2020; and
- Increasing the proportion of people living within walking distance of frequent public transport stops from 14% (2011) to 32% by 2040.

Four strategic priorities for transport development in accordance with the AP are:

1. Manage Auckland's transport as a single system;
2. Integrate transport planning and investment with land-use development;

[4] Connecting New Zealand Transport Strategy 2011/2021(Page 30)

3. Prioritise and optimise investment across transport modes; and

4. Implement new transport funding mechanisms.

The AMETI corridor (with the East West Link) is included on Map 13.2 of the AP (Auckland's Priority Transport Projects (2012-2042)) as a priority network improvement and specifically, is identified as the most important after the City Rail Link (refer to Figure 2).

The AP states that *"transport is a critical shaper and enabler of Auckland's future. Realising the vision for Auckland requires substantial public sector investment in transport, to enable the development of an integrated system that provides effective choices for people and businesses"*[5].

In addition, the AP considers that the suite of projects shown on Map 13.2 (which includes the AMETI corridor) form a multi- modal package that is crucial for Auckland's future and although they take on different forms, are designed to move people, goods and services around, into and out of the region efficiently, without compromising the liveability of Auckland, or reducing its environmental quality (The Auckland Plan, Chapter 13 (Page 332)).

In the AP, AMETI is noted as being required as part of a transport system that *"must integrate with land use to ensure that transport links support growth centres and transport corridors as set out in this Plan"*[6].

The AP also sets out the blueprint for growth across the region. The eastern suburbs are identified as being areas of significant urban development within the Plan (refer to Figure 3) with a forecast population growth of up to 25,000 people over the next 20 years. The Plan specifically recognises that Panmure and Pakuranga as town centres and Sylvia Park and Botany as 'emergent centres' are likely to experience significant change.

Emergent centres are those that are either in a formative stage of development or require significant change through redevelopment to support their transition to more intensive, mixed-use centres (AP, Chapter 10).

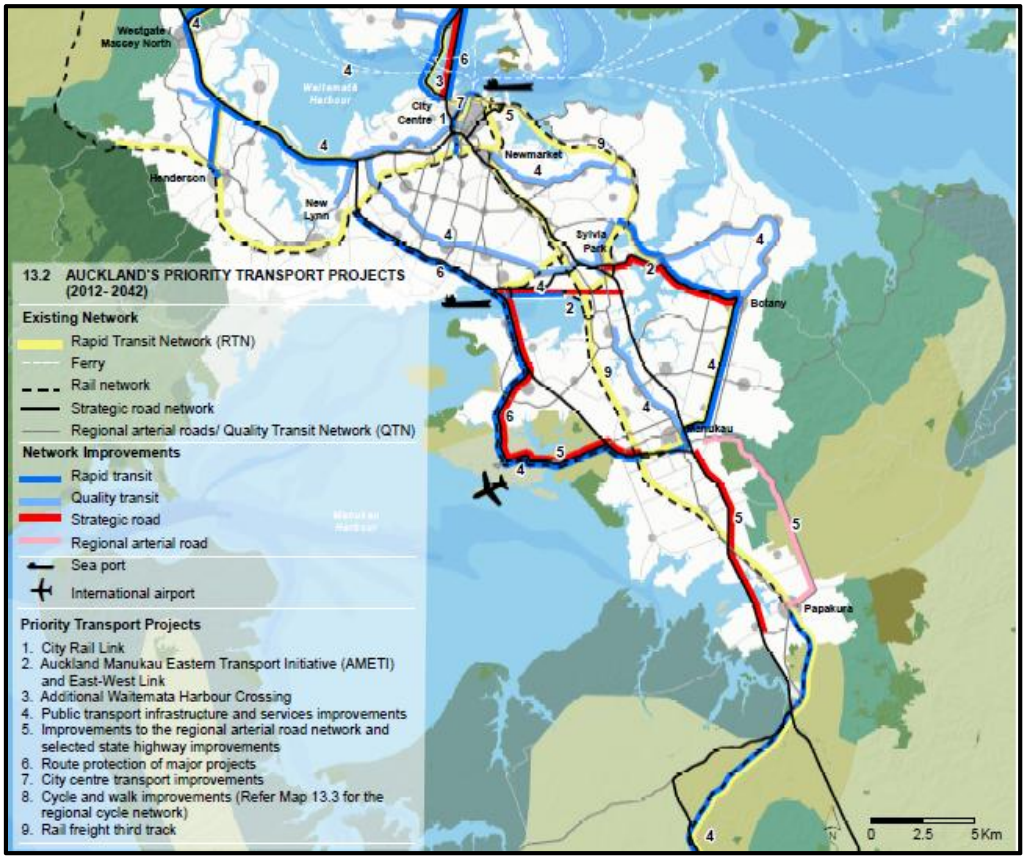
To enable this residential growth to occur and in order to unlock the economic prosperity and liveability of the area, the AP acknowledges that an efficient and effective transport system is needed. AMETI and the East-West Link project combined provide an integrated response to address transport issues for the eastern part of Auckland.

The provision of a segregated urban busway between Panmure and Pakuranga town centres as part of Stage 2A will increase the frequency and reliability of buses servicing the area and will form part of the rapid transit network for the eastern suburbs.

[5] The Auckland Plan, Chapter 13 (Page 330)

[6] The Auckland Plan, Chapter 13 (Page 314)

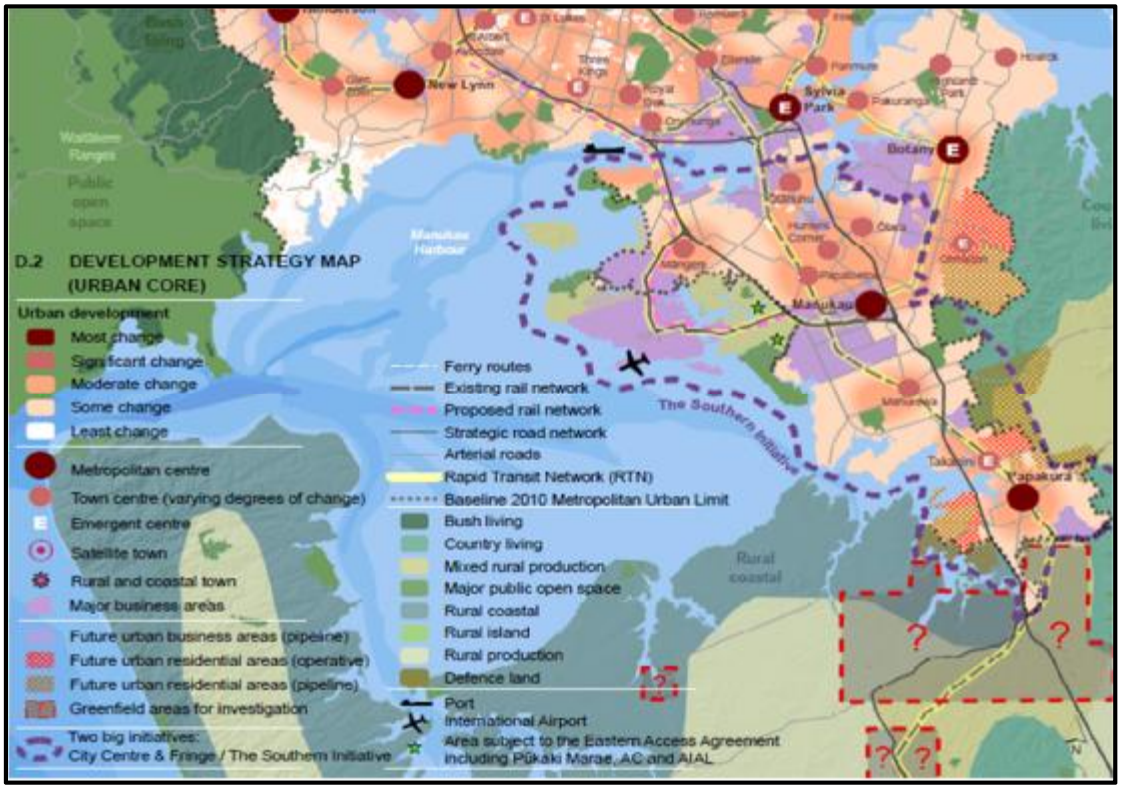
Figure 2 – Proposed Frequent Route Network



Source: The Auckland Plan 2012

The implementation of Stage 2A (as a core component to the overall AMETI project) is consistent with the overarching strategic policy framework which recognises the need to upgrade the corridor in order to accommodate planned growth. Further, the AP identifies that a well performing transportation network, such as AMETI, is critical in securing Auckland's future.

Figure 3 – Significant Change in Urban Development for the Eastern Suburbs



Source: The Auckland Plan 2012

3.1.6 Regional Land Transport Programme (2012-2015)

The Auckland Regional Land Transport Programme (RLTP) was approved by the AT Board in June 2012. The RLTP sets out a three year programme of prioritised works for transport in Auckland. The programme has been developed holistically to recognise transport's economic influences, enhancement of the city's liveability and the requirement of a co-ordinated approach.

The RLTP identifies AMETI as being a significant part in improving the efficiency and effectiveness of the Region's transport networks, improving connectivity and supporting greater integration between land use and transport.

The RLTP identifies that *"the AMETI improvements will allow faster and more efficient public transport services, commercial traffic and improved walking and cycling facilities serving one of the fastest growing areas of Auckland"*[7].

3.1.7 Maungakiekie-Tāmaki Local Board Plan (2014-2017)

The Maungakiekie-Tāmaki Local Board (MLTB) covers the south-eastern part of the isthmus including the suburbs of One Tree Hill, Royal Oak, Onehunga, Penrose, Mt Wellington, Panmure and Glen Innes.

[7] Auckland Regional Land Transport Programme 2012/15 (Page 22)

The Manukau Harbour and Tāmaki River define its southern and eastern boundaries respectively.

The Maungakiekie-Tāmaki Local Board Plan 2014 sets a strategic framework to guide decision making and actions for the area over the next three years.

A key priority for the Local Board, as identified in its Plan, is to advocate for transport infrastructure that responds to Auckland's growing population and *provides "safe, accessible and efficient transport choices that meet the needs of our community and businesses"*[8]. AMETI is specifically identified as being a key project the meets the communities need.

Furthermore, the MLTB Plan states *"our communities want frequent, affordable and high-quality public transport options that allow them to travel efficiently both locally and across Auckland. The board will continue to advocate for an increased range of public transport options and at a frequency that provides people with a feasible alternative to using their car…"*[9].

3.1.8 Howick Local Board Plan (2014-2017)

The Howick Local Board (HLB) area includes Pakuranga, Howick, Botany, Flat Bush and East Tamaki. With a population of 130,000, Howick is the fifth largest urban area in New Zealand.

The Howick Local Board Plan 2014 sets a three year strategic framework to guide decision making and actions for the area.

Transport is identified as being a major issue for the area due to *"the difficulty of accessing major roads and motorways. Our specific transport issues include congestion on main roads and limited ferry and public transport options"*[10].

A key priority for the Local Board, as identified in the Plan, is *"the continuation of the Auckland Manukau Eastern Transport Initiative to give people better transport choices by improving safety for cyclists, providing separate bus lanes and creating linkages to the public transport network"*[11].

Another priority for the HLB is to support economic development and stimulate business/ employment in the area. The Plan recognises AMETI as being the key project for the area that will facilitate this and provide for the development of their local economy.

Specifically, AMETI will provide for improved connections and connectivity to the public transport network and reduce traffic congestion at peak times, allowing for the movement of goods and people to get in and out of the Howick area.

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[8] Maungakiekie-Tāmaki Local Board Plan 2014 (Page 12)

[9] Maungakiekie-Tāmaki Local Board Plan 2014 (Page 12)

[10] Howick Local Board Plan 2014 (Page 16)

[11] Howick Local Board Plan 2014 (Page 16)

3.1.9 Other relevant Documents

Additional relevant documents include the Auckland Regional Public Transport Plan (2013), Auckland Economic Development Strategy 2012, Auckland Draft Long Term Plan (2015-2025), Draft Regional Land Transport Plan (2015) and the Public Transport Network Asset Management Plan (2012-2015).

3.2 Auckland Transport Objectives

3.2.1 Auckland Transport Objectives

Auckland's Integrated Transport Plan 2012-2041 (ITP) sets out the 30 year investment programme to meet the transport priorities outlined in the AP. The programme has been developed by AT and the New Zealand Transport Agency (NZTA) in collaboration with AC. It aims for the management of transport in Auckland as a 'One System'[12].

The programme covers state highways and local roads, railways, buses, ferries, footpaths, cycleways, intermodal transport facilities and supporting facilities such as parking and park-and-ride.

To implement the AP, the ITP seeks to ensure that Auckland's transport system better connects communities and supports a high quality urban form.

The overarching outcome identified in the ITP is *"Auckland's transport system is effective, efficient and provides for the region's social, economic, environmental and cultural wellbeing"*[13].

To deliver such a transport system, the following impacts are identified that are aimed to be achieved over the 30 year period:

- Better use of transport resources to maximise return on existing assets;
- Auckland's transport network moves people and goods efficiently;
- Increased access to a wider range of transport choices;
- Improved safety of Auckland's transport system;
- Reduced adverse environmental effects from Auckland's Transport system; and
- Auckland's transport system effectively connects communities and provides for Auckland's compact urban form.

Of particular relevance to AMETI are the objectives in relation to the implementation and management of the 'One System' approach. This includes the integration of transport planning and investment with land use development, to prioritise and optimise investment across transport modes and manage demand efficiently and safely.

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[12] The One System approach provides an integrated process that aims to better manage and plan the use of the transport network with land use development, at all levels of planning as required by the Auckland Plan.

[13] Auckland Integrated Transport Programme 2012-2041 (Page 32)

3.3 AMETI Project History

3.3.1 Eastern Suburbs Transport Corridor Planning

The need for better access between the south eastern suburbs and the Central Business District ("CBD") has been recognised for a long time and various investigations have been undertaken. In 1955, the Auckland Regional Planning Authority (Technical Advisory Committee) prepared a Master Transport Plan which included a proposal for a "South Eastern Motorway".

In 1975, the Auckland Regional Authority revisited a 1965 report prepared by the Authority for a four lane arterial road from the CBD to the eastern suburbs. The Authority designated the route under the Auckland Regional Planning Scheme. The designation known as the Eastern Corridor was later transferred to the ACC.

The "Eastern Highway" designation was rolled over into the 1993 Proposed Auckland City District Plan – Isthmus Section. A public challenge eventually led however to an Environment Court order in April 1997, preventing the corridor being used as a motorway. This led to a strategy study being undertaken, (The Eastern Corridor Study) and a major public consultation process in 1997. This study gave rise to seven options. The report recommended a comprehensive study of the options be undertaken, this was never conducted.

In 2002, the newly elected ACC commissioned a new study and investigated future transport demands and broader solutions to meet these demands. From the studies, a multi-modal transport corridor from Tamaki Drive through to the Pakuranga Highway was presented to the Auckland Regional Council Transport Committee.

Representatives from ACC, MCC and Transit New Zealand agreed that there was sufficient evidence demonstrating a need for additional transport facilities in the corridor. The Committee resolved to undertake a further strategy study to identify a shortlist of corridor development options. This study gave rise to the Eastern Transport Corridor (ETC) Recommended Option Report in 2004.

The strategic driver for the provision of an ETC was *"to provide a high quality strategic regional transport link between Auckland City and Manukau City via their eastern suburbs that will improve access and mobility for people, goods and services throughout the region and in areas served by the corridor"*[14].

In meeting this strategic approach, emphasis was placed on addressing traffic congestion of the eastern suburbs by way of further developing the regional land transport network in order to provide an outer ring road system that would create inner city connections and enhance mobility and access to all users.

The ETC Recommended Option Report identified, as the preferred option, a 27km multi modal expressway extending from the Auckland CBD to Manukau City. This option included bus lanes between Panmure to Pakuranga (along Lagoon Drive, Panmure Bridge and Pakuranga Road).

The preferred alignment included the duplication of Panmure Bridge. In response to the concerns of the community, the overall scheme was reassessed in 2004 and modified in order to reduce the required property take and cost.

[14] Eastern Transport Corridor Recommended Option Report (Opus, Page 4)

The modified scheme removed the duplication of the Panmure Bridge. However, a shared pedestrian/cycleway bridge providing additional access across Tamaki River was proposed adjacent to the south side of the existing bridge.

Local body elections in October 2004 resulted in the reconsideration of the project and it was subsequently suspended until 2006.

3.3.2 AMETI

In 2006, the AMETI Project was initiated as a tripartite partnership between ACC, MCC and ARTA. The partners determined that transport demand management (TDM)[15] and public transport (PT) should be given priority, with improvements to address any increase in general traffic demands.

AMETI has been progressively developed and refined since 2006 but overall, has always been focused on developing an integrated multi modal transport system that supports population and economic growth in East Auckland and Manukau.

To assist in the management of the Project in the 'early AMETI years', the study was split into three sectors (refer to Figure 4):

- Northern Sector – extending from Glen Innes town centre, south to SH1 at Mt Wellington;
- Central Sector – extending from the Northern Sector, across to (and including) Pakuranga town centre via both Panmure and Pakuranga Bridges; and the
- Southern Sector – consisting of Ti Rakau Drive and associated linkages.

As part of the initial stages of AMETI, 64 options were developed as part of a desire to deliver an integrated transport plan for an area encompassing Glen Innes/ Tamaki, Mount Wellington/ Panmure and Pakuranga/ Ti Rakau Drive and Botany.

The evaluation of the 64 potential options included a multi criteria fundamental flaw analysis with input from social and environmental experts.

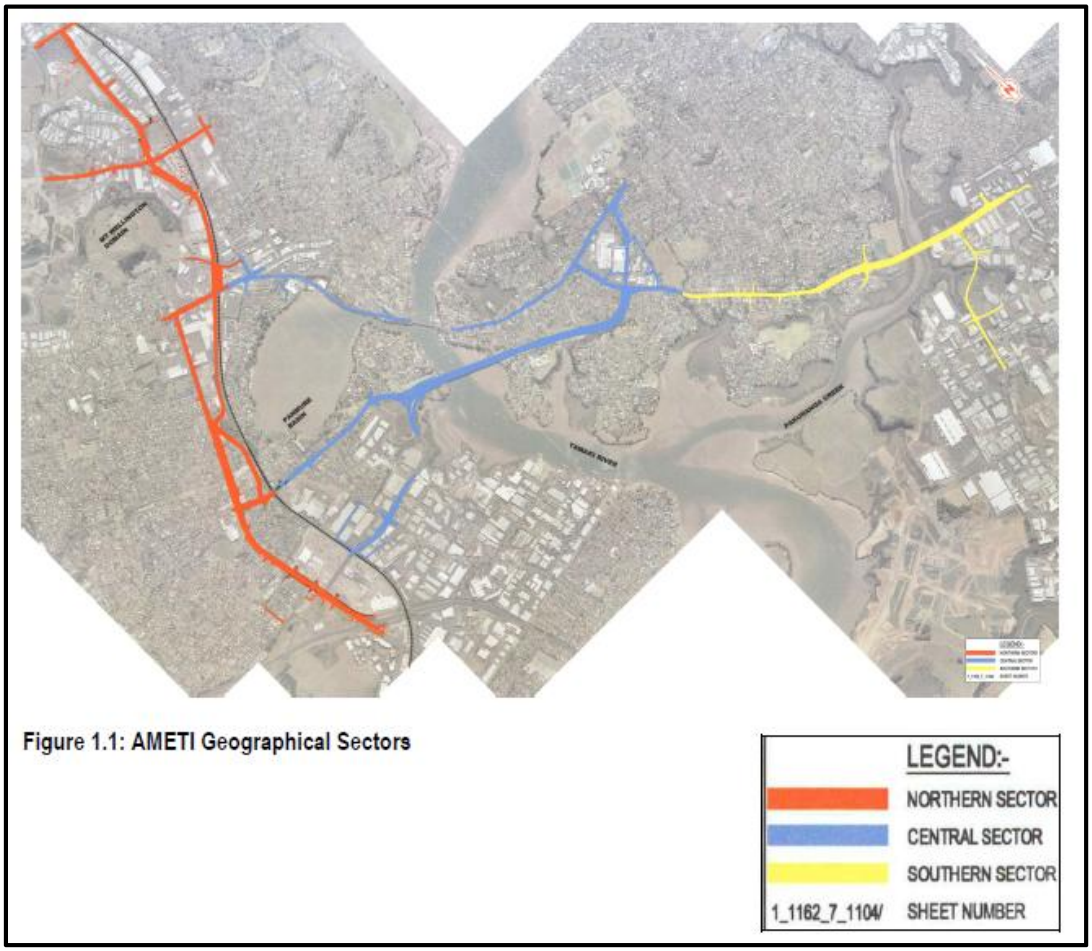
At this time, the strategic direction for AMETI included:

- Provision of Quality Transport Network (QTN[16]) Infrastructure by way of bus priority and bus lanes along Mount Wellington Highway, Ellerslie-Panmure Highway, Lagoon Drive, Pakuranga Highway and Ti Rakau Drive; and
- Provision of an enhanced general and freight traffic route from Pakuranga town centre via Pakuranga Bridge, Waipuna Road and then north to Glen Innes (AMETI Panmure Phase, Scheme Assessment Report, Opus (2009)).

[15] TDM refers to the application of strategies and policies to reduce travel demand (specifically that of single-occupancy private vehicles), or to redistribute this demand in space or time.

[16] QTN infrastructure implies providing bus priority measures, mostly within the existing corridor, at congested intersections and lengths of bus lanes in areas where predicted queues would severely limit the chance of meeting operating parameters.

Figure 4 – AMETI Project Extent



Source: AMETI Project Umbrella Document, Opus (2008)

The 2007 AMETI Recommended Options Evaluation Report (Opus, May 2007) concluded a preferred route alignment for the 'Central Sector'[17]. The option included converting two of the four general traffic lanes on Pakuranga Road and Lagoon Drive to kerbside bus lanes with Panmure Bridge reduced to one general traffic lane in each direction with bus priority. As part of this alignment, the Pakuranga Bridge was to be duplicated by providing a new bridge directly adjacent to the north side of the existing bridge accommodating four lanes of general traffic and a combined pedestrian/cycle lane.

In October 2010, AT was established and the AMETI Project was identified as being a key priority network improvement for Auckland in terms of optimising investment across transport modes and as part of integrating transport planning and investment with land development.

The eastern suburbs are identified as being areas of significant urban growth and development within the AP. In order to provide for the anticipated growth and unlock the economic potential of the area there is a pressing demand for transport investment in the eastern suburbs (the Auckland Plan, 2012). This outcome is reflected in the AMETI Stage 2A Project Objectives.

[17] The Central Sector encompasses the area now referred to as AMETI Stage 2A

Further refinements to the Panmure to Pakuranga section of AMETI (now referred to as AMETI Stage 2A) were undertaken during 2010-2013, following changes to Auckland's governance and subsequent amendments to the strategic approach and priorities of transport infrastructure.

The strategic direction for the delivery of providing bus priority infrastructure as part of AMETI and particularly along the Panmure to Botany corridor shifted from kerbside 'bus lane' facilities to that of a 'segregated urban busway'[18], in order to increase the frequency and reliability of buses servicing the area.

To align with the evolving strategic objectives and direction of transport infrastructure in Auckland, alternative route alignment and design options were investigated for AMETI Stage 2A during 2010-2013.

This resulted in the current scheme design which includes the provision of a segregated busway from Panmure Rail Station to Pakuranga Town centre, improved pedestrian/cycle facilities and the construction of a new bridge across the Tamaki River, adjacent to and parallel with the northern side of existing Panmure Bridge (to accommodate buses, cyclists and pedestrians).

In reviewing the historical AMETI documents, gaps were identified in the route selection analysis methodology and option evaluation assessment processes undertaken as part of the previous studies.

There was limited documentation regarding the route selection process and the design and construction requirements affecting Mauinaina and Mokoia Pā. The names Mauinaina and Mokoia Pā are often used interchangeably to refer to the same location. However, the Ngāti Pāoa MVA records that Mokoia Pā is the headland pā at the entrance of the lagoon (on the western bank of the Tamaki River adjacent to Panmure Basin), while Mauinaina is on the hill where the Church of England now stands (Cultural Values Assessment (Atkins Holm Majurey Limited July 2014)).

Mokoia Pā is of high cultural and spiritual significance to mana whenua. Mokoia Pā is a significant site in the history of Tamaki and New Zealand, and is of major significance in the history of Ngāti Pāoa.

In 1820, Mokoia Pā was the most prominent settlement and defensive Pā occupied by Ngāti Pāoa. It was the centre of their political, cultural, spiritual and economic identity and power. Its role in the early 1800 Musket Wars sets the Pā apart as a regionally significant cultural and national site (Cultural Values Assessment (Atkins Holm Majurey Limited July 2014)).

For Ngāti Pāoa, Mokoia Pā remains an important turangawaewae, but also represents a time of major change and grief (Cultural Values Assessment (Atkins Holm Majurey Limited July 2014)). Ngāti Pāoa, identify Mauinaina and Mokoia as "our sacred sites, our tāonga, and our treasures"[19].

Tamaki River has been identified as a Place of Value to Mana Whenua in the Proposed Auckland Unitary Plan (AP) (ID 2105 11643 R11 98 Archaeology of Maori origin Panmure I Tamaki River I Auckland City).

[18] The proposed facility will be unique in New Zealand as a segregated facility that requires buses to pass through signalised intersections along the route, as opposed to a fully segregated facility such as the Northern Busway.

[19] Maori Values Assessment – AMETI (Ngāti Pāoa 2013, Page 18)

Given the history and changing requirements for the project over the years it was considered important to complete a FOA to assess all the relevant and feasible alignment options from 2003 against the refined AT 2014 Stage 2A Project Objectives.

The FOA documents the process and outcomes taken in reaching a preferred option to support the route protection required for the future construction, operation and maintenance of a multi modal transport corridor between Panmure and Pakuranga town centres.

3.4 Historic AMETI Project Objectives

As previously noted, the AMETI project was initiated in 2006 as a tripartite partnership between the former ACC, MCC and ARTA.

The Project Objectives were developed and agreed in a Memorandum of Understanding by the project partners on 1 February 2006.

3.4.1 AMETI Project Objectives (2006-2014)

In pursuing the AMETI project, the project partners identified the overarching objective for the project is *"to secure the ability to implement and, in due course, to develop integrated multi-modal transport infrastructure within the Auckland-Manukau Eastern Transport Initiative which:*

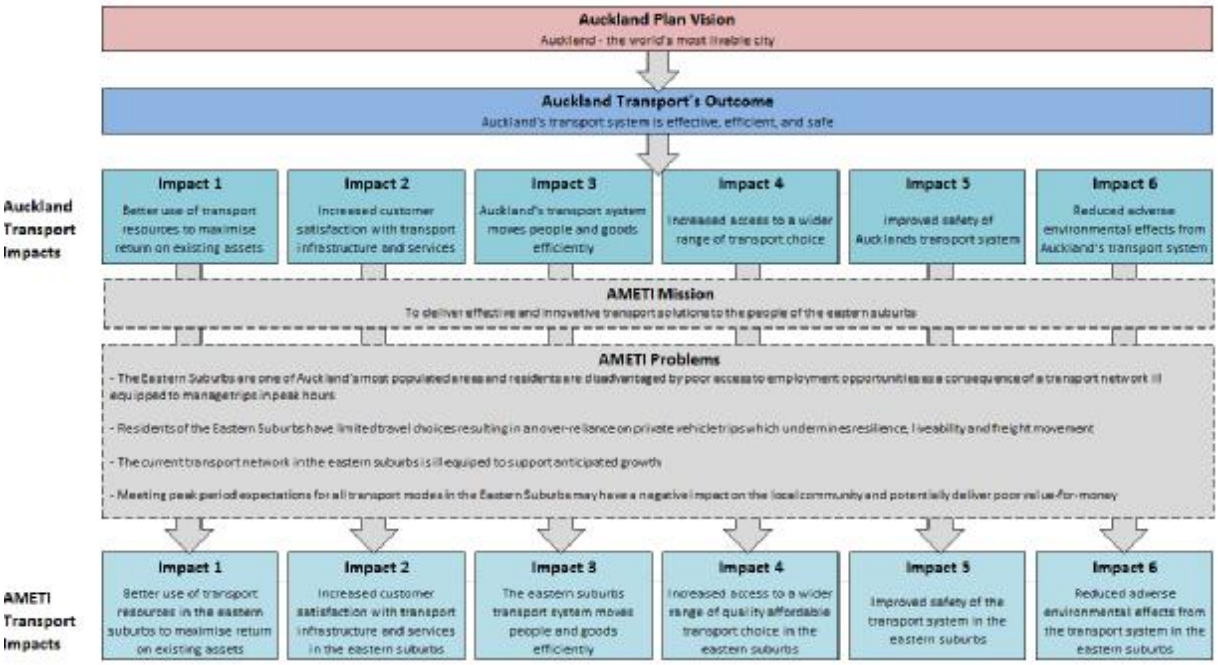
- *Provides for sustainable movement of people, goods, and services in a modern, planned and integrated manner;*
- *Provides connectivity between communities and businesses;*
- *Promotes economic development and the economic and social well-being of communities;*
- *Provides for Auckland's growth needs;*
- *Has good urban design, a sense of place, physical safety, and environmental sensitivity; and*
- *Addresses travel demand requirements"*[20].

These are project wide objectives which have directed/informed the overall AMETI Project and specially formed the basis of the consent requirements for AMETI Stage 1 (AMETI Package 1 Panmure Corridor, NoR Phase 1A AEE, prepared by Opus and dated April 2011).

In 2014, AT developed a cascade of objectives/impacts to demonstrate the clear alignment between AMETI and the strategic approach of AT (refer to Figure 5 below).

[20] AMETI Memorandum of Understanding between Auckland City Council, Manukau City Council and Auckland Regional Transport Authority, signed 01/02/2006

Figure 5: AMETI Cascade of Objectives/Impacts (Strategic Alignment)



3.5 AT 2014 Refined AMETI Project Objectives

In 2014, specific objectives were developed for AMETI Stage 2A. These were refined to reflect the strategic direction of both Auckland Council and AT, to align with the AP, ITP and other relevant strategic documents previously identified above (refer to Table 1 below). These stage specific objectives form the basis for the proposed NoR and works to enable an assessment as to whether a project meets the requirements under section 171 of the RMA (confirming that, subject to the purpose and principles (Part 2) of the RMA, the works and designation are reasonably necessary for achieving the objectives of the requiring authority).

These are the objectives for which the FOA tested a number of options against.

Table 1: AMETI Stage 2A Project Objectives

	Specific AMETI Stage 2A Project Objectives
S1	To contribute to place shaping in Panmure and Pakuranga town centres by providing better connections and accessibility between and within these centres for all transport users, including public transport users, pedestrians and cyclists.
S2	To provide transport infrastructure that integrates with land uses and supports a quality compact urban form in Panmure and Pakuranga.
S3	To provide transport infrastructure that improves linkages, relieves network constraints and improves journey time, frequency and reliability of the transport network overall.
S4	To improve the efficiency and resilience of the transport network between Panmure and Pakuranga by providing a dedicated route for public transport to and from the eastern suburbs.
S5	To maximise the benefits of investment in transport infrastructure by extending network connections and delivering network improvements
S6	To provide a multi modal transport corridor that connects Panmure and Pakuranga to increase access to a choice of transport options
S7	To create a corridor that is safe for all road users, including public transport passengers, cyclists and pedestrians

3.6 Existing Transport Situation

Residents living within Howick-Pakuranga have limited options other than to use the Panmure or Waipuna Bridge when travelling into central Auckland without rerouting onto the State Highway via East Tamaki Drive.

Existing traffic demands are therefore funnelled from the eastern suburbs into Panmure via the Panmure Bridge and Lagoon Drive before dispersing across the network to various locations (AMETI Package 1 – Phase 2: Integrated Transport Assessment (Opus, August 2013)).

The combined total of vehicles travelling over the Waipuna and Panmure Bridges (110,000 per day) is greater than the Victoria Park Viaduct or on any of the Roads of National Significance (RONS). In addition, the combined number of heavy vehicles is greater than over the Auckland Harbour Bridge[21].

The first stages of creating an efficient and effective multi-modal transport system to service the eastern suburbs has already begun with the completion of AMETI Stage 1, which included the upgrade of Panmure Rail Station (rail and bus interchange) and the construction of Te Horeta Road.

The following provides a summary of the key roading routes within the network corridor for AMETI Stage 2A as outlined within the Auckland Council District Plan Operative Auckland City (Isthmus Section 1999) and Auckland Council District Plan Operative (Manukau Section 2002) (refer to Figure 6).

3.6.1 Lagoon Drive

Lagoon Drive is approximately 1km in length, is a Regional Arterial Road and provides the main vehicular link between the Ellerslie-Panmure Highway and Pakuranga.

There are two general traffic lanes in each direction. Between Basin View Lane and Church Crescent, Lagoon Drive caters for an average of 17,000 vehicles per day, with approximately 5% of these being heavy commercial vehicles (HCVs) (Panmure Land Use Transport Plan 2010).

3.6.2 Panmure Bridge

Panmure Bridge is a three lane bridge spanning the Tamaki River and connects Lagoon Drive to Pakuranga Road.

The bridge accommodates 33,500 vehicles per day, with approximately 6% of these being HCVs (Panmure Land Use Transport Plan, 2010).

The bridge provides a single westbound and eastbound lane with a central contra-flow lane. This allows for two westbound lanes during the morning peak period and two eastbound lanes during the evening peak period. The contra flow is controlled by overhead aspect signals.

3.6.3 Pakuranga Road

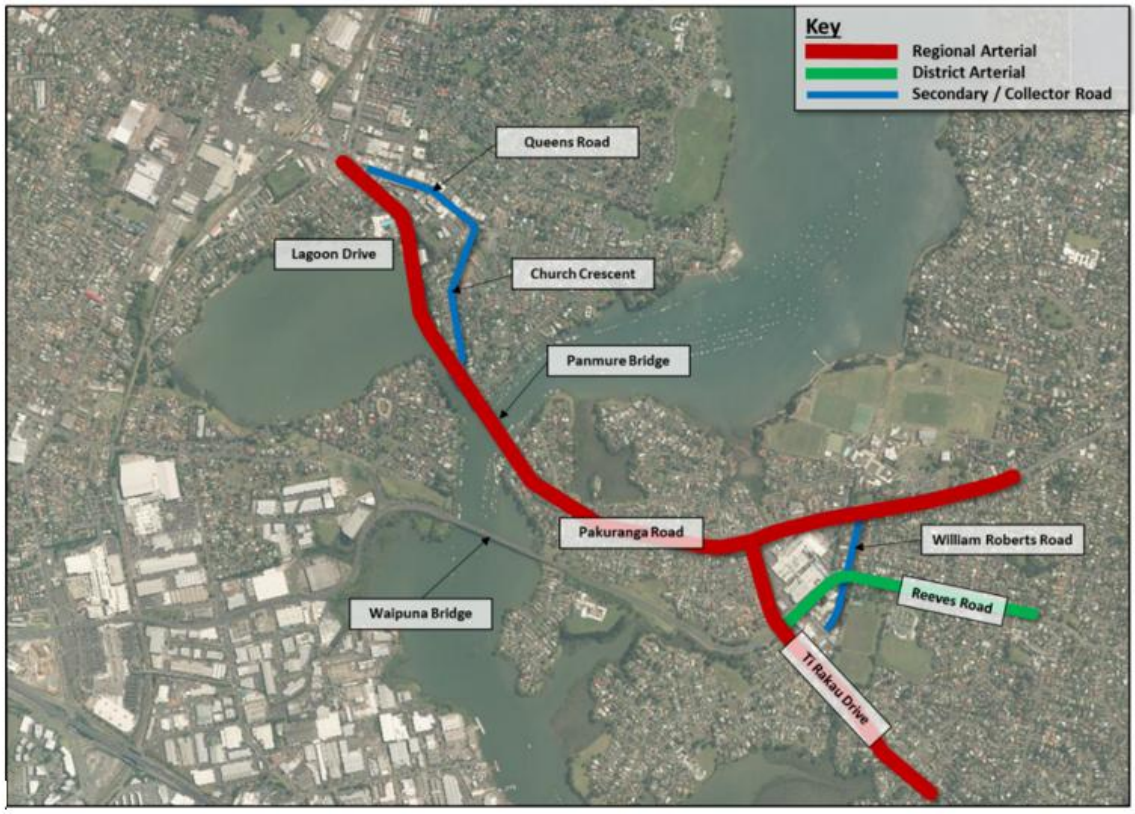
Pakuranga Road is 6km long and is classified as a Regional Arterial Road under the MCC Plan. The portion within the AMETI Stage 2A area is 1.5km long (between Panmure Bridge and Ti Rakau Drive).

[21] Panmure Land Use Transport Plan (Opus and Ascari, July 2010)

The lane configuration is four lanes widening to five as Pakuranga Road approaches Ti Rakau Drive.

The section of Pakuranga Road (between Kerswill Place and Millen Avenue) accommodates in excess of 10,000 vehicles per day (Panmure Land Use Transport Plan, 2010).

Figure 6 – AMETI Stage 2A Road Network and Hierarchy



Source: AMETI Package 1 – Phase 2: Integrated Transport Assessment (Opus, August 2013)

3.6.4 Passenger Transport Network

Bus Network

As part of the Regional Public Transport Plan, AT is currently undertaking a review of the bus network throughout the region.

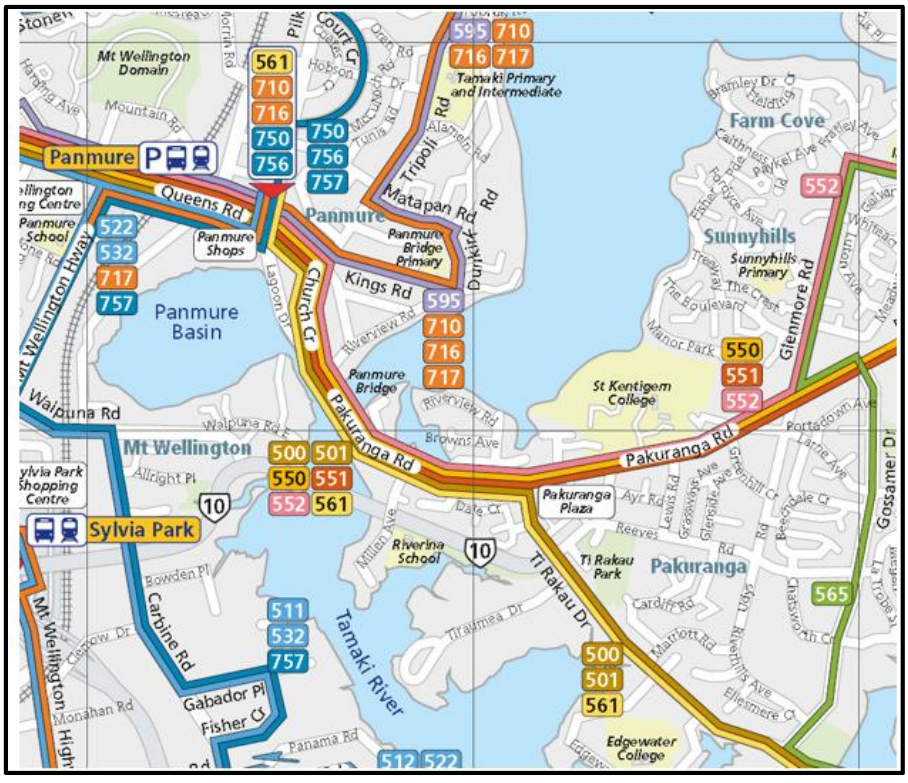
The new network is a region-wide integrated public transport network that will include Frequent, Connector, Local and Peak services.

The Frequent Network will have buses and trains at least every 15 minutes from 7am to 7pm, seven days. The schematic plan of the proposed frequent network in east Auckland is shown in Figure 7.

Figure 7 – Proposed Frequent Route Network[22]

Currently there are eleven bus routes that transverse through the AMETI Stage 2A area as shown in Figure 8. Most of these services travel inbound to Auckland's CBD via the eastern suburbs. Almost all utilise Panmure Bridge and divert away from Lagoon Drive into the Panmure Town Centre via Church Crescent and Queens Road and then onto Ellerslie Panmure Highway (AMETI Package 1 – Phase 2: Integrated Transport Assessment (Opus, August 2013)).

Figure 8 – Existing Local Bus Network



Source: AMETI Package 1 – Phase 2: Integrated Transport Assessment (Opus, August 2013)

[22] Auckland Transport Website 2014

The highest frequency of inbound services occur during the AM peak (8am-9am) and outbound services during the PM peak (5pm-6pm), reflecting the peak tidal nature of passenger demands in the area (refer to Table 2).

Table 2: Bus Service Frequencies during peak periods

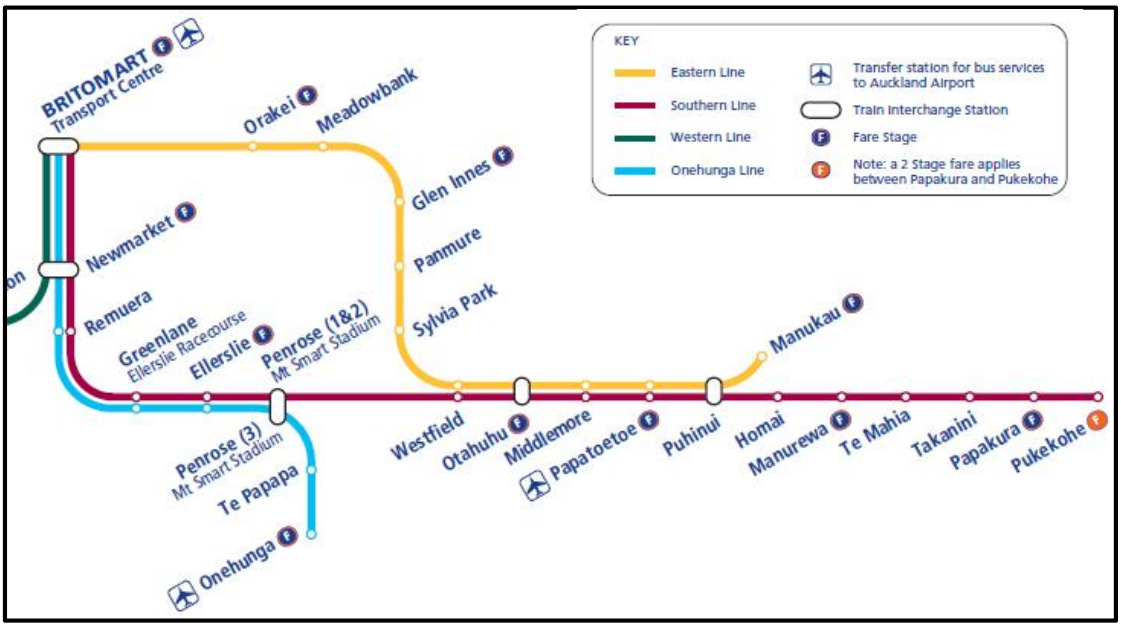
Location	Queens Road		Panmure Bridge		Pakuranga Road		Ti Rakau Drive	
Service Direction	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
AM Peak (8–9am)	25	16	17	9	10	3	10	6
Inter Peak (12–1pm)	15	15	9	9	5	3	4	4
PM Peak (5–6pm)	16	28	8	19	4	12	8	8

Source: AMETI Package 1 – Phase 2: Integrated Transport Assessment (Opus, August 2013)

Rail Network

The Panmure public transport interchange developed as part of the AMETI Stage 1 improvements is located approximately 180 metres west of the Panmure roundabout. Panmure Rail Station is located on the Eastern Line to Britomart to the north and Otahuhu, Manukau, Papakura and Pukekohe to the south (refer to Figure 9).

Figure 9 – Auckland Rail Network (Eastern/Southern Lines



The station is currently served by 129 train services per day in both directions Monday to Thursday with an additional eight services on a Friday. On Saturdays, 71 services and on Sundays 64 services stop at Panmure. The highest frequencies are during the AM and PM peak hours where there is a train running approximately every ten minutes (AMETI Stage 2A: Draft Integrated Transport Assessment, (Opus, February 2015)).

3.6.5 Pedestrian and Cycle Network

In 2013, Opus identified the walking and cycling network in the area is substandard and does not encourage travel by either mode (AMETI Package 1- Phase 2: Integrated Transport Assessment, 2012).

4 Evaluation Methodology

4.1 Overview

The methodology undertaken for the AMETI Stage 2A FOA (this report) included:

1. Reviewing historical alignment options previously raised for the Project between 2003-2014 (refer to section 4.2 and Appendix 1);
2. Screening all previously considered options (the long list of options)[23] to discount any that do not meet the AMETI Stage 2A Project Objectives (refer sections 4.3 and 5);
3. Consolidating and refining the remaining options, including the removal of duplicated options and the addition of any further options not previously considered (refer sections 4.4, 5 and Appendix 4);
4. Developing an evaluation framework, including assessing the options against criteria specific to the environmental context of the Project;
5. Undertaking a detailed MCA of the shortlisted options, using a five point scoring scale and involving a range of internal AT representatives and independent subject matter experts (refer sections 4.5, 5 and Appendix 4); and
6. Evaluating and analysing the MCA to select the preferred option (refer sections 4.6 and 6).

This process has included:

- Three Project Team Workshops (MCA Workshops 1, 2 and 3, as described in sections 4.5.4, 5.1.1-5.3);
- A Workshop with internal AT Maori Policy and Engagement advisors and Tama Hovell (AT's Independent Expert on mana whenua matters) (MCA Workshop 4 as described in section 4.5.4); and
- One-on-one discussions with social and environmental experts to robustly inform completion of the MCA analysis table.

4.2 Background Research

The AMETI Project Team reviewed historical documents dating back to 2003 (with regard to the section from Panmure Roundabout through to Ti Rakau Drive) and collated the alignment options considered over this period. Refer to Appendix 1 for a detailed list of the documents reviewed. The options are described in section 5.

4.3 Screening Process

All of the alignment options identified during the background research phase were screened against the AMETI Stage 2A Project Objectives. The screening of the alignment options was completed by the AMETI Project Team and was subsequently tested and further refined at the first MCA Workshop by

[23] Appendix 3 provides a comprehensive list of these options

the collective group (refer to Appendix 2). An additional option (Kerswill) was identified at the first MCA Workshop, and was also screened.

4.4 Consolidation of Options

The screened options that met the Project Objectives were taken forward for evaluation through an MCA process during Workshop 2. This process is described in further detail in section 4.4 below.

At this point in the methodology and during the MCA Workshop process, some of the options that met the Project Objectives were discarded or consolidated as they essentially duplicated a similar scheme (i.e. where two options reflected the same alignment or footprint, only one was taken forward for analysis).

This consolidation occurred during Workshop 1 and in advance of Workshop 3. It was then tested and collectively agreed upon during Workshop 3.

The rationale and logic for the consolidation of the options is set out in sections 4.4 and 5 below.

The shortlist of options taken through the full MCA process is shown in the option design information (i.e. schematic drawings and descriptions) attached as Appendix 3.

4.5 MCA Process

The process for completing the MCA involved three initial steps:

1. Drafting the criteria and metrics;
2. Selecting the relevant experts to participate based on the criteria; and
3. Facilitating Workshops and seeking inputs from relevant specialists to complete the MCA (including the evaluation and write-up).

4.5.1 Drafting the Criteria and Metrics

The criteria were collectively drafted by the AMETI Project Team. The criteria were split into four areas:

- Objectives;
- Consentability;
- Temporary (Construction) Effects; and
- Permanent (Operational) Effects.

Within the Temporary and Permanent effects categories, sub categories were identified covering:

- Built Environment;
- Social;
- Natural Environment;
- Public Health;
- Archaeology and Built Heritage; and
- Cultural and Heritage.

The criteria included within these subcategories were informed by an understanding of the Project by the Project Team, specialist advisors and mana whenua (as identified by the AT's Maori Policy and

Engagement Team). This included an assessment of the actual and potential effects by technical specialists, and reference to the "Social and Environmental Screen" in section 3 of the New Zealand Transport Agency "Minimum Standard Z/19 - Social and Environmental Management[24].

To enable robust and transparent evaluation and scoring of the options against the criteria, measures for each criterion were developed to inform Workshop discussions and focus the dialogue on how to interpret the criteria. Information sources were identified to provide the reference material on which criteria scores were made.

These criteria, the metrics and the information sources were discussed and collectively agreed upon at MCA Workshop 1 and are included in Appendix 4.

4.5.2 Criteria relationship to Part 2 of the RMA

Section 5 – Purpose:

To meet Part 2 of the RMA, projects such as AMETI Stage 2A need to achieve sustainable management of natural and physical resources. This is demonstrated through the use, development and protection of resources in a way that provides for communities social, economic and cultural wellbeing. This is moderated by the need to provide for future generation's needs, safeguard the natural environment and avoid, remedy and mitigate adverse environmental effects.

The purpose of AMETI Stage 2A is to provide for current and future community wellbeing through transport improvements focussed on promoting an integrated, multi modal transport system that supports population and economic growth in East Auckland and Manukau.

AMETI is designed to improve alternative modes of transport for the eastern suburbs beyond the reliance on private vehicles and in response will ease congestion on roads.

Together with improved public bus priority, AMETI will support enhanced connections from the area to the city, as well as to other eastern suburbs and will result in a higher level of integration between different transport modes.

The importance of AMETI is specifically recognised in the AP as providing a strategic link between the eastern suburbs, unlocking the economic potential of the area. This outcome is reflected in the AMETI Stage 2A Project Objectives.

The MCA consentability, future-proofing, built environment and social criteria and the option evaluation against these criteria demonstrates how the sustainable management, community wellbeing and future generational need 'tests' of RMA Part 2 can be achieved.

With respect to safeguarding of the natural environment, the MCA criteria clustered within the Natural Environment sub-categories specifically included in the MCA assist in determining the significance of effects on the life supporting capacity of air, water, soil and ecosystems.

The Part 2 requirement to avoid, remedy and mitigate adverse effects on the environment informed the options assessment. This is reflected in the consentability, built environment, social, natural environment, public health, cultural and heritage sub-category criteria.

[24] http://www.nzta.govt.nz/resources/state-highway-professional-services-contract-proforma-manual/standards/docs/sm030-z19-v2-1mar10.pdf

Section 6, 7 and 8:

Part 2 also includes sections 6, 7 and 8 being Matters of National Importance, Other Matters and Treaty of Waitangi respectively.

Section 6 lists seven specific matters which shall be recognised and provided for. These matters are directly reflected in the criteria included under the natural environment, cultural and heritage sub-categories.

Section 7 lists more general matters to which 'particular regard' shall be given and these include Kaitiakitanga, the ethic of stewardship, the efficient use and development of natural and physical resources, the maintenance and enhancement of the quality of the environment and amenity values. These matters are generally covered across all the MCA criteria.

Section 8 relates to the principles of the Treaty of Waitangi. This is covered specifically by the cultural criteria and also more generally by the approach taken to engagement with mana whenua.

4.5.3 Selecting the relevant Technical Experts

The MCA Workshops were attended by 23 experts in relevant fields. Additional experts relevant to the social and environmental criteria in the temporary and permanent effects sub categories were canvassed and briefed on the scope of works. Notwithstanding this, all participants were sent a complete set of relevant information including option alignment drawings and descriptions, and a copy of the MCA. They then completed the relevant fields independently.

Workshop attendees and experts who provided input into the completed MCA (Appendix 4) along with their project roles / areas of expertise are included in Appendix 5.

4.5.4 MCA Workshops and Completion Process

Workshop 1 (Monday 10 November 2014). The purpose of this Workshop was to:

- Confirm the agreed options previously raised and discount any that do not meet the current AMETI Stage 2A Project Objectives;
- Identify whether there are further options that may meet the Project Objectives; and
- Discuss and agree the evaluation framework including criteria.

Workshop 2 (Monday 17 November 2014). The purpose of this Workshop was to assess those options carried through from Workshop 1 through the MCA process confirmed in the first Workshop.

At Workshop 2, further discussions on the 10 refined options (refer to Table 3) were undertaken to gain a better group understanding of their effects and ability to meet the Project Objectives.
Between Workshop 2 and Workshop 3, the AMETI Project Team facilitated smaller focused Workshops with relevant subject matter experts to complete the consentability, temporary and permanent effects criteria.

A Workshop was also held with internal AT Maori Policy and Engagement advisors and Tama Hovell (AT's Expert on mana whenua matters) to complete the relevant cultural scoring.

Workshop 3 (Wednesday 26 November 2014). The purpose of this Workshop was to:

Collate information from individual assessments and collectively assess the refined options carried through from previous Workshops using the MCA. This was an opportunity to discuss and clarify expert scoring.

Workshop 4 (Monday 8 December 2014). The purpose of this Workshop was to:

Discuss the completed MCA spreadsheet and draft analysis, and determine whether completion of the MCA had produced a clear and transparent preferred option, or whether options that scored well required further assessment.

The conclusion being it was apparent that two key alignment alternative options (subsequently referred to as Options 11 and 12) had not been identified or assessed as part of this process. A more detailed description of the option development is provided in section 5.

This Workshop involved a focus group consisting of the AMETI Project Team and AT mana whenua advisors. Subsequently the AMETI Project Team undertook draft scoring for Options 11 and 12 based on the logic of scoring for Options 1-2.

This draft scoring was then circulated to the respective subject matter experts for confirmation or modification in finalising the MCA spread sheet.

MCA Finalisation Process

The AMETI Project Team was then responsible for capturing the logic and confirming the MCA scoring that is contained in Appendix 4. In undertaking this process the Project Team went through an iterative process of discussion and reviews with the relevant subject matter experts to confirm the scores and logic.

4.6 Evaluation and Analysis

4.6.1 Evaluation

Following the aforementioned Workshops, the Project Team evaluated and analysed the completed MCA. The evaluation process involved documenting, criterion by criterion, the rationale for the scores attributed through the MCA process. This is attached in Appendix 4.

This was completed to provide a record of the scoring and for transparency.

4.6.2 Analysis

In parallel with the evaluation process, the AMETI Project Team analysed the MCA to compare the overall scoring of each option against the criteria. This is set out in section 6 below.

From this analysis some of the options were able to be dismissed from further review due to their poor scoring against one or more of the sub categories.

The remaining options were further analysed and compared against the full range of MCA criteria to determine the preferred option.

A more detailed description of the option development is provided in section 5.

5 Option Development

5.1 Long List of Options

As identified above, the AMETI Project Team reviewed historical documents dating back to 2003 (with regard to the section from Panmure Roundabout through to Ti Rakau Drive) and collated the alignment options considered over this period. As a result 33 options were identified and therefore were considered reasonably conceivable alternatives that could be put forward for assessment during MCA Workshop 1.

This long list of options can be broadly grouped together as:

- Options that were explored as part of the ETC (2003-2005);
- Options that were explored for AMETI (2006-2007)(C-PAK1-C-PAK-5); and
- Options that were explored as part of the refinement of the 2007 preferred route (2010-2013).

5.1.1 MCA Workshop 1

A comprehensive list of these options is contained within Appendix 2 of this report. This information was circulated to attendees prior to Workshop 1. Following robust discussions at the initial Workshop, it was collectively agreed that the 2003-2004 options (eleven in total) should be discounted from any further assessment.

The rationale being that these options are very broad and align to a previous direction of the Project. For example the study that developed the options extended from Auckland CBD through to Manukau City and the subject section was only a small component of the overall study. Further, all the relevant components of the current Project have been included in subsequent options developed since that time.

An additional route alignment (provision of a busway between Panmure and Pakuranga via Queens Road and Kerswill Place) was identified in Workshop 1 that met the Project Objectives. The conclusion was that this alignment should be carried through as an option to be assessed.

On this basis, 23 options were identified that likely met the Project Objectives and progressed through to further assessment and refinement. During Workshop 2, discussions led by the design team on the refined options provided the group with further understanding of their effects and ability to meet the Project Objectives.

The refined 23 options were assessed at a high level to identify any overlaps or duplications of options. As a result, 10 options were discarded on this basis. The remaining 13 options included:

- Retaining the 2006-2007 options, with the exception of C-PAK-5 (refer to Table 3 and Appendix 2), as this was similar to C-PAK-2 (refer to Table 3 and Appendix 2) with the only differentiator being the provision of a two level car park under the Reeves Road flyover, for which detail will be refined as part of a subsequent stage of the project and subject to a separate NoR.
- Retaining the 2009 options, with the exception of ‘Option 1 and Option 2’as these are considered infeasible, given subsequent investigations has since determined the existing Panmure Bridge does not have the structural integrity to withstand clip on structures.
- Discarding all of the 2010 options (three in total) on the basis that they all have the same potential effects and are similar to the scheme alignments covered by the 2009 options.
- Retaining all of the ‘revised’ 2011 options (four in total) as their configuration and subsequent effects are not addressed by any other retained option.

- Discarding all of the 2012 options (three in total) on the basis that they are similar to the scheme alignments covered and taken forward from 2011.
- Retaining the 2013 option as the effects of this alignment are not covered by any other option taken forward.
- Discarding the 2014 option as it is a duplication of one of the 2011 options retained.
- Retaining the Queens Road to Kerswill Place busway option as an alternative alignment.

The following design assumptions informed the assessment of the 13 refined options:

- No change to the southern kerbline. The existing Panmure Bridge will need replacing in the near future. Engagement with mana whenua, during the MCA process indicated southward extensions beyond the current kerbline were not supported, due to the impacts on values associated with the coastal edge including the Pohutukawa.
- Options that included a dedicated busway would need to provide this on the northern side of the existing alignment not to the south. This is because the user catchment along Lagoon Drive is all to the north and the connection to the Panmure Rail Station is on the northern side of the corridor.
- The overall footprint width and configuration of the Panmure Bridge was a key determinant of the overall effects of each option.

5.1.2 Workshop 2

At Workshop 2, the consensus was that further consideration needed to be given to the preliminary design options developed during 2011[25]. These preliminary design options were developed for the purpose of determining the best option in terms of functionality to provide a Rapid Transit Network route along Lagoon Drive, across the Tamaki River at the Panmure Bridge and along Pakuranga Road.

In 2011 several of the preliminary options were amalgamated to develop four final options (i.e. Option A, Option B1, Option B2 and Option C) (refer to Appendix 4). During Workshop 2, it was identified that some of the preliminary options in their raw form could be feasible and met the Project Objectives.

On this basis, it was collectively determined that while only four options from 2011 should be retained and progressed through for further assessment, instead of those final or optimum four previously identified in Workshop 1 (refer to Appendix 4), they should be superseded to include:

- Option 2A – 3 lanes with contra-flow bus lane;
- Option 2B – RTN bridge with pedestrian/cycle facilities on northern side;
- Option 3 – 3 lanes (contra-flow) with shoulder bus lanes; and
- Option 4 – 3 lanes (contra-flow) with north side busway.

The AMETI Project Team then further interrogated the design elements of the 13 remaining options and identified that a further three could be discarded on the basis that they either duplicated a similar scheme or would result in double counting effects already covered by another option. The rationale for taking forward only ten of the 13 refined options was that:

[25] 2011 options were schematics developed for the sole purpose of determining the best option in terms of functionality, with regard to widening Panmure Bridge. Following MCA Workshop 2, several of the 2011 options were discarded due to duplication of other options, and four options were retained.

- In reassessing the retained 2006-2007 options, the only differentiator between C-PAK-2, C-PAK-3 and C-Pak-4 is the alignment at Pakuranga. To avoid duplication of assessing options with similar footprints or effects, C-PAK-1 and C-PAK-3 were discarded.
- A further option from 2011 (Option 4) was discarded, as the effects of providing a bridge structure on both sides of Panmure Bridge were duplicated by an option taken forward from 2009 (revised Option 5).

In summary, at the end of MCA Workshop 2, ten options were shortlisted to progress through to the subsequent MCA process. To eliminate confusion with the various options and their references over the years, the options were renamed as outlined in Table 3. Plans of the options are included in Appendix 3.

Table 3: Renaming of Ten Shortlisted Options

New reference	Previous Reference
Option 1 - Kerbside bus lanes with Pakuranga Bridge duplication	C-PAK-2 (2006-2007)
Option 2 - Kerbside bus lanes with Pakuranga Bridge duplication and one-way road system	C-PAK-4 (2006-2007)
Option 3 - Kerbside bus lanes with separate pedestrian/cycle bridge on the southern side of Panmure Bridge	Option 2 – Separate pedestrian/cycle bridge on the southern side (2009)
Option 4 - Kerbside bus lanes with separate pedestrian/cycle bridge between Queens Road and Kerswill Place	Option 3 – Kerswill Place pedestrian/cycle bridge (2009)
Option 5 - Kerbside bus lanes with separate pedestrian/cycle bridge of both sides of Panmure Bridge	Option 4 – Separate pedestrian/cycle bridge on both sides (2009)
Option 6 - Dedicated north side busway, with Panmure Bridge widening to accommodate three lanes, a contra-flow bus lane (one lane total) and shared pedestrian/cycle lane	Option 2A – 3 lanes with contra-flow bus lane (2011)
Option 7 - Dedicated north side busway with separate busway bridge (including shared pedestrian/cycle facilities on northern side of Panmure Bridge	Option 2B – RTN bridge with pedestrian/cycle facilities on northern side (2011)
Option 8 - Kerbside bus lanes with Panmure Bridge widening to accommodate three traffic lanes, two shoulder bus lanes and a shared pedestrian/cycle lane	Option 3 – 3 lanes (contra-flow) with shoulder bus lanes (2011)
Option 9 - Dedicated north side busway using the existing Panmure Bridge (including shared pedestrian/cycle facilities) with a new general traffic bridge to the south of the existing	Option 1 – Separate RTN bridge on the southern side (2013)

New reference	Previous Reference
bridge	
Option 10 - Shared carriageway on Lagoon Drive and dedicated north side busway on Pakuranga Road, with separate busway bridge (including shared pedestrian/cycle facilities between Queens Road and Kerswill Place)	RTN bridge between Queens Road and Kerswill Place

5.2 Shortlist of Options

At the conclusion of Workshop 2, ten options were shortlisted to progress through to the MCA process. These are described in further detail below and alignment drawings are attached as Appendix 3.

Between Workshop 2 and Workshop 3, the AMETI Project Team facilitated smaller intimate focused Workshops with experts to complete the consentability, temporary and permanent criteria for the 10 options outlined below.

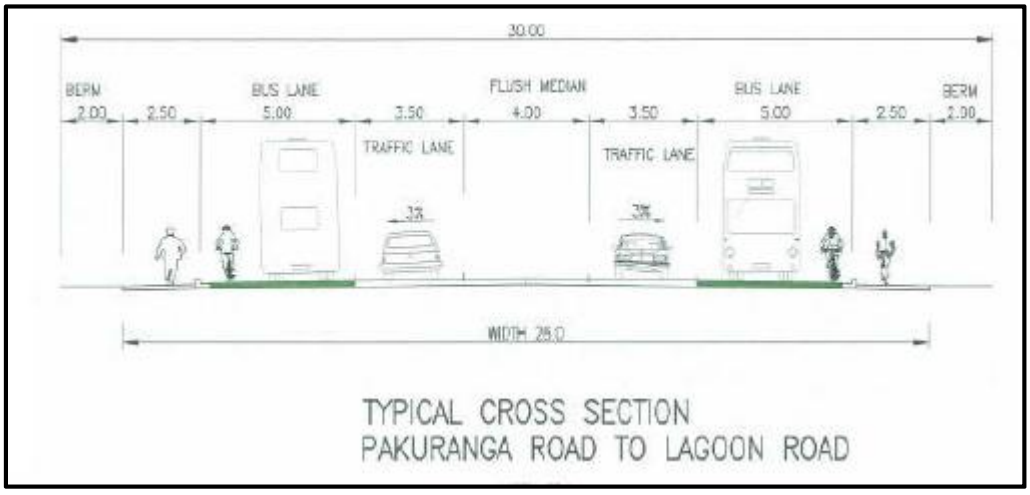
This also included a Workshop with AT Maori Policy and Engagement advisors and Tama Hovell (AT's Expert on mana whenua matters) to agree the criteria and confirm the relevant cultural effects.

5.2.1 Option 1 - Kerbside bus lanes with Pakuranga Bridge duplication

Option 1 would involve converting two of the four general traffic lanes on Pakuranga Road and Lagoon Drive to kerbside bus lanes with Panmure Bridge reduced to one general traffic lane in each direction with bus priority (refer to Figure 10).

In addition, the Pakuranga Bridge would be duplicated by providing a new bridge directly adjacent to the north side of the existing bridge that would allow for four lanes for general traffic and a combined pedestrian/cycle lane.

Figure 10 – Typical Cross Section Pakuranga Road to Lagoon Road



Source: The 2007 AMETI Recommended Options Evaluation Report (Opus, May 2007)

5.2.2 Option 2 – Kerbside bus lanes with Pakuranga Bridge duplication and one-way road system

Option 2 would involve converting two of the four general traffic lanes on Pakuranga Road and Lagoon Drive to kerbside bus lanes, with Panmure Bridge reduced to one general traffic lane in each direction with bus priority (refer to Figure 10).

As part of this proposal, Pakuranga Road from the shopping centre to Panmure Bridge would be realigned northwards through an existing residential area.

The Pakuranga Bridge would be duplicated by providing a new two-lane bridge some distance to the north of the existing Pakuranga Highway Bridge.

This would align through existing residential areas south of Pakuranga Road before connecting into Pakuranga Road and Millen Avenue.

The new alignment would provide two lanes east-bound while the existing Pakuranga Highway Bridge would provide two west-bound lanes (a large one-way system).

5.2.3 Option 3 - Kerbside bus lanes with separate pedestrian/cycle bridge on the southern side of Panmure Bridge

Option 3 would accommodate four general traffic lanes on Pakuranga Road, and two general traffic lanes along Lagoon Drive with kerbside bus lanes along both of these corridor lengths.

No amendments to the existing Panmure Bridge configuration occur (i.e. no additional general traffic or bus lanes would be provided); however, it was assumed that bus priority would be needed at the bridge tie-in.

This option would provide for a separate 3m pedestrian/cycle bridge crossing on the southern side of the existing Panmure Bridge (refer to Figure 11).

5.2.4 Option 4 – Kerbside bus lanes with separate pedestrian/cycle bridge between Queens Road and Kerswill Place

Option 4 would accommodate four general traffic lanes on Pakuranga Road, and two general traffic lanes along Lagoon Drive with kerbside bus lanes along both these corridors.

With regard to the Tamaki River crossing, no amendments to the existing bridge configuration occur (i.e. no additional general traffic or bus lanes would be provided); however it was assumed that bus priority would be needed at the bridge tie-in.

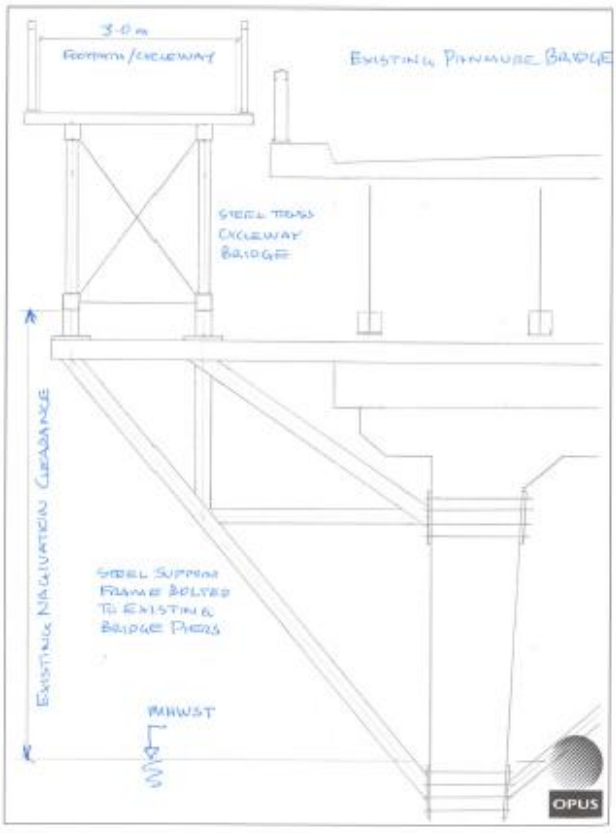
A separate 3m pedestrian/cycle bridge is provided between Queens Road and Kerswill Place to connect cyclists and pedestrians between Panmure and Pakuranga (refer to Figure 11).

5.2.5 Option 5 – Kerbside bus lanes with separate pedestrian/cycle bridge of both sides of Panmure Bridge

Option 5 would accommodate four general traffic lanes on Pakuranga Road, and two general traffic lanes along Lagoon Drive with kerbside bus lanes along both these corridor lengths. With regard to the Tamaki River crossing, no amendments to the existing bridge configuration were proposed (i.e. no additional general traffic or bus lanes would be provided); however, it was assumed that bus priority would be needed at the bridge tie-in.

A separate 3m pedestrian/cycle bridge crossing would be provided on both sides of the existing Panmure Bridge (refer to Figure 11).

Figure 11 – Separate 3m pedestrian/cycle bridge

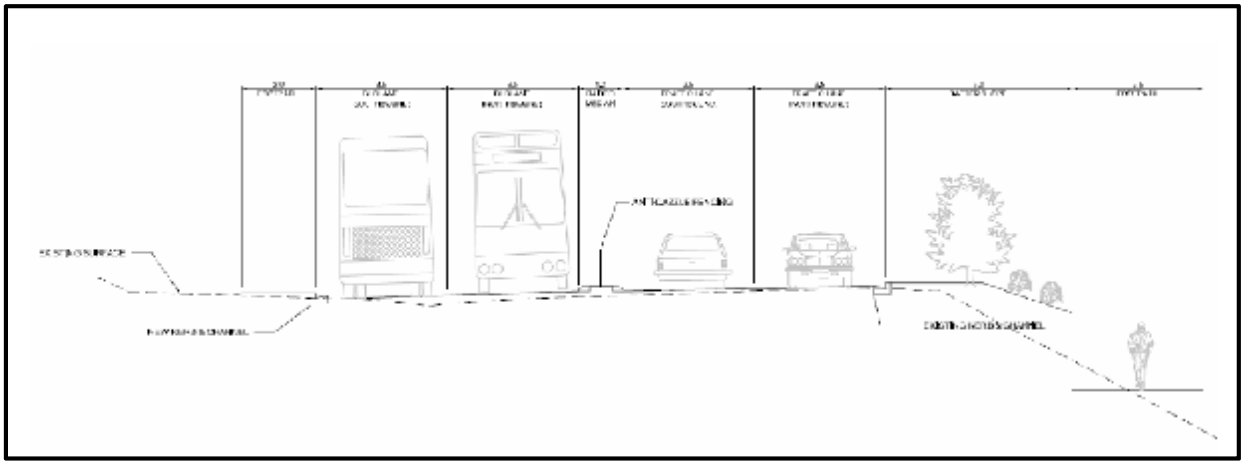


Source: AMETI: Panmure Pedestrian and Cycle Bridge Scheme Assessment Report (Opus 2009)

5.2.6 Option 6 – Dedicated north side busway, with Panmure Bridge widening to accommodate three lanes, a contra-flow bus lane (one lane total) and shared pedestrian/cycle lane

Option 6 would provide four general traffic lanes along Pakuranga Road, and two general traffic lanes along Lagoon Drive with a dedicated north side busway along the entire corridor (refer to Figure 12).

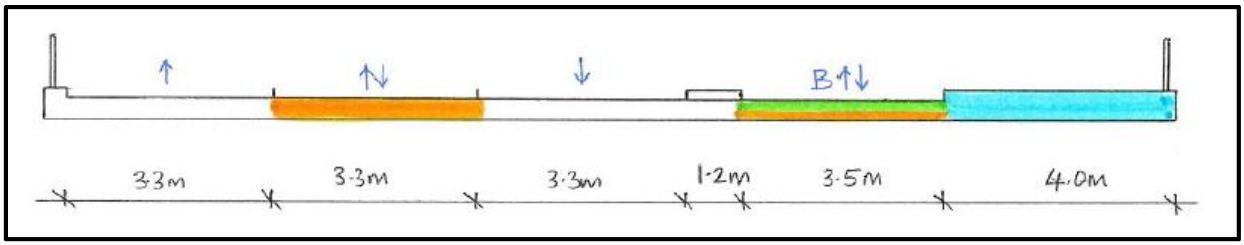
Figure 12 – RTN Busway Typical Section – Lagoon Drive



Source: AMETI Lagoon Drive RTN Busway Report (Opus 2010)

With regard to the Tamaki River crossing, an additional bridge would be provided to the north of the existing bridge to accommodate a north side 'one lane' busway and shared pedestrian/cycle facility. Three general traffic lanes would remain on the existing bridge (refer to Figure 13).

Figure 13 – Option 6 Bridge Configuration



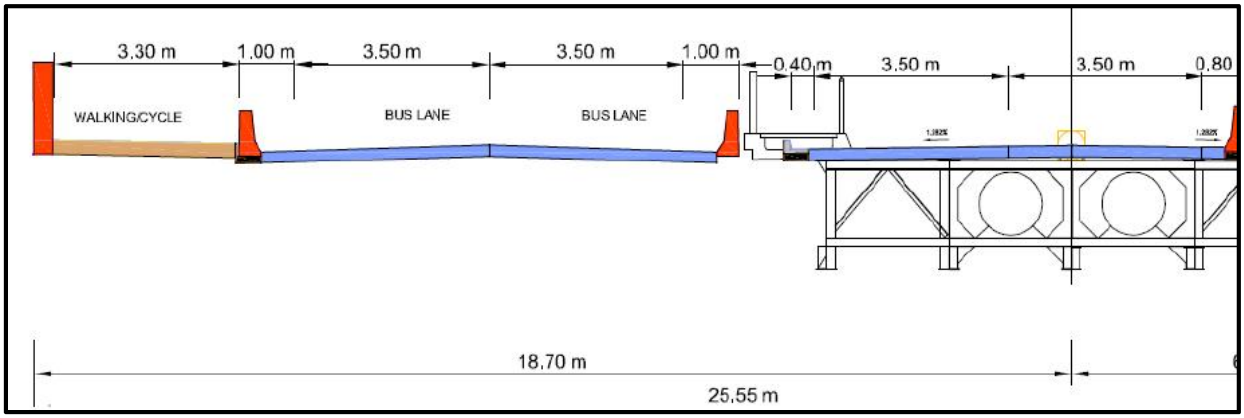
Source: Panmure Bridge RTN Option Assessment (Opus 2011)

5.2.7 Option 7 – Dedicated north side busway with separate busway bridge (including shared pedestrian/cycle facilities) on northern side of Panmure Bridge

Option 7 would provide four general traffic lanes along Pakuranga Road, and two general traffic lanes along Lagoon Drive with a dedicated north side busway along the entire corridor (refer to Figure 12).

With regard to the Tamaki River crossing, an additional bridge would be provided to the north of the existing Panmure Bridge to accommodate a north side two lane busway and a shared pedestrian/cycle facility. Three general traffic lanes would remain on the existing bridge (refer to Figure 14).

Figure 14 – Option 7 Bridge Configuration



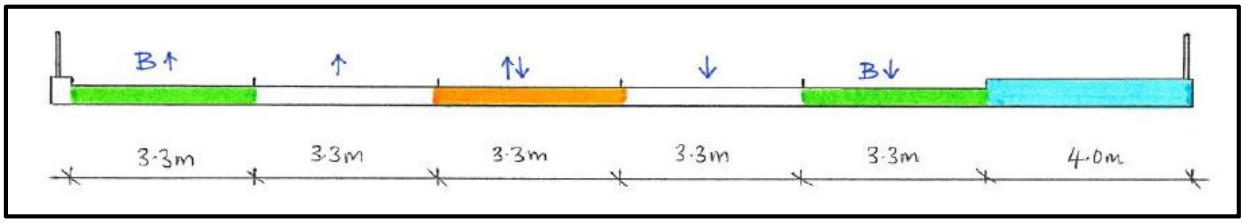
Source: Panmure Bridge RTN Option Assessment (Opus 2011)

5.2.8 Option 8 – Kerbside bus lanes with Panmure Bridge widening to accommodate three traffic lanes, two shoulder bus lanes and a shared pedestrian/cycle lane

Option 8 would provide four general traffic lanes along Pakuranga Road, and two general traffic lanes along Lagoon Drive with kerbside bus lanes along the entire corridor.

With regard to the Tamaki River crossing, the existing bridge would be retained to provide three general traffic lanes, a new single bus lane bridge would be provided to the south and a new bus lane and shared pedestrian/cycle facility would be provided on the northern side of the existing Panmure Bridge (refer to Figure 15).

Figure 15 – Option 8 Bridge Configuration

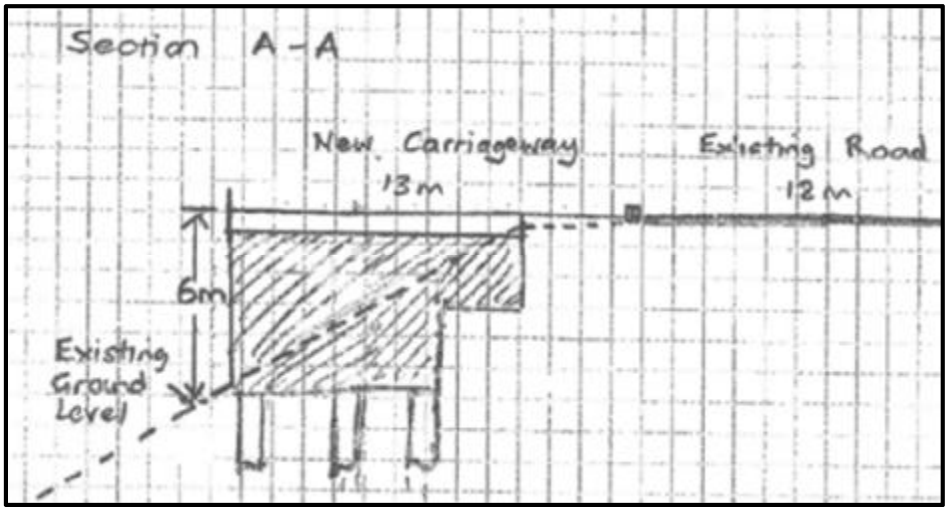


Source: Panmure Bridge RTN Option Assessment (Opus 2011)

5.2.9 Option 9 – Dedicated north side busway using the existing Panmure Bridge (including shared pedestrian/cycle facilities) with a new general traffic bridge to the south of the existing bridge

Option 9 has the same traffic arrangement as Option 7 except that the new bridge structure would be provided on the southern side of the existing Panmure Bridge. General traffic would be placed on the new bridge and the existing bridge would provide for the busway and pedestrian/ cycle facility (refer to Figure 16).

Figure 16 – Typical section through Lagoon Drive at Northern Bridge Abutment



Source: AMETI Package 1 Phase 2 Panmure Bridge Options Assessment (Opus 2013)

5.2.10 Option 10 – Shared carriageway on Lagoon Drive and dedicated north side busway on Pakuranga Road, with separate busway bridge (including shared pedestrian/cycle facilities between Queens Road and Kerswill Place)

Option 10 provides four general traffic lanes and a dedicated north-side busway between Queens Road and Kerswill Place, with two bus lanes and one cycle/pedestrian lane. The proposed bridge would be constructed between Queens Road and Kerswill Place, with two bus lanes and one cycle/pedestrian lane.

Also a shared carriageway would be provided along Queens Road and Kerswill Place for buses, cyclists, pedestrians and local traffic.

With regard to the Tamaki River crossing, no amendments to the existing bridge configuration occur (i.e. no additional general traffic or bus lanes would be provided).

5.3 Further Options Identified (Workshop 3 and 4)

Following Workshop 1 and 2, and the smaller intimate focused assessments all the scoring information for the 13 refined options was collated and collectively assessed during a subsequent third MCA Workshop. At the conclusion of Workshop 3 a draft MCA spreadsheet was completed.

A further Workshop was held (Workshop 4) and comprised a smaller focus group consisting of the AMETI Project Team and AT mana whenua advisors. During Workshop 4, the AMETI Project Team evaluated and analysed the draft MCA. During this process, it was apparent that two feasible alternative alignment options (subsequently referred to as Options 11 and 12) had not been identified or assessed as part of this process.

As discussed in section 4 these options were assigned draft scores based on similar logic for other options and these were circulated to the relevant experts for confirmation and amendments to complete the draft MCA. Option 11 and 12 are described in further detail below and alignment drawings are attached in Appendix 3.

5.3.1 Option 11 – Kerbside bus lanes with a separate pedestrian/cycle bridge on northern side of Panmure Bridge

Option 11 had the same configuration as Option 3 with the exception that the structure would be provided on the northern side of the existing Panmure Bridge.

As such, Option 3 would accommodate four general traffic lanes on Pakuranga Road, and two general traffic lanes along Lagoon Drive with kerbside bus lanes along both of these corridor lengths.

No amendments to the existing Panmure Bridge configuration occur (i.e. no additional general traffic or bus lanes would be provided). It was assumed that bus priority would be needed at the bridge tie-in.

This option would provide for a separate 3m pedestrian/cycle bridge crossing on the northern side of the existing Panmure Bridge (refer to Figure 11).

5.3.2 Option 12 – Busway and four general traffic lanes and a pedestrian/cycle bridge on northern side

Option 12 was a new option, in that it would provide four general traffic lanes along Pakuranga Road, and two general traffic lanes along Lagoon Drive with a dedicated north side busway along the entire corridor (same as for Options 6 and 7) (refer to Figure 12).

However, the existing Panmure Bridge would be replaced to accommodate four lanes of general traffic, with the dedicated busway merging into the general traffic lanes at each end and buses given priority. A shared pedestrian/cycle lane would be provided on the north side.

6 MCA Evaluation

This section of the report provides a summary of the MCA option evaluation results from the MCA Workshops and includes the rationale for the scores attributed through the analysis process. Appendix 4 contains the MCA worksheet and the recorded rationale for the scoring of each option against each criterion.

A comprehensive set of criteria was developed and used as the basis for undertaking the MCA. These criteria form each of the below sub-headings below and cover Project Objectives, consentability factors, and temporary and permanent effects.

In order to assess the performance of each option against these criteria, a set of measures and information sources was identified for each. These metrics and the information sources are provided in Appendix 4.

The performance of each of the options against the criteria was assessed in terms of a five-point scale. The assessment was not comparative; rather each option effect was considered against the existing environment that currently exists in the project area.

A positive score indicates an opportunity for improvement to the existing environment and a negative score indicates a worsening of the existing environment.

A project effect score in the MCA may not exactly transfer to the same level of effect once detailed technical assessments are undertaken for a preferred option. This is due to the difference in the level of design.

At the scheme design stage more detail is known about project effects that may alter the base scoring undertaken for the MCA based on the conceptual route alignment plans and known features, environments or receivers.

Differences between the MCA scoring and detailed technical assessments will also occur due to differences in technical methodologies and the measures in the MCA. The coarse grained MCA uses known information to inform scoring, consideration of scheduled trees, mapped significant indigenous vegetation and known archaeological sites and provides overall scores of project effects against criteria.

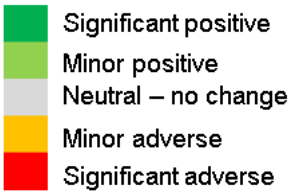
The detailed technical assessments have specific methodologies and assess project effects on a finer scale and in more detail. This means that while in the MCA effects were assessed as minor, there may be particular areas where effects are significant or there are particular receivers not considered at the coarse MCA level that experience significant effects.

A significant adverse score does not necessarily mean that the effects cannot be designed or mitigated out. Instead, it can be a reflection of the assessment being completed based on conceptual route alignment plans, rather than scheme design plans that would be developed to support a No R application under the RMA.

For the Project Objectives the scoring was slightly different. A positive score means that the option contributes to the achievement of the Project Objective while a negative score indicates that the option did not.

A negative Project Objective score was considered a fundamental flaw, as the option did not contribute to the Project Objectives. For an option to be taken forward it must contribute to the requiring authority's Project Objectives.

The scale is described as follows:



6.1 Overview of the Preferred Option Selection Process

The process for undertaking the options evaluation, analysis and selection the preferred option can be summarised as follows:

1. Step 1 (refer section 6.2 and 6.3): Some options were dismissed based on their poor scoring against the Project Objectives and policy compliance criteria (despite initial screening against the Project Objectives).

2. Step 2 (refer section 6.4): The remaining options were then evaluated to comparatively assess their performance against the MCA criteria, and to determine what the key differentiators were between the options. As discussed further in section 6.4, the key differentiators between the remaining options were determined to relate to:

    - The presence of a dedicated busway versus kerbside bus lanes – and the related public transport benefits or dis-benefits associated with each arrangement; and
    - The lane configurations across the Panmure Bridge, how these connect back into the Pakuranga Road/Lagoon Drive alignments, and the related future-proofing benefits or dis-benefits of each configuration, overlain against the footprint effects on the Mokoia Pā.

3. Step 3 (refer section 7): The options were split into the kerbside bus lane and dedicated busway options, recognising key similarities of options within the two individual sets and key overall differences between the two sets of options. The two sets of options were analysed to assess overall individual performance and to conclude whether the option was preferred or dismissed at this point.
4. Step 4 (refer section 7): The preferred option selected is discussed taking into account the overall performance against the MCA criteria, the strategic drivers of AT, and the general ability for options to satisfy RMA Part 2 matters[26], particularly the ability for identified significant adverse effects to be avoided, remedied and/or mitigated.

6.2 Options Dismissed based on Project Objectives

As outlined in section 5.1, the first step in the evaluation process was to comparatively assess all of the options against the Project Objectives, as poor performance against these criteria was considered a fundamental flaw in the evaluation.

Under section 171 of the RMA a requiring authority must demonstrate, subject to Part 2 of the RMA, that the preferred option for a designation is reasonably necessary for achieving the Project Objectives. Adverse scoring against these criteria was considered a fundamental flaw in the evaluation.

[26] Part 2 of the RMA contains the purpose and principle of the Act.

This has resulted in dismissal of some options (Options 1, 2 and 10) prior to a full evaluation against the full MCA suite of criteria, because the evaluation concluded there are aspects of the options that would not meet the Project Objectives.

6.2.1 Option 1 – Kerbside bus lanes with Pakuranga Bridge duplication

Option 1 assessed positively against all but one of the Project Objectives, because it would improve pedestrian / cyclist and public transport connectivity while improving the reliability of public transport and enhancing safety for all transport users; particularly for pedestrians and cyclists. Option 1 would also divert non-essential traffic around Panmure town centre, resulting in improved integration of transport infrastructure and land use.

Option 1 was assessed as 'minor adverse' against Objective S3, because two of the four general traffic lanes on Pakuranga Road would change to kerbside bus lanes. This would be positive for PT, walking and cycling, but is predicted to cause congestion for general traffic both on Pakuranga Road and the wider network, particularly on Pakuranga Highway. This issue directly led to the development of Options 3, 4, 5 and 8 which would maintain four general traffic lanes on Pakuranga Road.

Reducing Pakuranga Road from four to two general traffic lanes would cause adverse traffic effects and therefore would not achieve this objective because:

- The midblock (between intersections) capacity of a traffic lane is approximately 1800 vehicles per hour (one vehicle every 2 seconds).
- The 2016 forecast peak traffic flow on Pakuranga Road between Church Crescent and Ti Rakau Drive is over 1800 vehicles per hour in the peak direction and is as high as 2133 vehicles per hour in the pm peak eastbound. The "do minimum" forecast is about 200 vehicles per hour higher.
- If only one lane midblock capacity was provided, up to approximately 333 vehicles per hour would either not be able to pass through the network, or would need to re-route via Waipuna Bridge which is also currently at capacity. Either way there would be additional queuing on Pakuranga Road, Ti Rakau Drive, Lagoon Drive and Church Crescent.
- Even if one lane midblock capacity was provided, this would need to increase to two or more lanes at the signalised intersections in order to achieve an 1800 vehicles per hour (vph) capacity along the corridor. With the number and spacing of signalised intersections along Pakuranga Road, the additional lanes would likely merge into one another, effectively providing full two lanes in each direction along Pakuranga Road.
- Overall, to provide effective bus priority along Pakuranga Road without significantly increasing traffic congestion, an additional corridor width would be required for either the proposed busway or for additional kerbside bus lanes.

For this reason Option 1 was dismissed from further analysis.

6.2.2 Option 2 - Kerbside bus lanes with Pakuranga Bridge duplication and one-way road system

Option 2 scores positively against Project Objectives S4, S6 and S7 because it generally improves efficiency and resilience of the PT network, whilst also providing a multi modal corridor and improving safety for all transport users.

Option 2 was assessed as 'minor adverse' for Project Objective S3 for the same reason as Option 1. That is, two of the four general traffic lanes on Pakuranga Road would change to kerbside bus lanes. This would be positive for public transport, walking and cycling modes, but is predicted to cause significant congestion for general traffic both on Pakuranga Road and the wider network, particularly the Pakuranga Highway. When considered in combination with the positive impact on public transport, the overall assessment was 'minor adverse' for this objective.

Option 2 was also assessed as not contributing to Project Objectives S1, S2 and S5. This is largely due to the disruptive configuration; severance and land take effects from the option. It would have significant adverse impacts on existing residential areas and, operationally, would create a large "one way" system.

Due to these reasons, Option 2 was dismissed from further analysis.

6.2.3 Option 10 - Shared carriageway on Lagoon Drive and dedicated north side busway on Pakuranga Road, with separate busway bridge (including shared pedestrian/cycle facilities) between Queens Road and Kerswill Place

Option 10 was assessed as positively contributing to Project Objectives S4, S5 and S6 as it would, improve the reliability, efficiency and resilience of public transport, provide a multi modal transport corridor and would co-locate with the use of existing infrastructure corridors.

Option 10 scored neutral against Project Objectives S1, S3 and S7. The neutral scores reflect the alignment through the Panmure town centre, which could adversely affect amenity, and create safety issues (due to a lack of modal separation) and reliability issues (due to delays).

Option 10 was assessed as adversely contributing to Project Objective S2. This score is a reflection of the location of the busway through the middle of existing residential areas, rather than on or adjacent to an existing arterial transport corridor; therefore potentially conflicting with the existing amenity of the low density residential land use.

Due to these reasons, Option 10 was dismissed from further assessment.

6.3 Options Dismissed based on Policy Compliance (NZ Coastal Policy Statement)

The policy compliance criterion is particularly important and an adverse scoring against this criterion is also considered a fundamental flaw. In the context of AMETI Stage 2A, the key issue driving adverse scores was project effects from options that impact on the Panmure Basin ONF. Under the NZCPS adverse effects on an ONF must be avoided.

6.3.1 Option 9 - Dedicated north side busway using the existing Panmure Bridge (including shared pedestrian/cycle facilities) with a new general traffic bridge to the south of the existing bridge

Option 9 was assessed as positively contributing to all Project Objectives because it provides a dedicated busway and active mode corridor between Panmure and Pakuranga, and provides for general traffic through the retention of four lanes on Pakuranga Road.

However the additional bridge to the south of the existing Panmure Bridge would require a significant retaining structure at the Panmure Basin mouth and the removal of several Pohutukawa trees. This was assessed as a 'significant adverse' effect against the policy compliance criterion. The Panmure Basin is identified as an ONF in the PAUP and, under policies of the NZCPS, adverse effects on an ONF must be avoided.

Initial mana whenua feedback that identified a preference for retaining the southern kerb-line of the existing bridge and road in any future design (primarily to protect the cultural significance of the trees and coastal edge) is also an important factor. This compounding factor combined with the effects on the ONF meant the dismissal of this option. Even if the southern location for a bridge footprint was preferred by mana whenua, current policy interpretation of the need to avoid effects on an ONF means that this option (or any option with adverse effects on the ONF) would not be preferred.

Due to these reasons, Option 9 was dismissed from further assessment.

6.4 Remaining Options

As a result of the analysis against the Project Objectives and policy compliance criteria (refer sections 5.2 and 5.3), Options 1, 2, 9 and 10 were set aside. The remaining options taken forward for further analysis and comparison are listed below.

All these options share similar characteristics in that they would provide four general traffic lanes along Pakuranga Road and two general traffic lanes along Lagoon Drive. Options 3, 4, 5, 8 and 11 would have kerbside bus lanes, while Options 6, 7 and 12 would have a dedicated busway on the northern side of the corridor.

Kerbside options:

- Option 3 – Kerbside bus lanes with separate pedestrian/cycle bridge on southern side of Panmure Bridge;
- Option 4 – Kerbside bus lanes with separate pedestrian/cycle bridge between Queens Road and Kerswill Place;
- Option 5 – Kerbside bus lanes with separate pedestrian/cycle bridge on both sides of Panmure Bridge;
- Option 8 – Kerbside bus lanes with Panmure Bridge widening to accommodate 3 traffic lanes, 2 shoulder bus lanes and a shared pedestrian/cycle lane; and
- Option 11 – Kerbside bus lanes with separate pedestrian bridge on northern side of Panmure Bridge.

Busway options:

- Option 6 – Dedicated north side busway, with Panmure Bridge widening to accommodate 3 lanes, a contra-flow bus lane (one lane total) and shared pedestrian/cycle lane;
- Option 7 – Dedicated north side busway with new separate busway bridge (including shared pedestrian/cycle facilities) on the northern side of the existing Panmure Bridge; and
- Option 12 - Dedicated north side busway with Panmure Bridge replaced to accommodate four lanes of general traffic, with the north side bus facility merging at each end and buses given priority. A shared pedestrian/cycle lane would also be provided.

6.4.1 Comparison against Project Objectives

Options 3, 4, 5, 8 and 11 (bus lanes) were all assessed as ‘minor positive’ against the Project Objectives because while they generally improve transport outcomes for all modes, they have a reduced level of reliability (actual and perceived) compared to a busway facility.

The exceptions to the ‘minor positive’ assessment were:

- All bus lane options were assessed as ‘significant positive’ against Objective S1 due to the dedicated pedestrian and cycle facilities that would provide desirable connections to the town centres and surrounding land uses; and
- Option 4 was assessed as ‘significant positive’ against Objective S7, because the Kerswill Place pedestrian/cycle bridge would provide a safer segregated facility than cyclists sharing the bus lanes under Options 3, 5, 8 and 11.

Option 7 (full length busway) was assessed as 'significant positive' for all Project Objectives, because it would provide a very good level of service, would minimise journey disruptions, and provide sufficient capacity for and separation of all modes of traffic; and therefore would integrate with the surrounding land use, contribute to place shaping and leverage investment in the Panmure Rail Station, AMETI Stage 1 and wider rail improvement projects.

Options 6 and 12 (full length busway except at Panmure Bridge) were also mainly assessed as 'significant positive' because of its dedicated busway provision. The exceptions were:

- a 'minor positive' scoring for Objectives S3 and S4;and
- a 'minor positive' score for Option 12 for Objective S7, as it would generally provide for all modes but with little separation.

The reason for this less positive scoring against Objectives S3 and S4 compared to Option 7 is because, at the Tamaki River crossing, Option 6 would provide only a single lane bus bridge that would operate as a 'one way' system; and under Option 12, buses would share the four lanes (two in each direction) with general traffic. As a result, Options 6 and 12 would be less efficient than Option 7, which offers two dedicated bus lanes across the Tamaki River.

Overall, it was therefore assessed that all these options positively contribute toward the Project Objectives, with Option 7 best achieving the Project Objectives, and Options 6 and 12 performing better against the Project Objectives than the kerbside options (Options 3, 4, 5, 8 and 11).

6.4.2 Comparison against Consentability and Future-proofing Criteria

6.4.2.1 Consentability

Policy Compliance:

All the remaining options with the exception of Options 3 and 5 were assessed as 'neutral' against the policy compliance criterion as they are not contrary to the high level policy direction relevant to the project.

Options 3 and 5 (both kerbside bus lanes with no new general traffic or bus lanes across the Panmure Bridge) were assessed as 'minor adverse' due to the potential effects on the Pohutukawa trees and Panmure Basin values (ONF) on the southern side of the existing Panmure Bridge.

Options 3 and 5 scored as minor adverse because the effects on the ONF are potentially able to be designed out. As discussed under Option 9 in section 5.3, effects on an ONF need to be avoided (and Option 9 does not achieve this).

Land Take:

The kerbside bus lane options (Options 3, 4, 5, 8 and 11) were assessed as having an impact on land take because they require a partial land take of properties on the northern side of Pakuranga Road.

The dedicated bus lane options (Options 6, 7 and 12) require removal of houses on the north side of Pakuranga Road (whereas the kerb side lane options do not) and therefore require full property acquisitions.

It was noted in the Workshops that residual land under Options 6, 7 and 12 could potentially be redeveloped post-construction, meaning that the longer term overall difference in land take effects between kerbside bus lanes and a north side dedicated bus facility may not be substantial; however, the effect on current landowners and on land take overall is still significant.

The kerbside bus lane options were assessed as having a 'minor adverse' impact on land take, while the bus lane options were assessed as having a 'significant adverse' impact. It is noted, however, that these landowners would be compensated in accordance with the Public Works Act 1981 and that at a more detailed design stage, the significance of this effect may be able to be reduced. It is also noted that AT has already acquired many of the directly affected properties along the alignment.

6.4.2.2 Future-proofing

The future-proofing criterion assesses options against their ability to maintain network functionality and minimise the transport network effects during a future replacement of the existing bridge. Based on structural assessments this would need to occur in the foreseeable future (approximately 20 years). Replacement of the existing bridge is not a specific part of the AMETI Stage 2A Project.

Because of the limited alternative transport connections across the Tamaki River between Panmure and Pakuranga, transport network effects during replacement of the existing bridge would be very difficult to mitigate and, therefore, they should be avoided as far as practicable.

The options that were assessed best against this criterion provided the greatest lane capacity across the Tamaki River. This is because at the time of the bridge replacement, traffic could be diverted onto the proposed bridge to minimise construction traffic effects while the existing bridge is replaced. For assessment purposes, it was assumed that the shared path part of the bridge would be structurally designed so that it could be used by general traffic and buses during the replacement works.

Options 3, 4 and 11 (kerbside bus lane options) were assessed as 'neutral', because no lanes (or at best only one lane (cycleway)) across the Tamaki River would be provided during replacement works. This was assessed as causing significant adverse traffic effects associated with delays to travel times and congestion elsewhere on the network as traffic would seek an alternate route. This is 'neutral' because it is no worse than the existing situation, should the existing bridge be replaced now.

Options 5 (kerbside bus lane option), 6 and 12 (dedicated busway options) were assessed as 'minor adverse'. These options were assumed to provide two lanes for traffic during replacement works.

This would be an improvement over Options 3, 4 and 11 (described above) as traffic could travel in each direction; however compared to the current situation of three tidal flow lanes plus the future need to also accommodate buses, the reduction in corridor capacity to two lanes during bridge replacement works is still expected to cause adverse traffic effects on travel time and network congestion.

This is a minor positive because it is an improvement over the existing situation, but would still result in significant traffic impacts.

Options 7 (dedicated busway) and 8 (kerbside bus lanes) could be designed and constructed so that three lanes are provided during bridge replacement. This lane capacity would be the same as what exists now and it would be possible to provide a lane in each direction for general traffic as well as a one-way busway bridge, or provide a tidal flow arrangement where general traffic and buses would lane share with two lanes provided in the predominant direction at peak times.

For these reasons, these options were assessed as 'significant positive', as while some traffic impacts are likely, these options provide the best future-proofing benefits and are expected to minimise network disruptions as far as practicable.

6.4.3 Temporary Effects Criteria

6.4.3.1 Built Environment

For construction effects on traffic and utilities/significant infrastructure all options were assessed equally.

All options (both bus lane and dedicated busway options), were assessed as having 'minor adverse' effects on utilities and significant infrastructure as they all use the same corridor and would require the relocation / displacement of some utilities.

All options were assessed as having 'significant adverse' effects relating to construction traffic. This is because they would all require corridor widening works which would have significant disruption effects to users and the community, particularly due to the Panmure roundabout works.

6.4.3.2 Social

All options were assessed as having 'significant adverse' effects on property access. This is because they all involve the significant infrastructure works within residential areas. In addition, the bus lanes options (Options 6, 7 and 12) would result in modified access to residential properties and other community facilities.

6.4.3.3 Natural Environment

For effects on scheduled trees, Options 6, 7, 11 and 12 were assessed as having 'minor positive' effects. These alignments avoid scheduled trees because the bridge crossing over the Tamaki River is on the northern side of the existing bridge and this avoids impacts on scheduled trees at the mouth of the Panmure Basin.

Options 3, 4 and 5 were assessed as 'neutral' assuming the ability of Options 3 and 5 to avoid effects on Pohutukawa at Mokoia Pā headland, and depending on the ability of Option 4 to avoid effects on the scheduled / protected trees at the mouth of the Panmure Basin.

Option 8 was assessed as having 'minor adverse' effects as it may require the removal of scheduled trees at the mouth of Panmure Basin. It was noted in the MCA Workshops that this was primarily due to the limited design and that with further design there may be methods to avoid the effect that caused this negative scoring, but because this is an unknown assumption, the scoring was retained.

Construction effects on water quality were assessed as 'neutral' for all options because it is expected that the effects could be managed in accordance with Auckland Regional Council Technical Publication 90 (TP90) and would therefore be no more than minor.

For construction effects on navigation and safety, all options were assessed equally for reasons explained in section 4.

6.4.3.4 Public Health

The noise and vibration criteria were assessed as 'minor adverse' for all options except Option 4, which was assessed as 'significant adverse' because the construction location would be in a relatively quiet residential area of Kerswill Place and Queens Road. It would be difficult to manage the noise effects against this quiet background environment.

For construction effects on air quality, all options were assessed as having 'minor adverse' effects because the construction works would likely result in minor dust nuisance effects which can be mitigated. No particularly sensitive receivers were identified that would differentiate any of the options.

Adverse effects of contaminated land on human health as a result of construction were assessed as 'neutral' for all options because there are no identified or known areas of significant contamination associated with historical land uses.

6.4.3.5 Heritage

For archaeology, Option 3 was assessed as 'neutral' as it would avoid further effects on Mokoia Pā site to the north of the existing bridge, which is where the archaeological values have been identified (different to the identified cultural values).

Option 4 (kerbside bus lane) was assessed as having 'minor adverse' effects due to its potential effects on the defined edge of Mokoia Pā at Queens Road. All other options were assessed as causing 'significant adverse' effects because of the direct footprint effects on the Mokoia Pā and resulting effects on this archaeological site, which includes Options 4 and 10.

For built heritage, all options except Option 4 were assessed as 'neutral', given there are no recorded or known built heritage items identified or recovered within proximity of the options. Option 4 was assessed as 'minor adverse' as it has the potential to affect the WWII scheduled feature at the end of Queen Street.

6.4.4 Permanent Effects Criteria

6.4.4.1 Built Environment

For the built form criteria there were no marked differences between the options. For the connectivity criteria all options were 'minor positive' as they improve connectivity generally; however Options 4 and 10 were 'significant positive' because they provide an additional pedestrian/ cycle and bus link across the Tamaki River (Kerswill Place to Queens Road), overall supporting connectivity between Panmure and Pakuranga, and the surrounding areas.

Options 3, 4, 5, 8 and 11 (kerbside bus lane options) were all assessed as 'neutral' for the activities / use criterion, as their design would not materially affect existing activities and the uses/character of the surrounding area.

Options 6, 7 and 12 were 'minor adverse' as they would complicate access to the marina and Pakuranga Road properties.

For visual amenity, Options 3, 5, and 11 were assessed as 'neutral', given the relatively small scale of the proposed bridge structures and their colocation with the existing bridge.

Options 4, 6, 7, 8 and 12 were 'minor adverse' because of the relative prominence of the additional bridge structure across the Tamaki River. For associative elements[27], all options (except Option 4) were assessed as 'neutral' as they would not enhance or detract from any associative elements. Option 4 was assessed as 'minor positive', because it is in the same location as a historic bridge between Kerswill Place and Queen Street and it would provide an 'associative' link back to this past structure.

[27] Elements of townscape amenity with historical or cultural associations or which otherwise contribute to townscape amenity

6.4.4.2 Social

The community cohesion criteria assessment was strongly linked to the land take assessment. The kerbside options were assessed as 'minor adverse' because partial land take is required and the existing housing and community fabric is retained.

The full land take for the busway options means loss of this fabric and there is potential for significant effects on community cohesion. It is noted that residual land provides an opportunity to redevelop this land to mitigate this effect in the long term.

Open space was assessed as 'minor adverse' because while every option causes some impact on open space, no option undermined the purpose of any open space areas.

For community facilities, all options were assessed as 'neutral' because there would be no change in effects to community facilities. For effects on business land areas, all options except Options 6, 7 and 12 were assessed as 'neutral' because they were assess as are unlikely to have permanent effects on the viability or productivity of industrial or business land.

Options 6, 7 and 12 were assessed as having 'minor adverse' effects due to business land required to be taken for the dedicated busway at Panmure.

Recreational coastal activities were assessed as 'neutral' for Options 3, 5, 6, 7, 8, 9, 11 and 12 as they assume that colocation of the new bridge with the existing Panmure Bridge would displace two moorings.

Option 4 was assessed as having 'minor adverse' effects due to the loss of existing moorings, jetties and slipways due to a new bridge crossing over the Tamaki River.

6.4.4.3 Natural Environment

When assessed against the natural environment criteria there was little differentiation between the options. In particular, for water resources the options assessed as 'neutral', due to a lack of natural watercourses and lack of excavation.

For water quality the options assessed as 'minor adverse' due to the increase in stormwater discharge for all options.

For coastal, the options assessed as 'minor adverse' as they would all involve a new structure in the CMA; however while they would have impacts on coastal processes, these were not expected to be significant.

For public access the options assessed as 'neutral', as they would only improve walking and cycling to or over coastal areas, not enhance or provide additional access in these areas.

For navigation and safety the options assessed as 'minor adverse' due to the addition of new structures in the CMA and associated manageable impacts on navigation and safety.

All options were assessed as 'neutral' for terrestrial ecology as they would avoid effects on known areas of significant indigenous vegetation and significant habitats of indigenous fauna, given that no known sites/ areas were identified on planning maps.

Operational effects on scheduled trees were assessed in the same way as for temporary effects, with Options 6, 7, 11 and 12 assessed as 'minor positive' as they would avoid scheduled trees.

Options 3, 5 and 8 which were assessed as having 'minor adverse' effects because these alignments potentially remove Pohutukawa trees on the Mokoia Pā headland.

Option 8 was assessed as significant adverse because of the likelihood of the option causing a loss of scheduled Pohutukawa trees. As this criterion relates only to impacts on trees and not their cultural value, which is covered by other criteria, this impact was not considered significant adverse.

For the natural character criterion, Options 3, 5 and 11 were assessed as 'neutral' as they involve colocation with existing bridges and have a footprint that was assessed as having only a small if any effect on natural character.

Option 4 at the Kerswill Place location was assessed as having a 'minor adverse' effect due to the site context and the placement of a whole new bridge structure. The substantive increased footprint of Options 6, 7, 8 and 12 over the other options resulted in a 'minor adverse' score due to effects on natural character from this larger footprint.

Options 6, 7, 11 and 12 were assessed as 'neutral' against the landscapes and natural features criterion. These options would avoid the area of ONF (Panmure Basin) and co-locate the additional bridge structure beside the existing bridge, which reduces impacts on the wider landscape. Options 3, 5 and 8 were assessed as 'minor adverse'.

This is because although the additional bridges in these options are co-located next to the existing Panmure Bridge, the design includes a bridge crossing and footprint to the south of the existing Panmure Bridge. This requires works for the abutment and retaining structures which would cause potential adverse effects on the Panmure Basin ONF (although design refinement may be able to address this impact).

Option 4 was assessed as having 'minor adverse' landscape effects as it introduces a new bridge crossing into the wider landscape.

6.4.4.4 Public Health

When assessed against the public health criteria of noise / vibration and air quality, the scorings were mixed. For noise and vibration all options were assessed as having 'minor adverse' effects as all noise-generating activities would be collocated within the same corridor as existing infrastructure that has a higher ambient noise (being along Pakuranga Road, Lagoon Drive and Church Crescent).

For air quality the kerbside bus lane options (Options 3, 4, 5, 8 and 11) were assessed as 'minor adverse'. This is because the northern kerbside bus lane would be closer to the residential properties.

Options 6, 7 and 12 (with the north side bus lane facility) would require removal of the same properties.

As a result, Options 6, 7 and 12 were assessed as 'minor positive' for air quality because the removal of these properties creates a buffer distance to remaining residential properties.

6.4.4.5 Culture and Heritage

As outlined in Section 3.3.2 of this report, Mauinaina and Mokoia Pā are of high cultural and spiritual significance to mana whenua. For Ngāti Pāoa, Mokoia Pā remains an important turangawaewae, but also represents a time of major change and grief. Ngāti Pāoa, identify Mauinaina and Mokoia as "our sacred sites, our tāonga, and our treasures".

AT have been having monthly hui with Ngāti Pāoa and the other identified mana whenua since late 2011 with regard to the AMETI project. These hui informed the cultural and heritage criteria as identified by AT's Maori Policy and Engagement Team.

The cultural and heritage criteria were identified and consistent with those of the PAUP and are as follows:

- Effects on Sites and Places of value/ significance;
- Effects on Waterways;
- Effects on Cultural Landscapes; and
- Customary Rights.

The measures identified by AT's Maori Policy and Engagement Team are:

- Mauri;
- Waahi Tapu;
- Historical;
- Customary needs;
- Customary resources; and
- Contemporary esteem.

As outlined in Section 1.4, there is the possibility to use SEART to provide the required bus access to Panmure Rail Station and therefore avoid Mokoia Pā. However, it was considered at the initial stages of the process that this potential route would not generate the public transport benefits envisaged by the Project Objectives.

Mokoia Pā has been extensively modified as a result of the urban development in the area. These modifications have not, however, extinguished the intrinsic values that mana whenua associates with the Pā and its environs.

Under the culture and heritage criteria, the assessment showed little differentiation between the options in terms of effects on cultural values. There are no known Customary Rights in the area so the scoring was 'neutral' for this criterion for all options.

For effects on waterways, all options would increase the area of trafficked impervious surface, which resulted in 'significant adverse' scores due to the erection of additional structures within the waahi tapu waterways and given the increase in the stormwater runoff generated by additional paved surfaces. Although it was noted that mitigation could reduce the 'assessment', this did not distinguish the options.

For sites of value, most options were assessed as having 'significant adverse' effects due to their direct impacts on the Mokoia Pā.

Options 4 and 11 were assessed as 'minor adverse' given the smaller scale of the pedestrian/cycle bridges for these options and their location at the edge of the Mokoia Pā. For those options with a direct footprint, the opportunity does exist for 'cultural restoration' of land currently modified by residential development. Cultural restoration in this case includes appropriate landscaping, interpretive signage and urban design treatments.

For the cultural landscape criterion, the additional crossing of the Tamaki River created by Option 4 was assessed as a 'significant adverse' effect because it includes the provision of additional structures within the landscape.

Options 7 and 8 were also assessed as having 'significant adverse' effects on the cultural landscape due to the footprint widths of these options compared to the remainder of the options (which scored 'minor adverse').

All other options were assessed as 'minor adverse', as while they include an additional bridge, the footprint widths would be less and therefore would result in less cultural landscape effects.

For archaeology, Options 3 and 4 were assessed as 'neutral'. This is because these two options avoid further effects on the Mokoia Pā site to the north of the existing bridge.

All other options were assessed as 'significant adverse', because of the direct effect on the Mokoia Pā archaeological site. For built heritage, all options except Option 4 were 'neutral' given there are no recorded or known built heritage items identified or recovered within proximity of the options.

Option 4 was assessed as 'minor adverse' because it has the potential to affect the WWII scheduled feature at the end of Queens Road.

7 Analysis of MCA Evaluation Results

7.1 Option differences

7.1.1 Bus lane and busway options

As discussed in section 5, the remaining options were able to be grouped for further individual analysis of each option, into the following groups:

Kerbside bus lane options:

- Option 3 – Kerbside bus lanes with separate pedestrian/cycle bridge on southern side of Panmure Bridge;
- Option 4 – Kerbside bus lanes with separate pedestrian/cycle bridge between Queens Road and Kerswill Place;
- Option 5 – Kerbside bus lanes with separate pedestrian/cycle bridge on both sides of Panmure Bridge;
- Option 8 – Kerbside bus lanes with Panmure Bridge widening to accommodate 3 traffic lanes, 2 shoulder bus lanes and a shared pedestrian/cycle lane; and
- Option 11 – Kerbside bus lanes with separate pedestrian bridge on northern side of Panmure Bridge.

Dedicated busway options:

- Option 6 – Dedicated north side busway, with Panmure Bridge widening to accommodate 3 lanes, a contra-flow bus lane (one lane total) and shared pedestrian/cycle lane;
- Option 7 – Dedicated north side busway with new separate busway bridge (including shared pedestrian/cycle facilities) on the northern side of the existing Panmure Bridge; and
- Option 12 - Dedicated north side busway with Panmure Bridge replaced to accommodate four lanes of general traffic, with the north side bus facility merging at each end and buses given priority. A shared pedestrian/cycle lane would also be provided.

The inclusion of kerbside bus lanes in some options versus a dedicated busway facility in other options is a clear differentiator overall and particularly in the comparative assessment against the Project Objectives.

To assist in quantifying these differences, AT undertook an investigation[28] to compare the benefits and dis-benefits between kerbside bus lanes and a dedicated busway specifically for the AMETI Stage 2A scheme between Panmure and Botany.

The investigation considered bus lanes against a busway in nine different categories – travel time; trip reliability, patronage, bus volumes, property, land use, safety, costs and high occupancy vehicles / freight in the bus infrastructure. A key identified difference is that bus lanes retain the ability for side roads and driveways to cross the bus lanes. This causes 'side friction' and delays.

The investigation identified that trip reliability, both actual and perceived, is the key factor in people's decision to use public transport and concluded that a bus lane option would reduce trip reliability. This

[28] AMETI Bus Corridor Optimisation (Project Business Case, Scope and Timing), Version 5 – Final, May 2014.

would impact negatively on operational costs and patronage. This negative impact would increase over time due to more delay to buses caused by traffic and greater bus numbers.

The investigation also identified that customer perception of the quality of the service/ facility is linked to patronage. While this is difficult to quantitatively measure, based on experience and international examples, there is a "patronage premium" derived from provision of a busway as opposed to bus lanes because a busway is perceived to provide a higher quality service than bus lanes.

7.1.2 Tamaki River Crossing Arrangement

The other key differences between these remaining options relate to the lane configurations crossing the Tamaki River (at Panmure Bridge) and how these connect back into the Pakuranga Road/ Lagoon Drive alignments as follows:

- Kerbside bus lane Options 3, 4 and 5 would provide an additional pedestrian/ cycle bridge crossings of approximately 3m width in different locations, but no new general traffic or bus bridge lanes;
- Kerbside bus lane Option 8 would maintain three general traffic lanes (tidal flow), plus provide two kerb side bus lanes and a north side pedestrian/ cycling lane);
- Kerbside bus lane Option 11 would maintain three general traffic lanes (tidal flow) on the existing bridge plus provide a new north side two-lane busway and a north side pedestrian/ cycling lane;
- Dedicated busway Option 6 would maintain three general traffic lanes (tidal flow) on the existing bridge, plus a north side one lane busway and a north side pedestrian/ cycling lane;
- Dedicated busway Option 7 would maintain three general traffic lanes (tidal flow) on the existing bridge plus a north side two-lane busway and a north side pedestrian/ cycling lane; and
- Dedicated busway Option 12 would provide four general traffic lanes (two in each direction) with bus priority (no tidal flow) and a north side pedestrian/ cycling lane.

This split was undertaken recognising key similarities of options within the two individual sets and key overall differences between the two sets of options. Specifically, the similarities relate to the PT infrastructure provided by the options and also their footprints, with the dedicated busway options generally having a greater footprint.

The differences relate to the bridge configurations and footprints for the Tamaki River crossing.

With the exception of Option 8 this translates to the dedicated bus lane options having a wider cross sectional footprint. This has a direct correlation to an increase in archaeological and cultural effects.

The two sets of options are comparatively evaluated below in relation to the various MCA criteria.

7.2 Kerbside Bus Lane Options – Options 3, 4, 5, 8 and 11

These options all share similar characteristics in that they propose kerbside bus lanes along Pakuranga Road and Lagoon Drive. Their main differences relate to their design configurations for the Tamaki River crossing.

With the exception of Option 8, all other options have an equivalent overall width of four lanes (the existing three lane tidal flow bridge plus pedestrian/ cycling bridge).

Option 8 has an overall equivalent width of six lanes as it includes kerbside bus lanes over the crossing. Plans of each option are included as Appendix 3 to this report.

This section provides an overview and analysis of each of the five kerbside bus lane options identified above, in terms of the assessment criteria. It has been structured according to the similarities between the options, as discussed above, and accordingly, the options have been addressed under three option sub-headings.

Overall, the section will provide an explanation as to why the kerbside bus lane options have not been identified as the preferred option.

7.2.1 Options 3 and 5

Option 3 - Kerbside bus lanes with separate pedestrian/cycle bridge on southern side of Panmure Bridge; and Option 5 - Kerbside bus lanes with separate pedestrian/cycle bridge on both sides of Panmure Bridge

Option 3 would provide a 3m wide pedestrian cycle bridge to the south of the existing Panmure Bridge.

Option 5 would provide a 3m wide pedestrian cycle bridge to both the south and north of the existing Panmure Bridge.

Options 3 and 5 would require physical works and an operational footprint southward of the existing kerb-line at the north abutment of the Panmure Bridge. This causes potential adverse effects on the Outstanding Natural Feature and Pohutukawa trees. Since this effect may be able to be 'designed out', these options were not discounted earlier in the assessment process[29].

Options 3 and 5 have been assessed as 'minor adverse' under the policy compliance criterion due to potential adverse effects on the ONF. They also scored adversely against the landscapes/ natural features and scheduled tree criteria.

Mana whenua engagement undertaken in parallel to the MCA process also indicated a strong preference against any southward movement due to potential effects on the trees and cultural values associated with the location, which reinforced this assessment.

For the Project Objectives, Options 3 and 5 were assessed as 'minor positive', as while the options would provide kerbside bus lanes for most of the Project length, these would stop at the bridge so no additional bus capacity would be provided at the Tamaki River, except for pedestrians and cyclists.

The other options would increase lane capacity for buses across the Tamaki River, and improve the level of service and safety through provision of a dedicated bus facility.

Consequentially these options scored better against the Project Objectives than Options 3 and 5.

In terms of future-proofing for replacement of the existing bridge, these options would not safely enable any traffic to cross the Tamaki River at this location during the bridge replacement works period. This was assessed as causing 'significant adverse' traffic effects on the transport network that would be very difficult to mitigate.

Even if the bridge widths were increased to approximately 3.3m and constructed so that general traffic could cross, Option 3 would provide only one lane and would still cause significant congestion.

[29] Option 9 could not have effects south of the existing kerb-line designed out and was discounted.

Option 5 would provide two lanes which would reduce traffic effects, but would still be a 'significant adverse' effect considering that peak traffic currently requires two lanes. The two bridges would also need to be placed so that the replacement bridge lanes could be designed to meet modern safety width standards, which are currently narrow because the bridge was originally designed as a two lane bridge.

For these reasons Options 3 and 5 were not preferred.

7.2.2 Option 8

Option 8 - Kerbside bus lanes with Panmure Bridge widening to accommodate three traffic lanes, two shoulder bus lanes and a shared pedestrian/cycle lane

Option 8 would provide two additional kerbside bus lanes in addition to the existing three lanes of tidal flow. The lane widths for the tidal flow lanes would be wider (than the existing bridge provides) in order to meet modern, safe carriageway widths.

To achieve this outcome the existing bridge could be retained and the bus lane bridges constructed on either side. Space would need to be provided to enable the existing bridge to be eventually reconstructed with safer wider lane widths.

The bridge configuration under Option 8 would likely result in physical works and an operational footprint that would extend southward of the existing kerb-line (at the north abutment of the Panmure Bridge).

Similarly to Options 3 and 5, this causes potential adverse effects on the ONF and Pohutukawa trees. This effect may be able to be 'designed out' and consequentially these options were not discounted earlier in the assessment process.

Option 8 was assessed as 'minor adverse' under the policy compliance criterion due to potential effects on the ONF. It was also assessed adversely against the landscapes/ natural features and scheduled tree criteria. Mana whenua engagement through the MCA process also indicated a strong preference against any southward movement due to potential effects on the trees, which reinforced this assessment.

Although Option 8 would increase lane capacity through the provision of kerbside bus lanes across the Tamaki River, it was not assessed as positively against the Project Objectives as Options 6, 7, and 12 because these options would provide an improved level of service and safety with a dedicated bus facility.

In regard to the future-proofing criterion, Option 8 could effectively provide three lanes of river crossing during the replacement works (assuming the pedestrian cycling bridge can be used by general traffic temporarily).

This would replicate the existing three lane tidal arrangement and consequentially would provide sufficient traffic capacity across the Tamaki River during replacement works that would avoid adverse effects.

For these reasons Option 8 was not preferred.

7.2.3 Options 4 and 11

Option 4 - Kerbside bus lanes with separate pedestrian/cycle bridge between Queens Road and Kerswill Place and Option 11 - Kerbside bus lanes with separate pedestrian bridge on northern side of Panmure Bridge

Option 4 proposes a 3m wide pedestrian cycle bridge crossing at Kerswill Place connecting to Queens Road. Option 11 proposes a 3m wide pedestrian cycle bridge crossing adjacent to the north side of the existing Panmure Bridge.

Due to the location of these options on the northern side of the existing Panmure Bridge, they would not affect the ONF of the Panmure Basin and, therefore, scored better than Options 3, 5 and 8 in relation to the policy compliance and scheduled tree criteria.

The options were assessed as 'minor positive' against the Project Objectives. While the options would provide kerbside bus lanes for most of the Project length, these would stop at the bridge.

Consequentially, additional capacity would not be provided at the Tamaki River crossing, except for pedestrians and cyclists.

Other options would increase lane capacity for buses across the Tamaki River and would improve the level of service and safety by providing a dedicated bus facility, with the result that they scored better against the Project Objectives than Options 4 and 11.

In terms of future-proofing for replacement of the existing bridge, the two options would not safely enable traffic to cross the Tamaki River at this location during the bridge replacement works period. This is expected to cause 'significant adverse' traffic effects on the transport network that would be very difficult to mitigate.

Even if the bridge width was increased to approximately 3.3m and constructed so that general traffic could cross, Option 3 would provide only one lane and would still cause significant congestion.

In addition, under Option 4, traffic would need to traverse through Queens Road and Kerswill Place, which would require re-design and reconstruction to cater for the likely volumes of traffic.

For these reasons, Options 4 and 11 were not preferred.

7.3 Dedicated Busway Options Analysis – Options 6, 7 and 12

Option 6 - Dedicated north side busway, the existing Panmure Bridge to accommodate 3 lanes, a new bridge to the north of the existing, contra-flow bus lane and shared pedestrian/cycle lane;

Option 7 - Dedicated north side busway with separate busway bridge (including shared pedestrian/cycle facilities) on northern side of Panmure Bridge, and

Option 12 - Dedicated north side busway with separate RTN bridge as per Option 7, but with 4 lanes of general traffic and bus merges at each bridge end rather than a dedicated busway bridge.

These options all share similar characteristics in that they propose a north side dedicated bus facility. They differ in their design configuration at the Tamaki River crossing. Options 6 and 12 have an overall equivalent width of five lanes and Option 7 has an overall equivalent width of six lanes (the specific bridge configurations under each option is discussed below).

These remaining three options have been assessed separately from the earlier options because of the above similarity and the distinguishing design arrangement of the dedicated busway, as follows:

- Options 6 and 12 would provide an additional trafficable lane and a pedestrian cycle lane in addition to the existing three lane tidal flow bridge.
- Option 6 would retain the existing tidal flow three lane bridge for general traffic and would add a tidal 'one way' bus only bridge and a pedestrian cycling bridge.

- Option 12 would provide four general traffic lanes shared by buses with priority at each end plus a pedestrian cycle bridge.
- Option 7 would retains the existing tidal flow three lane bridge for general traffic and add a 'two way' bus only bridge and a pedestrian cycling bridge.

Options 6 and 12 were assessed as 'significant positive' in terms of the Project Objectives, with the exception of Project Objectives S3 and S4. These were assessed as 'minor positive' due to the restricted ability of buses to cross the Tamaki River under these options (i.e. by having only a single lane or sharing general traffic lanes) and the reduced reliability of this arrangement.

Option 7 was assessed as 'significant positive' in terms of all the Project Objectives because it would provide the best level of service, least journey disruptions, and sufficient capacity for and separation of all modes of traffic; and therefore would integrate with the surrounding land use, contribute to place shaping and leverage investment in the Panmure Rail Station, AMETI Stage 1 and wider rail improvement projects.

Generally, the three options all have the same scorings for the social and environmental criteria with two exceptions - cultural landscapes and future-proofing.

Under the cultural landscapes criterion, Option 7 was assessed as 'significant adverse', whereas Options 6 and 12 were 'minor adverse'. This difference was because the wider overall bridge footprint for Option 7 (essentially three rather than two lanes) was determined to be the tipping point for a minor to significant effect on the wider cultural landscape.

This significant effect is not considered a fundamental flaw in the option. It would, however, require focused design attention and engagement with mana whenua to provide a solution that could appropriately mitigate these effects.

Assessment against the future-proofing criterion[30] was based on the assumptions that the part of the bridge proposed for pedestrian and cycling facilities could be constructed so that general vehicles could use it during replacement of the existing bridge, and a temporary bridge could be provided for pedestrians and cyclists.

Assuming this, Options 6 and 12 would provide two trafficable lanes during replacement of the existing bridge and Option 7 would provide three trafficable lanes during replacement of the existing bridge.

Options 6 and 12 would provide an improvement over previously dismissed options in this respect. The expected peak time congestion and adverse temporary traffic effects of these options providing at least one lane in each direction compared to the existing situation where no lanes would be provided meant these options were assessed as having 'minor positive' effects.

Option 7 provides the ability to replicate the existing three lane tidal arrangement and, consequently, this option could provide sufficient traffic capacity across the Tamaki River during replacement works that would potentially minimise these significant adverse effects. For this reason Option 7 was assessed as major positive.

For these reasons, Option 7 was preferred and has been selected as the preferred option. Further justification for its selection is provided in section 7.5 below.

[30] This criterion assesses options against their ability to maintain network functionality and minimise the transport network effects during replacement of the existing bridge.

Selection of the Preferred Option

Option 7 (Dedicated north side busway with separate busway bridge, including shared pedestrian/cycle facilities to the north of the existing Panmure Bridge) has been selected as the preferred option from the 12 shortlisted options covered in this report. The logic behind the analysis process and this selection is summarised below.

7.4 Summary of the Options Analysis Process

Under section 171 of the RMA a requiring authority must demonstrate, subject to Part 2 of the RMA, that the preferred option for a designation is reasonably necessary for achieving the Project Objectives. AT also has its own strategic drivers, functions and statutory obligations that govern its decision-making, as explained in section 3 of this report.

The process for analysing and evaluating the options considered in this report, and the selection of the preferred option were designed in recognition of these requirements and obligations. In particular, these determined the criteria used in the MCA and subsequent analysis.

As discussed in section 4, the criteria and categories for the MCA were developed to directly reflect Part 2 matters under the RMA. This is an important approach to assist the preferred option selection process resulting in a selected option that is appropriate in an RMA context.

Achievement of the Project Objectives was given more emphasis in the analysis than some of the other criteria, as it is an essential test under the RMA and the objectives reflect the key strategic drivers of AT.

In addition, an adverse scoring against the policy compliance criterion was considered a fundamental flaw in the evaluation, because this criterion reflects the high level policy direction at a national level of relevance to the Project, and therefore AT's strategic objectives.

For the above reasons, the initial step in the evaluation and selection of the preferred option was a screening against the Project Objectives and the policy compliance criterion. The result of this initial screening was dismissal of Options 1, 2, 9 and 10, which performed relatively poorly against these key criteria.

The remaining options (Options 3, 4, 5, 6, 7, 8, 11 and 12) were then evaluated to comparatively assess their performance against the MCA criteria, and to determine what the key differentiators were between the options.

It was determined that the form of public transport provided by the option was a key differentiator. That is, the options were logically split between those that provided kerbside bus lanes (Options 3, 4, 5, 8 and 11) and those that provided a dedicated busway facility (Options 6, 7 and 12).

The other key differences between these remaining options relate to the lane configurations crossing the Tamaki River (at Panmure Bridge) and how these connect back into the Pakuranga Road/ Lagoon Drive alignments. The next step in the evaluation, therefore, was a comparative analysis of each set of options. The outcome of this evaluation was the conclusion that the kerbside bus lane options were not preferred.

The reasons for this largely related to the relatively poorer performance of these options (relative to the dedicated busway options) in relation to the Project Objectives, policy compliance and future-proofing criteria.

When the remaining options (Options 6, 7 and 12) were comparatively assessed, the outcome was the dismissal of Options 6 and 12 and selection of Options 7 as the preferred option. The key differentiator between these options was the relatively higher scoring of Option 7 against the Project Objectives and future-proofing criteria. This is explained further below.

7.5 Reasons for Selection of Option 7 as Preferred

Key reasons for selection of Option 7 as the preferred option are summarised as follows.

Option 7 performed better against the Project Objectives than all other options due to the provision of a dedicated busway facility. This provides the best level of service and reliability, the least journey disruptions, and sufficient capacity for and separation of all modes of traffic.

It also best integrates with the surrounding land uses, contributes to place shaping and leverages investment in other transport infrastructure projects in the vicinity, especially the recently completed Panmure Rail Station upgrade and associated transport works.

The AT investigation[31] into the comparison between bus lanes and a busway support these benefits and the relevant findings of the investigation included:

- The Pakuranga Road and Lagoon Drive section of the corridor would have the highest volume of buses and would deliver the greatest benefits early in the wider AMETI scheme context.
- A busway provides a higher level of service than bus lanes. This improved level of service is mostly driven by bus reliability. Reliability is the key quantifiable measure influencing people's mode choice.
- Reliable travel times, which are key to achieving efficient transfer to train at Panmure, are much easier to achieve with a dedicated busway on this corridor, particularly given the adjacent residential and commercial land use.
- Experience with the Northern Busway, along with international research, indicate that a busway will drive significant patronage increases over a bus lane scheme, even if the travel times delivered by the two infrastructure types are similar.
- Based on consultation undertaken through the Project, as well as international examples, implementation of a busway on the corridor would drive better patronage through improved service, both actual and perceived. As an infrastructural solution the busway would also be a catalyst for improved land use outcomes, particularly in the centres such as Pakuranga and Botany.
- As a result, in the medium term (2026) bus facilities along the full AMETI corridor (Panmure-Botany) are predicted to drive up to a 58% increase in patronage compared to the do minimum (noting the greatest increase in patronage occurs at the eastern (Botany) end of the corridor).
- Comparing 2026 predicted bus travel times on a busway against current bus travel times between Botany and Panmure sees an improvement of between 22% and 28% (5.6 – 7

[31] AMETI Bus Corridor Optimisation (Project Business Case, Scope and Timing), Version 5 – Final, May 2014

minutes) in the peak period. Similar but slightly reduced time savings would be achieved by bus lanes.

- When adding in the trip to Britomart via improved transfer to train times at Panmure, the time saving increases to 18 minutes, a 45% time saving from the existing situation.

Option 7 was assessed as 'neutral' for policy compliance, as it is not contrary to the high level policy direction relevant to the Project. There were no positive ratings under this criterion, so a neutral rating was considered a comparatively high rating. Importantly it enables the conclusion that the option does not appear to contain any element that is unlikely to be contrary to the RMA policy framework.

Option 7 also performed best against the future-proofing criterion, as it would provide three trafficable lanes during replacement of the existing bridge, which would minimise adverse traffic disruption effects.

This was a key differentiator between Option 7 and Options 6 and 12, as Option 7 would provide three trafficable lanes during replacement of the existing bridge, and Options 7 and 12 would provide only two.

Option 7 did not perform as well against the temporary and permanent criteria compared to the kerbside bus lane options.

Where criteria for Option 7 were scored as having 'minor adverse' effects, it is assumed that this level of effect can be avoided (through design) or appropriately mitigated through the RMA designation and consenting process and this would satisfy RMA Part 2, section 5(2) and 5(3) matters (which relate to safeguarding the natural environment and avoiding, remedying and mitigating adverse effects respectively).

Those criteria for which Option 7 was assessed as having 'significant adverse' effects were:

- Land take;
- Construction traffic;
- Construction impacts on residential and business;
- Archaeology;
- Community cohesion;
- Site and places of significance / value to mana whenua;
- Effects on waterways from a cultural perspective; and
- Cultural landscape effects.

As noted previously, these scorings do not necessarily mean that the effects cannot be designed or mitigated out and that the proposed works for these options would have significant effects in the environment. Instead, some of these scorings reflect that the assessment was completed based on conceptual route alignment plans, rather than detailed concept plans that would be developed to support a Notice of Requirement application under the RMA.

It is also important to note that any design solution to meet the Project Objectives will cause a level of adverse effects. Furthermore, all options, both bus lane and busway, were assessed as having 'significant adverse' effects for the following criteria:

- Construction traffic;
- Construction impacts on residential and business;
- Community cohesion; and
- Effects on waterways from a cultural perspective.

Therefore, any option selected would need to address these potentially significant adverse effects and these criteria were not differentiators for the option selection process.

On large infrastructure projects, construction impacts, while often significant, are usually temporary and able to be managed appropriately via conditions, management plans and particular construction approaches.

Community cohesion effects are acknowledged and relate to land take effects which are discussed below. These are possibly able to be mitigated via the positive transport benefits the Project would deliver to this local community and the redevelopment potential of residual land on Pakuranga Road.

While stormwater discharges are generally required to achieve regional standards, there would be a residual cultural effect form the discharge. Mitigation of the cultural effect is discussed below.

The construction, community and cultural effects would need to be addressed during further design and assessment of the Project.

For the land take criterion, the dedicated busway options (Option 6, 7 and 12) were all assessed as causing 'significant adverse' effects, whereas the kerbside options (Options 3, 4, 5, 8 and 11) were assessed as 'minor adverse'. This difference predominantly relates to land take effects along the northern side of Pakuranga Road. The kerbside options could be designed to require only partial take of property frontages without impacting the dwellings, while the dedicated bus way options would require full property take and removal of dwellings, which is considered a significant adverse effect. This difference in level of effect is because a dedicated bus way has a wider footprint than the kerbside bus lane options.

Although such land take is recognised as a 'significant adverse' effect, it was not considered a fundamental flaw in the options evaluation, as it is considered reasonably necessary for a design that achieves the Project Objectives, and mitigation can reasonably be demonstrated. On this point of mitigation, there is an opportunity for residual land to be re-developed (post-construction) into a form that is more reflective of the indicated zoning in the proposed Auckland Unitary Plan (PAUP). This approach may assist in mitigating the significant adverse effect of this property take. Under the RMA, the issue of mitigation will be investigated further as part of the AEE and design development process. The owners would also be compensated under the Public Works Act 1981.

The 'significant adverse' effect assessed for the archaeology, site and places of significance / value to Mana Whenua, and cultural landscape effects criteria relate directly to the design footprint of the additional bridge across the Tamaki River in the location of Mokoia Pa. To meet the Project Objectives and to future-proof for replacement of the existing bridge in this location an additional bridge is required in this location.

At the time of writing, through discussions with Mana Whenua it is understood that a north side bridge is preferable to a location to the south, which would significantly adversely affect cultural values associated with the Pohutukawa trees. It is also understood that Mana Whenua would prefer to deal with the issue of the existing bridge replacement and avoid returning to this issue in 20 or so years' time.

The preferred option provides an additional bridge north of the existing bridge. This approach also avoids conflict with the Outstanding Natural Feature of the Panmure Basin.

Notwithstanding this, the additional bridge would have adverse effects on cultural and archaeological values in this location that will require focused design attention and engagement with Mana Whenua to produce a solution that can appropriately avoid, remedy and/or mitigate these effects. Under the RMA, these effects must be appropriately avoided, remedies and/or mitigated as part of the AEE and design development process for the preferred option.

It is important to note that addressing these effects will be fundamental to the assessment of any future applications / notices of requirement under the RMA to satisfy sections 6(e) and 7(a) of Part II. These sections relate to recognising and providing for Maori relationships with ancestral lands and sites and the undertaking of Kaitiaki functions respectively. If appropriate avoidance, remediation or mitigation solutions to address cultural effects are not feasible or achievable, then it will be difficult for the Project to demonstrate how section 6(e) has been recognised and provided for, and how particular regard to section 7(a) has occurred. Part of the solution may arise from the opportunity for 'cultural restoration' of land currently modified by residential development.

7.6 Conclusion

Overall, this FOA has concluded that Option 7 best meets the Project Objectives, while also avoiding adverse effects in relation to the 'fundamental flaw' criteria of policy compliance and providing the best future-proofing benefits. Furthermore, the option is anticipated to result in other effects that are either the same or similar to the other options that meet the Project Objectives, or that can likely be appropriately avoided, remedied or mitigated through refined design and mitigation.

The ability to appropriately avoid, remedy or mitigate the effects of the option will need to be further assessed and confirmed for the preferred option as the Project proceeds into the AEE and design development phase.

For the above reasons, Option 7 has been selected as the preferred option.

Appendix 1 – Historic Documents Reviewed

DOCUMENT TITLE	AUTHOR	DATE	E or H Copy	SUB REPORTS/APPENDICES ATTACHED	AUTHOR	DATE	ELECTRONIC OR HARD COPY
Eastern Corridor Strategy Study - May-Aug 2002	EASTDOOR Study Team	1 May 2002	Hard Copy	Issues Paper	EASTDOR Study Team	1 May 2002	Hard Copy
				Scenarios/Options	EASTDOR Study Team	1 June 2002	Hard Copy
				Transport and Economic Analysis Volume 1	EASTDOR Study Team	1 August 2002	Hard Copy
				Transport and Economic Analysis - Addendum and Errata	EASTDOR Study Team	1 September 2002	Hard Copy
				Transport and Economic Analysis - Volume 2 (Appendices)	EASTDOR Study Team	1 August 2002	Hard Copy
				Preliminary Natural and Built Environment Assessment	EASTDOR Study Team	28 August 2002	Hard Copy
				Preliminary Social and Cultural Assessment	EASTDOR Study Team	1 August 2002	Hard Copy
				Stakeholder Workshops	EASTDOR Study Team	1 September 2002	Hard Copy
Eastern Corridor Strategy Study - May-Aug 2002	EASTDOOR Study Team	30 August 2002	Hard Copy	Summary Report	EASTDOR Study Team	30 August 2002	Hard Copy
				Final Report	EASTDOR Study Team	30 August 2002	Hard Copy
Preliminary Cultural Assessment - ETC	Ngai Tai/Ngati Paoa	1 October 2003	Electronic Copy	N/A	N/A	N/A	N/A
Eastern Transport Corridor (Volume 1)	OPUS	2003-2004	Hard Copy	Preliminary Statement of Maori Interest - ETC Phase 2	OPUS	16 April 2003	Hard Copy
				Review of Draft Strategy Study	OPUS	1 September 2003	Hard Copy
				Consultation Strategy	OPUS	9 June 2003	Hard Copy
				ETC Cycle and Pedestrian Working Paper	OPUS	1 July 2003	Hard Copy
				Stage 1 Consultation Report	OPUS	9 July 2003	Hard Copy
				Assessment of Environmental Effects	OPUS	25 July 2003	Hard Copy
				Enhancements, issues and constraints report	OPUS	29 August 2003	Hard Copy
Eastern Transport Corridor (Volume 2)	OPUS	2003-2004	Hard Copy	Preliminary Options Report	OPUS	18 November 2003	Hard Copy
				Addendum to Consultation Strategy	OPUS	2 December 2003	Hard Copy
				Iwi Consultation Working Paper - Stage 2 Oct-Dec 03	OPUS	1 January 2004	Hard Copy and Electronic Copy
				Recommended Option Technical Report	OPUS	1 March 2004	Hard Copy
				Recommended Option Report	OPUS	9 March 2004	Hard Copy
Eastern Transport Corridor (Volume 3)	OPUS	2004	Hard Copy	Supplementary Paper on the Relationship of Bus and Rail	OPUS	1 April 2004	Hard Copy
				Supplementary Paper coparing the Hobson Bay and Parnell Tunnel Options	OPUS	1 April 2004	Hard Copy
				ETC Project Questions and Answers	OPUS	26 April 2004	Hard Copy
				Preliminary Staging Report	OPUS	1 May 2004	Hard Copy
				Port Truck Survey Report	OPUS	1 June 2004	Hard Copy
				Base Scheme for Auckland City Preliminary Scheme Report	OPUS	1 July 2004	Hard Copy
				Interim Modified Scheme Report - An Initial Proposal	OPUS	1 August 2004	Hard Copy
				Modified Scheme Supplementary Report - Traffic Issues CBD - Southern Motorway	OPUS	1 September 2004	Hard Copy
				Preliminary Geotechnical Appraisal Report	OPUS	5 August 2003	Hard Copy
				Consultation Stage II Report	OPUS	27 February 2014	Hard Copy
				ETC Transport Corridor Modified Scheme - Questions and Answers	OPUS	26 April 2004	Hard Copy
ETC - Recommended Preferred Option Report	OPUS	27 February 2004	Hard Copy	N/A	N/A	N/A	N/A
Investigating for Growth: Economic and Strategic Importance of the Eastern Transport Corridor	Berl	Mar-04	Hard Copy	N/A	N/A	N/A	N/A
AMETI Consolidation Report	OPUS	1 January 2006	Hard Copy	N/A	N/A	N/A	N/A
Travel Patterns, Passenger Transport and Travel Demand Management Presentation	Various	1 May 2006	Hard Copy	N/A	N/A	N/A	N/A
DRAFT AMETI Passenger Plan	BECA	30 June 2006	Hard Copy	N/A	N/A	N/A	N/A
AMETI Travel Demand Management Sector Plan	OPUS	1 July 2006	Hard Copy	N/A	N/A	N/A	N/A
AMETI Design Criteria for Passenger Transport Provisions to 2016	BECA	28 August 2006	Hard Copy	N/A	N/A	N/A	N/A
AMETI Travel Demand Management Sector Plan	OPUS	7 September 2006	Hard Copy	N/A	N/A	N/A	N/A
Consultation Stock Take Report	OPUS	1 November 2006	Hard Copy	N/A	N/A	N/A	N/A
AMETI Issues and Constraints (Volume 1)	OPUS	22 December 2006	Hard Copy	N/A	N/A	N/A	N/A
AMETI Issues and Constraints (Volume 2)	OPUS	22 December 2006	Hard Copy	N/A	N/A	N/A	N/A
AMETI Recommended Options Report	OPUS	12 January 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI Recommended Options Summary Report	OPUS	28 March 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI Scheme Drawings	OPUS	12 April 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI Recommended Options Report	OPUS	18 May 2007	Electronic	N/A	N/A	N/A	N/A
AMETI Community Engagement (Volume 1)	OPUS	1 June 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI Community Engagement (Volume 2)	OPUS	1 June 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI Community Engagement (Volume 3)	OPUS	1 June 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI Community Engagement (Volume 4)	OPUS	1 June 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI Community Engagement (Volume 5)	OPUS	1 June 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI Draft Estimating Report - Technical Paper	OPUS	11 June 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI Draft Staging Report - Technical Paper	OPUS	12 June 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI Final Community Engagement Report	OPUS	3 July 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI IWI Engagement Report	OPUS	24 July 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI IWI Engagement Report	OPUS	15 August 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI Environmental Review Report	OPUS	15 August 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI - Southern Sector - Road Safety AUDIT	Traffic Planning Consultants	31 August 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI - Central Sector - Road Safety AUDIT	Traffic Planning Consultants	30 August 2007	Hard Copy	N/A	N/A	N/A	N/A
AMETI Draft Economic Evaluation Report - Technical Paper	OPUS	15 October 2007	Electronic	N/A	N/A	N/A	N/A
AMETI Funding Application October 2007	ASCARI PARTNERS LTD	23 October 2007	Hard Copy	N/A	N/A	N/A	N/A

DOCUMENT TITLE	AUTHOR	DATE	ELECTRONIC OR HARD COPY	SUB REPORTS/APPENDICES ATTACHED	AUTHOR	DATE	ELECTRONIC OR HARD COPY
AMETI Project Umbrella Document (APUD)	OPUS	5 March 2008	Hard Copy	N/A	N/A	N/A	N/A
AMETI Project Overview Document (APOD)	OPUS	1 April 2008	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Reports Client Deliverables (Volume 1)	OPUS	7 May 2008	Hard Copy	ETC Traffic Model Development and Validation Report	BECA	16 September 2002	Hard Copy
				Consolidation Report	OPUS	1 January 2006	Hard Copy
				Review of MOT Auckland Road Pricing Document	OPUS	14 June 2006	Hard Copy
				Review of St Kentigern College Proposal for Pakuranaga Town Centre	OPUS	9 June 2006	Hard Copy
				AMETI Travel Demand Management (TDM) Sector Plan	OPUS	7 September 2006	Hard Copy
				AMETI Transport Initiative Passenger Transport Infrastructure Provisions to 2016	BECA	20 October 2006	Hard Copy
				AMETI Transport Initiative Passenger Infrastructure Provisions Beyond 2016	BECA	20 October 2006	Hard Copy
				AMETI Passenger Transport Provisions Executive Summary	BECA	25 October 2006	Hard Copy
				AMETI Round the Mountain Route Assessment	OPUS	1 October 2006	Hard Copy
				Consultation Stock Take Report	OPUS	1 November 2006	Hard Copy
				AMETI Issues and Contraints Report	OPUS	22 December 2006	Hard Copy
				Travel Demand Management Technical Paper	OPUS	23 January 2006	Hard Copy
				Contaminant Issues and Required Stage 2 Testing Identified	Tonkin and Taylor/OPUS	20 March 2007	Hard Copy
AMETI Reports Client Deliverables (Volume 2)	OPUS	7 May 2008	Hard Copy	AMETI Recommended Options Summary Report	OPUS	28 March 2007	Hard Copy
				Community Engagement Overview	OPUS	16 March 2007	Hard Copy
				Introducing AMETI	Various	-	Hard Copy
				A Deliberative Feedback Mechanism (DFM) for the AMETI Project	Colmar Brunton	-	Hard Copy
				Travel Patterns Report	OPUS	1 April 2007	Hard Copy
				Memo - Development of AMETI EMME/2 Model from ETC Model	BECA	29 May 2007	Hard Copy
				AMETI - MWH/Waipuna Road Intersection Tunnel - Technical Paper	OPUS	28 May 2007	Hard Copy
				AMETI Recommended Options Report	OPUS	18 May 2007	Hard Copy
				Integration of AMETI and the Quarry Link Project	OPUS	22 May 2007	Hard Copy
				AMETI Technical Notes: Urban Charette Options Evaluation	OPUS	6 June 2007	Hard Copy
				AMETI Projcet Status Summary Report	OPUS	5 July 2007	Hard Copy
				AMETI Concept Design Drawings - Central and Southern Sectors	Various	1 July 2007	Hard Copy
				AMETI Community Engagement Report	OPUS	3 July 2007	Hard Copy
				AMETI Iwi Engagement Report	OPUS	1 July 2007	Hard Copy
AMETI Reports Client Deliverables (Volume 3)	OPUS	7 May 2008	Hard Copy	AMETI Environmental Review Report	OPUS	1 July 2007	Hard Copy
				Confidential Meeting Minutes - Manukau City Council re: AMETI Project	MCC	12 July 2007	Hard Copy
				Meeting Minutes - Auckland City Council re: AMETI Project	ACC	26 July 2007	Hard Copy
				Meeting Minutes - AMETI	MCC	-	Hard Copy
				Investing for Growth - Economic Importance of AMETI	BERL	1 July 2007	Hard Copy
				AMETI Saturn Traffic Model Validation Report	OPUS	1 October 2007	Hard Copy
				AMETI Wider Network Traffic Modelling	BECA	31 August 2007	Hard Copy
				AMETI Central Sector - Road Safety Audit of the Concept Design	TPC	30 August 2007	Hard Copy
				AMETI Northern Sector - Road Safety Audit of the Preliminary Design	TPC	28 August 2007	Hard Copy
				AMETI Southern Sector - Road Safety Audit of the Concept Design	TPC	31 August 2007	Hard Copy
				AMETI Preliminary Design Drawings	Various	17 December 2012	Hard Copy
				AMETI Draft Traffic Modelling Report	OPUS	19 Ocotber 2007	Hard Copy
				AMETI Route Protection Strategy 2007	OPUS	18 September 2012	Hard Copy
AMETI Reports Client Deliverables (Volume 4)	OPUS	7 May 2008	Hard Copy	AMETI Draft Esitmating Report Technical Paper	OPUS	19 October 2007	Hard Copy
				AMETI Draft Economic Evaluation Report Technical Paper	OPUS	15 October 2007	Hard Copy
				AMETI Peer Review of Transport Economics Draft Final Report	John Bolland Consulting Limited	1 October 2007	Hard Copy
				AMETI Funding Application	Ascari Partners	23 October 2007	Hard Copy
				Advisory Report - Property Estimates - Land Acquistions	Telfer Young	26 October 2007	Hard Copy
				AMETI Model Peer Review- Base Model Review	Peter Dunn	2 November 2007	Hard Copy
				AMETI: Addendum to the Environmental Review Report	OPUS	23 November 2007	Hard Copy
				AMETI: Addendum to Community Engagement Report	OPUS	16 November 2007	Hard Copy
				AMETI Strategy: Evaluation and Investigation Funding	Land Transport NZ	-	Hard Copy
				AMETI Technical Report: Ti Rakau Drive Options	OPUS	5 February 208	Hard Copy
				AMETI Technical Report: Cryers Link Road Options	OPUS	5 February 208	Hard Copy
				AMETI Project Overview Document	OPUS	1 April 2008	Hard Copy
				AMETI Optimisation Workshop - Auckland City Council	AMETI Team	2 April 2008	Hard Copy
Public Transport Staging and Implementation AMETI Corridor	Auckland Regional Transport Authority	3 November 2008	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Peer Review Response and Way Forward	OPUS	23 February 2009	Hard Copy	N/A	N/A	N/A	N/A
Agglomeration Benefits of the Panmure Phase of AMETI	John Williamson	24 June 2009	Electronic Copy	N/A	N/A	N/A	N/A
Panmure Phase of AMETI - NZTA Strategic Fit Assessment	Ascari Partners Limited	16 June 2009	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Panmure Phase - Scheme Assessment Report	OPUS	3 July 2009	Electronic Copy	N/A	N/A	N/A	N/A
Review of Panmure Components of AMETI	Flow Transportation Specialists	6 July 2009	Electronic Copy	N/A	N/A	N/A	N/A
AMETI: Panmure Pedestrian and Cycle Bridge - Scheme Assessment Report	OPUS	20 July 2009	Electronic Copy	N/A	N/A	N/A	N/A
Auckland Transport Plan 2009	Various	2009	Electronic Copy	N/A	N/A	N/A	N/A
Manukau City Council - Panmure Bridge Widening Concept Report	OPUS	8 October 2009	Hard Copy	N/A	N/A	N/A	N/A
Pakuranga Bridge Structural Report for 220kV Cable Crossing	BECA	8 December 2009	Hard Copy	N/A	N/A	N/A	N/A
AMETI Package 1 - Panmure Bridge Options Assessment Report June 2010	OPUS/BECA	29 June 2010	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 - Panmure Land Use and Transport Plan	OPUS	26 July 2010	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 - Land Use Integration in Urban Design	OPUS	29 July 2010	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 - Panmure Draft Design Philosophy Statement	OPUS	19 August 2010	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 Phase 2 - Lagoon Drive RTN Busway	OPUS	29 October 2010	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1: Panmure Procurement Plan Physical Works	OPUS	6 December 2010	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 Panmure Survey Report	BECA	21 April 2011	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Project Overview for NZTA - May 2011	Auckland Transport	May-11	Electronic Copy	NA	N/A	N/A	N/A
AMETI Package 1 Panmure Corridor Design - Services Relocation Ellerslie Panmure Highway	OPUS	2-Jun-11	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 Panmure Busway Accommodation Works Investigation and Options Report	OPUS	22 June 2011	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 - Phase 2 Barrier Options	OPUS	9 September 2011	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Phase 2 - Lagoon Drive Property Purchase Memo	OPUS	28 September 2011	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Power Point Presentation - Panmure	OPUS	30 September 2011	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 - Panmure Phase 2 Preliminary Design Philosophy Statement	OPUS	Sep-11	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 Preliminary Design Philosophy Statement Phase 2: Panmure Bridge	OPUS	19 October 2011	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 Specimen Design Report Phase 2: Panmure Bridge	OPUS	21 December 2011	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 - Panmure Phase 2 Panmure RTN Bridge	OPUS/BECA	21 December 2011	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Phase 2 Design Minutes - Panmure	Various	2011	Electronic	N/A	N/A	N/A	N/A

DOCUMENT TITLE	AUTHOR	DATE	ELECTRONIC OR HARD COPY	SUB REPORTS/APPENDICES ATTACHED	AUTHOR	DATE	ELECTRONIC OR HARD COPY
AMETI Package 1 - Engagement Report January 2012	OPUS	Jan-12	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Specialist Briefing - Phase 2 Document	OPUS	17 April 2012	Electronic Copy	N/A	N/A	N/A	N/A
Ngati Te Ata - Maori Values Assessment AMETI Project Te Waiohua	Ngati Te Ata	14 May 2012	Hard and Electronic Copies	N/A	N/A	N/A	N/A
Ngati Whatua O O'Rakei - Preliminary Maori Values Assessment	Ngati Whatua O Orakei	27 May 2012	Hard and Electronic Copies	N/A	N/A	N/A	N/A
AMETI Package 4 - Bus Lane Design Philosophy Statement	GHD/Aurecon	1 June 2012	Electronic Copy	N/A	N/A	N/A	N/A
Landscape, Open Space and Visual Effects Assessment - Lagoon Drive to Panmure Bridge	OPUS	12 June 2012	Hard and Electronic Copies	N/A	N/A	N/A	N/A
AMETI Package 1 - Phase 2 Final Design Report July 2012 (Draft)	OPUS	19 July 2012	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 - Phase 2 Integrated Transport Assessment	OPUS	Jul-12	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Phase 2 and Panmure Bridge - Urban Design Assessment of Environmental Effects	OPUS	Jul-12	Electronic Copy	N/A	N/A	N/A	N/A
AMETI - Stage 2 Assessment of Noise and Vibration Effects	Marshall Day Acoustics	31 July 2012	Electronic Copy	N/A	N/A	N/A	N/A
AEE of AMETI Phase 2 on the Panmure Basin Volcanic Feature	Dr Jan Lindsay for OPUS	2 August 2012	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 Phase 2 Air Quality Assessment	BECA	3 August 2012	Electronic Copy	N/A	N/A	N/A	N/A
AMETI RTN Optimisation Workshop 1 Minutes	GHD	6 August 2012	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Phase 2: Lagoon Drive to Panmure Bridge Urban Design Effects Assessment	OPUS	Aug-12	Electronic Copy	N/A	N/A	N/A	N/A
Ngai Tai ki Tamaki Values Assessment - Ameti Project Phase One	Ngai Tai Ki Tamaki	1 September 2012	Hard and Electronic Copies	N/A	N/A	N/A	N/A
AMETI RTN Optimisation Workshop 2 Minutes	GHD	19 September 2012	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 4 Scheme Assessment - Acoustics	Aurecon	27 September 2012	Electronic Copy	N/A	N/A	N/A	N/A
AMETI RTN Optimisation Workshop 3 Minutes	GHD	23 October 2012	Electronic Copy	N/A	N/A	N/A	N/A
Arboricultural Assessment of Tree Removal for AMETI	Amenity Tree Consultants Limited	31 October 2012	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Base Bus Priority Study - Package 1 Area Final Report	OPUS	30 November 2012	Electronic Copy	Presentation - AMETI 'Base' PT Option Presentation - The AMETI South Eastern Busway AMETI RTN Optimisation - Base Option Workshop 2 Minutes AMETI RTN Optimisation - Base Option Workshop 3 Minutes Economic Evaluation Worksheets (Including Benefit Cost Analysis)	N/A N/A N/A N/A N/A	N/A N/A N/A N/A N/A	N/A N/A N/A N/A N/A
AMETI Stage 4 - Ecological Assessment - SAR	GHD	Nov-12	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 4 Scheme Assessment - Landscape and Visual Assessment	GHD	14 December 2012	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 4 - Draft Stormwater Quantity and Quality Assessment SAR	GHD	Dec-12	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 4 - Statutory Assessment and AEE (Draft)	GHD	Dec-12	Electronic Copy	N/A	N/A	N/A	N/A
AMETI 4 - Social Impact Assessment	GHD	Dec-12	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 4 - Scheme Assessment Consultation Phase 1 and 2 Report	GHD	Dec-12	Electronic Copy	N/A	N/A	N/A	N/A
Te Akitai Maori Values Assessment for AMETI Project	Te Akitai Waiohua	2012	Hard and Electronic Copies	N/A	N/A	N/A	N/A
AMETI Package 4 - Preliminary Drawings	GHD/Aurecon	1 February 2013	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 4: Option Development	GHD/Aurecon	Feb-13	Electronic Copy	N/A	N/A	N/A	N/A
Panmure Bridge Options Assessment - Draft Report	OPUS	25 March 2013	Hard and Electronic Copies	Desktop Review - Summary of Archaeological Investigations	N/A	N/A	N/A
AMETI Package 5 Model Update (2013) - Transport Demand Forecasting Report (DRAFT)	BECA	11 April 2013	Electronic Copy	Combined PT Service Frequencies Traffic Volume Forecasts Transfer and Patronage Forecasts at Panmure Station RTN Patronage Forecasts Future Year Network Statistics	N/A	N/A	N/A
AMETI Package 4: Economic Evaluation 2013	BECA	25 July 2013	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 Phase 2 - Social Impact Assessment Scoping Report	OPUS	Aug-13	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Package 1 Phase 2 - Environmental Site Investigation Report	OPUS	2 September 2013	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Bus Lane Option Evaluation Draft Final Report	GHD/Aurecon	Oct-13	Electronic Copy	N/A	N/A	N/A	N/A
AMETI Bus Lane Option Development Report	GHD/Aurecon	Oct-13	Electronic Copy	Mid Block Options Option Evaluation Intersection Options			
Ngati Paoa Trust Maori Values Assessment -AMETI	Ngati Paoa Iwi Trust	1 December 2013	Hard Copy	N/A	N/A	N/A	N/A
Panmure Bridge Options Assessment (DRAFT)	Opus	1 December 2013	Hard Copy	N/A	N/A	N/A	N/A
AMETI Phase 2 - Audit Report and GAP Analysis	BECA/OPUS	1 March 2014	Electronic Copy	AMETI Phase 2 - Audit Report and Gap Analysis - Air Quality AMETI Phase 2 - Arborist's Audit Report AMETI Panmure to Pakuranage: Gap Analysis - Archaeology AMETI Phase 2 - Audit Report and Gap Analysis - Coastal AMETI Phase 2 - Audit Report - Consultation AMETI Phase 2 NOR - Draft Land Contamination GAP Assessment AMETI Phase 2 NOR - Earthworks Gap Analysis AMETI Phase 2 NOR - Ecology Audit Report and Gap Analysis AMETI Phase 2 NOR - DRAFT Geology GAP Assessment AMETI Phase 2 NOR - Landscape and Visual Audit AMETI Phase 2 NOR - Technical Acoustical Information - Audit Report AMETI Phase 2 Audit Report - Social Impacts AMETI Phase 2 NOR - Stormwater Gap Analysis AMETI Notice of Requirement Audit Report - Transport AMETI Phase 2 NOR - Urban Design Audit Report AMETI Phase 2 NOR - Utility Services Audit Report	BECA Peers Brown Miller Limited OPUS BECA OPUS OPUS OPUS OPUS OPUS BECA Marshall Day Acoustics OPUS OPUS OPUS BECA BECA	29 January 2014 29 January 2014 22 January 2014 31 January 2014 24 January 2014 1 February 2014 11 February 2014 28 January 2014 1 February 2014 11 February 2014 31 January 2014 24 January 2014 11 February 2014 22 January 2014 10 February 2014 11 February 2014	Electronic Electronic Electronic Electronic Electronic Electronic Electronic Electronic Electronic Electronic Electronic Electronic Electronic Electronic Electronic Electronic
Cultural Values Assessment in relation to the Proposed AMETI Project (DRAFT)	Atkins Holm Majurey Limited	1 July 2014	Hard and Electronic Copies	N/A	N/A	N/A	N/A

Appendix 2– Screening Spreadsheets

ALIGNMENT OPTIONS CONSIDERED

		AMETI STAGE 2A OBJECTIVES						
		Contribute to place shaping in Panmure and Pakuranga town centres by providing better connections and accessibility between and within these centres for all transport users, including public transport users, pedestrians and cyclists.	Provide transport infrastructure that integrates with land uses and supports a quality, compact urban form in Panmure and Pakuranga.	Provide transport infrastructure that improves linkages, relieves network constraints and improves journey time, frequency and reliability of the transport network overall.	Improve the efficiency and resilience of the transport network between Panmure and Pakuranga by providing a dedicated route for public transport to and from the eastern suburbs.	Maximise the benefits of investment in transport infrastructure by extending network connections and delivering network improvements.	Provide a multi modal transport corridor that connects Panmure and Pakuranga to increase access to a choice of transport options.	Create a corridor that is safe for all road users, including public transport passengers, cyclists and pedestrians.
2003	**A401**: Panmure to Tamaki River (Waipuna)							
	A402: Panmure to Tamaki River (SEART)							
	A403: Panmure to Tamaki River (Lagoon Drive)							
	H1: Mt Wellington to Botany Downs (Ti Rakau Drive)							
	H9: Mt Wellington to Botany Downs (Riverlea Avenue)							
	H10: Tamaki to Botany Downs (Farm Cove)							
	H11: Mt Wellington to Botany Downs (Edgewater)							
	H12: Mt Wellington to Botany Downs (Cryers)							
	H13: Mt Wellington to Te Irirangi Drive (Panama)							
	H14: Mt Wellington to Te Irirangi Drive (Waiouru)							
2004	Duplication of the Pakuranga Bridge on the downstream side (northern side) and provision of a walking and cycling bridge across Tamaki River adjacent to the existing Panmure Bridge (southern side).							
2006-2007	**C-PAK-1:** Duplicated Pakuranga Bridge, grade separation at Waipuna Road intersection, new at grade link from Pakuranga Motorway to a relocated intersection of Ti Rakau Dr and Pakuranga Road.							
	C-PAK-2: Duplicated Pakuranga Bridge, grade separation at Waipuna Road intersection, construction of viaduct above Reeves Road.							
	C-PAK-3: As per C-PAK-1, but with grade separated intersection of Ti Rakau Dr and Pakuranga Roads.							
	C-PAK-4: New bridge connecting from Waipuna Road interchange to Pakuranga Road near Millen Road.							
	C-PAK-5: As per C-PAK-2, but with parking building beneath reeves Road structure.							
2009	**Option 1.** Clip on pedestrian/cycleway bridge stucture							
	Option 2. Separate pedestrian/cycleway bridge structure							
	Option 3. New bridge between Queens Road and Kerswill Place							
	Option 4. Provision of pedestrian/cycle facilities on both sides of the existing Panmure Bridge							
	Option 5. Provision of a bridge on the southern side of the existing bridge.							
2010	**Option 1 -** Widen the existing bridge to accommodate shared pedestrian/cycle facilities on both sides of the bridge							
	Option 2 - New and separate bridge structures to accommodate shared pedestrian/cycle facilities on both sides of the bridge.							
	Option 3 - A new separate bridge structure to accommodate a pedestrian and two-way cycle facility on the south side of the bridge only with the existing footpath being retained on the northern side.							
2011	**Option A -** Widen the existing bridge to accommodate a central two lane RTN busway and 3.3m wide pedestrian/cycle facilities on both sides of the bridge.							
	Option B1 - a new separate two lane RTN busway bridge with a 3.3m wide pedestrian/cycle facility on the north side of the existing bridge and a new separate pedestrian/cycle bridge on the south side of the existing bridge.							
	Option B2 - a new separate two lane RTN busway bridge with a 4.3m two way pedestrian/cycle facility on the north side of the existing bridge and no footpath provision on the south side of the existing bridge.							
	Option C - a new separate two lane RTN busway bridge with a 3.3m wide pedestrian/cycle facility on the north side of the existing bridge. Existing bridge lanes are reduced to allow for a 3.3m wide pedestrian/cycle facility on the southern side.							
2012	**Do Minimum** - QTN with existing bridge but provides no bus priority over the Panmure Bridge.							
	Option 1 - Current proposed RTN (Option B2 above).							
	Option 2- QTN with new Panmure Bridge for vehicles (assumes that a 5 lane Panmure Bridge option will be in operation with 24 hour kerbside bus lanes, etc).							
2013	New RTN bridge to the south of the existing Panmure Bridge. [**NB**- Not supported by Ngati Paoa]							
2014	New RTN bridge located immediately adjoining and to the north of the existing Lagoon Drive roadway and Panmure Bridge							
	RTN bridge between Queens Road and Kerswill Place							

KEY	RETAINED FOR FURTHER ASSESSMENT	DISREGARDED FROM FURTHER ASSESSMENT

No changes to existing Panmure Bridge

AMETI STAGE 2A OBJECTIVES

ALIGNMENT OPTIONS CONSIDERED		Contribute to place shaping in Panmure and Pakuranga town centres by providing better connections and accessibility between and within these centres for all transport users, including public transport users, pedestrians and cyclists.	Provide transport infrastructure that integrates with land uses and supports a quality, compact urban form in Panmure and Pakuranga.	Provide transport infrastructure that improves linkages, relieves network constraints and improves journey time, frequency and reliability of the transport network overall.	Improve the efficiency and resilience of the transport network between Panmure and Pakuranga by providing a dedicated route for public transport to and from the eastern suburbs.	Maximise the benefits of investment in transport infrastructure by extending network connections and delivering network improvements.	Provide a multi modal transport corridor that connects Panmure and Pakuranga to increase access to a choice of transport options.	Create a corridor that is safe for all road users, including public transport passengers, cyclists and pedestrians.
2006-2007	**C-PAK-1:** Duplicated Pakuranga Bridge, grade separation at Waipuna Road intersection, new at grade link from Pakuranga Motorway to a relocated intersection of Ti Rakau Dr and Pakuranga Road.							
	C-PAK-2: Duplicated Pakuranga Bridge, grade separation at Waipuna Road intersection, construction of viaduct above Reeves Road.							
	C-PAK-3: As per C-PAK-1, but with grade separated intersection of Ti Rakau Dr and Pakuranga Roads.							
	C-PAK-4: New bridge connecting from Waipuna Road interchange to Pakuranga Road near Millen Road.							
2009	**Option 3**. New bridge between Queens Road and Kerswill Place							
	Option 4. Provision of pedestrian/cycle facilities on both sides of the existing Panmure Bridge							
	Option 5. Provision of a bridge on the southern side of the existing bridge.							
2011	**Option 2A** - 3 Lanes with contra-flow bus lane							
	Option 2B -RTN busway bridge with pedestrian/cycle facilities on northern side							
	Option 3 - 3 lanes (contra-flow) with shoulder bus lanes							
	Option 4 - 3 lanes (contra-flow) with north side busway							
2013	New RTN bridge to the south of the existing Panmure Bridge.							
2014	RTN bridge between Queens Road and Kerswill Place							

KEY	RETAINED FOR FURTHER ASSESSMENT	MODIFIED OPTIONS	DISREGARDED FROM FURTHER ASSESSMENT	No changes to existing Panmure Bridge

Appendix 3 – Option Plans

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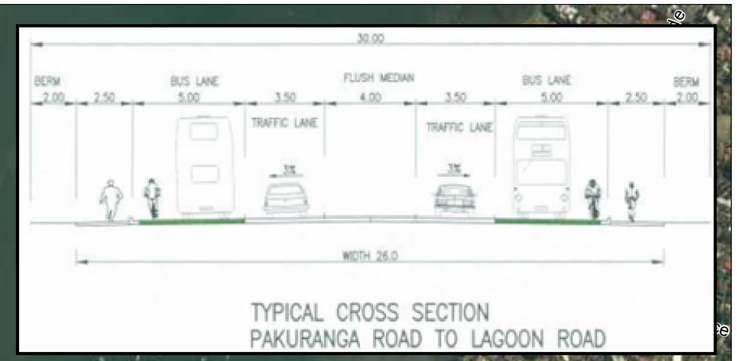

TYPICAL CROSS SECTION
PAKURANGA ROAD TO LAGOON ROAD

Option 1

- Existing general traffic lane changed to kerbside bus lane
- New general traffic lane and pedestrian/ cycleway
- Existing bridge
- New bridge
- Panmure roundabout changed to signalised intersection

Map Scale @ A3: 1:10,000

0 125 250 500

Metres

N

Revision	Author	Verified	Approved	Date
3	HC7	DRAFT	BTM	28/01/2015
2	HC7	DRAFT	DRAFT	28/01/2015
1	HC7	BAP	DRAFT	9/12/2014

Title: **Panmure - Pakuranga Options**
Option 1

Client: **Auckland Transport**

Project: **AMETI**

Beca

Discipline: **GIS**

Drawing No: **GIS-4215052-Option_1**

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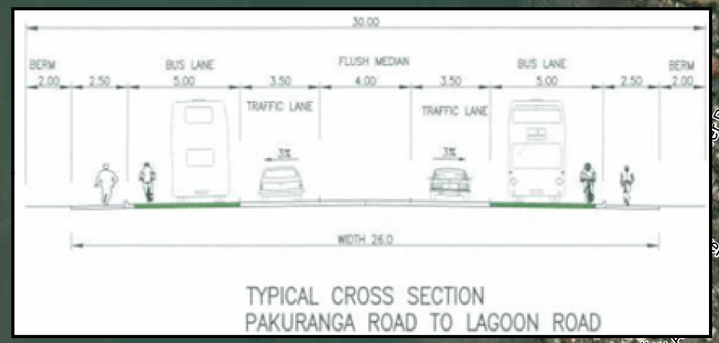
GIS@beca.com



TYPICAL CROSS SECTION
PAKURANGA ROAD TO LAGOON ROAD

ONE WAY

ONE WAY

Option 2

- Kerbside bus lane
- New general traffic lane and pedestrian/ cycleway
- Existing bridge
- New bridge
- Panmure roundabout changed to signalised intersection

Map Scale @ A3: 1:10,000

0 125 250 500

Metres

N

Revision	Author	Verified	Approved	Date
3	HC7	BAP	BAM	28/01/2015
2	HC7	DRAFT	DRAFT	28/01/2015
1	HC7	BAP	DRAFT	9/12/2014

Title:

Panmure - Pakuranga Options

Option 2

Client: Auckland Transport

Project: AMETI

Discipline: GIS

Drawing No: GIS-4215052-Option_2

GIS@beca.com
Date: 28/01/2015
Author:
File: P:\421\4215052\TGIS\5_Workspaces\01_mxd\141209_Refined_Options\GIS-4215052-Option_2.mxd

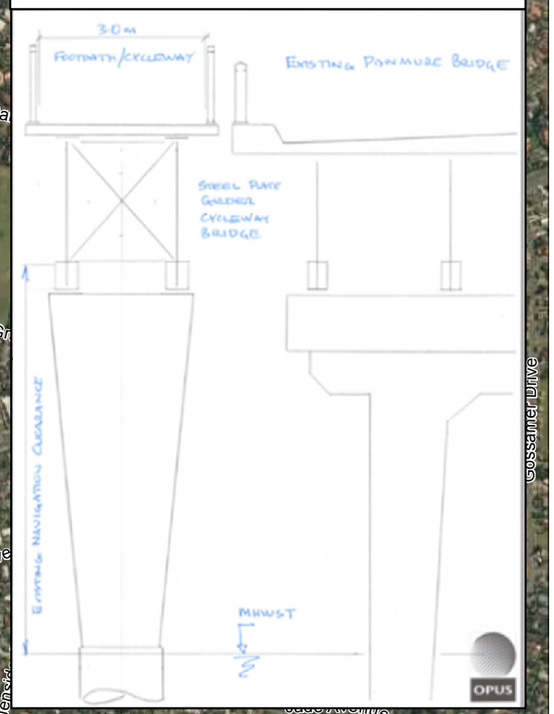
Option 3 - Pedestrian / Cycleway Bridge to south of existing bridge
Option 4 - Pedestrian / Cycleway Bridge crossing from Kerswill Place to Queens Road
Option 5 - Pedestrian / Cycleway Bridges to south and north of existing bridge
Option 8 - Widening of Panmure Bridge
Option 11 - Pedestrian / Cycleway Bridge to north of existing bridge

DRAFT

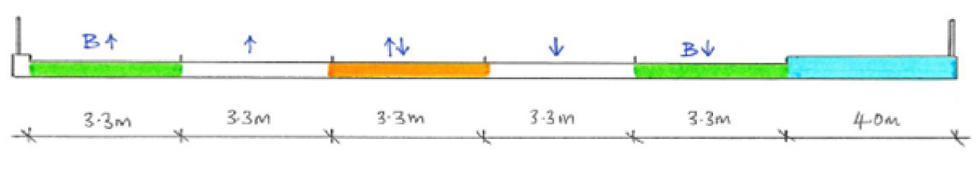
Option 4

Options 3, 5, 8 and 11

Option 3, 4, 5 and 11 Bridge



Option 8 Bridge



Legend

- Lagoon Drive: Kerbside bus lane
- Pakuranga Road: Additional kerbside bus lane
- 3m wide pedestrian/ cycleway bridge
- Panmure roundabout changed to signalised intersection

Map Scale @ A3: 1:10,000
0 125 250 500
Metres

N

Revision	Author	Verified	Approved	Date
3	HC7	BAP	BTM	28/01/2015
2	HC7	DRAFT	DRAFT	28/01/2015
1	HC7	BAP	DRAFT	10/12/2014

DRAFT

Title: **Panmure - Pakuranga Options**
Options 3, 4, 5, 8 and 11

Client: **Auckland Transport**

Project: **AMETI**

Beca

Discipline: **GIS**

Drawing No: **GIS-4215052-Option_3_4_5_8_11**

GIS@beca.com
Date: 28/01/2015
Author:
File: P:\421\4215052\GIS\5_Workspaces\01_mxd\141209_Refined_Options\GIS-4215052-Option_3_4_5_8_11.mxd

Bridge Configurations

*Option 6 - 3 Lane tidal flow general traffic
- 1 Bus lane
- 1 Pedestrian / cycle lane

*Option 7 - 3 Lane tidal flow general traffic
- 2 Bus lanes
- 1 Pedestrian / cycle lane

*Option 12 - 4 General traffic lanes with bus priority
- 1 Pedestrian / cycle lane

Legend

- North side: 2 lane busway
- Lagoon Drive: 2 lanes reallocated
- Pakuranga Road: Additional 2 lanes

Pedestrian/ cycleway (shared path)

Bridge crossing*

Panmure roundabout changed to signalised intersection

Option 6 and 7

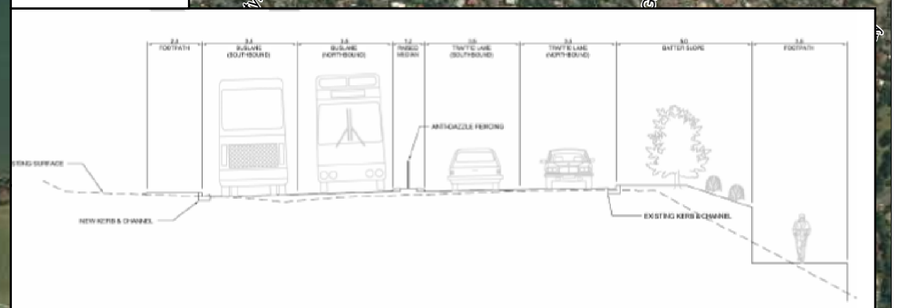
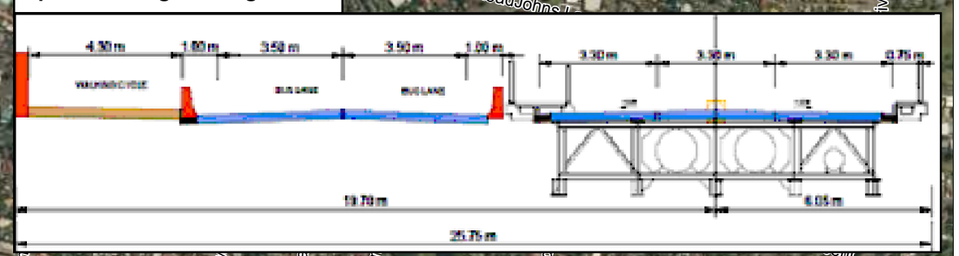
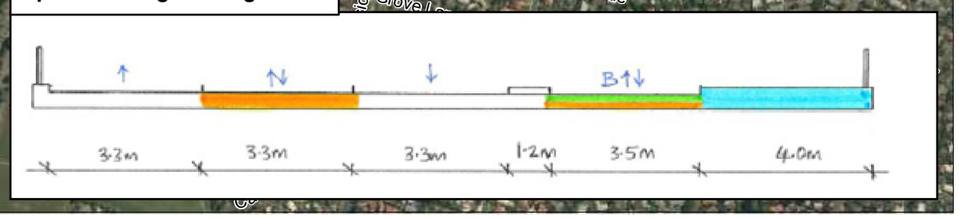


Figure 3-2: RTN Busway Typical section - Lagoon Drive

Option 7 Bridge Configuration



Option 6 Bridge Configuration



Map Scale @ A3: 1:10,000

0 125 250 500

Metres

N

Revision	Author	Verified	Approved	Date
2	HC7	BAP	BTM	28/01/2015
2	HC7	DRAFT	DRAFT	28/01/2015
1	HC7	BAP	DRAFT	10/12/2014

DRAFT

Title: **Panmure - Pakuranga Options**
Options 6, 7 and 12

Client: **Auckland Transport**

Project: **AMETI**

Beca

Discipline: **GIS**

Drawing No: **GIS-4215052-Option_6_7_12**

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GIS@beca.com

Date: 28/01/2015 Author:

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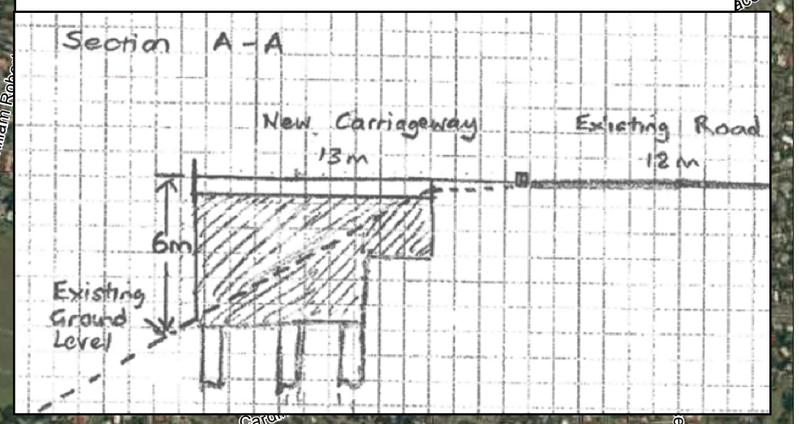
Option 9

- North side: 2 lane busway
- Lagoon Drive: 2 lanes reallocated
- Pakuranga Road: Additional 2 lanes
- General traffic lane realignment to south
- Pedestrian/ cycleway (shared path)
- Existing bridge
- New bridge to south of existing
- Panmure roundabout changed to signalised intersection

Typical section through Lagoon Drive at Northern Bridge Abutment



Map Scale @ A3: 1:10,000

0 125 250 500

Metres

N

Revision	Author	Verified	Approved	Date
3	HC7	BAP	BTM	28/01/2015
2	HC7	DRAFT	DRAFT	28/01/2015
1	HC7	BAP	DRAFT	10/12/2014

Title: **Panmure - Pakuranga Options**
Option 9

Client: **Auckland Transport**

Project: **AMETI**

Beca

Discipline: **GIS**

Drawing No: **GIS-4215052-Option_9**

GIS@beca.com

File: P:\421\4215052\TGIS\5_Workspaces\01_mxd\141209_Refined_Options\GIS-4215052-Option_10.mxd Author: Date: 28/01/2015

Option 10

- 2 lane northside busway
- Shared carriageway for bus, cyclists, pedestrians and local traffic
- Dedicated shared path
- Panmure roundabout changed to signalised intersection
- 2 bus lanes, 1 cycle/ pedestrian bridge

Map Scale @ A3: 1:10,000

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Metres

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Revision	Author	Verified	Approved	Date
3	HC7	BAP	BTM	28/01/2015
2	HC7	DRAFT	DRAFT	28/01/2015
1	HC7	BAP	DRAFT	10/12/2014

Title:

Panmure - Pakuranga Options

Option 10

Client: Auckland Transport

Project: AMETI

Beca

Discipline: GIS

Drawing No: GIS-4215052-Option_10

Appendix 4 – Completed MCA Spread-sheet and Evaluation

MCA Evaluation

A comprehensive set of criteria was developed and used as the basis for undertaking the MCA. These criteria form each of the below sub-headings and cover Project objectives, consentability factors, temporary and permanent effects. In order to assess the performance of each option against these criteria, a set of measures and information sources was identified for each. The metrics for each criterion is provided in italicised font under each of the criteria sub-headings below and the information sources are provided in the Final MCA, attached at the end of this Appendix.

The performance of each of the options against the criteria was assessed in terms of a five-point scale. The assessment was not comparative; rather each option effect was considered against the existing environment that currently exists in the project area. A positive score indicates an opportunity for improvement to the existing environment and a negative score indicates a worsening of the existing environment. For the Project Objectives the scoring was slightly different. A positive score means that the option contributes to the achievement of the project objective while an adverse score indicates that the option does not. An adverse project objective score was considered a fundamental flaw. The scale is described as follows:

Performance against AMETI Project Stage 2A Objectives

S1- Place Shaping

Contribute to place shaping in Panmure and Pakuranga town centres by providing better connections and accessibility between and within these centres for all transport users, including public transport users, pedestrians and cyclists.

- Options 3, 4, 5, 6, 7, 8, 9, 11 and 12 would all provide improved public transport and pedestrian / cycle facilities for the full length of the route (although not continuous), including across the existing Panmure Bridge. These are desirable connections to the town centres and surrounding land uses and therefore would support place shaping. For this reason, the options scored 'significant positive'.
- Options 1 and 2 scored 'minor positive' as while it would provide for improved pedestrian, cycle and public transport connections between town centres, it would worsen accessibility for general traffic along Pakuranga Road due to the reduction of the carriageway from four to two lanes.
- Option 10 is considered 'neutral', as although it improves town centre connectivity in Panmure by enhancing access to Queens Road and potentially increasing foot traffic, the increase in buses co-locating through Pakuranga town centre is likely to cause adverse outcomes for the town centre and transport users.
- Option 2 scored 'minor adverse' because like Option 1, it would worsen accessibility for general traffic by reducing Pakuranga Road to two lanes (from four) and because it is a less legible connection due to the one-way system and realignment of Pakuranga Road.

S2 – Transport Infrastructure integrating with land use

Provide transport infrastructure that integrates with land uses and supports a quality, compact urban form in Panmure and Pakuranga.

- Options 6, 7, 9 and 12 scored 'significant positive' because they would be co-located within the same corridor as existing infrastructure and, by providing a dedicated busway, would best enable surrounding land use changes to occur.
- Option 1 scored 'minor positive' because it would divert traffic around the town centres from non-essential journeys, particularly in Panmure.
- Options 3, 4, 5, 8 and 11 all scored 'minor positive' as they would be co-located within the same corridor as existing infrastructure and, by providing bus lanes, would enable surrounding land use changes to occur.
- Option 10 scored 'minor adverse' as it would not integrate well with surrounding land uses. In particular, due to effects on adjacent residential areas along Queens Road and Kerswill Place.
- Option 2 requires additional land and would take up areas of residential land around Pakuranga Town Centre that could be intensified. It creates large new areas of road that does not integrate with the surrounding residential land use. For these reasons it scored 'significant adverse' against this objective.

S3 – Transport Infrastructure improving linkages

Provide transport infrastructure that improves linkages, relieves network constraints and improves journey time, frequency and reliability of the transport network overall.

- Options 7 and 9 scored 'significant positive' because they would provide a dedicated busway for the full length between Panmure and Pakuranga that would improve active mode and public transport (PT) linkages and also maintain capacity for general traffic.
- Options 6 and 12 scored 'minor positive' as they would improve PT linkages and provide overall capacity benefits by providing a dedicated busway for the full length between Panmure and Pakuranga and also maintain capacity for general traffic. However neither option provides a dedicated two way busway bridge, causing a constriction at the Panmure Bridge and reducing reliability.
- Options 3, 4, 5, 8 and 11 all scored 'minor positive' because they would provide a kerbside bus lane for the full length between Panmure and Pakuranga that would improve active mode and PT linkages and also maintain capacity for general traffic. The options provide different Tamaki River crossing configurations but this did not raise any of the option scorings to significant positive, nor did it drop any of the scorings to neutral.

- Option 10 is considered 'neutral' as while it would separate buses from general traffic on a partial busway, all modes would share Kerswill Place and Queens Road and the route through the town centre (Panmure) would likely cause variable travel reliability.
- Options 1 and 2 scored 'minor adverse', as while they would improve network capacity for buses and active modes of transport, reducing Pakuranga Road from four to two lanes is highly likely to cause severe congestion and may reduce private transport reliability and result in congestion elsewhere on the network.

S4 – Improve efficiency and resilience of the passenger transport network

Improve the efficiency and resilience of the passenger transport network between Panmure and Pakuranga by providing a dedicated route for PT to and from the eastern suburbs.

- Options 7 and 9 scored 'significant positive' as they would have continuous dedicated busway provisions for the full alignment length between Pakuranga and Panmure.
- Options 1, 2, 3, 4, 5, 8, and 11 are all considered 'minor positive' as they would improve efficiency and resilience through provision of kerbside bus lanes;
- Options 6 and 12 are considered 'minor positive' as they would improve efficiency and resilience through provision of a dedicated busway; however neither option provides a dedicated two way busway bridge, thereby causing a constriction at the Panmure Bridge and reducing efficiency;
- Option 10 is considered 'minor positive' as it would improve efficiency and resilience through provision of a partial dedicated busway and shared facility on the Kerswill Place / Queens Road section of the alignment.

S5 – Maximise benefits of investment in transport infrastructure

Maximise the benefits of investment in transport infrastructure by extending network connections and delivering network improvements.

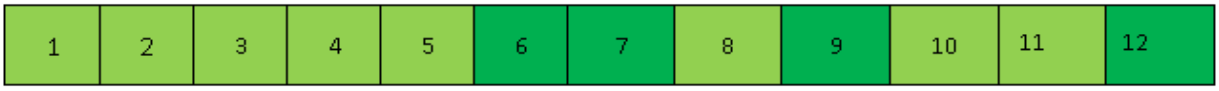
- Options 7 and 9 scored 'significant positive' as the provision of a dedicated busway would provide maximum reliability benefits for journeys to Panmure Rail Station/Interchange for PT. Also the alignment co-locates with the use of existing infrastructure corridor of Lagoon Drive / Pakuranga Road.
- Options 6 and 12 scored 'minor positive' as the provision of a dedicated busway would improve reliability of journeys to Panmure Rail Station/Interchange for PT. It also co-locates with the use of existing infrastructure corridor along Lagoon Drive / Pakuranga Roads, but not to the same extent as Options 7 and 9.
- Options 1, 3, 4, 5, 8 and 11 scored 'minor positive' as the provision of kerbside bus lanes would improve reliability of journeys to Panmure Rail Station/Interchange for PT. They also co-locate

with the use of existing infrastructure corridor along Lagoon Drive / Pakuranga Roads, but not to the same extent as Options 7 and 9.

- Option 10 scored neutral as the variable reliability caused by the alignment passing through the Panmure town centre means the investment value of the Panmure Rail Station/Interchange for PT may not be fully realised. The alignment also uses a transport corridor that is not currently a part of the regional network (local streets).
- Option 2 would duplicate infrastructure corridors by creating whole new roads and realigning existing roads. It would therefore focus future investment away from existing infrastructure and onto new areas. For this reason it is considered 'significant adverse'.

S6 – Provision of a multi modal transport corridor

Provide a multi modal transport corridor that connects Panmure and Pakuranga to increase access to a choice of transport options.



- Options 6, 7, 9and 12 are assessed to be 'significant positive' as they would provide for a multi modal transport corridor that affords adequate separation and connections for all users.
- Options 3, 4, 5, 8 and 11 are considered 'minor positive' as while they would generally provide for all modes, there would be minimal separation afforded across user groups. A segregated cycleway would be provided between Church Crescent and Millen Ave, but not for the full and continuous length of the corridor.
- Option 10 is considered 'minor positive' as while a dedicated pedestrian / cycle facility is provided along Pakuranga Road, all users share the Queens Road carriageway.
- Options 1 and 2 are also considered to be 'minor positive' (albeit marginally), as while they would provide for all modes to a varying extent, there would be limited separation for cyclists when sharing a 5m wide lane with buses.

S7 – Safe corridor for all users

Create a corridor that is safe for all road users, including public transport passengers, cyclists and pedestrians.

- Option 4 is considered to be 'significant positive' as a dedicated route (separate from buses) would be provided for pedestrians/cyclists through the Kerswill Place / Queens Road corridor, which are quiet local roads located within a relatively low traffic generating area.
- Option 6, 7, 9 and 12 are 'significant positive' as they generally provide for a dedicated busway and a segregated shared pedestrian/cycleway for the full length of the corridor. This removes general traffic and bus conflict, particularly from driveways, which would occur under a kerbside option.
- Options 1 and 2 scored 'minor positive' because although cyclists share the kerbside bus lanes, this is still safer than existing. Option 2 could be potentially perceived as less safe, given the one-

way system proposed in residential areas, but nonetheless is still considered to be 'minor positive' overall.

- Options 3, 5, 8 and 11 would improve safety to various degrees, particularly for cyclists and pedestrians with the provision of new facilities. However, it is acknowledged that aside from on the bridge crossing, cyclists would share lanes with buses. For this reason these options scored 'minor positive'.
- Option 10 is considered 'neutral', as while there would be separate facilities for all transport modes on Pakuranga Road, Queens Road users in the Panmure town centre may be less safe due to the lack of dedicated facilities and an overall increase in bus and cycling through traffic.

Consentability

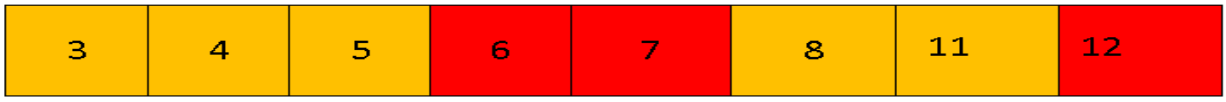
Policy Compliance

Qualitative assessment of the consistency of the proposal with the Resource Management Act (1991) high level policy framework relevant to the Project e.g. New Zealand Coastal Policy Statement, National Policy Statement's, Regional Policy Statement.

- Options 3, 4, 5, 6, 7, 8, 11 and 12 are considered 'neutral' as they are not contrary to the high level policy direction relevant to the Project (this assumes that the design of Options 3 and 5 can avoid effects on the Panmure Basin Outstanding Natural Feature).
- Option 8 is deemed to be 'minor adverse' due to the potential construction effects of the abutment and associated headland stability and retaining works on the Panmure Basin ONF.
- Option 9 scored 'significant adverse' due to the degree of anticipated effects it would have on the outstanding natural feature of the Panmure Basin[32].

Land Take (general)

Qualitative assessment of whether likely / anticipated effects from land take will be significant/more than minor. Reasonableness and requirement for operation and construction.



- Options 3, 4, 5, 8 and 11 are also considered to be 'minor adverse' given land requisition would be required for site frontages along Pakuranga Road. Specifically, partial land take would be required in relation to the front yard of those properties fronting Pakuranga Road; however the majority of dwellings would be able to remain.

[32] Panmure Basin is identified in the Auckland Regional Policy Statement as being of 'national importance'.

- Options 6, 7 and 12 require full property land takes, particularly along Pakuranga road; therefore 'significant adverse' effects on the affected landowners would be expected.
- It is acknowledged that there is a distinction between effects on property owners and broader social effects of property take. It is recognised that these affected property owners would be compensated under the Public Works Act 1981, and that at detailed design stage it is possible that the broader social effects may be able to be reduced.

Future proofing

Ability of the option to maintain network functionality and minimise the transport network effects during a future replacement of the existing bridge (compared to the existing situation).

3	4	5	6	7	8	11	12

- Options 3, 4 and 11 were assessed as 'neutral' because no lanes (or at best only one lane) across the Tamaki River would be provided during replacement works. This was assessed as causing significant adverse traffic effects associated with delays to travel times and congestion elsewhere on the network as traffic would seek an alternate route. However this situation is no worse to the existing situation if Panmure Bridge was to be replaced today.
- Options 5, 6 and 12 were assessed as 'minor positive'. These options were assumed to provide two lanes for traffic during replacement works. This would be an improvement on the above options as traffic could travel in each direction; however compared to the current situation of three tidal flow lanes, the reduction in capacity from three to two lanes is still expected to cause adverse traffic effects on travel time and network congestion.
- Options 7 and 8 were assessed as 'significant positive' as they could be designed so that three lanes are provided during bridge replacement. This lane capacity would be the same as what exists now and it would be possible to provide a lane in each direction for general traffic and a one-way busway bridge, or provide a tidal flow arrangement where general traffic and buses would lane share with two lanes provided in the predominant direction at peak times. Pedestrians and cyclists would need to be accommodated on a temporary structure.

Temporary (Construction) Effects

Built Environment

Construction Traffic Effects

Ability to avoid traffic effects.

3	4	5	6	7	8	11	12

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) scored 'significant adverse' given they would all require corridor widening works from Panmure Roundabout through to Ti Rakau Road. Such work, albeit temporary, would give rise to significant disruption effects on the community and commuters alike.

- As a result of conversion of the Panmure Roundabout to a signalised intersection, all options would cause some disruption to users and the community. However, based on the AMETI Package 1 Phase 2 Integrated Transport Assessment, retaining the Panmure Roundabout would also have an adverse effect in terms of safety and pedestrian connectivity.
- It is noted that managing roading construction works is a core function and role performed by AT.

Construction impacts on utilities and significant infrastructure

Requirements for relocation / design of alternative major infrastructure, including consideration of safety impacts of such requirements and risk of continuity of service over construction.

3	4	5	6	7	8	11	12

- The effects of the remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) are considered to be 'minor adverse' given all use the same corridor and would require some relocation or displacement of utilities.

Social

Construction impacts – disruption to property access

Accessibility effects on businesses, residents and community facilities over construction period.

3	4	5	6	7	8	11	12

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) are considered to be 'significant adverse' given they involve the provision of new infrastructure within residential land take areas. In addition, the provision of a dedicated busway would result in modified access to residential properties, community facilities and commercial premises. Accordingly, these options would give rise to effects on the social wellbeing, structure and accessibility of the community.

Natural Environment

Water Quality

Is there sufficient land available to manage effects on water quality from constructions activities (earthworks, stormwater discharges).

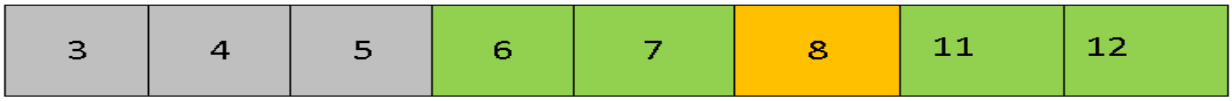
3	4	5	6	7	8	11	12

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) scored 'neutral' as there is anticipated to be sufficient land available to manage the temporary construction effects on water quality in accordance with the requirements of TP90 (technical publication guiding erosion

and sediment management). It is however acknowledged that although Lagoon Drive is located on the coastal edge, minimal works are proposed within this location.

Scheduled/ Protected Trees

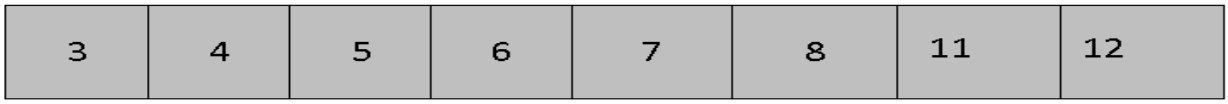
Ability to avoid construction effects on scheduled trees.



- Options 6, 7, 11 and 12 scored 'minor positive' as they would all avoid known scheduled and protected trees.
- Option 4 is considered to be 'neutral' (depending on its ability to avoid effects on the scheduled and protected tree located on Kerswill Place).
- Options 3 and 5 scored 'neutral' (assuming their ability to avoid effects on scheduled trees at the Panmure Basin mouth).
- Options 8 was assessed as 'minor adverse' due to the potential for effects on scheduled trees, as it is unknown whether their removal will be required or will be avoidable.

Navigation and Safety

Extent to which safe navigation is provided for during construction.



- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) are considered to be 'neutral' as it is anticipated that safe navigation could be achieved during construction. However, it is assumed that Option 4 (i.e. that proposes to erect new structures in the CMA) would be designed to manage navigational safety.

Public Health

Construction impact of noise and vibration for sensitive receivers

Ability to avoid noise and vibration effects.

- It is noted that all construction noise and vibration from the options would always be required to comply with the relevant national standards.
- Notwithstanding the above, Options 3, 5, 6, 7, 8, 11 and 12 are considered to give rise to 'minor adverse' effects as they are co-located within the same corridor as existing infrastructure that has a higher ambient noise level.
- Option 4 includes a new alignment through existing residential areas, which would give rise to a more 'significant adverse' effect due to a lower ambient receiving environment.

Air Quality

Extent of effects on air quality on the airshed and on sensitive receivers from airborne contaminants (dust).

3	4	5	6	7	8	11	12

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) are considered to be 'minor adverse' as the construction work would likely result in minor but manageable dust nuisance effects. In addition, no particularly sensitive receivers were identified that would differentiate any of the options.

Contaminated land (human health)

Impact of contaminants from historical land uses (air discharges and groundwater impacts).

3	4	5	6	7	8	11	12

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) are considered to be 'neutral' as existing geotechnical investigations have not determined or identified any known areas of significant contamination associated with historical land uses.

Heritage

Archaeology

Extent of effects on sites and places of archaeological value.

3	4	5	6	7	8	11	12

- Option 3 is considered 'neutral' given proposed physical works around Mokoia Pā are of a small scale (i.e. pedestrian and cycling) and are located to the south in an area that has previously been disturbed.
- Option 4 scored 'minor adverse' given the scale (albeit small) of the pedestrian/cycle bridge and associated physical works located within the wider context of Mokoia Pā.
- Options 5, 6, 7, 8, 11 and 12 would all involve physical works within Mokoia Pā and therefore scored as 'significant adverse'.

Built heritage

Extent of effects on heritage buildings and places.

3	4	5	6	7	8	11	12

- Options 3, 5, 6, 7, 8, 11 and 12 scored 'neutral' given there are no recorded or known built heritage items identified or recovered within proximity of the proposed works.
- Option 4 was considered 'minor adverse' given the likely impact of the proposed works on the 'Panmure Ferry Landing', a scheduled heritage item (jetty) built by the American forces in World War II (WW2) and located in the CMA off Queens Road.

Permanent (Operational) Effects

Built Environment

Connectivity (circulation)

The extent of effects on connectivity including disruption to the street network and walkability.

3	4	5	6	7	8	11	12

- Option 4 is considered to be 'significant positive' as it would provide an additional (at both Kerswill Place and Queens Road) and dedicated connection for pedestrians and cyclists linking into existing street networks with no effect on general traffic, assuming the pedestrian crossing at the existing Panmure Bridge is retained.
- Options 3, 5, 6, 7, 8, 11 and 12 scored 'minor positive' as they all provide for additional and improved pedestrian connections to a varying degree across Tamaki River and increased movement choice for the community. Although in some instances there are potential conflicts between the proposed busway, properties and local road accesses, overall the benefits would be positive.

Built form

The extent of effects on urban form including lot pattern, street frontages, significant buildings and other structures.

3	4	5	6	7	8	11	12

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) scored 'minor adverse' due to their varying degree of either encroachment into site frontages or property take.

Activities/use/character

The extent of effects on (compatibility with) surrounding activities, with particular regard to public activities (such as town centres), land use, and character.

3	4	5	6	7	8	11	12

- Options 3, 4, 5, 8 and 11 scored 'neutral' as their design would not materially affect existing activities and the uses or character of the surrounding area.
- Options 6, 7 and 12 are deemed 'minor adverse' as they would create complicated access to the boat ramp, marina and residential properties along Pakuranga Road, thereby affecting these activities/uses.

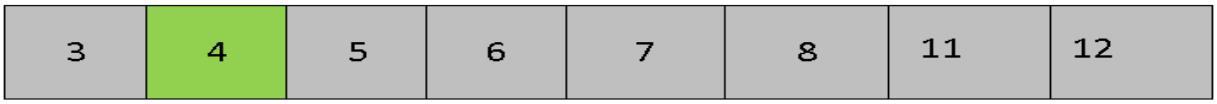
Visual amenity

The extent of effects on visual amenity taking into account the character and visibility (prominence) of the proposal, and the character of the existing environment, the sensitivity of audiences, and the experience of future road users.

- Options 3, 5 and 11 scored 'neutral' given the small scale of the proposed bridge structure and its co-location with the existing bridge.
- Option 4 scored 'minor adverse' due to the prominence of the additional bridge structure across the Tamaki River.
- Options 6, 7, 8 and 12 scored 'minor adverse' given the prominence of widening the existing bridge across the Tamaki River.

Associative elements

The extent of effects on elements of townscape amenity with historical or cultural associations or which otherwise contribute to townscape amenity.

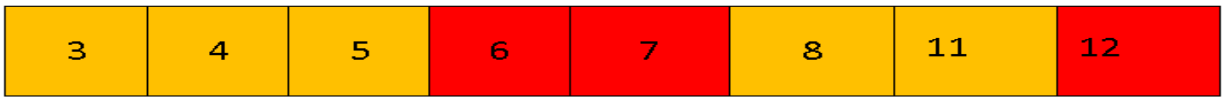


- Option 4 scored 'minor positive' as it recalls historic connections and accordingly contributes to the understanding of a sense of place.
- Options 3, 5 and 11 were not considered to enhance or detract from any associative elements and therefore scored 'neutral.'
- Options 6, 7, 8 and 12 were also considered 'neutral' as while they may result in some form of encroachment or modification to Mokoia Pā, they would not have an effect on the overall understanding or awareness of the Pā itself.

Social

Community cohesion

The extent of effects on community cohesion and connectedness.



- It is acknowledged, that assessment of this criterion is heavily influenced by effects from land take.
- Options 3, 4, 5, 8 and 11 scored 'minor adverse' as they require partial land take and have some minor cohesion effects due to widening the Pakuranga Road corridor to include kerbside bus lanes, which would result in an effective corridor width of six lanes and reinforce the severance of the community of this busy arterial road.

- Options 6, 7 and 12 scored 'significant adverse' due to the significance of full property land takes and associated housing stock loss along Pakuranga Road required for the dedicated bus lanes.

Open Space

The extent of effects on passive and active recreation opportunities.

3	4	5	6	7	8	11	12

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) were scored as 'minor adverse' because every option would have an effect on some areas of open space and reserve; however no option would cause such severe land take or severance of existing open space to justify a significant adverse effect scoring. Key areas of open space include the reserve on the corner of Kerswill Place and alongside the northern side of Pakuranga Road adjacent to the Pakuranga Inlet, as well as Domain Reserve to the north of Lagoon Drive. All options involve some footprint encroachment into these reserves; however no option was assessed as materially affecting the functionality of these reserves.

Community Facilities

The extent of effects on community facilities in the study area.

3	4	5	6	7	8	11	12

- Key community facilities assessed were the Leisure Centre and squash courts. All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) scored 'neutral' because there was no change in effects to community facilities. This assessment assumes that the Lagoon Drive works do not adversely affect access to the Leisure Centre and squash courts.

Viability/ Productivity of Business Land Areas

The extent of land take and severance of industrial and business land.

3	4	5	6	7	10	11	12

- Options 3, 4, 5, 8 and 11 scored 'neutral' as it is not anticipated that there would be any permanent impacts on the viability or productivity of industrial or business land. Key areas of business land include Pakuranga Plaza, a cluster of businesses to the south of Pakuranga Road, businesses along Queens Road and business land adjacent to all other arms of the existing Panmure Roundabout.
- Options 6, 7and 12 are considered to have a 'minor adverse' effect on accessibility due to provision of a dedicated bus lane to the south of Panmure town centre.

Recreational Coastal Activities

Extent of effects on recreational users of coastal space including moorings, jetties, slipways

3	4	5	6	7	8	11	12

- Options 3, 5, 6, 7, 8, 11 and 12 scored 'neutral' as they rely on the co-location of the existing Panmure Bridge and would not give rise to any known effects on recreational users of the coastal space, including no permanent displacement of moorings.
- Option 4 is considered to have a 'minor adverse' effect given it would result in a minor displacement of existing moorings.

Natural Environment

Water Resources

Extent of effects on surface freshwater and groundwater resources.

3	4	5	6	7	8	11	12

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) are considered to be 'neutral' as there are no identified natural watercourses and no significant excavations would be required (thereby avoiding impacts on groundwater), based on Auckland Council GIS Viewer Maps.

Water Quality

Impact of operational stormwater in regards to quantity and quality (including life supporting capacity).

3	4	5	6	7	8	11	12

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) scored 'minor adverse' because of the increased impervious surface created by the options, and the subsequent increase in stormwater discharge. However, it was assumed that this would be mitigated in accordance with stormwater treatment requirements and therefore any significant adverse effects would be avoided.

Ecological Resources (terrestrial biodiversity)

Extent of effects on significant indigenous vegetation and significant habitats of indigenous fauna (terrestrial).

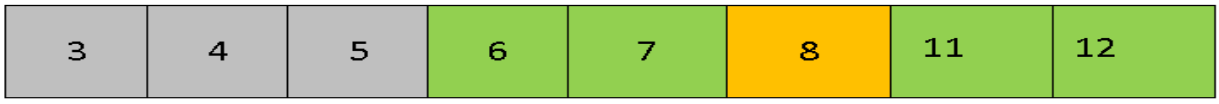
3	4	5	6	7	8	11	12

- All remaining options with the exception of Option 8 are considered to be 'neutral' as they would all avoid effects on known areas of significant indigenous vegetation and significant habitats of indigenous fauna (terrestrial). While there are a number of significant ecological areas (as identified under the PAUP) and coastal protection areas (as identified under the Auckland Council Regional Plan: Coastal) in the wider Panmure/Pakuranga and Tamaki River

areas, there are no known areas of significant indigenous vegetation or indigenous fauna (terrestrial) within the vicinity of the alignment under the PAUP or regional plans.

Scheduled/Protected Trees

Ability to avoid effects on scheduled and protected trees.



- Options 6, 7, 11 and 12 scored 'minor positive' as they would all avoid scheduled and protected trees.
- Option 4 is considered to be 'neutral' (assuming its ability to avoid effects on the scheduled and protected tree located on Kerswill Place).
- Options 3 and 5 scored 'neutral' (assuming their ability to avoid effects on scheduled trees at the Panmure Basin mouth).
- Option 8 was assessed as 'minor adverse' due to the potential for effects on scheduled trees, as it is unknown whether their removal will be required or will be avoidable.

Coastal Environment and Resources

Extent of effects on significant marine areas, existing coastal processes, and physical footprint within the coastal marine area.

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) are considered to be 'minor adverse' as they would all involve, to varying degrees, a new structure located within the CMA, which would result in minor but manageable effects on existing coastal processes.

Natural Character

Extent of effects on natural character areas (particularly outstanding areas and high natural character areas).

- Options 3, 5, 6 and 11 scored 'neutral' as there is co-location of new with existing bridges. In determining this score, it is assumed that there would be limited encroachment (or impact) on vegetation, the river corridor and embankment.
- Option 4 scored 'minor adverse' given it proposes additional structures that would result in disturbance of the natural landform of the river corridor and would also include minor vegetation removal.
- Options 6, 7, 8 and 12 are considered to give rise to 'minor adverse' effects given they would result in additional structures located adjacent to the existing Panmure Bridge and would modify the existing natural landform, particularly of river banks and terracing.

Landscape and Natural Features

Extent of effects on landscapes and natural features including geological features (particularly outstanding landscapes and features).

3	4	5	6	7	8	11	12

- Assessed in the wider landscape context Options 3, 5, 6, 7, 11 and 12 are co-located with existing bridges and on this basis would have a 'neutral' effect relative to the existing environment, given the landscape context in which they are located has previously been modified to varying degrees. Similar to the Tree criterion this assumes that Options 3 and 5 will not adversely affect values of the Panmure Basin Outstanding Natural Feature and, in particular, would not cause the loss of any Pohutukawa trees.
- Option 4 scored 'minor adverse' given the proposed additional bridge structures would give rise to minor effects on the surrounding landscape context.
- Although Option 8 would be co-located with the existing bridge and not on a significant landscape, the potential effects on Pohutukawa from construction of the abutment and associated headland stability led to the 'minor adverse' scoring.

Public Access to and Along the Coast

Extent to which public access to and along the coast is provided for or impacted.

3	4	5	6	7	8	11	12

- While all remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) would improve walking and cycling facilities to and over coastal areas, there are no options that would enhance or provide additional public access in these areas; hence the 'neutral' scoring.

Navigation and Safety

Extent to which safe navigation is provided for.

3	4	5	6	7	8	11	12

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) are considered to be 'minor adverse' as they would all involve, to varying degrees, a new structure located within the CMA and this would result in minor but manageable effects with regard to navigation and safety. It is acknowledged that the new bridge structures may give rise to a higher navigational safety risk but these are not anticipated to be a significant effect.

Public Health

Noise and Vibration (human health)

Impact of operational noise and vibration on sensitive receivers.

3	4	5	6	7	8	11	12

- It is noted that all noise and vibration is required to comply with the relevant national standards.
- Notwithstanding the above, Options 3, 4, 5, 6, 7, 8, 11 and 12 are considered to give rise to 'minor adverse' effects as all noise generating activities would be co-located within the same corridor as existing infrastructure that has a higher ambient noise.

Air Quality

Extent of effects on air quality on the airshed and on sensitive receivers from airborne contaminants (vehicle emissions).

3	4	5	6	7	8	11	12

- Options 6, 7 and 12 scored 'minor positive' for air quality as the removal of the north side properties for a dedicated busway and shared path along Pakuranga Road would provide a separation distance and buffer to the wider residential area.
- Options 3, 4, 5, 8, and 11 are 'minor adverse' as the traffic along Pakuranga Road would move within closer proximity to the northern residential area.

Cultural and Heritage

Effects on Sites and Places of Value/Significance

Mauri; Waahi Tapu; Historical; Customary needs; Contemporary esteem.[33]

3	4	5	6	7	8	11	12

[33] Mauri - The mauri (life force and life-supporting capacity) and mana (integrity) of the place or resource holds special significance to Mana Whenua.

Waahi Tapu - The place or resource is a wāhi tapu of special, cultural, historic, metaphysical and or spiritual importance to Mana Whenua.

Historical - The place has a strong or special association with, or is held in high esteem by, Mana Whenua for its symbolic, spiritual, commemorative, traditional or other cultural value

Customary needs - The place or resource is a venue or repository for Mana Whenua cultural and spiritual values.

Contemporary esteem - The place has special amenity, architectural or educational significance to Mana Whenua (including Marae, Kohanga Reo and Hauora).

- Options 4 and 11 are considered to be 'minor adverse' given the scale of the proposed pedestrian/cycle bridge and their location on the edge of Mokoia Pā.
- All other remaining options (being Options 3, 5, 6, 7, 8 and 12) scored 'significant adverse' due to direct impacts on Mokoia Pā.

Effects on waterways

Mauri; Waahi Tapu; Historical; Customary needs; Customary resources; Contemporary esteem.[34]

3	4	5	6	7	8	11	12

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) scored 'significant adverse' due to the erection of additional structures in Waahi Tapu waterways and given the increase in stormwater runoff generated from additional paved impervious surfaces.

Effects on cultural landscapes

Mauri; Waahi Tapu; Historical; Customary needs; Customary resources; Contemporary esteem.

3	4	5	6	7	8	11	12

- Options 3, 5, 6, 11 and 12 rely on the co-location of existing bridges and given their proximity to Mokoia Pā scored 'minor adverse'.
- Option 7 and 8 scored 'significant adverse' given the proposed scale of structures on the landscape and their proximity to Mokoia Pā.
- Similarly, Option 4 scored 'significant adverse' given it includes the provision of additional structures on the landscape that are located within close proximity to Mokoia Pā.

Customary rights

Extent of effects on areas of protected customary rights (under Takutai Moana or Treaty Redress).

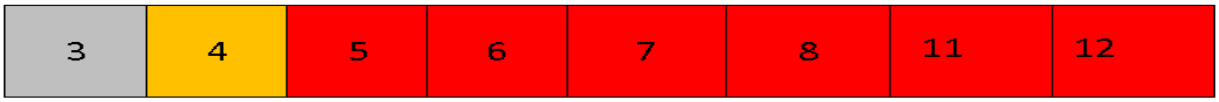
3	4	5	6	7	8	11	12

- All remaining options (being Options 3, 4, 5, 6, 7, 8, 11 and 12) are considered to be 'neutral', considering that based on the knowledge of AT internal mana whenua advisors, there are no known customary rights.

Archaeology

Extent of effects on sites and places of archaeological value.

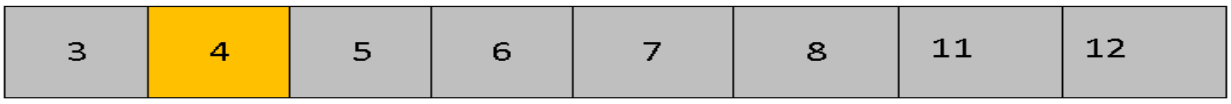
[34] Customary resources - The place provides important customary resources for Mana Whenua. Refer to footnote 7 to define other terms.



- Option 3 is considered 'neutral' given proposed physical works around Mokoia Pā are located to the south in an area that has previously been disturbed and would be of small scale.
- Option 4 scored 'minor adverse' given the scale (albeit small) of the pedestrian/cycle bridge and associated physical works located within the wider context of Mokoia Pā
- Options 5, 6, 7, 8, 11 and 12 all involve physical works within Mokoia Pā and therefore scored as 'significant adverse'.

Built Heritage

Extent of effects on heritage buildings and places.



- Options 3, 5, 6, 7, 8, 11 and 12 scored 'neutral' given there are no recorded or known built heritage items identified or recovered within proximity of the proposed works.
- Option 4 was considered 'minor adverse' given the likely impact of the proposed works on the 'Panmure Ferry Landing', a scheduled heritage item (jetty) built by the American forces in WW2 and located in the CMA off Queens Road.

MCA Topic		Key Result Area / Criteria	Measures	Information sources	1	2	3	4	5	6	7	8	9	10	11	12
Performance against Stage 2 Objectives	S1	Contribute to place shaping in Panmure and Pakuranga town centres by providing better connections and accessibility between and within these centres for all	Supports future amenity and public realm improvements to these town centres. Provides legible and desirable connections to the town centres and surrounding land uses. Provides a continuous corridor connection for all modes between the Panmure and Pakuranga following	Creates improved or enhanced public space/urban form. Land use and development opportunities. PAUP land use zonings.												
	S2	Provide transport infrastructure that integrates with land uses and supports a quality, compact urban form in Panmure and Pakuranga.	Do all modes of the network integrate with land uses anticipated (under the PAUP)? Does the network provide for highest accessibility to the most densely populated / highest trip generating locations?	PAUP zoning plans. Models and Qualitative assessment.												
	S3	Provide transport infrastructure that improves linkages, relieves network constraints and improves journey time, frequency and reliability of the transport network overall.	Demonstrates improvements in transport network reliability of connection and frequency of service.	Qualitative knowledge of the people carrying capacity of the network												
	S4	Improve the efficiency and resilience of the passenger transport network between Panmure and Pakuranga by providing a dedicated route for public transport to and from the eastern suburbs.	Demonstrates efficiency and reliability in passenger transport network.	Knowledge of models and qualitative assessment.												
	S5	Maximise the benefits of investment in transport infrastructure by extending network connections and delivering network improvements.	Demonstrates optimal use of existing infrastructure and improved network connections. Supports other transport investment priorities and demonstrates a strategic fit ie. where investment has already been made in the network. Does not preclude future connectivity to Botany.	Knowledge of existing bus congestion, future scenarios and subjective assessment of the connections for other modes. Additional land required.												
	S6	Provide a multi modal transport corridor that connects Panmure and Pakuranga to increase access to a choice of transport options.	Does it provide for all modes (walking, cycling, bus, freight, general traffic) between Panmure and Pakuranga with adequate separation and connections and with linkages and connectivity between modes.	Option drawings												
	S7	Create a corridor that is safe for all road users, including public transport passengers, cyclists and pedestrians.	Ability to provide for accessible, legible, connected and safe general traffic, bus, pedestrian and cyclist infrastructure. Ability to provide separation of modes where necessary for safety.	Option drawings.												
Consentability		Policy compliance.	Qualitative assessment of the consistency of the proposal with the Resource Management Act (1991) high level policy framework relevant to the Project eg. NZCPS, NPS's, RPS.	Knowledge and review of the relevant objectives and policies.	N/A	N/A								N/A		
		Land take (general).	Qualitative assessment of whether likely / anticipated effects from land take will be significant/more than minor. Reasonableness and requirement for operation and construction.	Option drawings.	N/A	N/A							N/A	N/A		
Future proofing		Future-proofing	Ability of the option to maintain network functionality and minimise the transport network effects during a future replacement of the existing bridge	Option drawings and Qualitative understanding of traffic network effects	N/A	N/A							N/A	N/A		
Temporary effects (construction)	Built Environment	Construction traffic effects - disruption of business and residential activity.	Ability to avoid traffic effects.	Design of footprint options. Estimated durations for construction works. Ability to provide effective traffic management. Likelihood of major traffic congestion.	N/A	N/A							N/A	N/A		
		Construction impacts on Utilities and significant infrastructure, and on lifeline services to the bridge for relocation as future proofing.	Requirements for relocation / design of alternative major infrastructure, including consideration of safety impacts of such requirements and risk of continuity of service over construction.	Design footprint of options. Estimated durations for construction works.	N/A	N/A							N/A	N/A		
	Social	Construction Impact – disruption to business and residents	Accessibility effects on businesses, residents and community facilitiesover construction period	Design footprint of options. Estimated durations for construction works.	N/A	N/A							N/A	N/A		
	Natural Environment	Water Quality.	Is there sufficient land available to manage effects on water quality from constructions activities (earthworks, stormwater discharges).	Option drawings.	N/A	N/A							N/A	N/A		
		Scheduled Trees.	Ability to avoid construction effects on scheduled trees.	Plans of scheduled trees.	N/A	N/A							N/A	N/A		
		Navigation and safety.	Extent to which safe navigation is provided for during construction.	Option Drawings.	N/A	N/A							N/A	N/A		
	Public Health	Construction impact of noise and vibration for sensitive receivers.	Ability to avoid noise and vibration effects.	Design footprint of options Estimated durations for construction works Noise management.	N/A	N/A							N/A	N/A		
		Air quality.	Extent of effects on air quality on the airshed and on sensitive receivers from airbourne contaminants (dust).	Proximity of dust generating construction activities to sensitive receivers.	N/A	N/A							N/A	N/A		
		Contaminated land (human health).	Impact of contaminants from historical land uses (air discharges and groundwater impacts).	Plans of identified / known contaminated land Option Drawings.	N/A	N/A							N/A	N/A		
	Heritage	Archaeology.	Extent of effects on sites and places of archaeological value .	Plans of sites and places.	N/A	N/A							N/A	N/A		
		Built heritage.	Extent of effects on heritage buildings and places.	Plans of sites and places.	N/A	N/A							N/A	N/A		
	Built Environment	Connectivity (circulation).	The extent of effects on connectivity including disruption to the street network and walkability.	Land Use mapping, aerial photographs, topographic mapping. Option Drawings.	N/A	N/A							N/A	N/A		
		Built Form.	The extent of effects on urban form including lot pattern, street frontages, significant buildings and other structures.	Land Use mapping, aerial photographs, topographic mapping. Historical areas identified on plan maps Option Drawings.	N/A	N/A							N/A	N/A		
		Activities / Use.	The extent of effects on (compatibility with) surrounding activities, with particular regard to public activities (such as town centres), land use, and character.	Use knowledge of the project area, urban structure and form. Identify activities (land use and topographic map / aerial photo data). Option Drawings.	N/A	N/A							N/A	N/A		
		Visual Amenity.	The extent of effects on visual amenity taking into account the character and visibility (prominence) of the proposal, and the character of the existing environment, the sensitivity of audiences, and the experience of future road users	Project extent knowledge and Option Drawings Aesthetics including visibility, prominence, effects on public views, 'fit' with context using.	N/A	N/A							N/A	N/A		
		Associative Elements.	The extent of effects on elements of townscape amenity with historical or cultural associations or which otherwise contribute to townscape amenity.	Use land use and topographic map / aerial photo data to identify associative elements including recreational areas and historical / cultural areas identified on plan maps.	N/A	N/A							N/A	N/A		
		Community cohesion.	The extent of effects on community cohesion and connectedness.	Impact of severance of existing communities, including severing residential areas from town centres, community facilities (schools) – land use maps and origin / destination assessments undertaken. Impact of land take.	N/A	N/A							N/A	N/A		

MCA Topic		Key Result Area / Criteria	Measures	Information sources	1	2	3	4	5	6	7	8	9	10	11	12
Permanent Effects (Operation)	Social	Open space.	The extent of effects on passive and active recreation opportunities.	Physical impact of new structures. – Land take/physical impact on open space. Proximity of new structures to existing public open space. – Proximity effects/change in quality on open space. Impacts on public access to/along coastal marine areas or other key open space.	N/A	N/A							N/A	N/A		
		Community facilities.	The extent of effects on community facilities in the study area.	Physical impact of new structures. – Extent of land take/physical impact Proximity of new structures on community facilities. – Proximity effects/change in quality. Remove freight vehicles to nominated streets of social service.	N/A	N/A							N/A	N/A		
		Viability / productivity of business land areas.	The extent of land take and severance of industrial and business land.	Property Impact assessment Links to and along the CMA included here We note that this needs to recognise project cost if site directly affected.	N/A	N/A							N/A	N/A		
		Recreational coastal activities.	Extent of effects on recreational users of coastal space including moorings, jetties, slipways etc.	Aerials and option drawings.	N/A	N/A							N/A	N/A		
	Natural Environment	Water resources.	Extent of effects on surface freshwater and groundwater resources.	Identify water resources, (land use and topographic map / aerial photo data). Option Drawings.	N/A	N/A							N/A	N/A		
		Water quality.	Impact of operational stormwater in regards to quantity and quality (including life supporting capacity).	Ability to provide adequate stormwater treatment or treatment above PAUP requirements. Option Drawings.	N/A	N/A							N/A	N/A		
		Ecological resources (terrestrial biodiversity).	Extent of effects on significant indigenous vegetation and significant habitats of indigenous fauna (terrestrial).	Identify ecological resources, (PAUP maps. land use and topographic map / aerial photo data). Option Drawings.	N/A	N/A							N/A	N/A		
		Scheduled / Protected Trees.	Ability to avoid effects on scheduled and protected trees	Plans of scheduled trees.	N/A	N/A							N/A	N/A		
		Coastal environment and resources.	Extent of effects on significant marine areas, existing coastal processes, and physical footprint within the coastal marine area.	Identify coastal resources, (land use map / coastal charts, aerial photo data). Option Drawings.	N/A	N/A							N/A	N/A		
		Natural Character.	Extent of effects on natural character areas (particularly outstanding areas and high natural character areas).	Land use and topographic map / aerial photo data. Option Drawings.	N/A	N/A							N/A	N/A		
		Landscapes & Natural Features.	Extent of effects on landscapes and natural features including geological features (particularly outstanding landscapes and features).	Land use and topographic map / aerial photo data. Option Drawings.	N/A	N/A							N/A	N/A		
		Public access to and along the coast.	Extent to which public access to and along the coast is provided for or impacted.	Land use and topographic map / aerial photo data. Option Drawings.	N/A	N/A							N/A	N/A		
		Navigation and safety.	Extent to which safe navigation is provided for.	Option Drawings.	N/A	N/A							N/A	N/A		
	Public Health	Noise and vibration (human health).	Impact of operational noise and vibration on sensitive receivers.	Land use and topographic map / aerial photo data. Option Drawings.	N/A	N/A							N/A	N/A		
		Air quality.	Extent of effects on air quality on the airshed and on sensitive receivers from airbourne contaminants (vehicle emissions).	Projected traffic volumes and proximity of sensitive receivers.	N/A	N/A							N/A	N/A		
	Cultural and Heritage	Effects on Sites and Places of value / significance.	Mauri; Waahi Tapu; Historical; Customary needs; Contemporary esteem - (see footnote for definition)	Mana Whenua advisors knowledge of these matters.	N/A	N/A							N/A	N/A		
		Effects on Waterways.	Mauri; Waahi Tapu; Historical; Customary needs; Customary resources; Contemporary esteem - (see footnote for definition)	Mana Whenua advisors knowledge of these matters.	N/A	N/A							N/A	N/A		
		Effects on Cultural Landscapes.	Mauri; Waahi Tapu; Historical; Customary needs; Customary resources; Contemporary esteem - (see footnote for definition)	Mana Whenua advisors knowledge of these matters.	N/A	N/A							N/A	N/A		
		Customary rights.	Extent of effects on areas of protected customary rights (under Takutai Moana or Treaty Redress).	Mana Whenua advisors knowledge of these matters	N/A	N/A							N/A	N/A		
		Archaeology.	Extent of effects on sites and places of archaeological value.	Plans of sites and places.	N/A	N/A							N/A	N/A		
		Built heritage.	Extent of effects on heritage buildings and places.	Plans of sites and places.	N/A	N/A							N/A	N/A		

Mauri - The mauri (life force and life-supporting capacity) and mana (integrity) of the place or resource holds special significance to Mana Whenua.
Waahi Tapu - The place or resource is a wāhi tapu of special, cultural, historic, metaphysical and or spiritual importance to Mana Whenua.
Historical - The place has a strong or special association with, or is held in high esteem by, Mana Whenua for its symbolic, spiritual, commemorative, traditional or other cultural value
Customary needs - The place or resource is a venue or repository for Mana Whenua cultural and spiritual values.
Contemporary esteem - The place has special amenity, architectural or educational significance to Mana Whenua (including Marae, Kohanga Reo and Hauora).
Customary resources - The place provides important customary resources for Mana Whenua.

Appendix 5 – Workshop Attendees and Expertise

Workshop 1 Attendees

Attendees	Organisation	Expertise / Role
Peter King	Auckland Transport	AMETI Project Director
Bridgid McDonald	Auckland Transport	Legal
Anthony Cross	Auckland Transport	PT Network Manager
Philip Hollings (AT)	Auckland Transport	Property Advisor
Kit McLean	Auckland Transport	Transport Planner
John Williamson	Auckland Transport	Transport Economist
Duncan Humphrey	Auckland Transport	AMETI Project Manager
Paul Jones	Auckland Transport	Principal Planner
Aimee Barwick	Auckland Transport	Planning Intergration Manager
Nicola Bishop	Auckland Transport	Senior Planner
Tui Gilling	Auckland Transport	Maori Advisor
Tipa Compain	Auckland Transport	Maori Advisor
Tama Hovell	Atkins Holmes Majurey	Maori Advisor
Phil Harrison	Opus	Transport Planning / Modelling
Andrew Murray	Beca	Transport Planning / Modelling
Neil Watson	Beca	Design Director
Bryce Julyan	Beca	Strategic Planning Advisor
Blair Masefield	Beca	Independent Planning Expert

Workshop 2 Attendees

Attendees	Organisation	Expertise / Role
Peter King	Auckland Transport	AMETI Project Director
Don Munro	Auckland Transport	Manager Strategic Transport Integration
Bridgid McDonald	Auckland Transport	Legal
Anthony Cross	Auckland Transport	PT Network Manager
Philip Hollings (AT)	Auckland Transport	Property Advisor
Kit McLean	Auckland Transport	Transport Planner
John Williamson	Auckland Transport	Transport Economist
Duncan Humphrey	Auckland Transport	AMETI Project Manager
Paul Jones	Auckland Transport	Principal Planner
Aimee Barwick	Auckland Transport	Planning Intergration Manager
Nicola Bishop	Auckland Transport	Senior Planner
Tui Gilling	Auckland Transport	Maori Advisor
Tipa Compain	Auckland Transport	Maori Advisor
Tama Hovell	Atkins Holmes Majurey	Maori Advisor
Rebekah Pokura-Ward	Opus	Social Planner
Phil Harrison	Opus	Transport Planning / Modelling
Andrew Murray	Beca	Transport Planning / Modelling
Neil Watson	Beca	Design Director
Bryce Julyan	Beca	Strategic Planning Advisor

Blair Masefield	Beca	Independent Planning Expert

Workshop 3 Attendees

Attendees	**Organisation**	**Expertise / Role**
Peter King	Auckland Transport	AMETI Project Director
Don Munro	Auckland Transport	Manager Strategic Transport Integration
Bridgid McDonald	Auckland Transport	Legal
Anthony Cross	Auckland Transport	PT Network Manager
Philip Hollings (AT)	Auckland Transport	Property Advisor
Kit McLean	Auckland Transport	Transport Planner
Simon Milner	Auckland Transport	Public Transport Planner
John Williamson	Auckland Transport	Transport Economist
Duncan Humphrey	Auckland Transport	AMETI Project Manager
Paul Jones	Auckland Transport	Principal Planner
Aimee Barwick	Auckland Transport	Planning Intergration Manager
Graeme Michie	Auckland Transport	Planning Team Leader
Nicola Bishop	Auckland Transport	Senior Planner
Tui Gilling	Auckland Transport	Maori Advisor
Tipa Compain	Auckland Transport	Maori Advisor
Tama Hovell	Atkins Holmes Majurey	Maori Advisor
Matthew Felgate	Opus	Archaeologist

Rebekah Pokura-Ward	Opus	Social Planner
Phil Harrison	Opus	Transport Planning / Modelling
Andrew Murray	Beca	Transport Planning / Modelling
Neil Watson	Beca	Design Director
Bryce Julyan	Beca	Strategic Planning Advisor
Blair Masefield	Beca	Independent Planning Expert

Workshop 4 Attendees

Attendees	**Organisation**	**Expertise / Role**
Peter King	Auckland Transport	AMETI Project Director
Duncan Humphrey	Auckland Transport	AMETI Project Manager
Paul Jones	Auckland Transport	Principal Planner
Graeme Michie	Auckland Transport	Planning Team Leader
Nicola Bishop	Auckland Transport	Senior Planner
Tui Gilling	Auckland Transport	Maori Advisor
Tipa Compain	Auckland Transport	Maori Advisor
Tama Hovell	Atkins Holmes Majurey	Maori Advisor
Blair Masefield	Beca	Independent Planning Expert