Miramar Area Cycleways

Draft Issues Paper

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1. Introduction

1.1 Background

Over recent years Wellington City Council (the Council) has committed capital funding for cycleway development through its Long Term Plan and Annual Plan processes. The investments aim to contribute towards cycling becoming "**safer and more convenient**" (Cycling Policy Nov 2008) by increasing the level of service for people who use bikes.

The Urban Cycleways Programme (UCP) has provisionally allocated $9.5 million to the Council for investment by 30 June 2019. When contributions from rates and the National Land Transport Fund (NLTF) are taken into account, $37.5 million will be invested in cycling in Wellington by 30 June 2019, of which $2.0 million has been allocated to the Miramar area (1 of 5 projects in the Eastern Suburbs).

The Council established a working group in the Eastern Suburbs made up of ward councillors, community representatives and the NZ Transport Agency, to identify preferred route options to recommend to the Council. The Working Group met on four occasions and identified key and local destinations; priority corridors and preferred cycleway routes. Public opinion was sought on these during April and May 2016. These routes were reviewed and refined as part of the Council's Refresh Programme. The Council's Transport and Urban Development (TUD) Committee approved routes for improvement in Miramar and across other parts of the Eastern Suburbs at its meeting on 11 August 2016.

This next phase of work is to identify and evaluate treatment types along these routes and will involve engagement with affected parties and wider stakeholders. The Council will establish a solution working group and several community working groups that will be utilised to guide the formulation of options and designs. The solution groups will ideally report recommended option(s) to the Council before it considers consulting with the wider public.

1.2 Purpose of this Report

The purpose of this report is to:

1. Gather and review background information, and identify gaps in existing data which may need to be filled
2. Outline the current level of service for people on bikes and the adequacy and safety of provisions for people walking, biking, driving, parking and using buses along the identified routes
3. Provide the wider transport context, details of other projects/ studies, e.g. Let's Get Wellington Moving, Wellington Network Operating Framework, Airport Runway Extension Project as well as details of other cycling projects and report on how this study will fit within the context of these wider reports
4. Identify issues, constraints and opportunities for constructing cycleways along the five key routes

The Council is developing the overall programme and individual projects using the NZ Transport Agency's business case process. To date the 'strategic', 'programme' and 'indicative' business case stages have been completed. This issues paper forms part of the evaluation required to compile the Detailed Business Case. The Detailed Business Case is the basis of the Council's request for funding from the UCP and NLTF for the Miramar Area Cycleways project.

1.2.1 Scope and Limitations

This report has been prepared by consultants on behalf of the Council and may only be used and relied on by the Council.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. The consultant has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

This report is intended as a preliminary investigation to identify potential issues that may arise in the provision of cycleway facilities on five routes in the Miramar area.

1.2.2 Assumptions

The data contained in this report includes traffic count data obtained from the Council. It has been assumed that the data received is all correct.

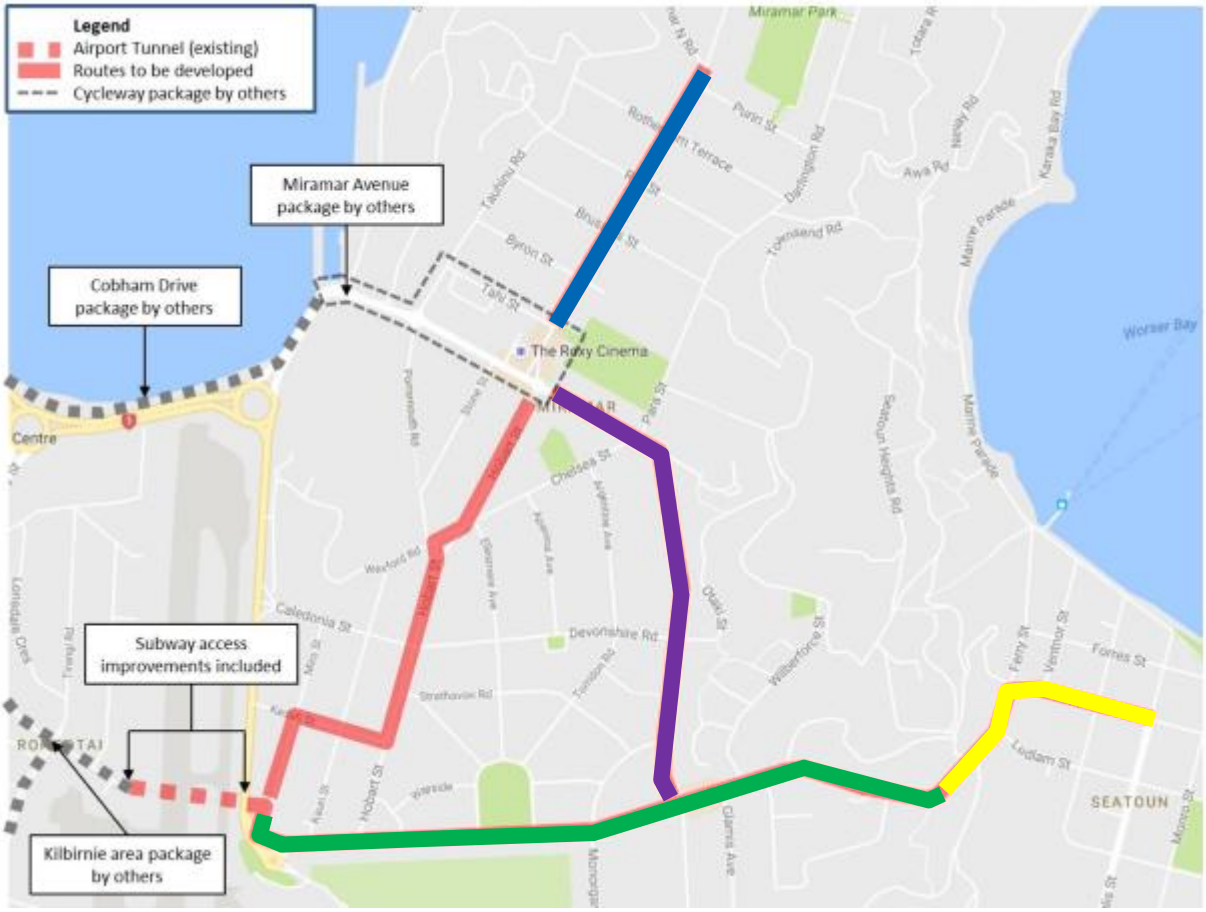
The route descriptions are based on a site visit undertaken on 29 November 2016 and the observations are correct as at that date.

1.3 Study Area

This report focuses on the Miramar Area Cycleways Project (1 of 5 projects in the Eastern Suburbs). The TUD Committee meeting on 11 August 2016 identified five initial cycleway routes within Miramar[1] (to be delivered by 30 June 2019) as listed below and shown in Figure 1.

1. Route 1 – Park Road between Miramar Avenue and Miramar North Road (shown blue)
2. Route 2 – Ira Street/ Miramar Avenue (between Hobart Street/ Park Road and Ira Street) (shown purple)
3. Route 3 – Hobart Street, Kedah Street and Miro Street, including the Airport Tunnel (shown red)
4. Route 4 – Broadway from the Airport Tunnel to Seatoun Tunnel (shown green)
5. Route 5 – Seatoun Tunnel/ Dundas Street (shown yellow)

Figure 1 Miramar Cycleway Routes



These routes are covered in more detail, individually, later in the report.

[1] In addition to the Miramar Avenue and Cobham Drive cycleway projects that are outside the scope of this report.

1.4 Project Objectives

The Miramar Area Cycleways Project is part of the Council's investment in a safe and comprehensive cycle network to give people more transport choice, reduce congestion and emissions, and make Wellington a more attractive place to live, work and visit.

The primary objective is to define proposals for transport improvements to five routes in the Miramar area which maximises benefits for all users and in particular addresses the poor level of service for people who travel by bike. It is recognised that this may be achieved via a staged approach with the first stage being a pragmatic and sensible step towards the long term vision. The proposals will be developed in conjunction with community representatives who form the Solution and Community Working Groups.

It is envisaged that the proposed improvements will:

- Improve the level of service for people on bikes along identified routes
- Improve or maintain the level of service for people using buses
- Maintain or improve the level of service for pedestrians
- Maintain an acceptable level of service for general traffic movements
- Minimise impacts to on-street parking and increase parking supply if feasible

2. Wellington City Council Plans and Policies

2.1 Introduction

The Council has completed a Cycleways Master Plan and supporting Programme Business Case. These pieces of work led to the identification of opportunities to progress cycling improvements in the Eastern Suburbs. Increased levels of funding to develop a safer and more convenient cycle network have been allocated as part of the National Land Transport Programme (NLTP), UCP and Long Term Plan processes.

In developing the Miramar Area Cycleways project, a number of other studies and projects that have an impact on, or are impacted by this project have been considered, including the Let's Get Wellington Moving programme and the Airport Runway Extension Project.

2.2 Urban Growth Plan

Wellington City's population is expected to grow by around 50,000 people with 22,000 new homes planned over the next 30 years. The Urban Growth Plan[2] (approved by Council in June 2015) sets out how the Council will ensure new houses, transport networks and services are provided where needed in a sustainable and integrated way.

The guiding principles behind the Plan are to:

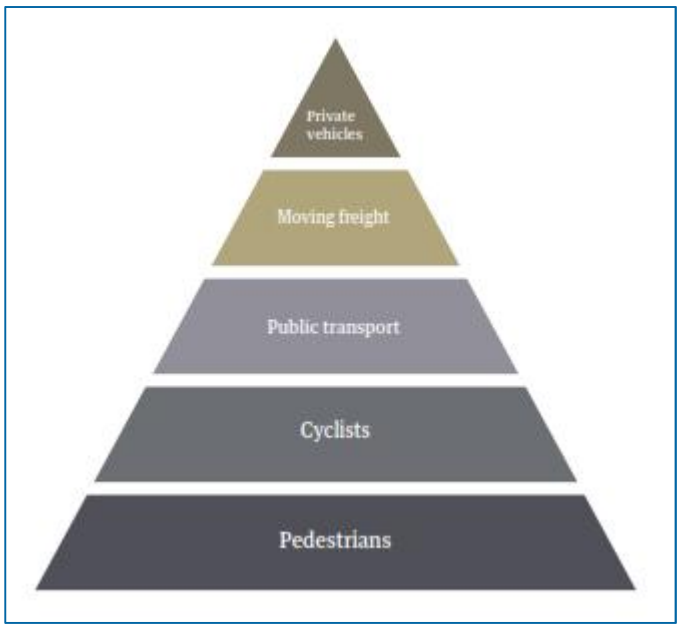
- Keep the City compact, walkable and supported by an efficient transport network
- Maintain features that support residents' high quality of life
- Protect the City's natural setting and reduce the environmental impacts of development and transport
- Make the City more resilient to natural hazards, such as earthquakes and the effects of climate change

The Strategy is to direct urban growth where it will benefit the City most and is supported by a quality transport network, around selected suburban centres which can support intensification.

The Urban Growth Plan sets out the Council's Sustainable Transport Hierarchy (see Figure 2) which encourages walking, cycling and public transport over other modes of transport. The Plan sets out the need to provide a safe cycle network that will encourage people of all ages to cycle and includes dedicated actions to make Wellington a better City for Cycling.

[2] Wellington City Council, Wellington Urban Growth Plan – Urban Development and Transport Strategy 2014-2043, June 2015

Figure 2 Sustainable transport hierarchy



Kilbirnie has been identified as a growth area in the Plan and is expected to accommodate an additional 800+ dwellings by 2043. Miramar is identified as an investigation area for residential growth, with medium density housing. To support growth in these areas, the Plan sets out the need to ensure that Kilbirnie and Miramar Town Centre are attractive places for local communities to shop, access services and socialise. To date, a place-based plan has been developed for Kilbirnie Town Centre aimed at revitalising the town centre and creating an attractive, vibrant, people-friendly and prosperous part of Wellington City. Improving pedestrian and cycle access is one of the key goals to be achieved in the revitalisation of the town centre.

The Urban Growth Plan also sets out support for the development of the airport as a key economic hub and the need to improve transport connections to it, including for cycle movements.

2.3 2015-25 Long-term Plan

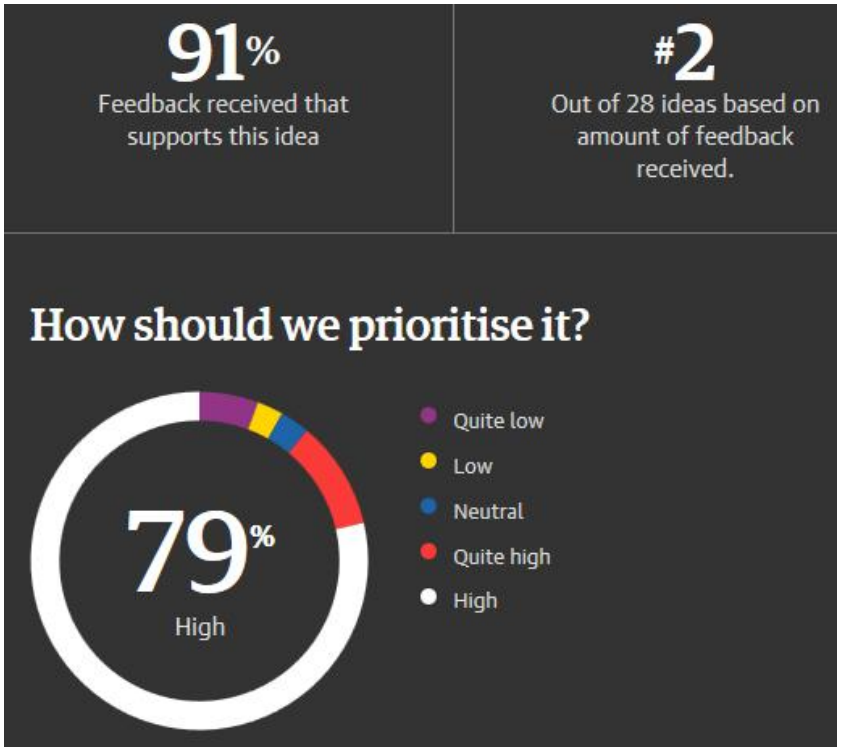
The Long-term Plan (LTP) (approved by Council in June 2015) sets out the Council's intentions for the next decade. The current LTP is for the period 2015-25 and was adopted by the Council on 24 June 2015. The Council reviews its LTP every 3 years.

The 2015-25 LTP sets out how and why the Council proposes to 'invest for growth' and how the Council will support new initiatives that unlock the city's growth potential. The LTP identified eight big ideas for economic growth ranging from provision for long haul flights to developing cycleways between the suburbs and the CBD[3]. The LTP sets out the Council's commitment to provide $58 million of funding over the next 10 years to implement a city wide-network of safe cycling routes (the Cycleway Investment Programme).

Consultation was undertaken on the LTP and the Council's plans to implement a city wide-network of safe cycling routes were well received, as set out in Figure 3.

[3] http://wellington.govt.nz/your-council/news/2014/01/eight-big-ideas

Figure 3 LTP consultation results on developing a safe cycle network[4]



2.4 Wellington Cycling Framework

In June 2015, the Council adopted the Cycling Framework, which includes a plan of the Wellington Cycle Network, and principles that set out decision-making thresholds for the delivery of each aspect of the network.

2.5 Cycleways Programme Master Plan

The Wellington Cycleways Programme Master Plan[5] (approved by Council in August 2015) is a guide for the Council to deliver new cycling infrastructure that best meets the community's needs. It outlines the cycling infrastructure and safety, and engagement activities that are proposed, with a focus on work to be done in the first three years. It also explains how the Council will prioritise the development of the cycle network, how it will connect key locations throughout the city, and how it will increase the number of people who choose to get around by bike.

The Master Plan was developed concurrently with the Programme Business Case to support the development of the programme options and to identify the scope, scale and type of interventions that could be developed into an investment programme. The Master Plan and Programme Business Case were developed with Councillors, Council Officers and NZ Transport Agency representatives through a series of workshops. The Master Plan was endorsed by Councillors at the September 2015 TUD Committee meeting.

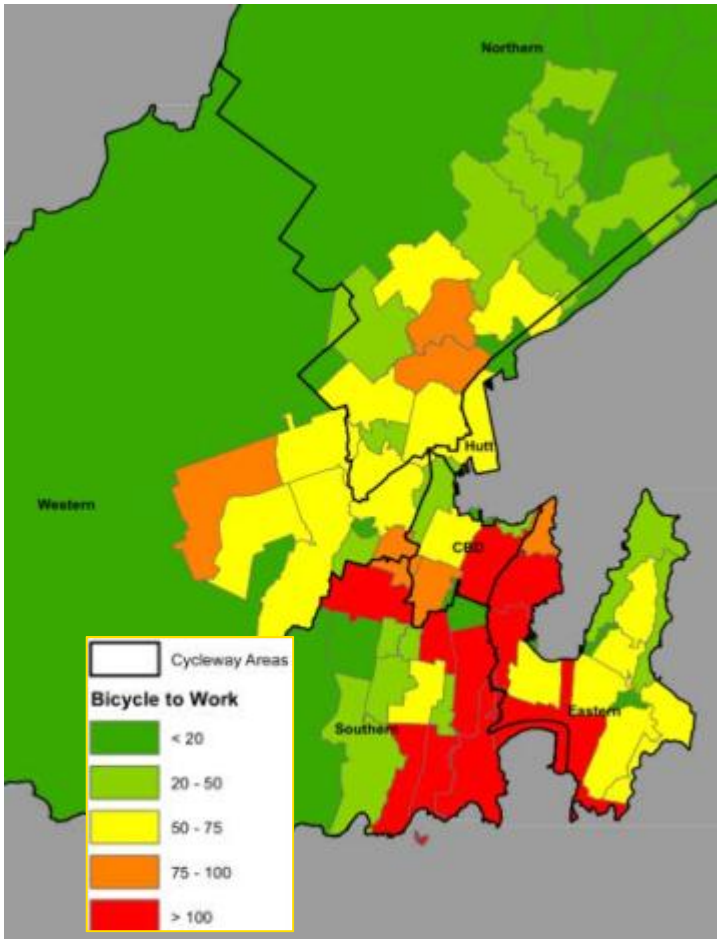
Through the development of the Master Plan and Programme Business Case, the cycle network was agreed to consist of a range of infrastructure, facilities and non-asset investments to improve participation in cycling and address safety issues concerning cycling in Wellington. The cycling transport infrastructure would involve a range of solutions (i.e. protected lanes or shared paths outside the road corridor) as well as supporting facilities such as bike corrals.

[4] http://consultation.our10yearplan.co.nz/our-big-ideas/real-transport-choices/a-cycling-network/
[5] Wellington City Council, Wellington Cycleways Programme Master Plan, September 2015

Due to Wellington's topography and geographical structure six catchment areas (north, south, east, west, CBD and Wellington Hutt corridor) were identified and used as the basis for understanding the current and potential demand for cyclists. A need to develop a hierarchy of routes (primary, secondary and tertiary) was agreed with councillors and stakeholders with this occurring in the subsequent stages of the network's development.

Figure 4 shows the areas and concentration where those who currently cycle to work live. It shows that there are medium to low levels of cycle to work activity from the Miramar area.

Figure 4 Areas in Wellington City where those who cycle to work live[6]



Miramar and the southern suburbs have relatively high numbers of residents who cycle to work.

2.6 Wellington City Cycle Network Business Cases

2.6.1 Strategic Case

The Wellington City Cycle Network Strategic Case[7] (August 2015) outlines the case for change. It says investment in cycling will improve safety for cyclists, increase transport choice, and lessen environmental impact and traffic congestion by reducing the number of vehicles on the road. In turn, this will make the city a better place to live. The Strategic Case was developed together with the NZ Transport Agency and Greater Wellington Regional Council.

[6] Wellington City Council, Wellington Cycleways Programme Master Plan, September 2015
[7] Wellington City Council, Wellington City Cycle Network Strategic Case, August 2015

As part of the development of the Strategic Case, a facilitated Investment Logic Mapping exercise was undertaken in March 2015 with representatives from the Council, the NZ Transport Agency, Cycle Aware Wellington, the Automobile Association and Wellington Employers' Chamber of Commerce. The group identified three underlying problems:

1. Poor uptake due to the perception that cycling is unsafe and inconvenient is reducing cycling's contribution to the transport system
2. Unforgiving infrastructure and poor road user behaviour is resulting in significantly higher than average rates of harm to people on bikes
3. An unappealing environment for people on bikes is reducing transport and recreation choices for Wellingtonians

It was acknowledged that these problems will be exacerbated by Wellington City's forecast population growth.

The Strategic Case was provided in support of an application for funding to the NZ Transport Agency to develop a Programme Business Case for the Wellington City Cycle Network.

2.6.2 Wellington Cycle Network Programme Business Case

The Wellington Cycle Network Programme Business Case[8] (approved by the NZ Transport Agency in October 2015) supports the Strategic Case and outlines the need for investment in cycling infrastructure, education and promotion to improve the current levels of cycling in a safe and efficient environment. Enhancements and additions to the cycling network are critical to improve the overall transport network for the city and will need to be supported by a thorough promotion and education programme to maximise the outcomes of the investment.

As noted above, the development of the Programme Business Case and the Master Plan involved engagement and consultation with Councillors, Council Officers and NZ Transport Agency representatives through a series of workshops. As part of this process, the key problems identified in the Strategic Case were confirmed and the following investment objectives were identified:

- Provide a high Level of Service for people who bike within an integrated transport network
- Improve cycling infrastructure and facilities so that cycling makes a much greater contribution to network efficiency, effectiveness and resilience
- Ensure cycling is a viable and attractive transport choice
- Reduce the crash rate, and the number and severity of crashes involving people on bikes
- Improve Wellington's sustainability, liveability and attractiveness

The Programme Business Case was provided in support of an application for funding to the NZ Transport Agency to develop Indicative and Detailed Business Cases for elements of the Wellington City Cycle Network, including the Eastern Suburbs Cycleways Network.

2.6.3 Eastern Suburbs Indicative Business Case

The Eastern Suburbs Indicative Business Case[9] (submitted to NZTA for approval in December 2016) builds on the strategic and programme business cases developed in 2015 and reconfirms the problems set out in these documents.

[8] Wellington City Council, Wellington Cycle Network Programme Business Case, October 2015
[9] Wellington City Council, Wellington City Urban Cycleways Programme: Eastern Suburbs Indicative Business Case, December 2016

The Indicative Business Case phase involves the development of a long list of route options and the identification of issues associated with each option, to enable the selection of preferred route options. For the Eastern Suburbs Cycleways Network, this process was undertaken collaboratively with a Working Group that included local community representatives and representatives from the NZ Transport Agency.

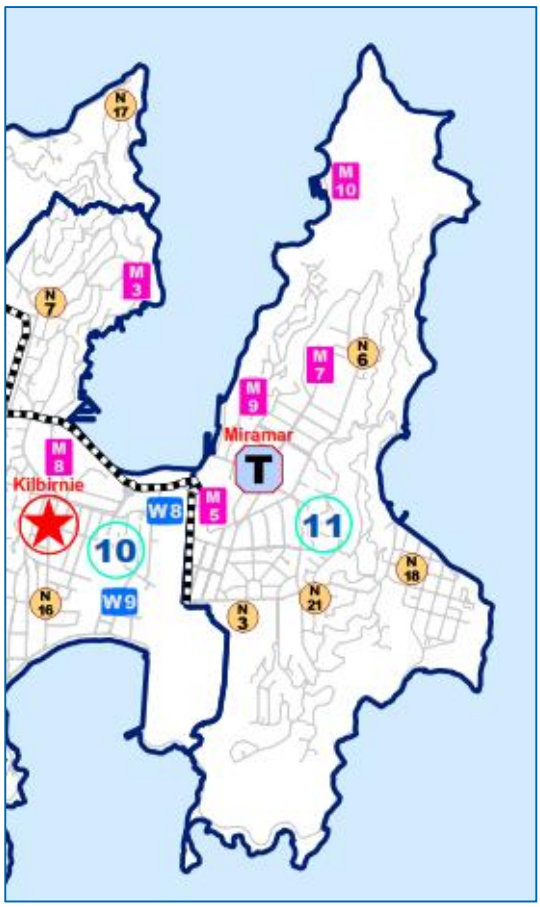
The Eastern Suburbs Indicative Business Case sets out in detail the process that has been followed to determine the preferred and approved routes that will form the Eastern Suburbs Cycleways Network. This includes details of the refresh of the cycleways programme and the decisions made at the TUD Committee meeting on 11 August 2016 which confirmed the routes for improvements in Miramar, to be delivered by 30 June 2019.

The Indicative Business Case was provided in support of an application for funding from the UCP and NLTP to the NZ Transport Agency, for the Eastern Suburbs Cycleways Network project to proceed to the Detailed Business Case phase.

2.7 Town Centres Policy

The Council's Centres Policy (August 2008) sets out a hierarchy of Town Centres and identifies Miramar as one of four Town Centres in Wellington City, as shown in Figure 5. Three Neighbourhood Centres are identified in the immediate study area and include Broadway (Strathmore), Strathmore and Seatoun. In addition, Park Road is identified as a Work Area. The proposed cycleway routes will play a key role in connecting these key destinations.

Figure 5 Wellington hierarchy of town centres

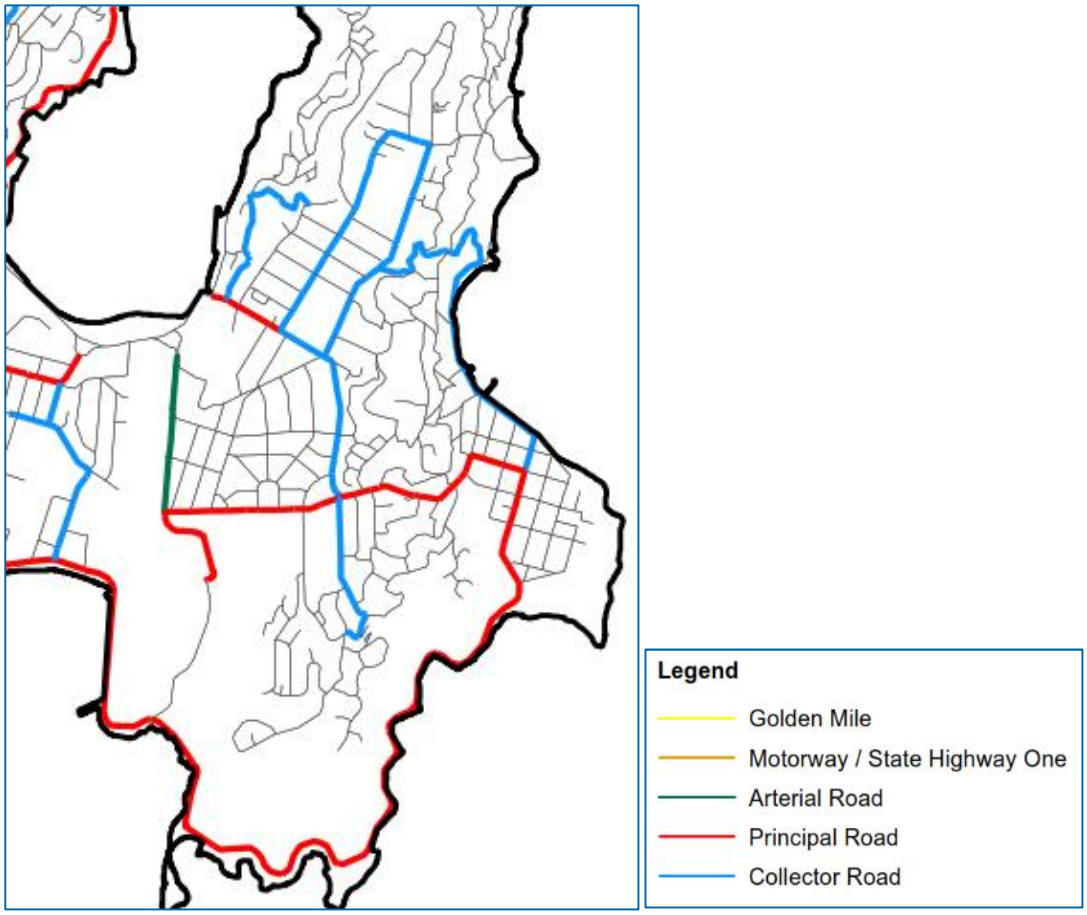


One of the main objectives set out in the Centres Policy (Objective 7) is to improve the urban design quality of all Centres and build on their sense of place. This objective will be considered in the design of the Broadway and Seatoun Tunnel/ Dundas Street cycleway routes that pass through the three Neighbourhood Centres.

2.8 Wellington City Hierarchy of Roads

The Hierarchy of Roads in Wellington City is shown in Figure 6.

Figure 6 Wellington City Road Hierarchy in Miramar



The five proposed cycleway routes are identified as the following types of road:

- **Route 1 – Park Road** is designated as a Collector Road for its entire length;
- **Route 2 – Ira Street/ Miramar Avenue** is designated as a Collector Road for its entire length;
- **Route 3 – Hobart Street**, is designated as a Local Road for its entire length;
- **Route 4 – Broadway** is designated as a Principal Road for its entire length; and
- **Route 5 – Seatoun Tunnel/ Dundas Street** is designated as a Principal Road for its entire length.

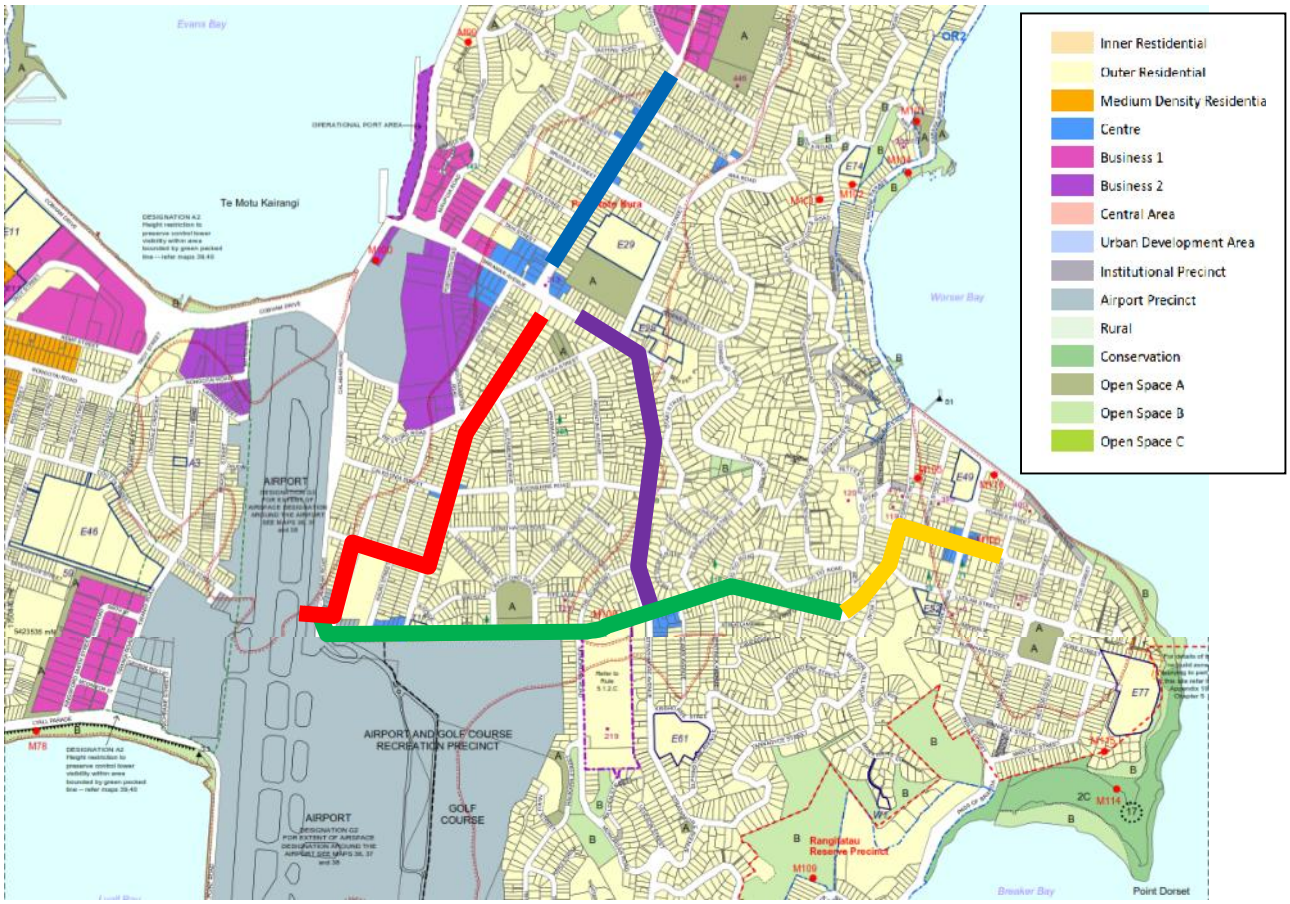
The definition of the road categories are as follows:

- Principal Road: roads that provide access to motorways and to arterial roads having a dominant through-traffic function and carrying the major public transport routes (primary road);
- Collector Road: roads that distribute traffic between and within local areas and form the link between principal and secondary roads (secondary road); and
- Local Road: roads that provide direct access to properties fronting the road and include both long and short cul-de-sacs (secondary road)

2.9 District Plan Land Zoning

The Council's District Plan Maps identify activity areas and overlays within Wellington City and an extract that includes the Miramar area is shown below in Figure 7.

Figure 7 Wellington City Council District Plan Zoning Map for Miramar Area



The five Miramar cycleway routes have been superimposed on the District Plan to show the underlying and adjacent land use zones. All legal roads are uncoloured and the centre of the road is considered the separation between zones. The predominate adjacent zone is 'Outer Residential', with 'Centres' identified on Park Road, Broadway and Ferry Road (corresponding with the Work Areas and Neighbourhood Centres identified earlier in this Section). Broadway also has an area of 'Open Space A' at Crawford Green. As a result of the zone centerline approach for the road, there may be different district plan requirements for the cycleway routes at the same location, depending on the side of the road they are to be located on.

It has been assumed that no land adjacent to the road is contaminated. This will need to be confirmed as this project progresses.

A preliminary assessment of the Wellington District Plan suggests upgrade and maintenance of existing formed roads (including earthworks) is a permitted activity across the zones (Rules 5.1.5, 7.1.2 and 17.1.14). A resource consent, is not likely to be required if all works are within the existing formed road. There are potential consent requirements that could be triggered by either the location of works within the formed road, or works required outside the formed road.

The following list identified triggers that may result in consents being required.

- Earthworks within Outer Residential, Centre or Open Space A zoned land which may not meet the height/depth limits or the area limits (Rule 30.2.1)

- Signs within Outer Residential, Centre or Open Space A zoned land which may not meet maximum area, volume and height requirements (Standards 5.6.3 and 7.6.3.1, Rule 17.1.4)
- Works in proximity to a heritage-designated Norfolk Island Pine tree at 411 Broadway would require consent if the cycleway route disturbed soil or requires the laying of impervious surfaces within the dripline of the tree (Rule 21C.2.1)
- Works in proximity to an unnamed Maori site, identified as being of high significance located in the road corridor at approximately 459 Broadway (District Plan Reference M108). The District Plan notes the site requires further investigation, although the plan does not specify the scope of those investigations. The implications or impact of any works on this site associated with construction or operation of the cycleway will need to be assessed, as total or partial destruction or removal of the site will require resource consent (Rule 21E.1)

  Ngati Toa and Taranaki iwi have advised that consultation should be undertaken with iwi on all proposed Miramar cycleway routes as there may be additional sites of significance to Maori not shown on the District Plan Maps, which could be affected by any proposed works.

There are three schools adjacent to the cycleway routes, with Scots College shown as an Education Precinct, Miramar Central School (Designation E29) and Marist-Holy Cross School (Designation E28). If the cycleways development requires any works within these designations, written approval will be required from the designation holder.

2.10 District Plan Restrictions on Access

No restrictions on vehicle access in the study have been identified.

2.11 Climate Change Action Plan

The Council's Climate Change Action Plan (revised in 2013) 'Low Carbon Capital'[10] sets out what the Council is doing to enable Wellington to thrive in a future of growing carbon constraints and climate impacts. The plan sets out how the Council intends to take action to cut Wellington's greenhouse gas emissions and reduce the City's vulnerability to extreme weather events and rising sea-levels.

The Council's investments towards making cycling "safer and more convenient" (Cycling Policy Nov 2008) are directly aligned with the three pillars of climate change action for Wellington.

1. Greening Wellington's Growth

   The action plan notes that Wellington already has the country's highest proportion of people walking, cycling and using public transport for journeys to and from work and that this, together with other factors such as the city's compact form, contributes to Wellington's lower carbon footprint.

2. Changing the way we move

   The action plan notes that there has been a rise in the number of people cycling in the city despite the current lack of supporting infrastructure and refers to the Council's commitment to investment in cycling and the importance of it in relation to other modes as set out in the Sustainable Transport Hierarchy and the accompanying Long Term and Annual Growth Plans.

[10] Wellington City Council, Low Carbon Capital: A Climate Change Action Plan for Wellington 2016-2018, October 2016

3. Leading by example

   The action plan notes that the Council owns, manages, and provides a range of services that directly or indirectly produce greenhouse gas emissions and that it will work towards achieving its target of an 80% reduction in emissions by 2050. The action plan further states that the Council will be reducing the size of their light vehicle fleet and encouraging staff to walk, cycle, or take public transport. It is further noted that the Council already has a fleet of pool bikes which has recently been expanded to include e-bikes that staff can use for business journeys.

2.12 Related Transport Projects

In developing the Miramar Area Cycleways Project, a number of other studies and projects that have an impact on, or are impacted by this project will be considered.

2.12.1 Let's Get Wellington Moving programme

In the wake of the Basin Bridge decision an alliance has been established between Wellington City Council, the NZ Transport Agency and Greater Wellington Regional Council to develop an integrated multi-modal solution for Wellington's transport needs. The focus is the area from Ngauranga Gorge to the Airport, encompassing the Wellington Urban Motorway and connections to Wellington Hospital and eastern and southern suburbs.

Called Let's Get Wellington Moving this alliance has a programme to develop and consult on recommended scenarios.

While this is being progressed, all previously planned improvements on key parts of the network have been placed on hold, including the Mount Victoria Tunnel Duplication project.

2.12.2 Wellington Network Operating Framework

The development of Wellington's Cycle Network, particularly in the central area, is currently being examined as part of the review and update of the Wellington Network Operating Framework (NOF).

Competing road user needs is an ongoing issue in populated areas where trade-offs have to be made to balance demands around the network. A NOF outlines the aspirational operation of the network in terms of strategic objectives and associated relative priorities for each transport mode, identifying which user modes have priority where and when. The NOF process is collaborative and a number of key stakeholders are involved in the process in Wellington.

In Wellington, priorities could be links for Bus Rapid Transit and Cycleways. The NOF is a key opportunity to consider how road space and intersection priority is allocated and assigned to cycling alongside other modes.

2.12.3 Bus Rapid Transit

Greater Wellington Regional Council, the Council and the NZ Transport Agency are working together on proposals for a new Bus Rapid Transit (BRT) network from Wellington Railway Station to Newtown (Wellington Hospital) and Kilbirnie. An Indicative Business Case has narrowed down two options for further investigation.

1. The first will see bus lanes at targeted locations along the core route, with buses given limited priority at intersections. It has an estimated cost $58.8 million and would save 4½ minutes on the average journey.
2. The second option has an estimated cost of $127.2 million and would see buses given full priority at intersections and bus lanes along the whole route and would save 6½ minutes.

This project is being considered as part of the Let's Get Wellington Moving programme.

2.12.4 Future Bus Network

In addition to proposals for the Bus Rapid Transport network, Greater Wellington is making a range of additional improvements to provide affordable, reliable bus services that people want to use. These improvements are listed below.

- A new bus network for Wellington City so there are more services, more often for more people. 75% of Wellington City residents will be within 1 km of a high frequency bus route. The changes are based on public feedback. The new network should be up and running by January 2018 (more detail provided in Section 10 and Appendix A)
- A new bus fleet to replace the retiring trolley buses and oldest diesels from mid-2017 onwards. Greater Wellington is exploring higher capacity, environmentally sustainable options, considering their cost and environmental impact. New low emission diesel buses will come into service first, with the aim of moving towards a fully electric fleet
- Introducing integrated fares and ticketing (IFT) so one ticket takes you anywhere on the Metlink network by bus train or ferry irrespective of the operator. IFT means faster, cashless, seamless travel. Greater Wellington Regional Council is also reducing the number of different tickets and rewarding more people for frequent public transport use
- Performance-based contracts that encourage bus operators to provide better service to their customers

2.12.5 Wellington Airport Proposed Runway Extension

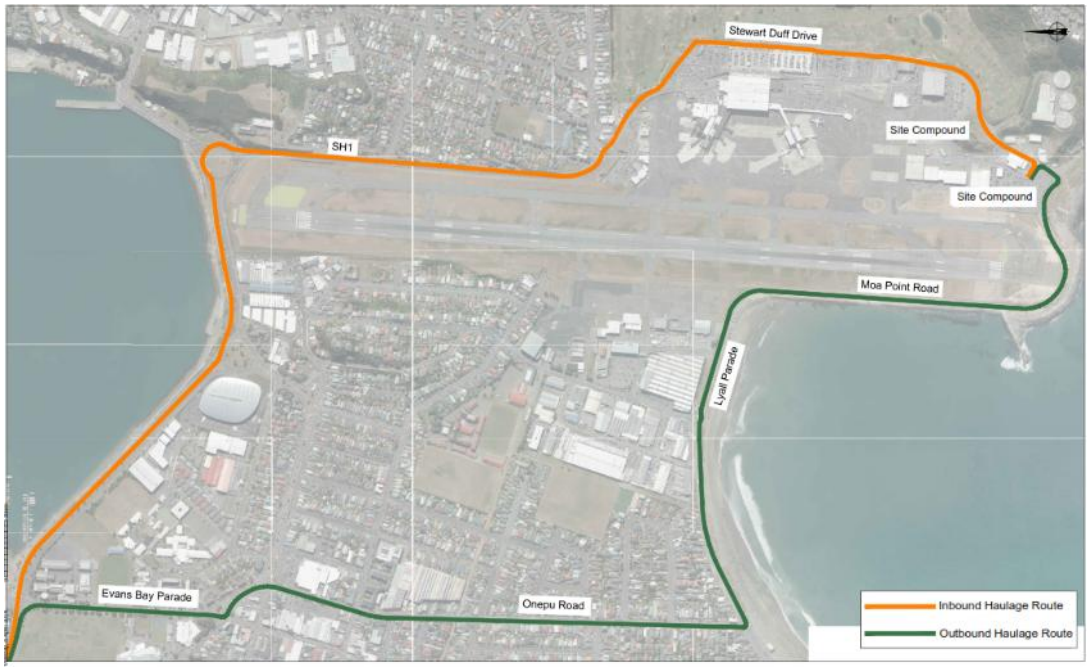
Wellington International Airport Limited is proposing an extension to its runway via a reclamation of the coastal marine area to the south of the existing runway in Lyall Bay. The extension will enable larger aircraft to fly directly to Wellington, linking Wellington with Asia and North America. This would provide benefits to the region's business, education and civic communities.

The Council identified long haul flights as one of the "8 big ideas[11]" to help Wellington thrive and views the project as a major opportunity to change how Wellington City connects with the rest of the world[12]. The Council has committed $90 million as its contribution towards a longer runway as set out in the Council's Long Term Plan.

A resource consent application has been submitted for the project, with public submissions sought in August 2016. Information submitted as part of the resource consent identifies the intended day time construction haulage route within the Eastern Suburbs along SH1 (including Cobham Drive) for inbound vehicles and along Moa Point Road, Lyall Parade, Onepu Road, Evans Bay Parade and SH1 for outbound vehicles. Proposals are for 30 trucks per hour to use these routes to transport fill to the site between 9.30 am – 2.30 pm. It is noted that this section of Evans Bays Parade is a proposed cycleway route and improvements are proposed for the existing off-road cycle path on the northern side of Cobham Drive. It is further noted that it is possible that cycleway and airport construction activities may be underway at the same time.

[11] http://wellington.govt.nz/your-council/news/2014/01/eight-big-ideas
[12] One of the Council's other big ideas is 'better transport' including developing cycleways – see Section 0

Figure 8 Proposed Runway Extension Day Time Haulage Route



2.12.6 Great Harbour Way

The Great Harbour Way -Te Aranui o Poneke (GHW) is the name adopted to a concept which involves the development and marketing of a continuous shared cycle and pedestrian route around the coastline of Wellington Harbour. The 67 km route stretches from Pariwhero/ Red Rocks to Pencarrow Head and the aim is for it to be located immediately beside the harbour edge as far as is practicable.

In 2008, a number of groups decided to combine their efforts into the Great Harbour Way Coalition. The Coalition proposed to develop the concept further and to seek support from the various agencies and organisations that control and administer the harbour edge and the immediate environs, and to chart a direction to move the GHW from a concept into reality. As a first step, the Coalition commissioned The Great Harbour Way - Te Aranui o Poneke Report by Boffa Miskell, which establishes the Great Harbour Way Coalition's vision and objectives. Funding for the study came from the Council, Greater Wellington Regional Council and the NZ Transport Agency, all of whom have implemented cycle and pedestrian initiatives and physical works along the proposed route. The GHW concept seeks to integrate these into a route that has its own identity and can be marketed as an overall corridor.

More recently, the Council undertook an engineering investigation[13] to identify options for the Miramar to Waitangi Park Precinct section, which is adjacent to this study area. The investigation also produced a draft programme, indicative cost estimates, sketches of the options and cross-sections for public consultation.

Two options were assessed, both options included a nominal 5.0 metre wide path split with a 3.0 metre cycle path and 2.0 metre footpath. For Option A, the existing road infrastructure incorporating traffic lanes, parking and on-road cycle lanes would remain unaffected, with the path being built outwards from the existing sea-side kerb-line (including a cantilever deck structure, new seawalls and land acquisition where required). In contrast, Option B considers the development of the route within the existing road corridor, achieved by removal of on-road parking and/or cycle paths, and lane narrowing where practical, bearing in mind the vehicle swept paths of large goods vehicles. Indicative cost estimates for Options A and B were estimated at $44 million and $13 million respectively.

[13] Wellington City Council/ AECOM, Great Harbour Way Investigations, July 2016

2.12.7 Minor Works

The Council has a minor works programme which delivers smaller scale improvement works (with costs less than $300,000). Projects being progressed this financial year (2016-17) in the Eastern Suburbs are listed below.

1. Seatoun Tunnel safety improvements: cycle-activated warning signs and associated detection camera, at locations shown in Figure 9
2. Kilbirnie Crescent/ Hamilton Road Intersection Improvements: To aid east-west cycle movements for people on bikes travelling between Kilbirnie and Hataitai
3. Lyall Parade, Lyall Bay Bike Fix-it Stand: installation of a bike fix-it stand with tools and a tyre pump

Figure 9 Seatoun Tunnel Safety Improvements

Two minor works projects are to be considered as part of this project and are listed below.

- Broadway safety improvements – remove traffic islands and trees within the central median to eliminate 'pinch points
- Airport Tunnel entrance improvements – remove gates and install signs

2.12.8 Point Halswell Shared Path Trial

The Council is considering a trial of a two-way shared walking and cycling path at the top of the Miramar Peninsula during 2017. If the trial proceeds, temporary traffic management will be used to close the harbour-side traffic lane to motorised traffic. Vehicles will be restricted to one-way operation from Shelly Bay to Scorching Bay.

While this proposal is expected to appeal mainly to recreational cyclists, it is expected to increase the number of people on bikes in the Eastern Suburbs and assist to normalise cycling. This initiative may also encourage those who may be considering riding a bike for other journeys, including to work, to do so.

2.12.9 Behaviour Change Initiatives

In line with the WUCP Behaviour Change Strategy a programme of wrap-around activities are being planned for the Eastern Suburbs. The first was held on 15 October 2016 at Kahurangi

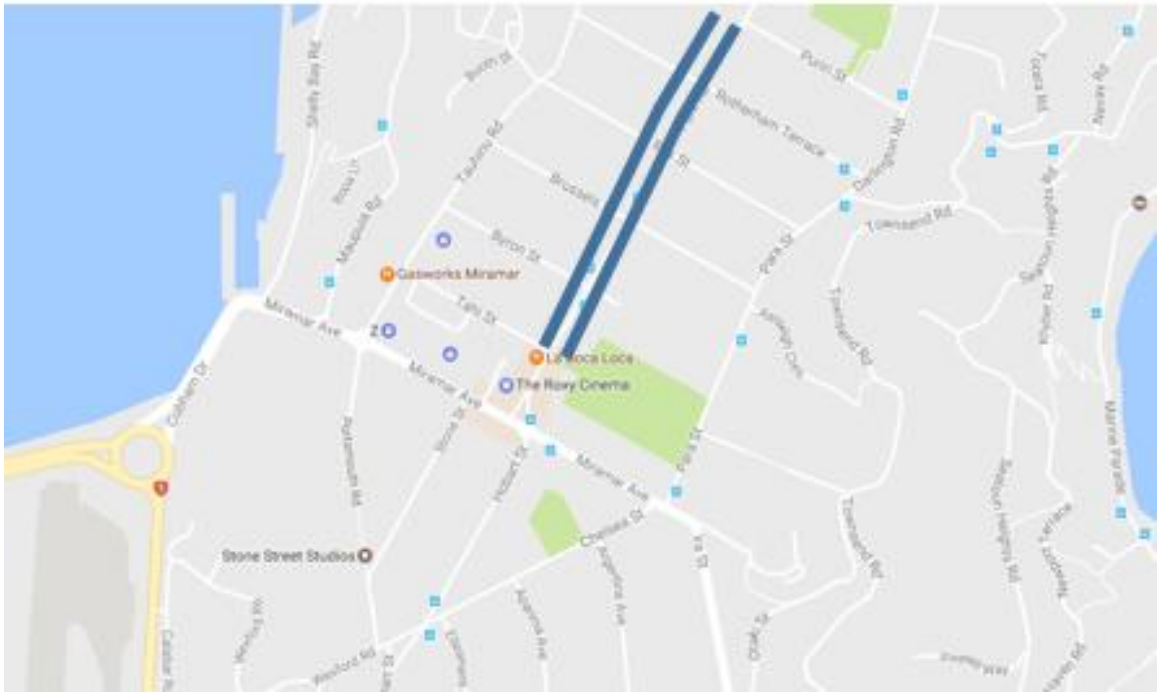
School, *Strathmore Local Day*, which involved activities such as a bike fix up, try an e-bike and bike challenges.

3. Existing Road Corridor – Park Road

3.1 Road Layout

The section of Park Road being considered as part of this cycleways project is the area between Tahi Street and Miramar North Road as shown in Figure 10. The route is primarily along residential streets (as shown in Figure 7) and connects Miramar Town Centre to the commercial area to the north of Miramar North Road.

Figure 10 Park Road (Route 1)[14]



Miramar Avenue to Tahi Street

The intersection of Park Road and Miramar Avenue is controlled by a roundabout. Between Miramar Avenue and Tahi Street, Park Road has a 30 km/h speed limit; elsewhere it is 50 km/h. This section includes retail activities and the Roxy Picture Theatre. Angle parking is located on the western kerb and parallel parking on the eastern kerb. A flush median is present. The kerb to kerb width is 20 metres. See Figure 11.

[14] Google Maps

Figure 11 Park Road, south of Tahi Street looking north[15]

Tahi Street to Byron Street

A pedestrian crossing is located south of Byron Street. The crossing has kerb extensions to reduce the width of carriageway that pedestrians have to cross. This crossing provides access to Miramar Central School at 38 Park Road.

Byron Street to Miramar North Road

North of Byron Street there is parallel parking on both sides of the road and a flush median. The flush median provides turning bays at the intersections. The kerb to kerb width is 17 metres. See Figure 12.

Figure 12 Park Road, north of Byron Street[16]

There is a dairy and takeaways located on the corner of Miramar Avenue and Brussels Street. No cycle parking facilities are provided at this location.

[15] Google Maps Street View
[16] Google Maps Street View

North of Miramar North Road

The intersection with Miramar North Road is also a roundabout. North of Miramar North Road, Park Road reduces in width to 11 metres, see Figure 13. During the site visit, a cyclist was observed cycling on the footpath. This area contains a number of commercial premises including a Garden Centre (now closed), Park Road Studios and Weta Workshop at the northern end. It is noted that this section of Park Road is not being considered as part of this project.

Figure 13 Park Road, north of Miramar North Road[17]

Site visit observations

It was noted during the site visit that parking occupancy was high along sections of Park Road. It was also noted that several bus routes use Park Road including 2, 18, 24 and 31 and there are a number of bus stops on both sides (bus route maps and timetables are provided in Appendix A).

Large trees are located in the berm with footpaths located adjacent to the kerb on the east side but on the west side footpaths are located between the trees and property boundaries.

3.2 Traffic Volumes

The Council has provided traffic count data at key locations within the study area and these have been analysed below.

Park Road north of Tahi Street

The traffic patterns for Park Road north of Tahi Street have been provided in Figure 14 and summarised in Table 1.

[17] Google Maps Street View

Figure 14 Traffic Volumes – Park Road, north of Tahi Street (August 2015)

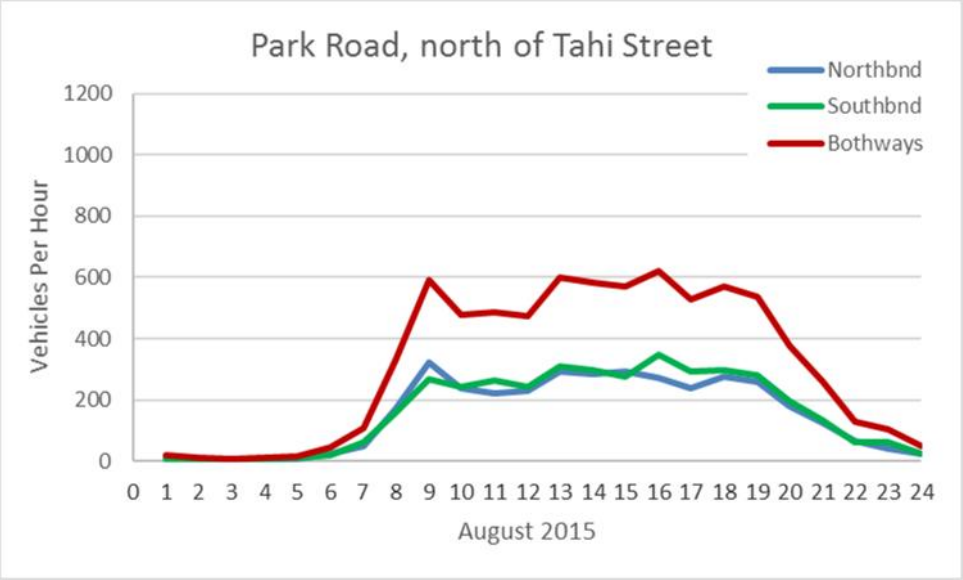


Table 1 Traffic Volume and Speed Analysis – Park Road, north of Tahi Street

	AM peak	Interpeak	PM peak	Daily	Average Speed	85% Speed
Northbound	320	290	270	3,650	30	38
Southbound	270	310	350	3,850	37	44
Both ways	590	600	620	7,500	33	41

As shown in Figure 14 and Table 1, there are moderate traffic flows throughout the day without distinct AM or PM peaks and the number of vehicles travelling both northbound and southbound are relatively similar. There are 7,500 vehicle movements per day and this level is considered appropriate for this type of Collector Road and is neither high nor low. The average speeds at this location are already relatively low and it is noted that the traffic count location is just to the north of the 30 km/h speed limit.

Park Road south of Rex Street

Traffic patterns for Park Road south of Rex Street have been provided in Figure 15 and Table 2.

Figure 15 Traffic volumes – Park Road at Rex Street (August 2015)

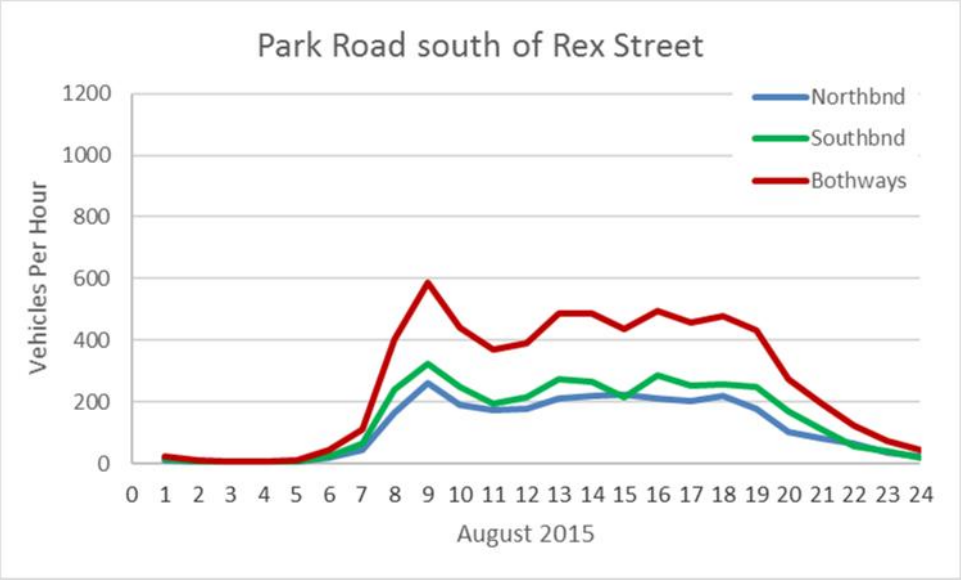


Table 2 Traffic Volume and Speed Analysis – Park Road at Rex Street

	AM peak	Interpeak	PM peak	Daily	Average Speed	85% Speed
Northbound	260	220	220	2,850	49	55
Southbound	320	280	290	3,550	50	57
Both ways	580	500	510	6,400	49	56

As shown in Figure 15 and Table 2, there are moderate traffic flows throughout the day. There is a noticeable peak at 9 AM which could be linked to drop-offs at Miramar Central School. There are more vehicles travelling southbound than northbound suggesting that alternative routes are used. There are 6,400 vehicle movements per day and again this level is considered moderate and appropriate for a Collector Road. It is noted that this is approximately 1,000 vehicles less than at the north of Tahi Street traffic count location. The average speeds at this location are higher than those recorded north of Tahi Street.

3.3 Crash Analysis

Analysis of the crash history data for Park Road contained in the NZ Transport Agency's Crash Analysis System (CAS) for the 10-year period between 2006 and 2015, has been undertaken. For the section of Park Road between Tahi Street and Miramar Road North, two minor injury crashes were reported, as shown in Table 3.

Table 3 Park Road crashes

Type	Vehicle movement	Fatal	Severe	Minor	Non-injury	Total
MB	Manoeuvring – U turn			1		1
HA	Crossing (no turns) – right angle			1		1
	Total	0	0	2	0	2

Both of these crashes involved the driver of the car failing to give way. In one crash the driver failed to give way when turning to non-turning traffic; in the other crash the driver failed to give way at a give-way sign.

3.4 Issues and Constraints

The potential issues for cyclists using Park Road and constraints to implementing cycle facilities are listed below.

- There are no dedicated facilities for cyclists on Park Road, such as lanes, road markings, signage or parking
- Roundabouts can be difficult to negotiate for cyclists
- There are safety concerns with cycle lanes adjacent to angle parking in terms of visibility, unless enough clearance is provided for cars to reverse
- Traffic islands reduce the width of the carriageway that is to be shared with cyclists and motorised vehicles, creating pinch points
- Kerb extensions together with the traffic islands at the pedestrian crossing create pinch points for cyclists
- Buses use the route and any redesign of the road corridor would need to cater for vehicles of this dimension
- There are bus stops along the entire length which need to be considered in any redesign of the road corridor
- The area being considered as part of this project does not extend past the Miramar North Road intersection where a number of commercial premises are located and where a cyclist was observed cycling on the footpath
- Cycle facilities will need to tie in with the proposed facilities for Miramar Town Centre (a separate project)
- Only a small section of Park Road (between Miramar Avenue and Tahi Street) has a 30km/h speed limit
- Cars are recorded travelling faster than the 50km/h speed limit
- There are a number of residential driveways that cars reverse out of and there are sightline restrictions created by the large trees located in the road berm
- Miramar Central School generates a high number of pedestrian, cyclist and vehicle movements at school start and finish times
- Flooding is experienced along this corridor.

3.5 Opportunities

Opportunities that have been identified are listed below.

- Flush medians allow vehicles to overtake cyclists at a safe distance
- The width of the flush medians could be reduced to cater for cycle facilities
- The 30 km/h speed section enables confident cyclists to more comfortably cycle in the traffic lane
- The property setback could provide a shared off road pedestrian and cycle path

- There are a number of local destinations where cycling could be encouraged and facilities such as cycle parking could be provided, e.g. Miramar Central School, Miramar Town Centre and the commercial premises north of Miramar North Road.
- Work with water infrastructure teams to identify planned improvement projects and to align works programmes.

3.6 Summary

Park Road has a carriageway width that would allow several layouts to be considered for cyclists. Vehicles generally travel at or close to the posted speed limit and volumes of traffic are within ranges expected to provide on-road facilities.

4. Existing Road Corridor – Ira Street/ Miramar Avenue

4.1 Road Layout

The Ira Street/ Miramar Avenue route being considered as part of this cycleways project includes all of Ira Street as well as Miramar Avenue from the 30 km/h speed limit sign to the east of Hobart Street, as shown in Figure 16. The route is primarily along residential streets (see Figure 7) and connects Miramar Town Centre to Broadway.

Figure 16 Ira Street/ Miramar Avenue (Route 2)

Miramar Avenue (Hobart Street / Park Road to Ira Street)

The intersection of Park Road/ Hobart Street/ Miramar Avenue is controlled by a roundabout. The 30 km/h reduced speed limit for Miramar Town Centre ends just to the east of this intersection. The remainder of the route is 50 km/h.

There is a bus stop located on the south side of Miramar Avenue at the location of the 30 km/h speed limit.

This section of Miramar Avenue has parallel parking on both sides and a flush median. Traffic islands are placed periodically within the flush median. Large trees are located in the berm with footpaths located adjacent to the kerb. The kerb to kerb width is 16 metres. See Figure 17.

Figure 17 Miramar Avenue, east of Park Road[18]

The intersections with Para Street and Chelsea Street are controlled by give ways with priority to Miramar Avenue.

A pedestrian crossing is located just west of the Ira Street intersection. Central islands for pedestrians and cyclists are located within the median. There is a kerb extension on the southern kerb.

The right of way at the intersection is between Miramar Avenue west and Ira Street, with Miramar Avenue east controlled by a stop sign.

It was noted during the site visit that parking occupancy was higher at the Park Road end.

Ira Street

Ira Street has solid edgelines delineating parking spaces and a flush median. The northern end of Ira Street is a typical residential street with lots of driveways and some on street parking. Trees and lampposts are located in the berm. The footpath is adjacent to the kerb. See Figure 18

[18] Google Maps Street View

Figure 18 Ira Street, south of Miramar Avenue[19]

South of 72 Ira Street, there is no berm on the eastern side and property boundaries extend to the back of the footpath. See Figure 19.

Figure 19 Ira Street, looking south from 72 Ira Street[20]

It was noted during the site visit that the parking area is narrow and vehicle wheels straddled the edgeline at a number of locations.

To the south of Otaki Street, a small retaining wall is located immediately adjacent to the road. See Figure 20.

[19] Google Maps Street View
[20] Google Maps Street View

Figure 20 Ira Street, south of Otaki Street[21]

Two substations are located on Ira Street, one north of Otaki Street and the other north of Broadway.

The intersection with Broadway is controlled by a roundabout. The 30 km/h reduced speed limit on Broadway for Strathmore Park starts at Ira Street.

The north east corner of the Broadway/ Ira Street intersection is a grassed area. An existing footpath runs along the diagonal boundary.

Bus routes 25, 30, 43 and 44 use Ira Street and there are a number of bus stops on both sides of the road (bus route maps and timetables are provided in Appendix A).

4.2 Traffic Volumes

The Council has provided traffic count data at key locations within the study area and these have been analysed below.

Miramar Avenue east of Hobart Street

The traffic patterns for Miramar Avenue east of Hobart Street (outside 95) have been provided in Figure 21 and summarised in Table 4.

[21] Google Maps Street View

Figure 21 Traffic Volumes – Miramar Avenue, east of Hobart Street (August 2015)

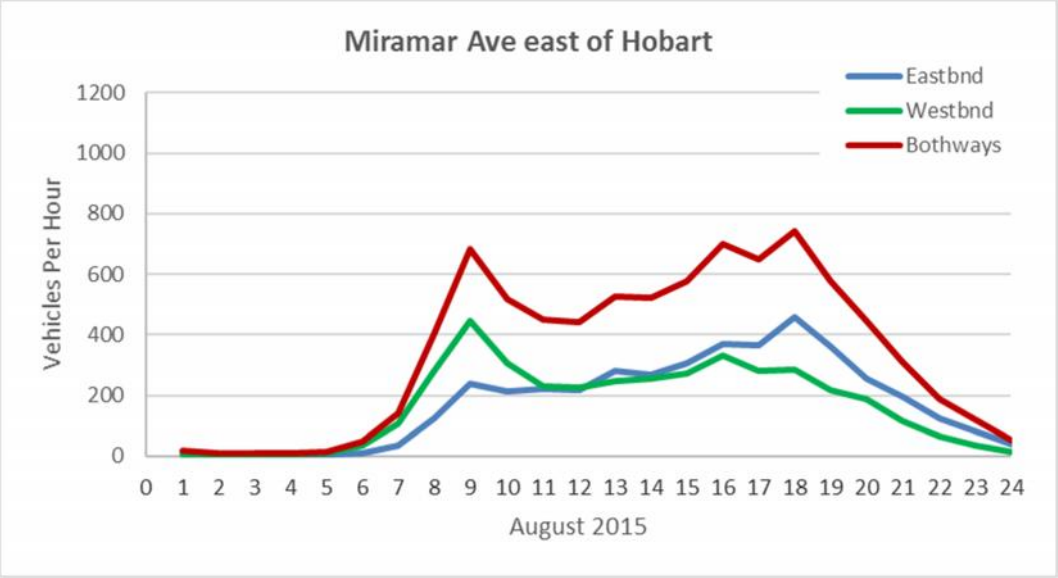


Table 4 Traffic Volume and Speed Analysis - Miramar Avenue, east of Hobart Street (outside 95)

Direction	AM Peak	Interpeak	PM Peak	Daily	Average Speed	85% speed
Eastbound	240	280	460	4,200	44	49
Westbound	450	250	330	3,950	43	48
Both ways	690	530	790	8,150	43	48

As shown in Figure 21 and Table 4; Miramar Avenue experiences tidal peaks flows westbound during the morning period and eastbound during the evening period. At this location Miramar Avenue is a Collector Road (see Figure 6); and would expect to have tidal flow. Traffic volumes are higher than on Park Ave although both are collector roads. The average speed suggest that this location does not experience significant congestion, but average traffic would be travelling faster than a typical cyclist.

Ira Street at Miramar Avenue

The traffic patterns for Ira Street at Miramar Avenue have been provided in Figure 22 and Table 5.

Figure 22 Traffic Volumes – Ira Street at Miramar Avenue (August 2015)

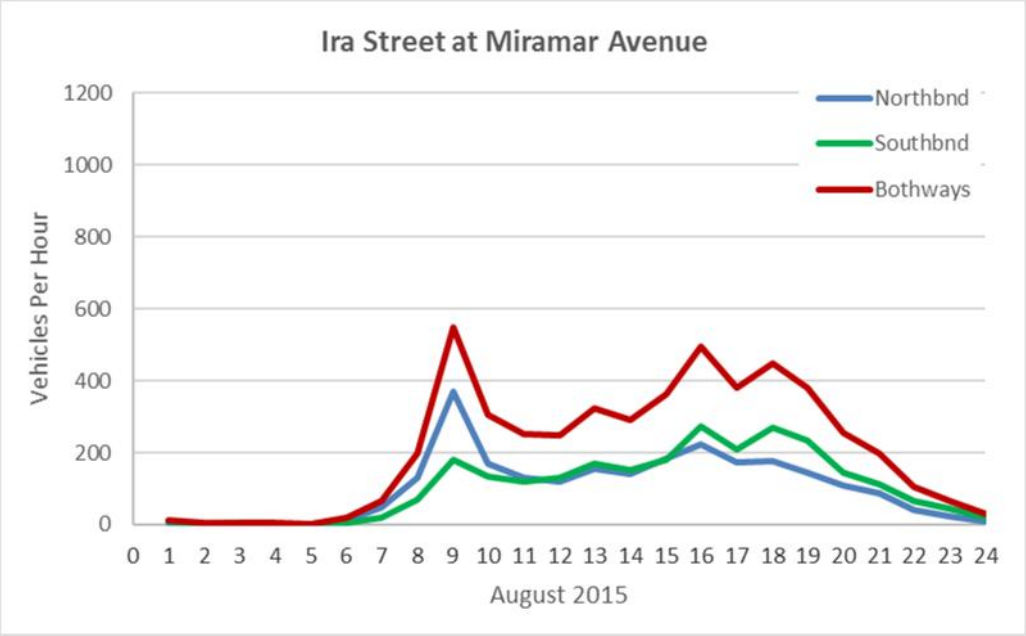


Table 5 Traffic Volume and Speed Analysis - Ira Street at Miramar Avenue (outside 82)

Type	AM Peak	Interpeak	PM Peak	Daily	Average Speed	85% speed
Eastbound	370	160	220	2,450	45	50
Westbound	180	170	270	2,550	47	52
Both ways	550	320	500	5,000	46	51

As shown in Figure 22 and Table 5; Ira Street experiences a significant peak northbound during the morning period and pm peak spreading between 4 and 6 pm southbound. Ira Street is a Collector Road (see Figure 6) which typically see a tidal flow traffic pattern. Traffic volumes are lower than on other collector roads in the project area. The average speed suggest that this location does not experience congestion. Vehicles on average are traveling faster than a typical cyclist.

Ira Street at The Quadrant

The traffic patterns for Ira Street at The Quadrant have been provided in Figure 23 and Table 6.

Figure 23 Traffic volumes – Ira Street at The Quadrant

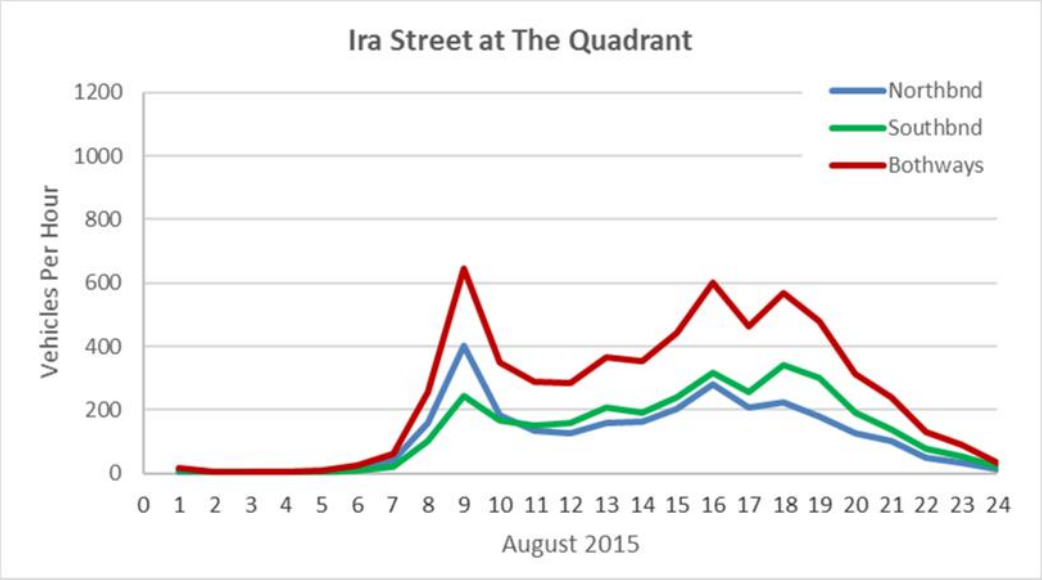


Table 6 Traffic Volume and Speed Analysis - Ira Street at The Quadrant (outside 17)

Type	AM Peak	Inter Peak	PM Peak	Daily	Average Speed	85% speed
Eastbound	400	160	280	2,850	48	54
Westbound	240	210	340	3,200	50	55
Both ways	640	370	620	6,050	49	54

As shown in Figure 23 and Table 6; Ira Street experiences tidal peaks flows northbound during the morning period and southbound during the evening period. Ira Street is a Collector Road (see Figure 6); and tidal flows of this nature are expected on such roads. The average speed suggest that this location does not experience congestion. Vehicles on average are traveling faster than a typical cyclist.

4.3 Crash Analysis

Analysis of the crash history data for Ira Street and Miramar Avenue contained in CAS for the 10-year period between 2006 and 2015, has been undertaken. Four minor injury crashes were reported as set out in Table 7.

Table 7 Ira Street crashes

Type	Vehicle Movement	Fatal	Severe	Minor	Non-Injury	Total
LB	Right turn against – making turn			1		1
HA	Crossing (no turns) – right angle			3		2
TOTAL		0	0	4	00	4

All four of these crashes involved the driver of the vehicle failing to give way. In one crash the driver failed to give way when turning to non-turning traffic. In the other three crashes, the driver failed to give way at a stop or give way sign.

4.4 Issues and Constraints

The potential issues for cyclists using Ira Street/ Miramar Avenue and constraints to implementing cycle facilities are listed below.

- There are no dedicated facilities for cyclists on Ira Street/ Miramar Avenue, such as lanes, road markings, signage or parking
- Roundabouts can be difficult to negotiate for cyclists
- Kerb extensions together with the traffic islands at the pedestrian crossing create pinch points for cyclists
- Buses use the route and any redesign of the road corridor would need to cater for vehicles of this dimension
- There are bus stops along both Ira Street and Miramar Avenue which need to be considered in any redesign of the road corridor
- Cycle facilities will need to tie in with the proposed facilities for Miramar Town Centre (a separate project)
- Cycle facilities will need to tie in with the proposed facilities for Broadway (also being considered as part of this project)
- All turning movements for all modes need to be considered at the Miramar Avenue / Ira Street intersection
- A cycle facility on Ira Street may require a setback from the retaining wall
- The differing property setbacks on the east side of Ira Street may restrict the ability to provide a shared off road pedestrian and cycle path along the full length of Ira Street

4.5 Opportunities

Opportunities that have been identified are listed below.

- Flush medians allow vehicles to overtake cyclists at a safe distance
- The width of the flush median on Miramar Avenue could be reduced to cater for cycle facilities

4.6 Summary

This route has a narrower carriageway width than Park Ave which may limit options at the design stage. Traffic speeds are higher than the posted speed which may require calming through design treatments.

5. Existing Road Corridor – Hobart Street

5.1 Road Layout

The Hobart Street route being considered as part of this cycleways project includes the Tunnel underneath the runway of Wellington Airport between Miro Street and Coutts Street and extends along Miro Street to Kedah Street where it travels east to Hobart Street and heads north to Miramar Ave, as shown in Figure 24. The route is primarily along residential streets (see Figure 7) and connects Miramar Town Centre to Kilbirnie and beyond, via the Tunnel under the airport which is a key link between the Eastern Suburbs.

Figure 24 Hobart Street (Route 3)[22]

Airport Tunnel

The Tunnel under the airport is currently used by people walking and riding bikes, motorised vehicles are prohibited. The paths leading to it from Miro Street allows cyclists to cycle off-road. The Tunnel is not well lit. Figure 25 show the exit from the Tunnel onto Coutts Street where there are cycle lanes present. Coutts Street is being considered as part of the Kilbirnie Area cycleways project.

[22] Google Maps

Figure 25 Coutts Street

Miro Street

Upon exiting the Airport Tunnel at Miro Street, cyclists have the choice of turning left onto Miro Street towards Miramar town centre or right to the airport, Strathmore and Seatoun.

Miro Street is a residential tree-lined road with houses on the western side only. On the eastern side of the street is a childcare centre and open space. There is parallel parking provided on both sides of the road. There are wide berms and the kerb to kerb width is 14 metres. There are minimal road markings. See Figure 26.

Figure 26 Miro Street, north of Broadway[23]

[23] Google Maps Street View

Kedah Street

The intersection of Miro Street and Kedah Street is a give way priority, with give way signs on the Miro Street approaches.

Kedah Street does not have kerb and channel and vehicles park on the grass berm, as shown in Figure 27. The footpath has a kerb onto the grass berm. While the sealed width is only 6.8 metres the overall road reserve width is 20.1 metres.

Figure 27 Kedah Street, east of Miro Street

Hobart Street

The intersection of Kedah Street and Hobart Street is uncontrolled.

Hobart Street has a kerb to kerb width of 12 metres. There is on-street parking on both sides, though no parking bays are marked. The centreline is a single white line. The footpath on the eastern side is between the kerb and property boundaries. On the western side there is a grass berm between the footpath and property boundaries. See Figure 28.

Figure 28 Hobart Street, north of Kedah Street[24]

The intersection with Devonshire Road/ Caledonia Street is priority controlled, with stop signs on Hobart Street. Islands are in the centre of the road on Hobart Street. There are a number of small retail shops on the south west and north east corners of this intersection, including a dairy and takeaway shops and a church is located on the south east corner. There is marked on-street parking outside the dairy to the south of the intersection. The word “stop” for the stop sign is located within the parking area, resulting in the wording being obscured if a vehicle is parked in the space. See Figure 29.

Figure 29 Hobart Street, south of Devonshire[25]

North of Devonshire Road/ Caledonia Street (to Wexford Road/ Chelsea Street) there are a number of lampposts located on the footpath on both sides of Hobart Street. Some are near the kerb line whilst others are set back against property boundaries. There are trees located on the western berm along this section. There is no berm on the eastern side.

[24] Google Maps Street View
[25] Google Maps Street View

North of Wexford Road/ Chelsea Street (adjacent to number 115 Hobart Street) there are two traffic islands with trees in the middle of the road, as shown in Figure 30.

Figure 30 Hobart Street, outside 115[26]

From the traffic island north to Miramar Avenue, individual parking areas are marked, and no parking lines are painted across driveways.

The intersection of Hobart Street and Miramar Avenue is controlled by a roundabout. There are islands south of the roundabout, with trees. The reduced speed limit to 30 km/h for the Miramar Town shopping area starts 60 metres south of the intersection. See Figure 31.

Figure 31 Hobart Street, south of Miramar Avenue[27]

Bus routes 2 and 18 travel to/ from Miramar and use the northern part of Hobart Street (from Caledonia Street to Miramar Avenue). Bus route 11 travels to/ from Seatoun and use the southern part of Hobart Street (from Caledonia Street to Broadway). There are a number of bus stops on

[26] Google Maps Street View
[27] Google Maps Street View

both sides of the road (bus frequency details are provided in Section 10 and bus route maps and timetables are provided in Appendix A).

5.2 Minor Safety Improvement Works

Improvements to the Airport Tunnel have recently been implemented as part of the Council's minor works programme. Extracts from Council documents[28] detailing the works are set out below.

The following improvements are proposed to improve access and level of service for cyclists using the Airport Tunnel:

- Remove the existing gate and install a removable bollard at both ends of the tunnel.
- Install a new "No Motorbike / Moped" sign at both ends of the tunnel.
- Remove existing and install new pedestrian / cycle symbols with direction arrows at both ends of the tunnel.

Airport Tunnel Entrance Improvements June 2016

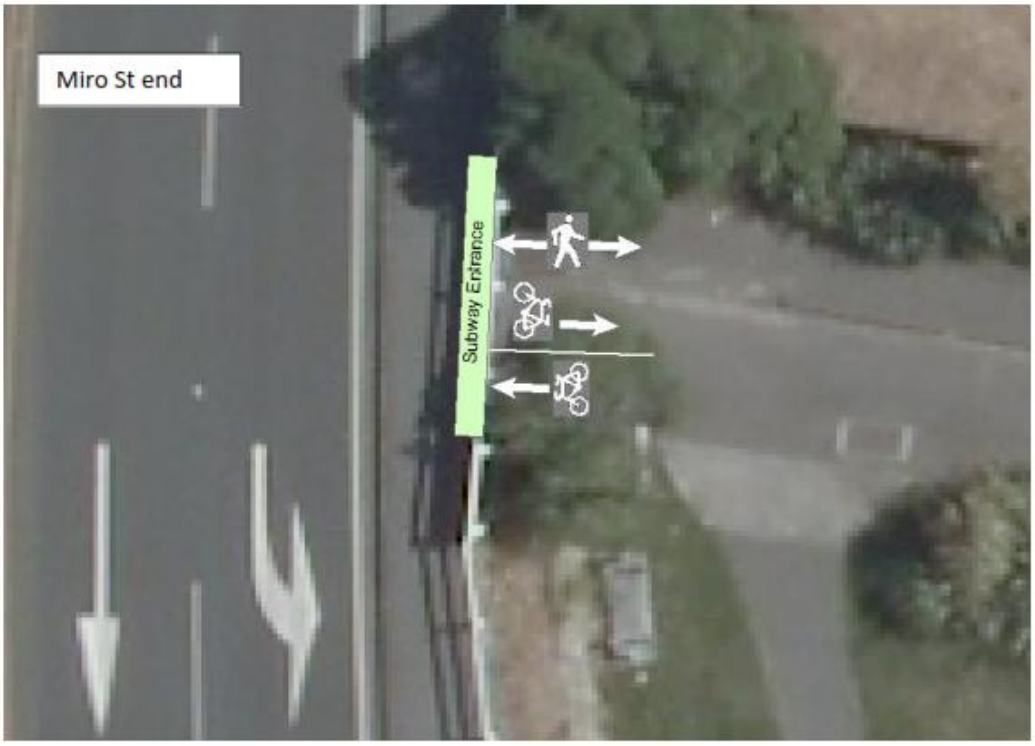
1. Remove the gate and install a removable bollard at both ends of the tunnel.

2. Install a new "No Motorbike/ Moped" sign at both ends of the tunnel.

(Size to be agreed with Contractor on site.)

[28] WCC, Memo: Eastern Suburbs Cycleway Network Refresh (Draft), July 2016

3. New pedestrian/ cycle symbols with arrows to be marked.
   Existing cycle symbol on the footpath at the Coutts St entrance to be removed.



5.3 Traffic Volumes

The Council has provided count data at key locations within the study area and these have been analysed below.

Miro Street

The traffic patterns for Miro Street have been provided in Figure 32 and Table 8.

Figure 32 Traffic Volumes – Miro Street (August 2015)

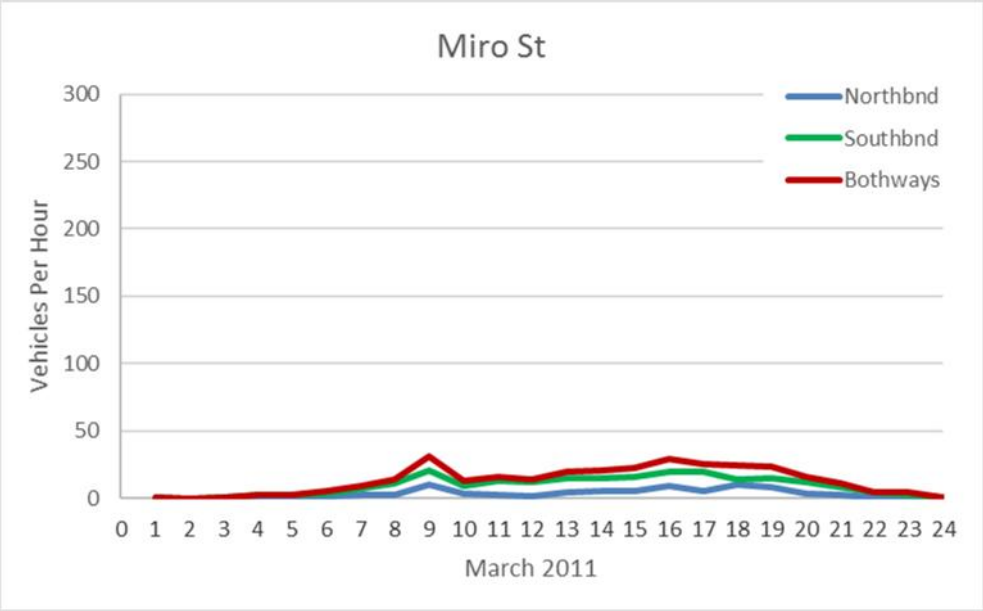


Table 8 Traffic Volume and Speed Analysis – Miro Street

Type	AM Peak	Inter Peak	PM Peak	Daily	Average Speed	85% speed
Eastbound	10	10	10	100	29	41
Westbound	20	20	20	250	35	46
Both ways	30	30	30	350	32	44

As shown in Figure 32 and Table 8, traffic volumes along this road are very low throughout the day, with less than one vehicle every two minutes on average. Traffic speeds along this road are also low and below the 50 km/h speed limit. This makes it an attractive route for cyclists.

Kedah Street

The traffic patterns for Kedah Street have been provided in Figure 33 and Table 9.

Figure 33 Traffic Volumes – Kedah Street

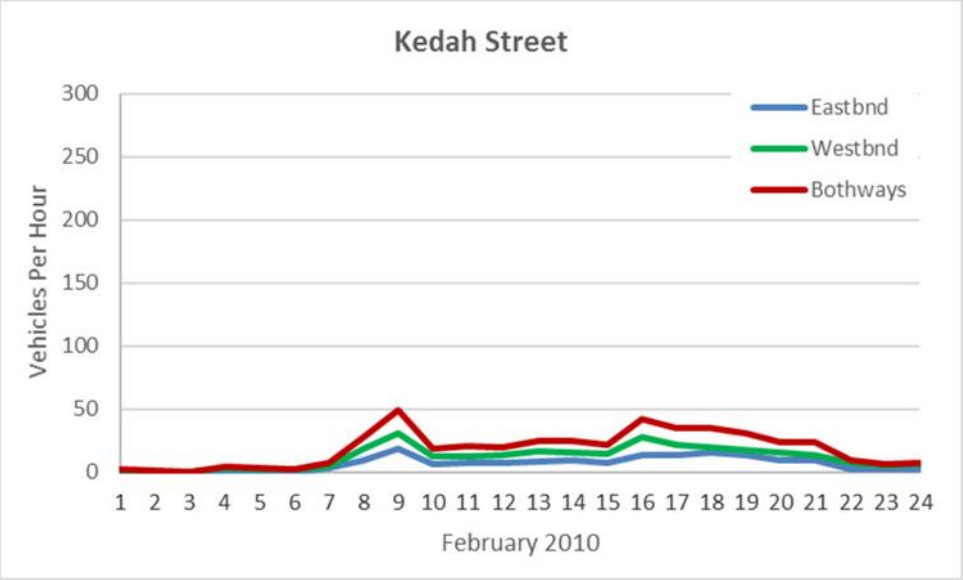


Table 9 Traffic Volume and Speed Analysis – Kedah Street

Type	AM Peak	Inter Peak	PM Peak	Daily	Average Speed	85% speed
Eastbound	20	10	20	150	35	43
Westbound	30	20	30	300	34	41
Both ways	50	30	50	450	34	42

As shown in Figure 33 and Table 9, traffic flows are low throughout the day. Traffic speeds along this road are also low and below the 50 km/h speed limit. These factors make the route attractive to cyclists.

Hobart Street

The traffic patterns for Hobart Street are provided in Figure 34 and Table 10.

Figure 34 Traffic Volumes – Hobart Street

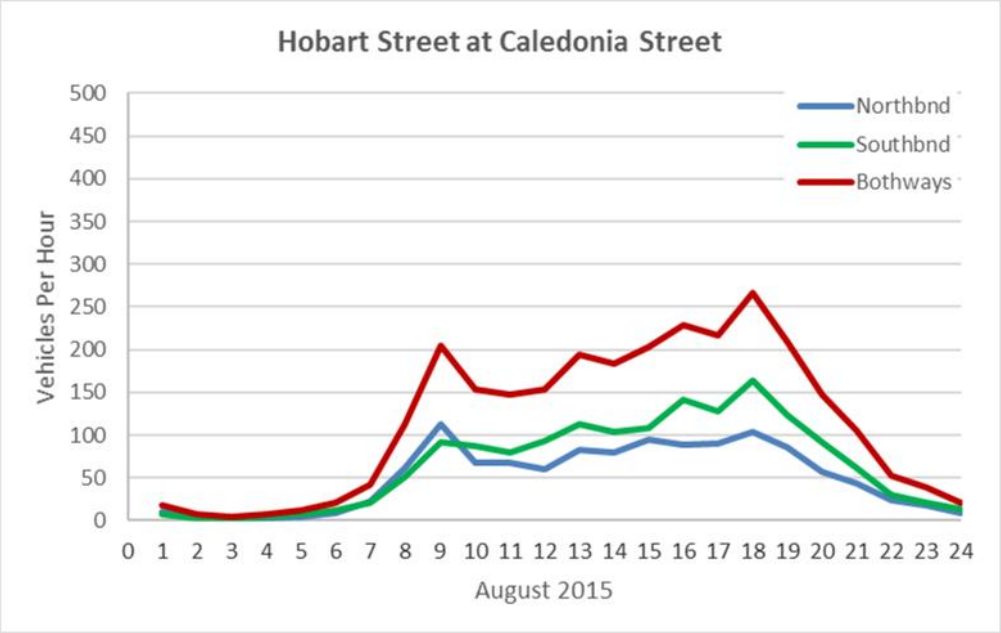


Table 10 Traffic Volume and Speed Analysis – Hobart Street

Type	AM Peak	Inter Peak	PM Peak	Daily	Average Speed	85% speed
Eastbound	110	80	100	1,200	43	50
Westbound	90	110	160	1,550	41	47
Both ways	200	190	270	2,750	42	49

As shown in Figure 34 and Table 10, traffic volumes and speeds on Hobart Street are higher than on Miro and Kedah Street (but significantly lower than on the relatively parallel route along Ira Street). Traffic volumes are between 200-270 vehicles per hour during the day, this is one vehicle approximately every 15 seconds. There is good compliance with the speed limit along this road.

5.4 Crash Analysis

Analysis of the crash history data for Hobart Street contained in CAS for the 10-year period between 2006 and 2015, has been undertaken. Two crashes were reported, one minor injury crash and one serious injury crash as set out in Table 11.

Table 11 Hobart Street crashes

Type	Vehicle movement	Fatal	Severe	Minor	Non-injury	Total
LB	Right turn against – making turn		1			1
HA	Crossing (no turns) – right angle			1		1
	TOTAL	0	1	1	0	2

One of these crashes involved the cyclist riding in pedestrian space, resulting in a severe injury. The other crash involved the cyclist failing to give way at a stop sign, resulting in a minor injury.

Both of the crashes involved teenagers (aged 14 and 16 years) and both occurred at the intersection of Caledonia Street and Devonshire Road.

5.5 Issues and Constraints

The potential issues for cyclists using the Hobart Street route and constraints to implementing cycle facilities are listed below.

- There are no dedicated facilities for cyclists, such as lanes, road markings, signage or parking, apart from through the Airport Tunnel
- Roundabouts can be difficult to negotiate for cyclists
- Traffic islands on Hobart Street reduce the width of carriageway to be shared by cyclists and motorised vehicles, creating pinch points
- Buses use the route and any redesign of the road corridor would need to cater for vehicles of this dimension
- There are bus stops along Hobart Street which need to be considered in any redesign of the road corridor
- Cycle facilities will need to tie in with the proposed facilities for Miramar Town Centre (a separate project)
- Cycle facilities will need to tie in with the proposed facilities for Broadway (also being considered as part of this project)
- Cycle facilities in the Airport Tunnel will need to tie in with the proposed facilities for Coutts Street (a separate project)
- The proposed route goes through several give way intersections which would need appropriate treatment
- The Airport Tunnel is not well lit resulting in safety and personal security concerns for users and non-users

5.6 Opportunities

Opportunities that have been identified are listed below.

- Traffic speeds and volumes are low along this route, particularly along Miro Street and Kedah Street
- The existing grassed berms on Miro Street and Kedah Street could be converted to off-road cycle facilities
- Cycle parking facilities could be provided at the shops at the Devonshire Road/ Caledonia Street/ Hobart Street intersection

5.7 Summary

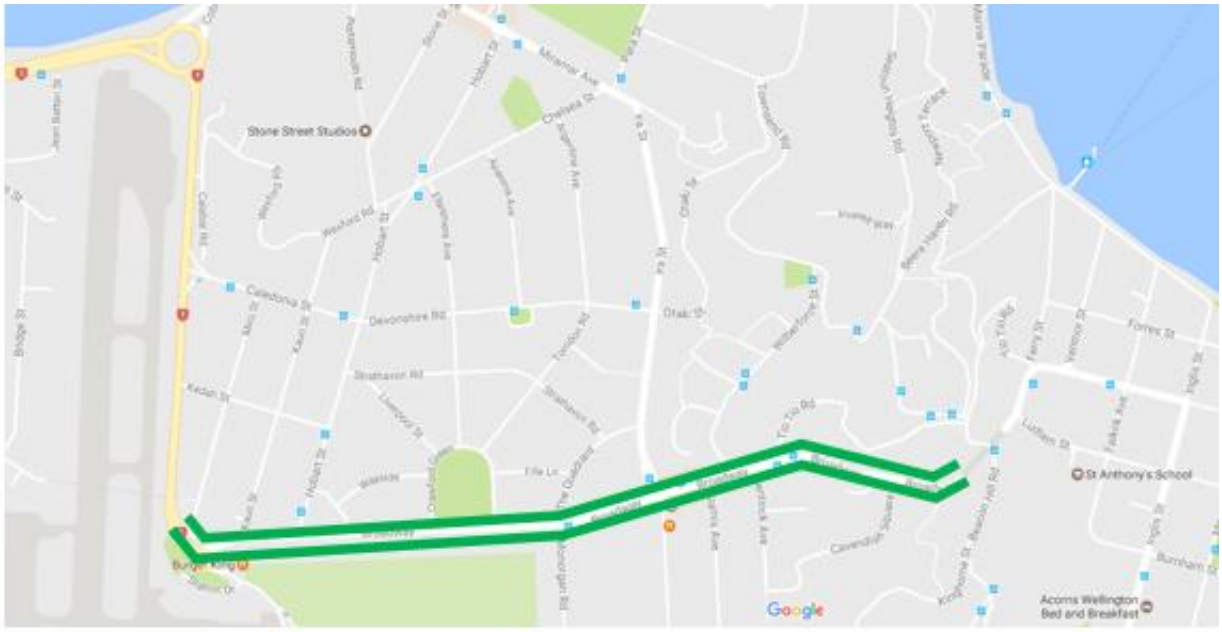
This route will be more attractive to cyclists in its current form due to the lower volumes of vehicular traffic. Due to some sections of road having a reduced seal width the scale or works on this route will vary to other routes in Miramar.

6. Existing Road Corridor – Broadway

6.1 Road Layout

The Broadway route being considered as part of this cycleways project is Broadway between the Airport Tunnel and the Seatoun Tunnel as shown in Figure 35. The route is predominantly residential with a couple of areas of small retail shops and open space including the sports ground of Scots College (refer Figure 7 Section 2.9 District Plan Land Zoning). The route provides a connection between Seatoun and Strathmore to Kilbirnie and beyond, via the Airport Tunnel.

Figure 35 Broadway (Route 4)



Calabar Road intersection

The western end of Broadway is controlled by a roundabout with Calabar Street (SH1) and Stewart Duff Drive (operated by Wellington Airport).

Miro Street

Upon exiting the Airport Tunnel at Miro Street, cyclists have the choice of turning left onto Miro Street towards Miramar Town Centre or right to the airport, Strathmore and Seatoun. Existing signage indicates for cyclists heading to the airport to turn right along a narrow path adjacent to the road (there is a separate path for pedestrians along the diagonal boundary). Turning right also leads to Strathmore and beyond to Seatoun, though this is not indicated on the sign. The path for cyclists heading towards Strathmore has vehicles overhanging it which results in a narrow path, as shown in Figure 36 and Figure 37.

Figure 36 Miro Street, cycle path

Figure 37 Miro Street, cycle path

Miro Street to Hobart Street

The properties from 335 to 343 Broadway are accessed via a one-way slip lane from Miro Street. A solid median is located on Broadway at the western end which transitions into a flush median

with regularly spaced islands with trees. The kerb to kerb width here is 14 metres. Parking occupancy is high. There is no easily identifiable way for westbound cyclists to access the Airport Tunnel from Broadway.

The Broadway intersection with Hobart Street is unusual. There is a right turn bay on Broadway prior to the right turn out of Hobart Street creating unnecessary conflict between traffic turning right in and turning right out on Hobart Street. There are local shops and a motel in the vicinity of this intersection.

Hobart Street to Ira Street

East of Hobart Street the flush median with regularly spaced islands with trees continues and solid edgelines delineate parking spaces. Parking occupancy is high, as shown in Figure 38.

Figure 38 Broadway, east of Hobart Street[29]

There is a heritage-designated Norfolk Island Pine tree at 411 Broadway (at the intersection with Crawford Green). In the road corridor at approximately 459 Broadway (between The Quadrant and Ira Street) there is an unnamed Maori site, identified as being of high significance.

Scots College is located on the east side of Monorgan Road, with the entrance to the school on that road. There is a pedestrian crossing to the east of The Quadrant with traffic islands in the central median.

Ira Street/ Strathmore Avenue *to Wilberforce Street*

The intersection with Ira Street is controlled by a roundabout. The Strathmore shops are located between Ira Street/ Strathmore Avenue and Glamis Avenue. There is a reduced speed limit of 30 km/h and kerb extensions have been constructed to reduce vehicle speed. During the site visit a car was observed crossing the centreline to pass a cyclist at the narrowing of the carriageway. The carparks here are time restricted to 15 minutes on the south side and 60 minutes for half of the north side. See Figure 39 and Figure 40.

[29] Google Maps Street View

Figure 39 Broadway, at Strathmore shops, looking east[30]

Figure 40 Broadway, at Strathmore shops, looking west[31]

Wilberforce Street to Seatoun Tunnel

East of the Strathmore shops, Broadway is primarily residential and the parking occupancy is lower. Between Bentinck Avenue and until 50 m east of Tio Tio Road, there is a solid centreline and the seal measures 13.5 metres kerb to kerb.

A flush median is present east of Tio Tio Road to the entrance of the Seatoun Tunnel. The seal width measures 13.5 m kerb to kerb. Parking is located on both sides of the road until around 20 metres before the Seatoun Tunnel. See Figure 41.

The pedestrian footpath on the southern side stops outside property number 579 and no pedestrian facilities are provided for the parking located between here and the Tunnel.

[30] Google Maps Street View
[31] Google Maps Street View

Figure 41 Broadway, west of Cavendish Square

Bus routes 11 and 30 use Broadway and there are a number of bus stops on both sides of the road. Bus route 28 also travels along a small section of Broadway between Wilberforce Street and Ira Street (bus route maps and timetables are provided in Appendix A).

6.2 Minor Safety Improvement Works

Improvements to Broadway including the removal of traffic islands and trees within the central median to eliminate 'pinch points' were identified as part of the Council's minor works programme. In addition, the Council's TUD Committee (at its meeting on 25 June 2015) considered a proposal to improve the link for cyclists between Broadway and the Airport Tunnel via designated cycle lanes. Approval was not given for this project due to a low benefit/cost ratio and reduction in on-street parking.

Extracts from Council documents[32] detailing the works are set out below.

6.2.1 Broadway Safety Improvements

It is proposed to remove the traffic islands and trees within the central median to eliminate 'pinch points' where there is insufficient space for cars to safely overtake cyclists.

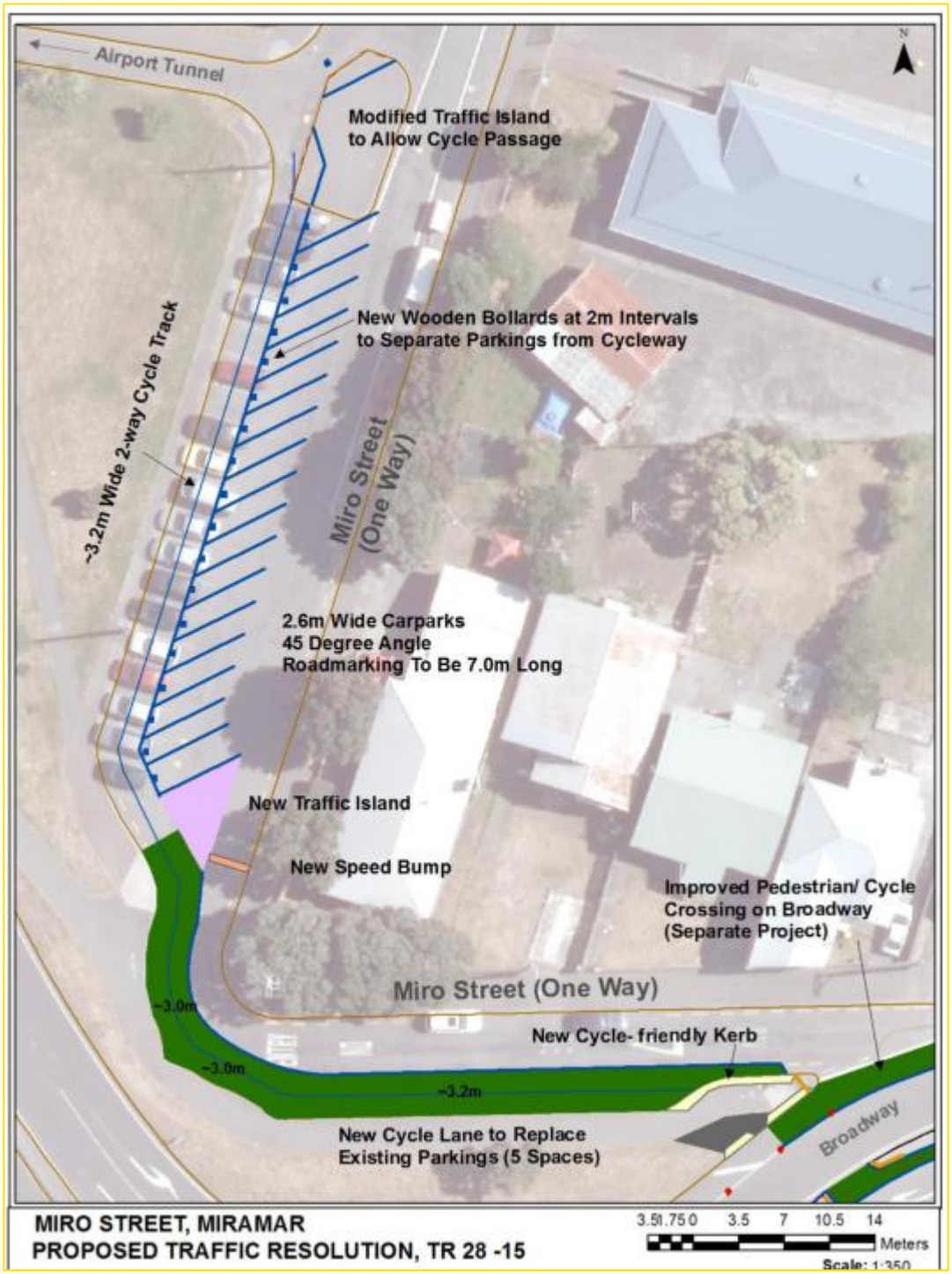
Refer to Appendix B for a plan which identifies the islands which are to be removed. Consultation was carried out with local residents during February 2015 and the majority of the feedback was positive. Further consultation will be required prior to works being carried out.

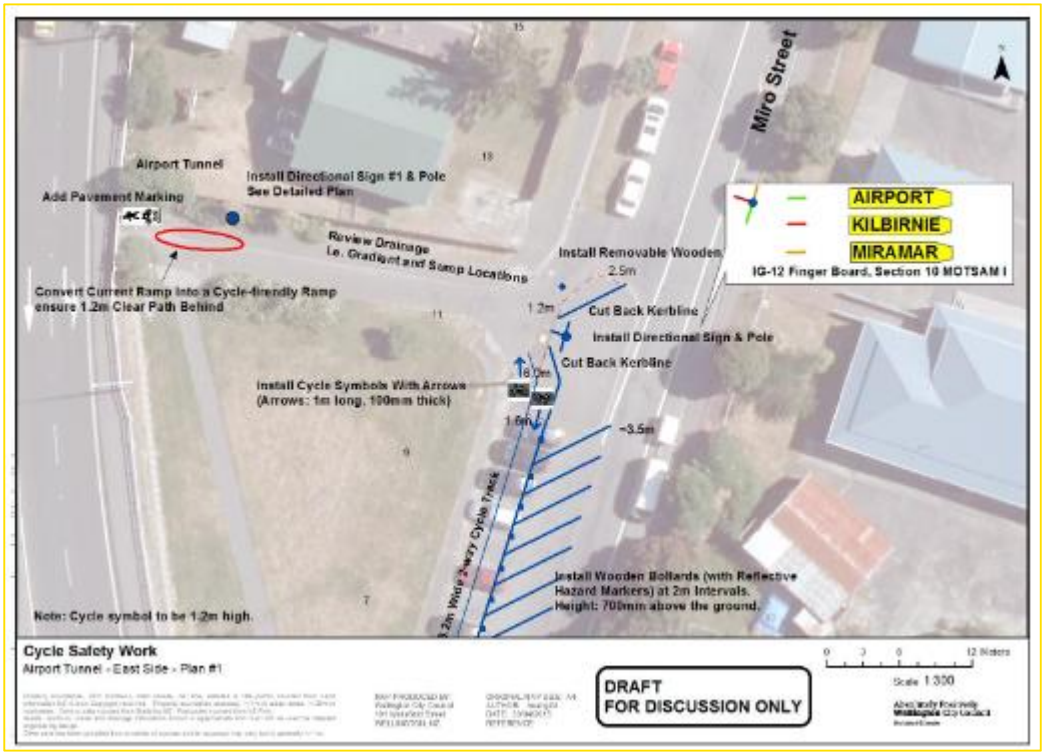
[32] WCC, Memo: Eastern Suburbs Cycleway Network Refresh (Draft), July 2016

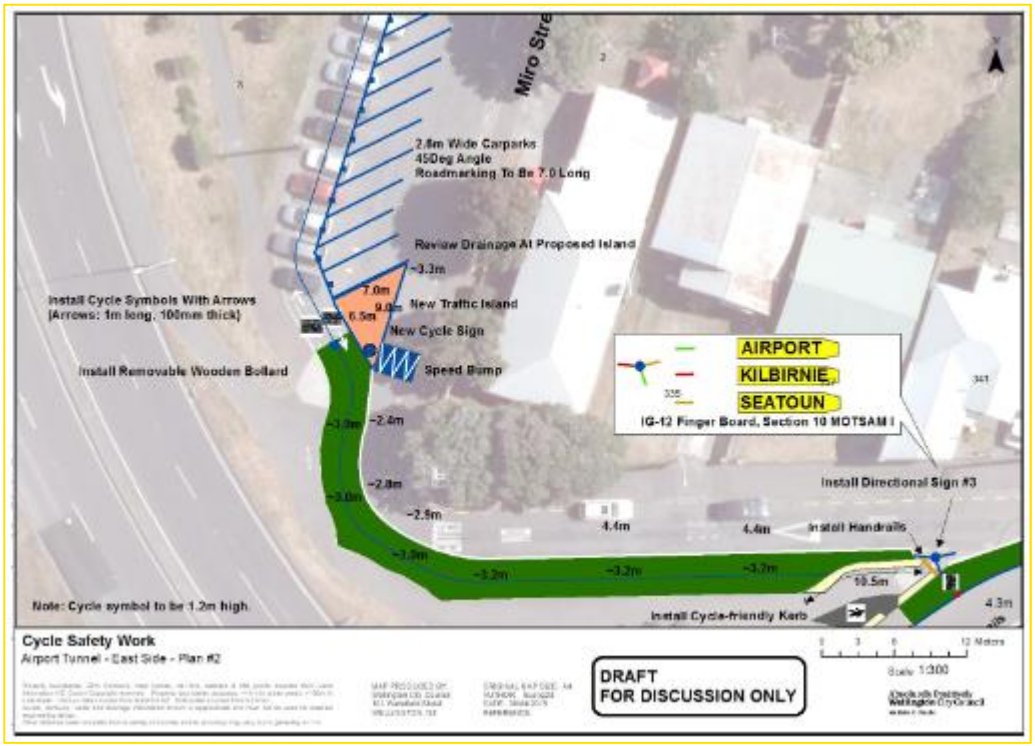
6.2.2 Miro Street Cycle Lanes

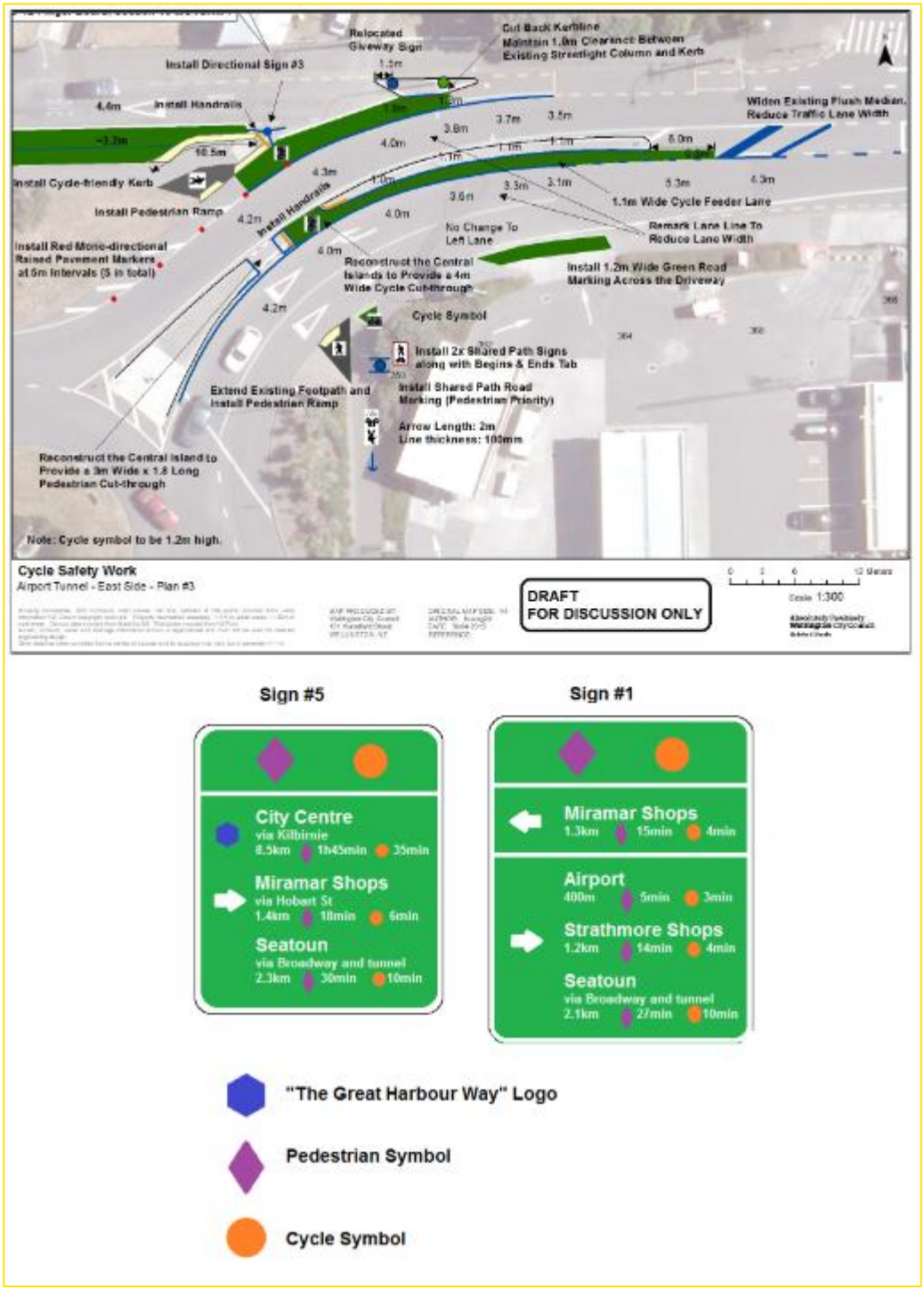
A proposed traffic resolution report was considered by the WCC Transport and Urban Development (TUD) committee on 25th June 2015. The report and TUD feedback are included in Appendix D.

The proposal involved improving the link between Broadway, Miro Street and the airport tunnel with provision of designated cycle lanes. This was rejected by the TUD on the grounds of a low Benefit/Cost ratio and reduction in on-street parking.


Airport Tunnel
Modified Traffic Island
to Allow Cycle Passage
New Wooden Bollards at 2m Intervals
to Separate Parkings from Cycleway
~3.2m Wide 2-way Cycle Track
Miro Street
(One Way)
2.6m Wide Carparks
45 Degree Angle
Roadmarking To Be 7.0m Long
New Traffic Island
New Speed Bump
Improved Pedestrian/ Cycle
Crossing on Broadway
(Separate Project)
Miro Street (One Way)
~3.0m
New Cycle- friendly Kerb
~3.0m
~3.2m
New Cycle Lane to Replace
Existing Parkings (5 Spaces)
Broadway
MIRO STREET, MIRAMAR
PROPOSED TRAFFIC RESOLUTION, TR 28 -15
3.51.750 3.5 7 10.5 14
Meters
Scale: 1:350


Miro Street
Airport Tunnel
Install Directional Sign #1 & Pole
See Detailed Plan
Add Pavement Marking
Review Drainage
i.e. Gradient and Sump Locations
Convert Current Ramp into a Cycle-friendly Ramp
ensure 1.2m Clear Path Behind
Install Removable Wooden
2.5m
1.2m
Cut Back Kerbline
Install Directional Sign & Pole
Cut Back Kerbline
Install Cycle Symbols With Arrows
(Arrows: 1m long, 100mm thick)
1.6m
~3.5m
2.2m Wide Shared Cycle Track
Install Wooden Bollards (with Reflective
Hazard Markers) at 2m Intervals.
Height: 700mm above the ground.
Note: Cycle symbol to be 1.2m high.
AIRPORT
KILBIRNIE
MIRAMAR
IG-12 Finger Board, Section 10 MOTSAM I
Cycle Safety Work
Airport Tunnel - East Side - Plan #1
DRAFT
FOR DISCUSSION ONLY
Scale 1:300


Miro Street
2.8m Wide Carparks
45Deg Angle
Roadmarking To Be 7.0 Long
Review Drainage At Proposed Island
~3.3m
7.0m
9.0m
6.5m
New Traffic Island
New Cycle Sign
Install Cycle Symbols With Arrows
(Arrows: 1m long, 100mm thick)
Install Removable Wooden Bollard
Speed Bump
~1.9m
~2.4m
~2.8m
~3.0m
~2.5m
4.4m
4.4m
Install Handrails
Install Directional Sign #3
~3.2m
~3.2m
~3.2m
10.5m
4.3m
Install Cycle-friendly Kerb
Note: Cycle symbol to be 1.2m high.
AIRPORT
KILBIRNIE
SEATOUN
IG-12 Finger Board, Section 10 MOTSAM I
Cycle Safety Work
Airport Tunnel - East Side - Plan #2
DRAFT
FOR DISCUSSION ONLY
Scale 1:300



6.3 Traffic Volumes

The Council has provided count data at key locations within the study area and these have been analysed below.

Broadway at Kauri Street

The traffic patterns for the west end of Broadway (at Kauri Street) have been provided in Figure 42 and summarised in Table 12.

Figure 42 Traffic Volumes – Broadway at Kauri Street

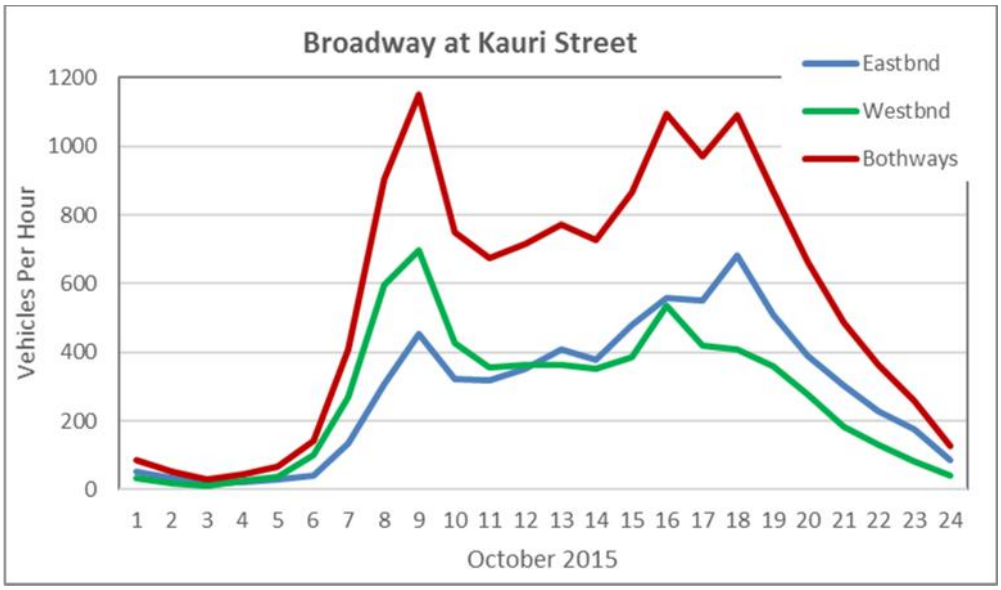


Table 12 Traffic Volume and Speed Analysis – Broadway at Kauri Street

Type	AM Peak	Inter Peak	PM Peak	Daily	Average Speed	85% speed
Eastbound	450	360	680	6,850	40	45
Westbound	700	360	540	6,450	41	48
Both ways	1150	720	1220	13,300	41	46

As shown in Figure 42 and summarised in Table 12, traffic volumes are high throughout the day with between 700 – 1,200 vehicles per hour, or one vehicle every 3-5 seconds. This traffic is tidal with a westbound AM peak and eastbound PM peak being higher than the opposing direction. Traffic speeds are lower than might be expected on a Principal Road, possibly due to the location of the survey point on the approach to the roundabout.

Broadway at Monorgan Street

The traffic patterns for Broadway at Monorgan Street have been provided in Figure 43 and summarised in Table 13.

Figure 43 Traffic Volumes – Broadway at Monorgan

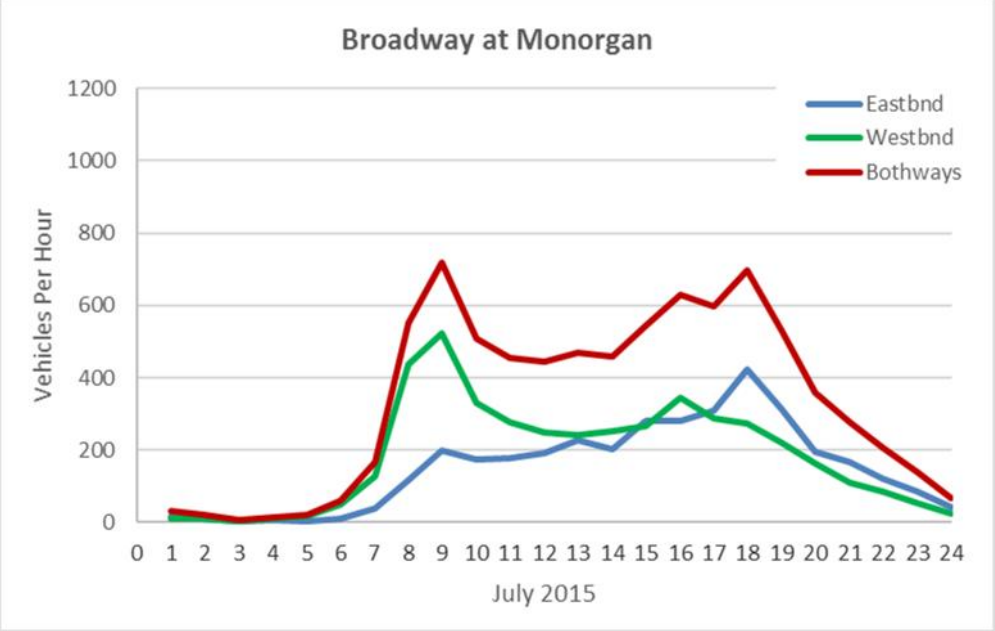


Table 13 Traffic Volume and Speed Analysis – Broadway at Monorgan

Type	AM Peak	Inter Peak	PM Peak	Daily	Average Speed	85% speed
Eastbound	200	230	420	3,600	48	54
Westbound	520	280	350	4,350	47	52
Both ways	720	470	700	7,950	47	53

As shown in Figure 43 and Table 13; there is a considerable (6,000 vehicles) drop off in traffic from the count at Kauri Street. Traffic at this location is still tidal and average traffic speeds are close to the speed limit. There is a peak in traffic between 8 and 9 am with the PM peak being more spread

6.4 Crash Analysis

Analysis of the crash history data for Broadway contained in CAS for the 10-year period between 2006 and 2015, has been undertaken. Four minor injury crashes and one severe injury crash were reported as shown in Table 14.

Table 14 Broadway crashes

Type	Vehicle movement	Fatal	Severe	Minor	Non-injury	Total
LB	Right turn against – making turn			1		1
EE	Collision with obstruction – opening door			1		1
JA	Crossing (vehicle turning) – right turn right side		1			1
GC	Turning versus same direction – stopped or turning from left side			1		1
HA	Crossing (no turns) – right angle			1		1
	Total	0	1	4	0	5

In one crash, the driver failed to check or notice the cyclist behind. In another, the driver did not see or look for the cyclist until too late, possibly due to a blind spot. In this crash, the cyclist turned from an incorrect position on the road, and did not see or look for the vehicle. Both of these crashes resulted in minor injuries.

Three of the crashes involved the driver of the vehicle failing to give way. In one of these three crashes the driver failed to give way when turning, to non-turning traffic, while in the other two crashes, the driver failed to give way at a stop sign or a give way sign. Two of these crashes resulted in minor injuries, while the other resulted in a severe injury.

6.5 Issues and Constraints

The potential issues for cyclists using Broadway and constraints to implementing cycle facilities are listed below.

- There are no dedicated facilities for cyclists, such as lanes, road markings, signage or parking
- Roundabouts can be difficult to negotiate for cyclists, particularly in high traffic volume areas
- Traffic islands on Broadway and at the pedestrian crossing near The Quadrant reduce the width of carriageway to be shared by cyclists and motorised vehicles, creating pinch points
- Buses use the route and any redesign of the road corridor would need to cater for vehicles of this dimension
- There are bus stops along Broadway which need to be considered in any redesign of the road corridor
- Cycle facilities will need to tie in with any improvements to the Airport Tunnel, to Ira Street and to Seatoun Tunnel (also being considered as part of this project)
- The proposed route goes through several intersections which would need appropriate treatments
- The path for westbound cyclists from Broadway to the Airport Tunnel is not clear
- Parking demands are high
- Scots College generates a high number of pedestrian, cyclist and vehicle movements at school start and finish times
- The narrowing of the carriageway at the Strathmore shops reduces the carriageway width for cyclists, noting that a car was observed crossing the centreline to pass a cyclist at the narrowing
- There are no pedestrian facilities close to the Seatoun Tunnel for the vehicles that are parked here
- There is no pedestrian crossing point for the southern footpath which terminates prior to the Seatoun Tunnel
- There is inconsistency with the provision of right turning bays within the flush median
- There is a very narrow footpath width adjacent to bus stop 6036 (at Strathmore shops)

- There is a high camber in the road shoulders due to repeated resealing of the road which can be a hazard for cyclists
- It was noted that adjacent to the Kauri Street intersection there was a lot of dazzle marks and it is unknown if works are planned here that may affect any future designs or timing of works
- Works in proximity to the heritage-designated Norfolk Island pine tree at 411 Broadway would require consent if the cycleway route disturbed soil or requires the laying of impervious surfaces within the dripline of the tree
- Works in proximity to the Maori site in the road corridor at approximately 459 Broadway would require further investigations

6.6 Opportunities

Opportunities that have been identified are listed below.

- The flush median on Broadway could be reduced to cater for cycle facilities
- The 30 km/h speed section enables confident cyclists to more comfortably cycle in the traffic lane, particularly at the Ira Street roundabout/ Strathmore shops
- Cycle parking facilities could be provided at the Strathmore shops and the shops located at the Hobart Street intersection
- The grassed area at the north east corner of the Ira Street roundabout could be utilised

6.7 Summary

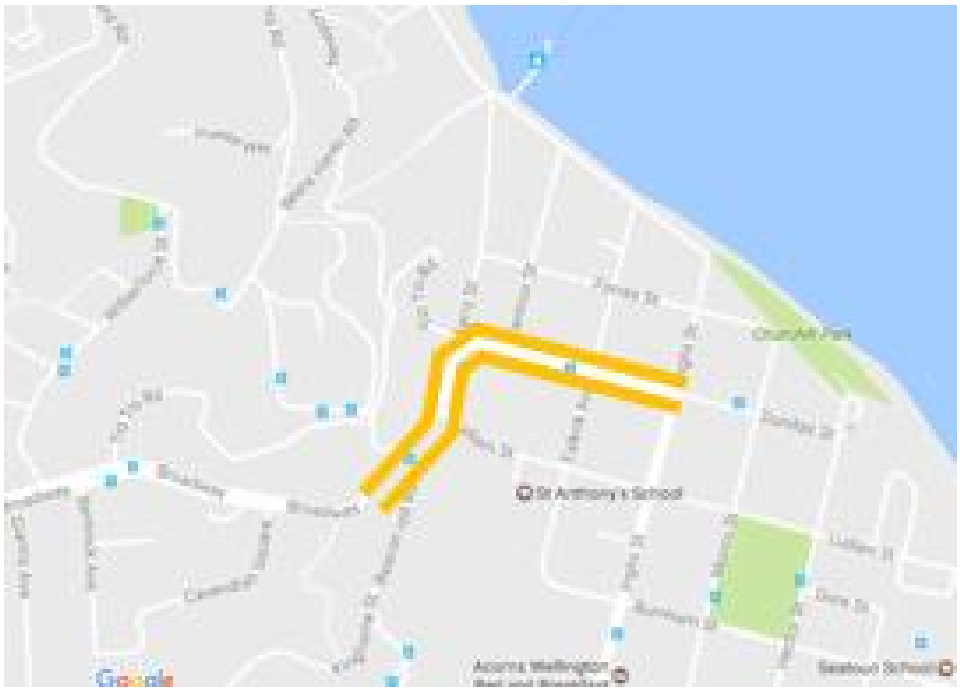
Improvements on this route have previously been put before Council and been declined due to a low benefit cost ratio, despite positive feedback from public consultation. There are significant variations in traffic volumes along this corridor and competing demands for parking from adjacent land uses. Any future designs will need to consider value for money and have early and through community engagement with all adjacent land owners.

7. Existing Road Corridor – Seatoun Tunnel/ Dundas Street

7.1 Road Layout

The Seatoun Tunnel/ Dundas Street route being considered as part of this cycleways project includes Ferry Street between the Tunnel and Dundas Street, and Dundas Street to Inglis Street, as shown in Figure 44. The route is predominantly residential with a small area of shops at Seatoun (refer also to Figure 7 Section 2.9 District Plan Land Zoning). The route provides a connection from Seatoun to Strathmore, Kilbirnie and beyond, via the Seatoun Tunnel.

Figure 44 Seatoun Tunnel/ Dundas Street (Route 5)



Seatoun Tunnel

Seatoun Tunnel is around 150 metres long and has a single pedestrian footpath on the northern side. The Tunnel is narrow with no shoulders, as shown in Figure 45. The width of the Tunnel is to be confirmed (it is not provided in the Council's RAMM database).

Figure 45 Western end of Seatoun Tunnel[33]

Immediately after the Tunnel is Ludlam Street. There is very poor visibility for pedestrians here trying to use the footpath in the Tunnel. Ludlam Street has speed cushions to try and reduce through traffic using this road. See Figure 46 and Figure 47.

Figure 46 Eastern end of Seatoun Tunnel, looking east[34]

[33] Google Maps Street View
[34] Google Maps Street View

Figure 47 Eastern end of Seatoun Tunnel, looking west

Ferry Street

Ferry Street between Ludlam and Dundas Street has parallel parking on both sides and a kerb to kerb width of 14.5 metres.

In the development of cycleway routes (undertaken by the Eastern Suburbs Working Group and confirmed as part of the Refresh programme), it was agreed that the cycleway route would follow Ferry Street and Dundas Street to avoid the right turn into Ludlam Street against high traffic flows (AADT of 2400 heading toward the Tunnel) and due to more generous widths (Ferry/ Dundas Streets are both significantly wider than Ludlam/ Falkirk Streets, 13.5 to 14.5 metres compared to 8.0 to 12.1 metres).

The intersection of Ferry Road and Dundas Street is priority controlled with the priority between Ferry Road south and Dundas Street. Central islands help to channel the traffic around the intersection. See Figure 48.

Figure 48 Ferry Street at Dundas Street, looking north[35]

Dundas Street

Dundas Street is lined with large Pohutukawa trees on the footpath, as shown in Figure 49.

Figure 49 Dundas Stree, looking east[36]

The trees in the footpath allow for only a 1 metre wide footpath in some areas. See Figure 50.

[35] Google Maps Street View
[36] Google Maps Street View

Figure 50 Dundas Street footpath

A reduced speed limit of 30 km/h is present for a 160 metre stretch at the Seatoun shops between Ventnor Street and Inglis Street. Parking occupancy is high in these areas. There are twenty minute and sixty minute time parking restrictions in the vicinity of the shops.

Bus routes 11 and 30 use the Seatoun Tunnel/ Dundas Street route and there are a number of bus stops on both sides of the road (bus route maps and timetables are provided in Appendix A).

7.2 Minor Safety Improvement Works

The Council is proposing to install cycle-activated warning signs and associated detection camera at the Seatoun Tunnel entrances this financial year (2016-17), as detailed in Figure 51.

Figure 51 Seatoun Tunnel safety improvements

7.3 Traffic Volumes

The Council has provided count data at key locations within the study area and these have been analysed below.

Seatoun Tunnel

The traffic patterns for the Seatoun Tunnel have been provided in Figure 52 and Table 15.

Figure 52 Traffic Volumes – Seatoun Tunnel (August 2015)

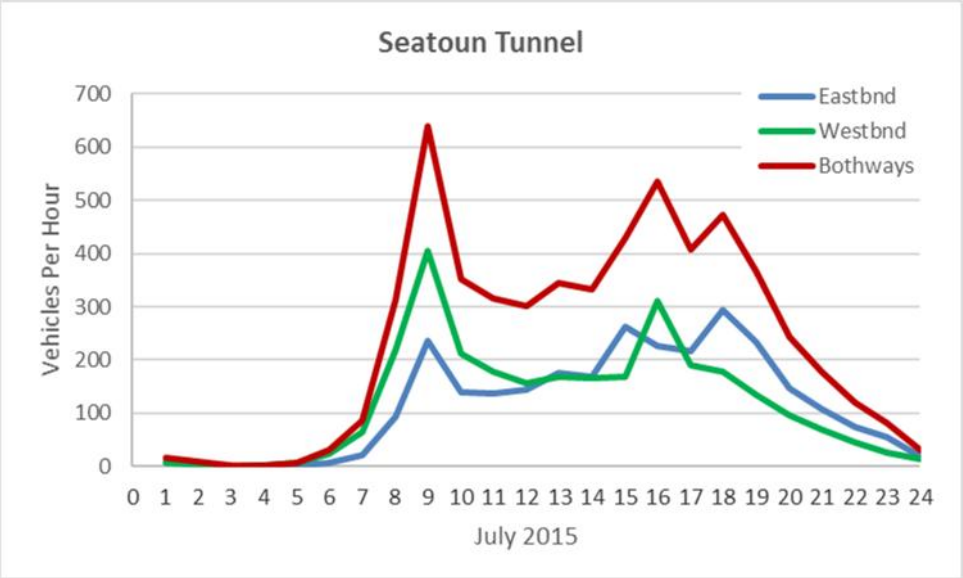


Table 15 Traffic Volume and Speed Analysis – Seatoun Tunnel

	AM Peak	Inter Peak	PM Peak	Daily	Average Speed	85% speed
Eastbound	240	180	290	2,750	47	52
Westbound	400	180	310	2,850	46	51
Both ways	640	360	600	5600	46	51

As shown in Figure 52 and Table 15; the Seatoun Tunnel experiences a morning peak. The traffic volume is low for a Principal Road. Average traffic speeds are higher than typical cyclist's speeds.

Ferry Street

The traffic patterns for Ferry Street have been provided in Figure 53 and Table 16.

Figure 53 Traffic Volumes – Ferry Street (August 2015)

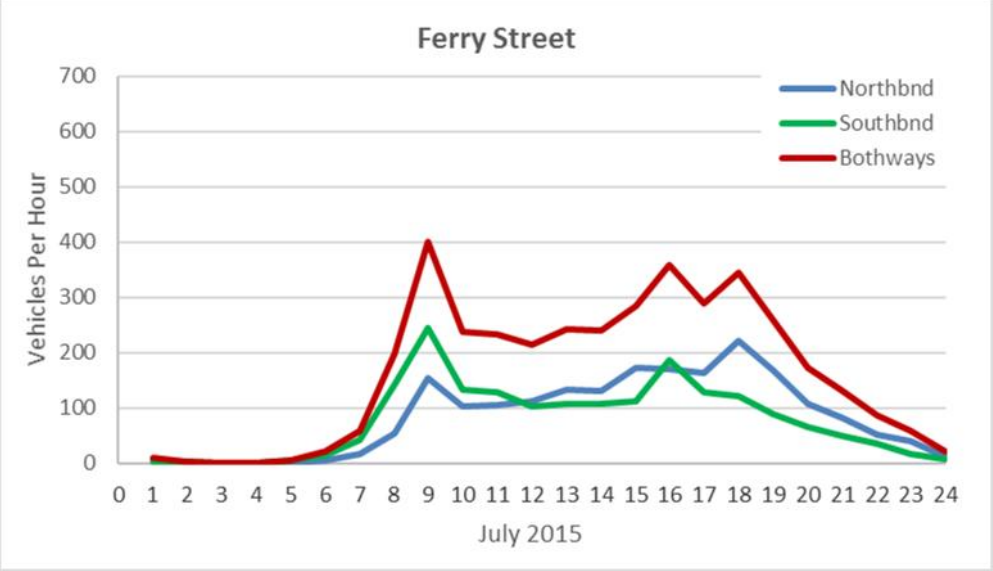


Table 16 Traffic Volume and Speed Analysis – Ferry Street

Type	AM Peak	Inter Peak	PM Peak	Daily	Average Speed	85% speed
Eastbound	150	130	220	2,000	40	45
Westbound	250	130	190	1,850	39	45
Both ways	400	260	410	3,850	39	45

Traffic volumes on Ferry Road are considerably lower than outside 574 Broadway, there is a single intersection (Ludlam Street) between these two counts. Average traffic speeds are also lower than adjacent count locations.

Dundas Street

The traffic patterns for Dundas Street have been provided in Figure 54 and Table 17.

Figure 54 Traffic Volumes – Dundas Street (August 2015)

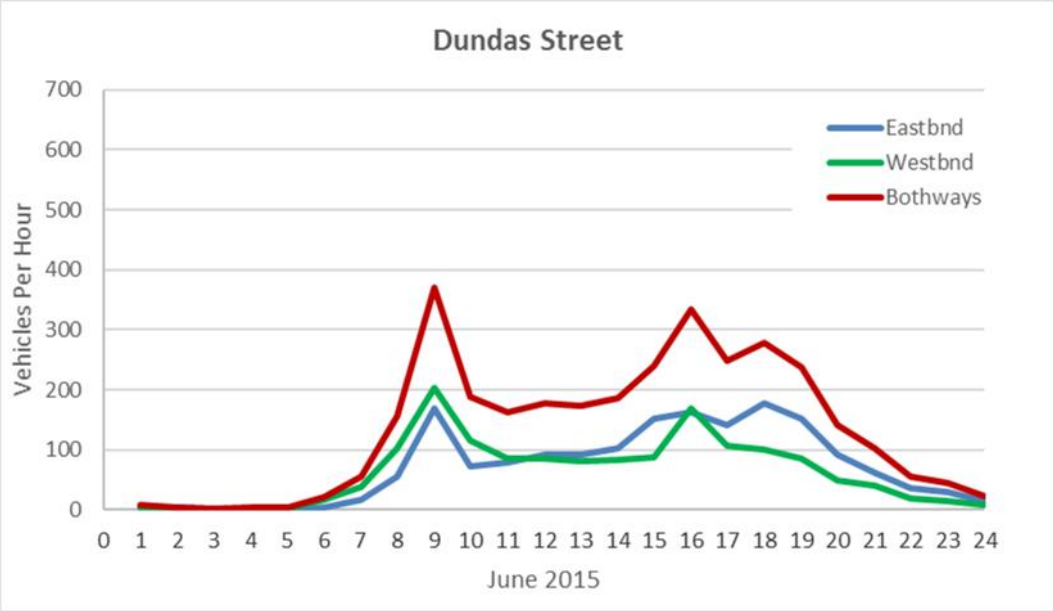


Table 17 Traffic Volume and Speed Analysis – Dundas Street (outside 18)

Type	AM Peak	Inter Peak	PM Peak	Daily	Average Speed	85% speed
Eastbound	170	100	180	1,700	39	46
Westbound	200	90	170	1,500	40	48
Both ways	370	190	330	3,200	40	47

Dundas Street traffic has a high morning peak and longer spread evening peaks. Traffic volumes on Dundas Street are lower than other Principal roads with lower average speeds.

7.4 Crash Analysis

Analysis of the crash history data for Seatoun Tunnel/ Dundas Street contained in CAS for the 10-year period between 2006 and 2015, has been undertaken. Three minor injury crashes and three severe injury crashes were reported as shown in Table 18.

Table 18 Ferry Street crashes

Type	Vehicle movement	Fatal	Severe	Minor	Non-injury	Total
LB	Right turn against – making turn			2		**2**
HA	Crossing (no turns) – right angle		3	1		**4**
	Total	**0**	**3**	**3**	**0**	**6**

All six of these crashes involved the driver of the vehicle failing to give way. In one crash the driver failed to give way when turning to non-turning traffic, while in four crashes, the driver failed to give way at a give way sign. In the other crash, the driver failed to give way when priority was defined by road markings.

7.5 Issues and Constraints

The potential issues for cyclists using Seatoun Tunnel/ Dundas Street and constraints to implementing cycle facilities are listed below.

- There are no dedicated facilities for cyclists, such as lanes, road markings, signage or parking
- Buses use the route and any redesign of the road corridor would need to cater for vehicles of this dimension
- There are bus stops along the route which need to be considered in any redesign of the road corridor
- Cycle facilities will need to tie in with any improvements to Broadway (also being considered as part of this project)
- The traffic lanes in the Tunnel are too narrow for cyclists and vehicles to share the road side by side
- The existing footpath in the Tunnel is only 1.1 metres wide and too narrow in its current form for a shared cycle and pedestrian path
- There are no pedestrian crossing facilities on Ferry Road for pedestrians from Ludlam Street wanting to use the footpath through Seatoun Tunnel (on the northern side)
- Visibility is poor out of Seatoun Tunnel
- St Anthony's School on Ludlam Street generates a high number of pedestrian, cyclist and vehicle movements at school start and finish times
- All turning movements for all modes need to be considered at the Ferry Street / Dundas Street intersection
- Parking demands are high
- Traffic islands and kerb extensions at the pedestrian crossing create pinch points for cyclists
- The traffic islands and kerb extensions at the Inglis Street intersection reduce the width of carriageway to be shared by cyclists and motorised vehicles, creating pinch points
- There are numerous driveways along the route
- Many of the pedestrian crossing points, particularly by the shops, allow parking to occur over the pedestrian apron

7.6 Opportunities

Opportunities that have been identified are listed below.

- The 30 km/h speed section enables confident cyclists to more comfortably cycle in the traffic lane
- Cycle-activated warning signs and the associated detection camera are to be installed in the Seatoun Tunnel this financial year (2016-17)

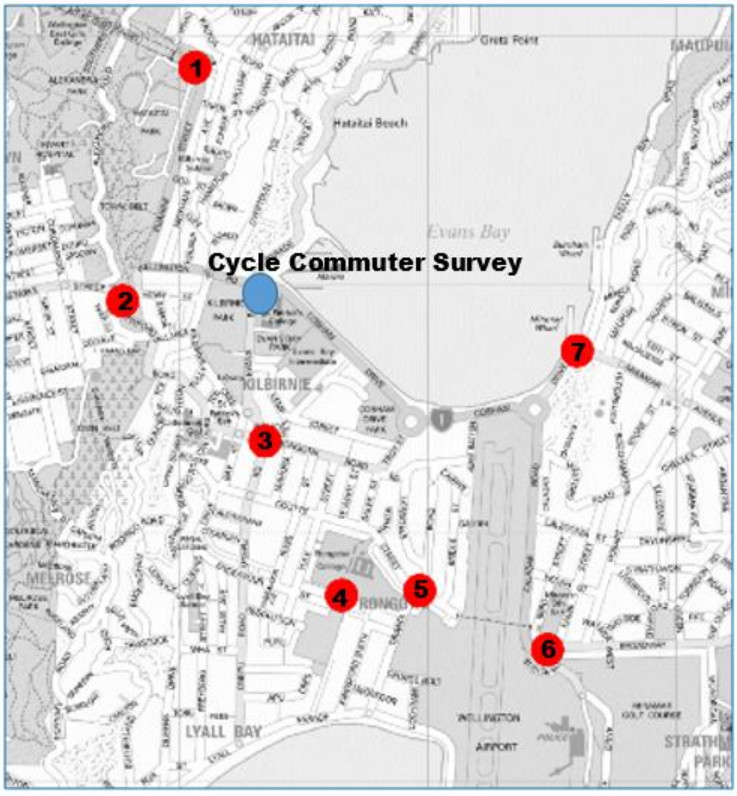
8. People Walking

The Council undertakes annual surveys of commuter travel around the city. This is done by undertaking a cordon survey recording all modes of travel into the CBD and spot cycle counts on other key roads.

In addition to the annual cordon surveys, the Council undertook a series of walking and cycle surveys in the Eastern Suburbs in November 2015 and March 2016, as set out below and shown in Figure 55.

1. Ruahine Street, Taurima Street and Mt Victoria Tunnel
2. Crawford Road and Wellington Road
3. Onepu Road, Rongotai Road and Evans Bay Parade
4. Leonie Gill Pathway
5. Tirangi Road and Coutts Street
6. Miro Street, Broadway and Airport Tunnel
7. Shelly Bay Road, Miramar Avenue and Cobham Drive

Figure 55 Eastern Suburbs cycle survey locations[37]



[37] Wellington City Council/ TDG, Transport Monitoring Surveys – March 2016 Survey Results, April 2016

The blue circle represents the annual commuter site.

The results of the Council walking surveys shown in Figure 55 are provided in the next few sections of this report.

8.1 Broadway/ Miro/ Airport Tunnel

The results of walking counts undertaken in November 2015 at the Miro Street/ Broadway/ Airport Tunnel intersection (site 6) for the morning weekday period are shown in Table 19.

Table 19 Morning pedestrian count at Airport Tunnel

Year	Monday	Tuesday	Wednesday	Thursday	Friday	Weekday total	Weekday average
	Two hour total						
November 2015	82	72	94	66	64	378	76
	Peak hour volume						
November 2015	60	46	63	38	37	244	49

As shown in Table 19, the highest number of people per hour walking through the Airport Tunnel during the morning peak hours was 63, or approximately one per minute (recorded during the November 2015 survey). This is considered to be a relatively low pedestrian volume.

Detailed turning counts for this intersection were not reported, so it is not known if pedestrians approach the Tunnel from Miro Street or Broadway.

8.2 Shelly Bay Road/ Miramar Avenue/ Cobham Drive

The results of walking counts undertaken in November 2015 at the Miramar Avenue/ Cobham Drive / Shelly Bay Road (site 7) for the morning weekday period are shown in Table 20.

Table 20 Morning pedestrian count at Miramar Avenue

Year	Monday	Tuesday	Wednesday	Thursday	Friday	Weekday total	Weekday average
	Two hour total						
November 2015	38	64	41	34	43	220	44
	Peak hour volume						
November 2015	22	41	27	21	24	135	27

Less than 50 people walk via the Miramar Avenue/ Cobham Drive/ Shelly Bay Road during the morning peak hours (as recorded during the November 2015 survey). This is considered to be a low pedestrian volume.

Detailed turning counts for the pedestrians at this intersection were not reported, so it is not known the directions these pedestrians walk in.

8.3 Additional Data

Additional surveys are required if the number of pedestrians on the remaining routes are to be quantified.

9. People Riding Bikes

The results of the Council cycle surveys shown in Figure 55 are provided in the next few sections of this report.

9.1 Cyclist Movements

9.1.1 Broadway / Miro / Airport Tunnel

The results of cycle counts undertaken in November 2015 and March 2016 at the Miro Street/ Broadway/ Airport Tunnel intersection (site 6) for the morning weekday period are shown in Table 21.

Table 21 Morning cycle count at Airport Tunnel

Year	Monday	Tuesday	Wednesday	Thursday	Friday	Weekday total	Weekday average
	Two hour total						
November 2015	109	117	111	103	56	496	99
March 2016	122	86	158	127	128	621	124
	Peak hour volume						
November 2015	71	83	70	69	32	325	65
March 2016	83	58	99	94	74	408	82

Detailed turning counts for this intersection were not recorded, so it is not known if cyclists approach the Tunnel from Miro Street or Broadway.

9.1.2 Shelly Bay Road/ Miramar Avenue/ Cobham Drive

The results of cycle counts undertaken in November 2015 and March 2016 at the Miramar Avenue/ Cobham Drive/ Shelly Bay Road (site 7) for the morning weekday period are shown in Table 22.

Table 22 Morning cycle count at Miramar Avenue

Year	Monday	Tuesday	Wednesday	Thursday	Friday	Weekday total	Weekday average
	Two hour total						
November 2015	139	210	160	80	110	699	140
March 2016	221	185	228	125	116	875	175
	Peak hour volume						
November 2015	82	130	104	53	68	437	87
March 2016	137	120	147	87	63	554	111

Of the 175 cyclists recorded in March 2016, 121 (70%) came from Miramar Avenue, 41 (23%) came from Cobham Drive, and 13 (7%) came from Shelly Bay Road.

9.1.3 Evans Bay Parade/ Cobham Drive/ Wellington Road

The total number of cyclists using the Evans Bay Parade/ Cobham Drive/ Wellington Road intersection during the weekday morning commuter peak period (7.00 – 9.00 am), are shown in Table 23.

Table 23 Morning weekday cycle count at Evans Bay Parade [38]

Year	Monday	Tuesday	Wednesday	Thursday	Friday	Weekday total	Weekday average
	Two hour total						
March 2007	178	121	145	107	123	674	135
March 2008	250	370	270	192	246	1328	266
March 2009	248	285	244	230	160	1167	233
March 2010	427	335	312	255	177	1506	301
March 2011	212	325	289	205	191	1222	244
March 2012	79	239	250	174	166	908	182
March 2013	279	321	225	317	275	1417	283
March 2014	349	369	285	236	272	1511	302
March 2015	256	307	277	257	182	1279	256
November 2015	182	322	230	140	172	1046	210
March 2016	260	259	420	374	333	1646	329
	Peak hour volume						
March 2007	122	72	100	72	84	450	90
March 2008	153	220	179	117	161	830	166
March 2009	176	192	156	144	97	765	153
March 2010	228	218	191	160	100	897	179
March 2011	133	203	188	135	116	775	155
March 2012	52	160	152	103	106	573	115
March 2013	181	210	137	206	177	911	182
March 2014	206	218	182	147	164	917	183
March 2015	157	197	176	166	111	807	161
November 2015	105	211	149	81	111	657	132
March 2016	147	147	293	219	208	1014	203

As shown in Table 23, the March 2016 surveys recorded a higher volume of cyclists from the previous years of surveys. These results show that commuter cyclist use of the Evans Bay/ Cobham Drive/ Wellington Road intersection has increased at an average per annum rate of 3.5% (from 2007 to 2016). The highest peak hour total was recorded as 293 cyclists, observed on Wednesday 2 March 2016, while the average peak hour was some 203 cyclists per hour.

Further analysis of the weekday average two hour results reveal that only 24% of these movements (80 of 329 cyclists) are towards the CBD (via Wellington Road or Evans Bay Parade to the north), with the majority of cyclists (200 of 329, 61%) heading south on Evans Bay Parade.

The counts undertaken at the Evans Bay Parade/ Cobham Drive/ Wellington Road intersection do not include commuter cyclists travelling to the CBD via the Crawford Road route through Newton or the Mount Victoria Tunnel if travelling via Kilbirnie Crescent/ Hamilton Road. These can be identified in the additional survey data collected, as noted below, which identifies that on average approximately 100 cyclists (of 129, 78%) entered the CBD via the Mount Victoria Tunnel and 68 cyclists (of 118 cyclists 58%) headed towards the CBD via Crawford Road. Accordingly, the data indicates that approximately 250 people travel from the Eastern Suburb towards the CBD in the morning commuter peak period.

[38] Wellington City Council Transport Monitoring Surveys – March 2016 Survey Results, April 2016

The weekend results of the last 5 years are provided below:

Table 24 Weekend cycle count at Evans Bay Parade

Year	Saturday	Sunday	Weekend total	Weekend average
	Four hour total			
March 2011	248	390	638	319
March 2012	461	202	663	332
March 2013	147	464	611	306
March 2014	320	193	513	257
March 2015	74	446	520	260
November 2015	264	104	368	184
March 2016	304	244	548	274
	Peak hour volume			
March 2011	122	127	249	125
March 2012	155	64	214	110
March 2013	59	142	201	101
March 2014	119	84	203	102
March 2015	30	127	157	79
November 2015	101	40	141	71
March 2016	96	77	173	87

Cyclist numbers along Evans Bay Parade have reduced since 2011.

9.1.4 Census Journey to Work

The Census that is undertaken by Statistics New Zealand at five yearly intervals asks the question of how employees travelled to work. The results are tabulated by residential location together with workplace address. The proportion of people travelling to work by bicycle for the area units covered in the study area is provided in Table 25.

Table 25 Proportion of work travel by cycle (2013 Census data)

Area Unit	Residential address			Workplace address		
	2001	2006	2013	2001	2006	2013
Seatoun Tunnel West	4%	3%	5%	0%	0%	0%
Strathmore Park	3%	3%	5%	3%	1%	5%
Miramar South	3%	2%	4%	3%	2%	5%
Miramar North	3%	3%	6%	6%	2%	6%
Miramar	3%	3%	7%	1%	1%	2%
Karaka Bay	4%	4%	7%	5%	0%	0%
Seatoun	4%	5%	7%	3%	2%	3%
Maupuia	1%	1%	5%	4%	3%	6%
Miramar West	3%	2%	3%	4%	7%	4%

The highest proportion of people living in the Miramar peninsula that cycle to work live in Seatoun, Miramar and Karaka Bay, with 7% of the employees cycling to work.

A more detailed breakdown of residents going to work is shown by mode in Table 26.

Table 26 Mode of travel to work (2013 Census data)

Area unit	Drove	Passenger	Public bus	Train	Motorcycle	Bicycle	Walked	Other
Seatoun Tunnel West	165	24	54	0	6	15	12	6
Strathmore Park	843	87	270	3	27	75	75	15
Miramar South	780	96	336	0	27	51	132	24
Miramar North	591	57	210	0	30	66	81	18
Miramar	537	42	198	3	30	66	81	18
Karaka Bay	444	27	69	0	12	42	18	15
Seatoun	591	48	129	0	24	57	24	15
Maupuia	396	42	93	0	6	30	30	12
Miramar West	69	6	33	0	0	3	9	3

In 2013 there were 520 employees cycling to work from the Miramar Peninsula.

9.1.5 Additional Data

Additional surveys are required if the number of cyclists on the remaining routes are to be quantified.

9.2 Cyclists LOS Using the Danish Method

9.2.1 Introduction

The term levels of service (LOS) is provided to characterise operational conditions within a traffic stream and their perception by motorists and passengers. Six LOS are defined with “A” representing the highest level, and “F” the lowest. As traffic volumes increase, the level of service decreases. For most design or planning purposes, service flow rates “D” or “C” are usually considered acceptable. The following general statements describe the various levels of service.

- LOS A describes primarily free-flow operations. Vehicles are seldom impeded in their ability to manoeuvre in the traffic stream. Delay at intersections is minimal
- LOS B represents reasonably unimpeded operations at average travel speeds. The ability to manoeuvre in the traffic stream is only slightly restricted and delays are not bothersome
- LOS C represents stable operations; however, ability to manoeuvre and change lanes in midblock locations may be more restricted than in LOS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds
- LOS D borders on a range in which small increases in flow may cause substantial increases in approach delay and hence decreases in arterial speed. LOS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these
- LOS E is characterised by significant delays and average travel speeds of one-third the free-flow speed or less. Such operations are caused by some combination of adverse

progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing

- LOS F characterises arterial flow at extremely low speeds, from less than one-third to one-quarter of the free-flow speed. Intersection congestion is likely at critical signalised locations, with long delays and extensive queuing

9.2.2 Network Operating Framework

The Wellington Network Operating Framework sets out definitions for the following types of road users:

- Public transport
- Pedestrian
- Cycle
- Freight
- General public

The definitions for LOS A to LOS F are all descriptive and generally do not have quantitative definitions.

Table 27 summarises the Wellington Network Operating Framework for cyclists.

Table 27 Cycle Levels of Service

Area unit	Suitability	Quality	Conflict with vehicles	Environment
A	Safe for all cyclists	Wide, separate, good surface	No conflict	Low speed
B	Suitable for all cyclists	Shared paths	Few conflicts	Calm
C	Adequate for most	Marked on road	Some conflict	<=50km/h
D	Experienced	Share road	Likely	>60km/h
E		Share road	High	High
F		Narrow/ unsealed verge	Extreme	High

9.2.3 Cycle Network Gap Study

The City Council undertook a Cycle Network Gap Study in 2013. As part of this study, a comprehensive literature review was undertaken to determine the best method for assessing cycle levels of service. Eight different methodologies were reviewed, and the study team determined that the Danish method was considered most appropriate. This was based on *Pedestrian and Bicycle Level of Service on Roadway segments, Soren Jensen, January 2007, Trafitec.* The model attempts to objectively quantify cycle satisfaction between intersections. Further detail on the model is provided in Appendix B.

9.2.4 Level of Service – Miramar Area Cycleways

The Danish method of estimating the level of service was used to determine the existing Level of Service for the five proposed cycle routes. The methodology estimates the satisfaction of cyclists and provides an overall level of service. This has been undertaken for different time periods and the lowest level of service for the day has been provided. Where there are significant differences in conditions, a new LOS has been prepared. The calculations include the traffic volumes and speeds at different times of the day, together with the environment (retail, residential, mixed, and the lane and cycle widths on the road).

Park Road

The LOS results for Park Road are provided in Table 28.

Table 28 Park Road Levels of Service

Southern end	AM Peak	Interpeak	PM Peak	Worst LOS
Very satisfied	6%	1%	0%	
Moderately satisfied	21%	4%	2%	
Little satisfied	28%	10%	6%	
Little dissatisfied	21%	16%	10%	
Moderately dissatisfied	17%	33%	29%	
Very dissatisfied	8%	35%	53%	
Level of service	C	E	F	**F**
Middle and Northern end	AM Peak	Interpeak	PM Peak	Worst LOS
Very satisfied	3%	4%	3%	
Moderately satisfied	12%	15%	12%	
Little satisfied	21%	24%	21%	
Little dissatisfied	23%	23%	23%	
Moderately dissatisfied	26%	23%	26%	
Very dissatisfied	15%	12%	15%	
Level of service	D	D	D	**D**

The results in Table 28 show that this route, particularly the southern end, does not offer a good LOS for cyclists.

Ira Street/ Miramar Avenue

The LOS results for Ira Street/ Miramar Avenue are provided in Table 29, which indicates a good LOS for cyclists.

Table 29 Ira Street/ Miramar Avenue Levels of Service

Miramar Avenue	AM Peak	Interpeak	PM Peak	Worst LOS
Very satisfied	23%	24%	22%	
Moderately satisfied	40%	40%	40%	
Little satisfied	22%	21%	22%	
Little dissatisfied	9%	8%	9%	
Moderately dissatisfied	5%	5%	5%	
Very dissatisfied	2%	2%	2%	
Level of service	B	B	B	**B**
Ira Street	**AM Peak**	**Interpeak**	**PM Peak**	**Worst LOS**
Very satisfied	23%	24%	22%	
Moderately satisfied	40%	40%	40%	
Little satisfied	22%	21%	22%	
Little dissatisfied	9%	8%	9%	
Moderately dissatisfied	5%	5%	5%	
Very dissatisfied	2%	2%	2%	
Level of service	B	B	B	**B**

Hobart Street

The LOS results for Ira Street/ Miramar Avenue are provided in Table 30.

Table 30 Hobart Street Levels of Service

Kedah Street	AM Peak	Interpeak	PM Peak	Worst LOS
Very satisfied	18%	12%	8%	
Moderately satisfied	38%	32%	25%	
Little satisfied	25%	28%	28%	
Little dissatisfied	11%	15%	19%	
Moderately dissatisfied	6%	9%	14%	
Very dissatisfied	2%	4%	6%	
Level of service	B	C	C	**C**
Hobart Street	**AM Peak**	**Interpeak**	**PM Peak**	**Worst LOS**
Very satisfied	9%	9%	8%	
Moderately satisfied	26%	26%	26%	
Little satisfied	29%	29%	29%	
Little dissatisfied	18%	18%	18%	
Moderately dissatisfied	13%	13%	13%	
Very dissatisfied	5%	5%	6%	
Level of service	C	C	C	**C**

The results in Table 30 show that these two streets offer a good LOS for cyclists.

Broadway

The LOS results for Broadway are provided in Table 31.

Table 31 Broadway Levels of Service

Broadway at Kedah Street	AM Peak	Interpeak	PM Peak	Worst LOS
Very satisfied	2%	2%	1%	
Moderately satisfied	7%	10%	6%	
Little satisfied	25%	19%	14%	
Little dissatisfied	21%	22%	20%	
Moderately dissatisfied	31%	29%	32%	
Very dissatisfied	24%	19%	27%	
Level of service	E	D	E	**E**
Broadway at Hobart Street	**AM Peak**	**Interpeak**	**PM Peak**	**Worst LOS**
Very satisfied	3%	4%	3%	
Moderately satisfied	12%	14%	12%	
Little satisfied	22%	23%	22%	
Little dissatisfied	23%	23%	23%	
Moderately dissatisfied	26%	24%	26%	
Very dissatisfied	15%	13%	15%	
Level of service	D	D	D	**D**

The results in Table 31 show that this route offers an acceptable level of service on Broadway at Hobart Street but this declines heading to Kedah Street.

Ferry Street

The LOS results for Ferry Street are provided in Table 32.

Table 32 Ferry Street Levels of Service

Tunnel	AM Peak	Interpeak	PM Peak	Worst LOS
Very satisfied	2%	2%	1%	
Moderately satisfied	7%	8%	8%	
Little satisfied	15%	17%	16%	
Little dissatisfied	20%	22%	21%	
Moderately dissatisfied	31%	30%	31%	
Very dissatisfied	25%	21%	23%	
Level of service	E	E	E	**E**
Dundas Street	AM Peak	Interpeak	PM Peak	Worst LOS
Very satisfied	11%	12%	11%	
Moderately satisfied	31%	32%	31%	
Little satisfied	28%	28%	28%	
Little dissatisfied	16%	15%	15%	
Moderately dissatisfied	10%	9%	10%	
Very dissatisfied	4%	4%	4%	
Level of service	C	C	C	**C**

The results in Table 32 show that a poor LOS is offered to cyclists in Seatoun Tunnel while Dundas Street offers a good LOS for cyclists.

10. People Using Buses

10.1 Bus Routes

Nearly all of the routes identified as part of the Miramar Area cycleways project are also bus routes, with the exception of Kedah Street and Miro Street. All of the cycleway routes have bus stops located along them, as set out below.

- Park Road – bus routes 2, 18, 24 and 31
- Ira Street/ Miramar Avenue - bus routes 25, 30, 43 and 44
- Hobart Street - bus routes 2, 11 and 18
- Broadway - bus routes 11, and 30
- Seatoun Tunnel/ Dundas Street - bus routes 11 and 30

Links to the current bus route maps and timetables are provided in Appendix A.

The redesign of any of these road corridors will need to cater for buses and consider how bus stops are incorporated. Buses collecting passengers at bus stops can cause delays to cyclists who are not confident to overtake them or where there is insufficient room to pass. Cycleway designs that allow cyclists to cycle on the footpath around the back of the bus stop need to consider how to manage the volume of passengers getting on and off buses.

10.2 Bus Frequencies

The frequency of buses along the proposed cycleway routes are shown in

Table 33.

Table 33 Weekday bus frequencies across the five cycleway routes

Bus/ cycleway route and bus stop	Direction	First bus	Last bus	No. of buses per hour (approx.)	Increased frequency
Bus route 2: Miramar to Wellington					
Hobart Street (Miramar Ave to Caledonia Street) at Chelsea Street stop	Towards CBD	6.15 am	11.50 pm	3 to 4	1 every 10 mins, 7.15 – 8.15 am
	Towards Miramar	6.04 am	11.33 pm	4	1 every 10 mins, 5.00 -7.00 pm
Park Road (Rotherham Tce to Miramar Ave) at Brussels Street stop	Towards CBD	6.13 am	11.48 pm	3 to 4	1 every 10 mins, 7.13 -8.14 am
	Towards Miramar	6.05 am	11.36 pm	4	1 every 10 mins, 5.00 -7.00 pm
Bus route 11: Seatoun to Wellington					
Hobart Street (Caledonia Street to Broadway) at Kedah stop	Towards CBD	6.16 am	12.00 am	3 to 4 (reduces to 2 after 6.00 pm)	5 per hour, 7.00 – 9.00 am
	Towards Miramar	6.21 am	11.45 pm	3 to 4 (reduces to 2 after 7.00 pm	6 per hour, 5.00 – 6.00 pm

Broadway (Hobart Street to Seatoun Tunnel) at Strathmore Park Shops stop	Towards CBD	6.14 am	11.58 pm	3 to 4 (reduces to 2 after 6.00 pm)	5 per hour, 7.00 – 9.00 am
	Towards Miramar	6.23 am	11.47 pm	3 to 4 (reduces to 2 after 7.00 pm	6 per hour, 5.00 – 6.00 pm
Ferry Street (at Dundas Street stop)	Towards CBD	6.12 am	11.57 pm	3 to 4 (reduces to 2 after 6.00 pm)	5 per hour, 7.00 – 9.00 am
	Towards Miramar	6.25 am	11.50 pm	3 to 4 (reduces to 2 after 7.00 pm	6 per hour, 5.00 – 6.00 pm
Bus route 18: Miramar to Victoria University (Karori Campus)					
Hobart Street (Miramar Ave to Caledonia Street) at Chelsea Street stop	Towards CBD	7.18 am	5.41 pm	2	4 per hour, 7.00 - 8.00 am
	Towards Miramar	9.04 am	6.45 pm	2	-
Park Road (Rotherham Tce to Miramar Ave) at Brussels Street stop	Towards CBD	7.16 am	5.41 pm.	2	4 per hour, 7.00 - 8.00 am
	Towards Miramar	9.05 am	6.46 pm	2	-
Bus route 24: Miramar Heights to Wellington					
Park Road (Rotherham Tce to Miramar Ave) at Brussels Street stop	Towards CBD[39]	6.11 am	6.06 pm	1	4 per hour, 7.00 - 8.00 am
Bus route 25: Strathmore – Wellington					
Ira Street (Devonshire Road to Broadway) at Broadway stop[40]	Towards CBD	6.45 am	8.11 am	6 buses total, one every 15 mins	-
Bus route 28: Beacon Hill Shuttle (Beacon Hill - Strathmore)					
Ira Street at Broadway stop (connects with Route 30)[41]	Towards CBD	7.06 am	8.28 am	6 buses total, one every 15 mins	-
	Towards Miramar	3.35 pm	6.20 pm	8 buses total, one every 20-30 mins	
Bus route 30: Seatoun Express (Breaker Bay/Scorching Bay - Wellington)					
Ira Street (Devonshire Road to Broadway) at Broadway stop	Towards CBD	6.55 am	9.42 am	12 buses total, one every 20 mins	1 every 7-10 mins, 8.00 – 8.30 am (5 buses)
	Towards Miramar	4.35 pm	7.00 pm	9 buses total	6 per hour, 5.00 – 6.00 pm

[39] Bus route 24 does not travel along Park Road on the journey from the CBD to Miramar.
[40] Bus route 25 also travels along Broadway for a short distance (Monorgan Road to Ira Street)
[41] Bus route 28 also travels along Broadway for a short distance (Wilberforce Street to Ira Street)

Broadway (Ira Street to Seatoun Tunnel) at Strathmore Park Shops stop	Towards CBD	6.54 am	9.42 am	12 buses total, one every 20 mins	1 every 7-10 mins, 8.00 – 8.30 am (5 buses)
	Towards Miramar	4.35 pm	7.00 pm	9 buses total	6 per hour, 5.00 – 6.00 pm
Ferry Street (at Dundas Street stop)	Towards CBD	6.50 am	9.38 am	12 buses total, one every 20 mins	1 every 7-10 mins, 8.00 – 8.30 am (5 buses)
	Towards Miramar	4.39 pm	7.02 pm	9 buses total	6 per hour, 5.00 – 6.00 pm
Bus route 31: Miramar North Express, Miramar to Wellington					
Park Road (Rotherham Tce to Miramar Ave) at Brussels Street stop	Towards CBD	6.54 am	8.53 am	11 buses total	1 every 10 mins, 7.00 - 8.30 am
	Towards Miramar	2.55 pm	7.12 pm	11 buses total	1 every 10 mins, 5.00 - 6.00 pm
Bus route 43: Strathmore Park - Wellington - Khandallah (Loop Service)					
Ira Street/ Miramar Ave (whole cycleway route) at Devonshire Road/ Otaki Street stops[42]	Towards CBD	8.34 am	11.00 pm	1	2 per hour, 7.00 – 11.00 pm
	Towards Miramar	8.38 am	11.49 pm	1	2 per hour, 8.00 pm – 12.00 am
Bus route 44: Strathmore Park - Wellington - Khandallah (Loop Service)					
Ira Street/ Miramar Ave (whole cycleway route) at Devonshire Road/ Otaki Street stops[43]	Towards CBD	7.02 am	6.01 pm	1	2 per hour, 7.00 – 8.00 am and 4.00 – 6.00 pm
	Towards Miramar	7.45 am	7.46 pm	1	4 per hour, 6.00 – 7.00 pm

As shown in

Table 33, the busiest route for buses is Park Road between 7.00 and 8.00 am when approximately 20 buses travel southbound along this road toward the CBD, this equates to approximately one bus every three minutes. There are fewer buses (approximately 14) heading north along this road in the evening peak hour between 5.00 and 6.00 pm, this equates to approximately one bus every four to five minutes.

On Ira Street between 7.00 and 8.00 am, approximately 11 buses travel northbound from Broadway to Devonshire Road, towards the CBD. It is possible that cyclists may travel in the opposite direction towards Broadway, to access the Airport Tunnel. Approximately eight buses travel southbound between Devonshire Road and Broadway between 5.00 and 6.00 pm.

Buses travel northbound and southbound on Hobart Street towards the CBD. Between 7.00 and 8.00 am approximately nine buses travel southbound from Miramar Avenue to Caledonia Street and five buses travel northbound from Broadway to Caledonia Street. In the evening between 5.00 and 6.00 pm approximately eight buses travel northbound from Caledonia Street towards Miramar Town Centre and six travel southbound from Caledonia Street towards Seatoun.

There are approximately 9-10 buses travelling from Seatoun (Ferry and Dundas Streets) along Broadway to Ira Street between 7.00 and 8.00 am (and a similar number between 8.00 and 9.00 am). An additional four buses travel between Wilberforce Street and Ira Street (bus route 28). In

[42] Bus route 43 also travels along Broadway for a short distance (Monorgan Road to Ira Street)
[43] Bus route 44 also travels along Broadway for a short distance (Monorgan Road to Ira Street)

the evening peak hour between 5.00 and 6.00 pm, there are approximately 12 buses travelling towards Seatoun on Broadway (from Ira Street) and an additional three buses on the Ira Street to Wilberforce Street section.

10.3 Bus Network Changes

There may be changes to bus stops and routes as part of the Bus Rapid Transit, Future Bus Network and Let's Get Wellington Moving projects.

The Future Bus Network Map (see Appendix A) identifies Park Road (Route D), Hobart Street, Broadway, Ferry Street and Dundas Street (all Route C) as Higher Frequency Core Routes and Ira Street (Route Q) as a Medium Frequency Local Route.

During the morning and afternoon peak times on weekdays, bus frequencies will be every 10 to 20 minutes on Route D (Park Road) and every 5 to 10 minutes on Route C (Hobart Street, Broadway, Ferry Street and Dundas Street). On Route Q (Ira Street) buses frequencies will be every 15 to 30 minutes at peak times on weekdays.

11. Summary of Issues

A number of issues have been identified to date and these will be examined further with local residents and other interested parties as this project progresses (a summary of comments made at the Open Days held on 15 and 18 March are included in Appendix C). A number of issues are shared by many, if not all of the routes, while other issues are more site-specific. These issues are summarised below.

11.1 Issues for cyclists and route design

11.1.1 Across the five routes

- There are very limited existing facilities for cyclists, such as lanes, road markings, signage or parking.
- There are a number of roundabouts which can be difficult to negotiate for cyclists, particularly in high speed or highly trafficked areas.
- There are a number of traffic islands and kerb extensions which reduce the width of the carriageway that is to be shared with cyclists and motorised vehicles, creating pinch points for cyclists.
- Buses use nearly the routes and any redesign of the road corridor would need to cater for vehicles of this dimension.
- There are bus stops along nearly all the routes which need to be considered in any redesign of the road corridor.
- Cycle facilities on each of the routes will need to tie in with each other and with those being proposed for Miramar Town Centre and Kilbirnie projects.
- Cars are recorded travelling faster than the 50 km/h speed limit on a number of the routes and there are high traffic volumes on Broadway.
- There are a number of residential driveways that cars reverse out of.
- The proposed route goes through several intersections which would need appropriate treatments and consideration given to turning movements for all modes.
- Parking demands on some sections of the routes are high, particularly the western end of Broadway.
- It has been assumed that no land adjacent to the road is contaminated. This will need to be confirmed as this project progresses.
- Ngati Toa and Taranaki iwi have advised that consultation should be undertaken with iwi on all proposed Miramar cycleway routes as there may be additional sites of significance to Maori not shown on the District Plan Maps, which could be affected by any proposed works.

11.1.2 Park Road (Route 1)

- There are safety concerns with cycle lanes adjacent to angle parking in terms of visibility, unless enough clearance is provided for cars to reverse.

- The area being considered as part of this project does not extend past the Miramar North Road intersection where a number of commercial premises are located and the carriageway narrows.
- Miramar Central School generates a high number of pedestrian, cyclist and vehicle movements at school start and finish times.

11.1.3 Ira Street/ Miramar Avenue (Route 2)

- A cycle facility on Ira Street may require a setback from the retaining wall.
- The differing property setbacks on the east side of Ira Street may restrict the ability to provide a shared off road pedestrian and cycle path along the full length of Ira Street.

11.1.4 Hobart Street (Route 3)

- The Airport Tunnel is not well lit and creates safety and personal security concerns for users and non-users.

11.1.5 Broadway (Route 4)

- The path for westbound cyclists from Broadway to the Airport Tunnel is not clear.
- Scots College generates a high number of pedestrian, cyclist and vehicle movements at school start and finish times.
- The narrowing of the carriageway at the Strathmore shops reduces the carriageway width for cyclists, noting that a car was observed crossing the centreline to pass a cyclist at the narrowing.
- There are no pedestrian facilities close to the Seatoun Tunnel for the vehicles that are parked here.
- There is no pedestrian crossing point for the southern footpath which terminates prior to the Seatoun Tunnel.
- There is inconsistency with the provision of right turning bays within the flush median.
- There is a very narrow footpath width adjacent to bus stop 6036 at Strathmore shops.
- There is a high camber in the road shoulders due to repeated resealing of the road which can be a hazard for cyclists.
- At Kauri Street intersection there was a lot of dazzle marks and it is unknown if works are planned here that may affect any future designs or timing of works.
- Works in proximity to the heritage-designated Norfolk Island Pine tree at 411 Broadway would require consent if the cycleway route disturbed soil or requires the laying of impervious surfaces within the dripline of the tree.
- Works in proximity to the Maori site in the road corridor at approximately 459 Broadway would require further investigations.

11.1.6 Seatoun Tunnel/ Dundas Street (Route 5)

- The traffic lanes in the Tunnel are too narrow for cyclists and vehicles to share the road side by side.
- The existing footpath in the Seatoun Tunnel is only 1.1 metres wide and too narrow in its current form for a shared cycle and pedestrian path.
- There are no pedestrian crossing facilities on Ferry Road for pedestrians from Ludlam Street wanting to use the footpath through Seatoun Tunnel (on the northern side).
- Visibility is limited out of Seatoun Tunnel.
- St Anthony's School on Ludlam Street generates a high number of pedestrian, cyclist and vehicle movements at school start and finish times.
- Many of the pedestrian crossing points, particularly by the shops, allow parking to occur over the pedestrian apron.

Appendix A – Bus Timetables

Links to Metlink timetables

Route 2

Route 11

Route 18

Route 24

Route 30

Route 31

Route 43

Route 44

Wellington Future Bus Network Map

Appendix B – Cycling Levels of Service Model

The model equation for bicycles is provided in Figure 56.

Figure 56 Level of service analysis

$$\text{logit}(p) = \alpha \begin{bmatrix} \text{very satisfied} = -1.3652 \\ \text{moderately satisfied} = 0.3741 \\ \text{a little satisfied} = 1.5512 \\ \text{a little dissatisfied} = 2.4805 \\ \text{moderately dissatisfied} = 3.8449 \end{bmatrix} + \text{AREA} \begin{bmatrix} \text{residential} = 0.0557 \\ \text{shopping} = -0.3400 \\ \text{mixed} = -0.0334 \\ \text{rural fields} = 0.0196 \\ \text{rural forest} = 0.3569 \end{bmatrix} - 0.0005585 \cdot \text{MOT} - 2.3895 \cdot \text{LBUF} + 0.0004691$$

$$\cdot \text{MOT} \cdot \text{LBUF} - 0.0958 \cdot \text{SPEED} + 0.000421 \cdot \text{SPEED}^2 - 0.000002913 \cdot \text{MOT} \cdot \text{SPEED} + 0.0402 \cdot \text{LBUF} \cdot \text{SPEED}$$

$$+ 0.000002446 \cdot \text{MOT} \cdot \text{LBUF} \cdot \text{SPEED} - 0.001623 \cdot \text{PED} + 0.0000008309 \cdot \text{PED}^2 - 0.09416 \cdot \text{PARK} + 1.7782 \cdot \text{PATH}$$

$$+ 1.3938 \cdot \text{ULAN} + 2.5196 \cdot \text{RSHO} + 0.2413 \cdot \text{DBL} - 0.2593 \cdot \text{RBUF} + 1.2694 \cdot \text{SW} - 0.6988 \cdot \text{BUS} + 0.6821 \cdot \text{LANE}$$

where

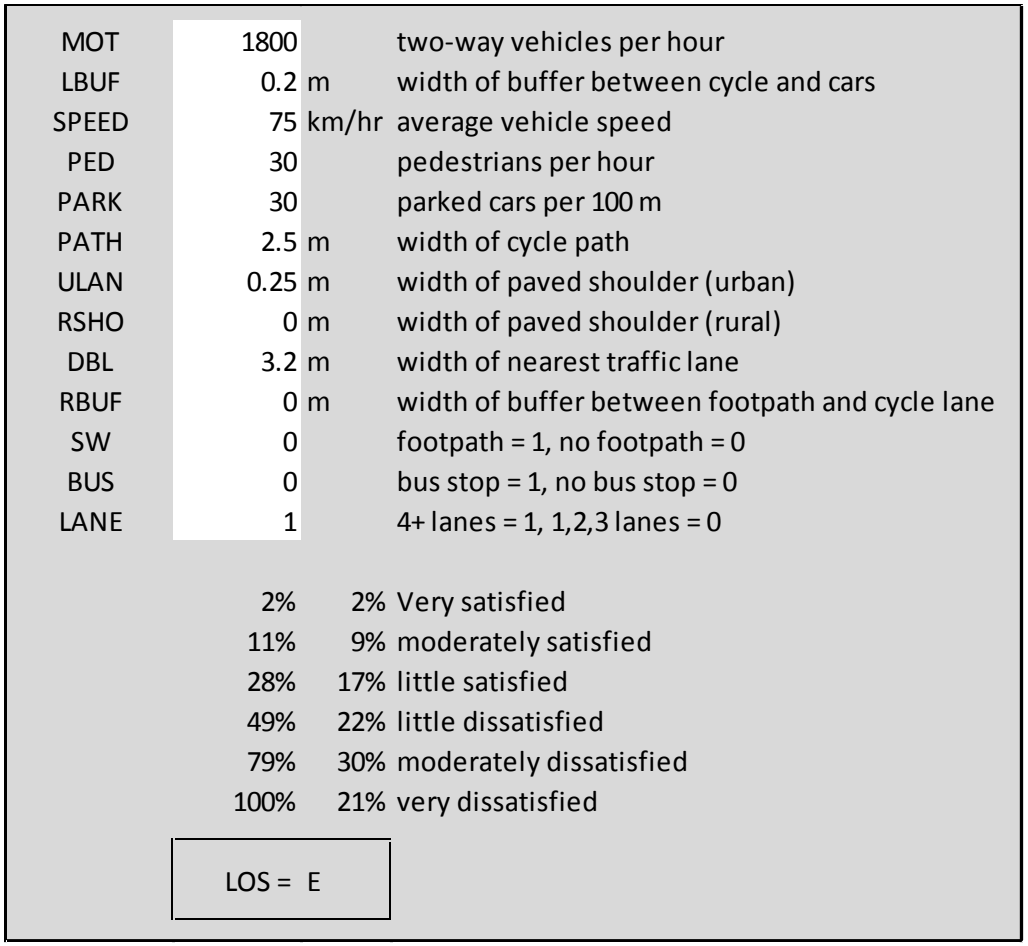
- $\text{logit}(p)$ = utility function of the cumulative logit model,
- α = intercept parameter of the response level of satisfaction,
- AREA = type of roadside development or landscape,
- MOT = motor vehicles per hour in both directions,
- LBUF = width of buffer area between bicycle facility and drive lane on the nearest roadside (m),
- SPEED = average motor vehicle speed (km/h),
- PED = passed pedestrians per hour on nearest roadside at 20 km/h riding speed,
- PARK = parked motor vehicle on nearest roadside per 100 m,
- PATH = width of bicycle path/track on nearest roadside (m),
- ULAN = width of bicycle lane/paved shoulder (at least 0.9 m wide) on nearest roadside in urban areas (m),
- RSHO = width of bicycle lane/paved shoulder (at least 0.9 m wide) on nearest roadside in rural areas (m),
- DBL = width of nearest drive lane including bicycle lane/paved shoulder of less than 0.9 m width (m),
- RBUF = width of buffer area between sidewalk and bicycle facility/drive lane (m),
- SW = sidewalk dummy, sidewalk on nearest roadside = 1, no sidewalk = 0,
- BUS = bus stop dummy, bus stop on roadway = 1, no bus stop = 0,
- LANE = drive lane dummy, four or more drive lanes = 1, one to three lanes = 0.

Variables with the largest effect on cycle satisfaction were the type and width of the cycle facility, and the distance to motor vehicles and pedestrians.

To determine the LOS, the probability of cyclists in each user category is calculated, and the accumulative totals for each level of satisfaction is determined. If 50% are above very satisfied, the LOS for cyclists is considered to be A. If very satisfied and moderately satisfied is greater than 50%, the cycle LOS is considered to be B, etc.

An example for a “mixed use” area is provided in Figure 57.

Figure 57 Level of Service example



MOT	1800		two-way vehicles per hour
LBUF	0.2	m	width of buffer between cycle and cars
SPEED	75	km/hr	average vehicle speed
PED	30		pedestrians per hour
PARK	30		parked cars per 100 m
PATH	2.5	m	width of cycle path
ULAN	0.25	m	width of paved shoulder (urban)
RSHO	0	m	width of paved shoulder (rural)
DBL	3.2	m	width of nearest traffic lane
RBUF	0	m	width of buffer between footpath and cycle lane
SW	0		footpath = 1, no footpath = 0
BUS	0		bus stop = 1, no bus stop = 0
LANE	1		4+ lanes = 1, 1,2,3 lanes = 0

2%	2%	Very satisfied
11%	9%	moderately satisfied
28%	17%	little satisfied
49%	22%	little dissatisfied
79%	30%	moderately dissatisfied
100%	21%	very dissatisfied

Note that changing the flow to 1000 improves the LOS to B. Increasing the speed to 75 km/h decreases the LOS to E. Some of the above parameters can be found in RAMM databases.

Appendix C – Open Days 15 & 18 March Feedback

Broadway (airport subway to Dundas/ Inglis Street intersection, Seatoun)

Issues/ observations

- One of the worst parts of the journey to the CBD via Crawford due to:
  - Opening doors on parked cars
  - Traffic islands with trees creating pinch points
- Residents park on south side of road instead of in driveways (avoid reversing into traffic)
- 'Address Broadway/ Crawford Green to airport underpass flow problems'
- Section between Calabar Road and Ira Street is the worst due to traffic islands
- Parked cars and traffic islands mean there is not enough width for overtaking
- Miramar Junction tram turnaround (Hobart Street and Wayside West)
- Dundas/ Inglis Street intersection - green paint makes cyclists take a line close to kerb so cars think they are turning left
- 'Great connector. Remove central islands and have a tree or six at the side instead'

Route

- Avoid this road as not safe, take 'Strathavaon' route
- 'Look at encouraging people to turn off Broadway at Crawford Green and use "friendly" side roads to the tunnel'
- Consider buying land within old school for direct link to underpass

- ‘Link to Scots College down Monorgan Road’

Seatoun Tunnel

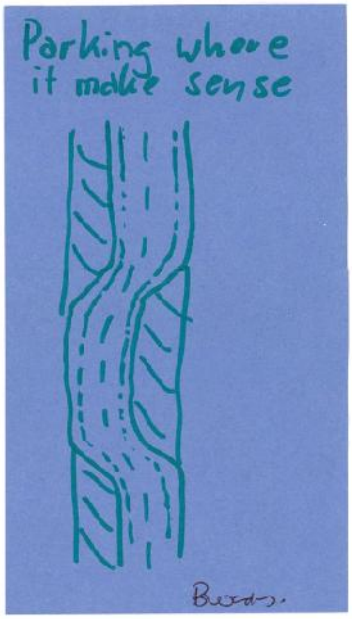
- Poor lighting in tunnel, can use LED or improved paint?
- It’s about cooperation - education for cyclists to take the lane and drivers to wait
- You just live with it
- Remove the slope in tunnel (one needed for vehicles to not hit side)?

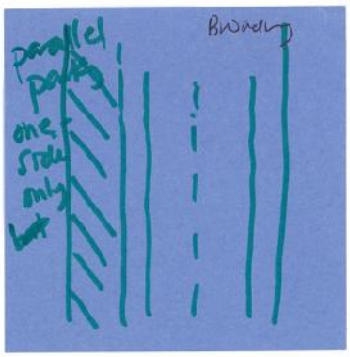
Airport subway

- Better signage to underpass needed
- Keep airport subway (scooters aren’t that bad)
- Drop kerb has been removed, not helpful for people using pushchairs

Type of facility/ solutions

- Prefer kerb separated cycle lanes (or other physical barrier)
- Both sides for cyclists
- ‘Remove the islands… as planned 2016’
- Remove traffic calming islands at 30 km/h speed reduction
- Get rid of the islands
- Lose median strip to give cyclists room
- Possibly widen the path for a shared facility
- ‘Raise and separate’
- Prefer parallel parking – avoid car doors. Place on both sides where it makes sense





Ira Street (including Miramar Avenue to roundabout)

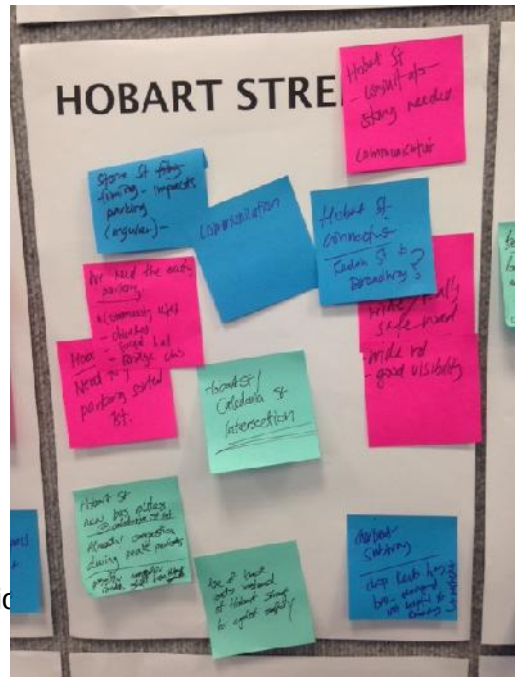
Issues/ observations

- Get rid of retaining wall (is it historic?)
- Infill housing – no off-street parking
- Encroachment – houses on north west side (numbers 60-86 Ira Street)
- Really wide berm on west side
- Berm is very wide
- 'Berm width large/ footpath narrow'
- What is the median for? It is visually distracting (from urban design perspective)
- 'Poor kerb edging, bus shelter should be indented'
- Speeding (used as a race track) and drivers don't notice the slight curve
- 'Poor bus shelter, no bus shelter on other side'
- 'Chelsea / Para / Miramar access too wide perhaps? Calm it down'

Type of facility/ solutions

- Prefer kerb separated cycle lanes (or other physical barrier)
- Two-way, off-road cycle path on NW side all the way to Seatoun with links to Cobham Drive (on north side of road) and path on northern side through Seatoun Tunnel

Hobart Street (including Miro and Kedah Streets)



Issues/ observations

- Narrow footpath (Miro Street)
- Need a safe place for kids to cycle along
- Formerly Miramar South School (Ministry of Education)
- Chelsea/ Hobart Street intersection needs improvements, particularly when heading north on Hobart from Chelsea
- 'Chelsea St/ Hobart INT dodgy for cyclists'
- 'Hobart St / Caledonia St intersection'
- Stone Street Studios filming can impact on parking
- 'Please listen to the residents – communication/ consultatio has been really poor'
- Already a really wide and safe road with good visibility
- We need existing parking for community uses - churches, social hall and bridge club
- 'New bus routes at Caledonia Street int/ already congestion during peak periods/ possibly consider route shift from Hobart south'

Airport parking

- Issues with cars parking over driveways (Miro Street)
- Needs to get parking sorted first (airport end)
- 'We really like Hobart Street the way it is – just sort out the parking at the airport end'

Type of facility/ solutions

- Use of buffer zones to protect cyclists

Route

- Chelsea Street is a good cut through
- 'Use of back roads instead of Hobart Street for cyclist safety'
- Additional connection on Hobart Street between Kedah Street and Broadway?

Park Road

Issues/ observations

- Issues cycling behind angle parking
- Parallel parking at shops
- Park Road/ Brussels Street intersection - no pedestrian protection, very wide. Lots of vulnerable people including children and elderly, sheltered housing in area. Some people who bypass the town centre use Brussels Street
- Intersection opposite Brussels Street very wide, hazardous for pedestrians
- Holy Cross is currently running a cycle education programme
- Choke point at Park Road/ Miramar Ave/ Hobart Street intersection
- Weta Workshop parking spill over - possibility of promoting cycling and other sustainable modes?
- 'Weta traffic around Revans, Camperdown, outside Miramar North School – no resident parking and dangerous for school children
- 'Choke point at north end of Park Road – California to Camperdown. Widen road? Use yellow lines more?
- Tauhinu Road used as bypass by cyclists and vehicles – not safe

Route

- Choke point at Park Road/ Miramar Ave/ Hobart Street intersection – don't need to add to this by encouraging cyclists to travel via section between Tahi Street and Miramar Avenue. Provide bypass of Miramar town centre

Type of facility/ solutions

- ‘Raise and separate’

Other issues

- People come to Miramar for work (film industry and commercial kitchens)
- ‘Safety for road users – no reduction to vehicle lanes’
- ‘Have kerb on cycle/ car side not footpath/ cycle side’
- ‘General preference for full separation between cyclists and vehicle traffic’
- ‘If use of shared paths make sure to sign/ mark with consistently and clarity’
- ‘Are current berms best use of road space?’
- ‘Signage between airport and subway non-existent – a great route possible’
- ‘Remember recreational link to peninsular circuit’
- ‘Possible bike racks on buses’
- Cobham Drive Crossing safety issue – people using median in the morning (near Stadium)
- Another destination in area: Prison gardens – community gardens
- Ferry to Miramar wharf then shuttle to airport
- Everything needs to be on the website