Wendy Collard

From: Jenny Lapham
Sent: Monday, 27 November 2023 10:37 a.m.
To: [redacted]
Subject: Local Government Official Information and Meetings Act 1987 (LGOIMA) Request
Attachments: Dunedin Network Operating Framework (2023) - Draft_Redacted.pdf; Dunedin Network Operating Framework report.pdf

Kia Ora [redacted]

I refer to your request below and my e-mail of 20 October 2023 extending the time to respond to your request by 20 working days. Please accept my apology that we were unable to meet our original timeframe. Our response to your questions are as follows:

1 The most recent version of the Network Operating Plan

At this time, the Council does not have a Network Operating Plan. A Network Operating Framework is being developed, but has not yet been finalised. The Network Operating Plan will be developed once the Network Framework is approved.

2 The documents which include the most recent version of the Network Operating Plan.

As per response to question one.

3 The older versions of the Network Operating Plan, as it existed in 2005, 2010, 2015, 2020 and 2022 (a total of 5 documents).

As per response to question one.

4 The most recent version of the Network Operating Framework.

A draft Network Operating Framework was produced as part of the Safer Future Dunedin Transport programme in 2020. An updated draft has been produced dated 2023. Attached are copies of the 2020 and 2023 versions. These are still in draft form and have not been finalised. Some information has been redacted pursuant to section 7(2)(f)(i) of LGOIMA to maintain the effective conduct of publish affairs through the free and frank expression of opinions by or between or to members or officers or employees of any local authority in the course of their duty.

5 The documents which include the most recent version of the Network Operating Framework.

As per response to question 4.

6 The previous versions of the Network Operating Framework.

As per response to question 4.

7 If any of the Councillors have seen the Network Operating Framework, by what means did this occur? Please include when and where they had a chance to see it and what your department's role was in facilitating this.

This is an operational document which is still in draft form. It has not been presented to the Council.

8 For the financial years 2019, 2020, 2021, 2022 and 2023, the amount and description of payments made from your department to the DCC Communications and Marketing Department.

This information is declined pursuant to section 17(e) of LGOIMA as the information does not exist. Any work undertaken by the Communications and Marketing Department (and other corporate departments) is paid for via a Corporate Charge. The Department does not charge for individual projects.

As we have declined to provide some information you are advised that you have the right to seek a review of our decision by the Office of the Ombudsman.

Kā mihi

Jennifer Lapham
Mana Whakahaere Kairuruku/Governance Support Officer
Governance Group

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From: [redacted]
Sent: Tuesday, 26 September 2023 4:57 p.m.
To: Transport <Transport@dcc.govt.nz>
Cc: Official Information <officialinformation@dcc.govt.nz>
Subject: Network Operating Framework

From: [redacted] (Dunedin)

To: DCC Transport

Tuesday 26/9/2023

Hello DCC Transport. Please provide the following information related to Dunedin. There are eight requests:

1. The most recent version of the Network Operating Plan
2. The documents which include the most recent version of the Network Operating Plan
3. The older versions of the Network Operating Plan, as it existed in 2005, 2010, 2015, 2020 and 2022 (a total of 5 documents)
4. The most recent version of the Network Operating Framework

5. The documents which include the most recent version of the Network Operating Framework

6. The previous versions of the Network Operating Framework

7. If any of the Councillors have seen the Network Operating Framework, by what means did this occur? Please include when and where they had a chance to see it and what your department's role was in facilitating this

8. For the financial years 2019, 2020, 2021,2022 and 2023, the amount and description of payments made from your department to the DCC Communications and Marketing Department.

Yours faithfully

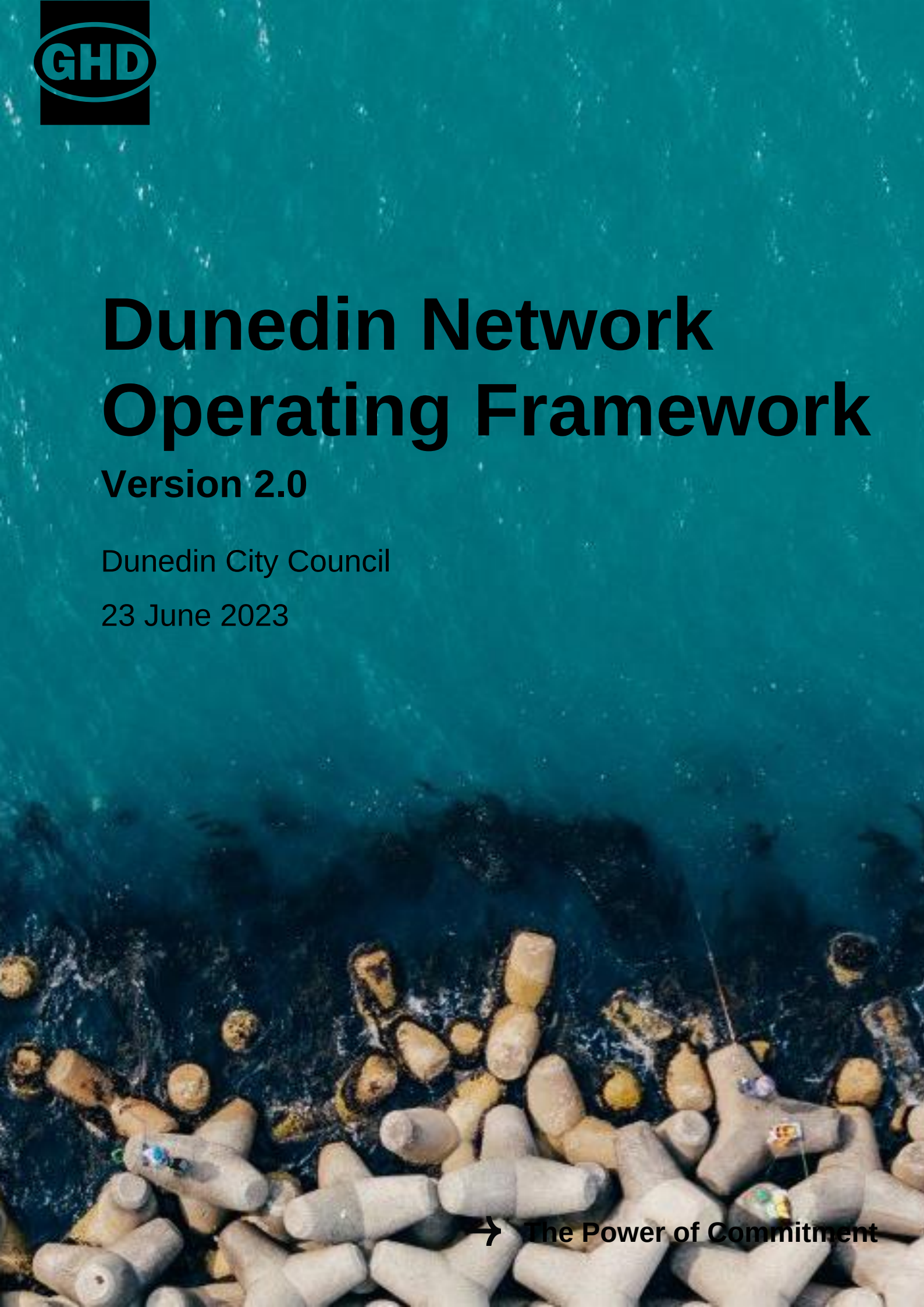
[redacted]

Dunedin Network Operating Framework

Version 2.0

Dunedin City Council

23 June 2023



The Power of Commitment

Project name		Dunedin Network Operating Framework					
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Status Code	**Revision**	**Author**	**Reviewer**		**Approved for issue**		
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1. Introduction

The development of this Network Operating Framework (NOF) aims to support Dunedin City Council (DCC) and stakeholders with forward-looking multi-modal network planning for Dunedin. This Network Operating Framework provides stakeholders with a first principles approach to the development of the Dunedin transport network. It outlines an aspirational transport network that supports current and future land uses in response to stakeholder predicted future travel needs and demands.

This NOF aims to assist by providing an approach to network planning which road-controlling authorities can utilise to consider all road users and the inter-relationship with land use, transport networks, and transport infrastructure and services. The framework enables a collaborative and integrated approach to managing the transport system through a 'one network' framework.

This NOF is an update to the Dunedin Network Operating Framework report version 1.0, November 2020. The focus area of this NOF are the urban areas of Dunedin and Mosgiel.

1.1 Network Operating Framework Objectives

Development of a NOF aims to recognise the diverse needs of road users. With a strategic and collaborative approach, stakeholders and road user groups provide input into the development of a framework to understand the needs of users in the existing network and focus investment on future schemes that suit the needs and demands of its users.

A NOF provides a 'backbone' to support the development of Network Operating Plans and transport investments (through business cases and master planning) to supplement and support investment decisions. The NOF provides road agencies with strategy guidance on how to respond to land use and transport network interactions in the road network. A NOF aims to:

– Support decisions as part of a wider decision-making framework
– Provide a collaborative approach to planning outcomes
– Take a wider view of the network
– Provide transparency in decision-making
– Compliment Business Case development and Master Planning
– Assist with informing understanding of network interventions
– Form an iterative process to encourage an integrated transport network.

The NOF takes the approach of considering the network needs of general traffic, freight, public transport users, pedestrians, and cyclists while considering the inter-relationship of those modes with land use. It will give guidance on network operations planning and where to consider trade-offs in terms of relative encouragement between modes.

This NOF is considered 'live' and will evolve as there are changes in the strategic environment, new projects come on-line, further data and analysis becomes available, and new technologies are developed.

1.2 Purpose of this report

This report has been prepared by GHD Ltd for Dunedin City Council. The purpose of this report is an updated November 2020 report, outlining the expanded Network Operating Framework for Dunedin, inclusion of Mosgiel.

1.3 Scope and limitations

This report: has been prepared by GHD for Dunedin City Council and may only be used and relied on by Dunedin City Council for the purpose agreed between GHD and Dunedin City Council as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Dunedin City Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

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. GHD 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.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Dunedin City Council and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

Demographic and growth information

Please note that the demographic and growth data presented in this report is based on the 2018 Census and pre COVID-19 pandemic information. It is important to acknowledge that the pandemic has had a substantial impact on various societal factors, including population dynamics and economic growth. It is also important to highlight that updated Census data from the 2023 Census was not yet available at the time of this report update. Therefore, while the data provided offers insights into the trends and characteristics of Dunedin, it may not fully reflect the current situation or the latest demographic changes. It is recommended to review data as sources are updated to obtain a comprehensive understanding of the present demographic.

2. Network Operating Framework Development Process

Austroads Network Operations Planning Framework and Austroads Guide to Traffic Management Part 4: Network Management informed the development of this Network Operating Framework. The development of the framework is based around collaborative workshops where stakeholders develop and apply strategic objectives and network principles for transport modes on the network.

The steps undertaken are outlined in Figure 1 below.

Figure 1 Network Operating Framework Process

Alignment with the Waka Kotahi One Network Framework (ONF) is outlined on the Waka Kotahi website:

https://www.nzta.govt.nz/planning-and-investment/planning/one-network-framework/

2.1 Process Overview

The NOF development process is based upon interactive workshop sessions. The purpose of the sessions is to develop strategic objectives and network principles and to understand the interactions of network links and places to develop modal priority network maps.

The initial NOF development workshops were held over several sessions virtually during 2020 as a result of the COVID-19 pandemic. This NOF incorporates updates following two sessions held 5th and 6th April 2023, and focused on expanding the modal priority network to include Mosgiel as well as reviewing and expanding the central Dunedin modal priority network.

The workshop outcomes informed the development of the modal priority network maps which were further refined following the workshop from subject matter experts and Dunedin City Council. These maps assist in identifying where balancing conflicting modal priorities is required and enable identification of locations where network interventions may support improved network outcomes.

The following steps summarise the NOF development process:

Strategic Objectives and Network Principles

Strategic objectives and network principles set the strategic context and mode-based aspirations for the network to inform the development of the NOF. These underpin and guide the development of the strategic network. For this updated NOF the existing Strategic Objectives and Network Principles were utilised.

Development of strategic objectives and guiding principles draw on national, regional, and local planning and policy literature with key stakeholders. These are refined through collaborative workshop sessions to better outline the aspirations and approach for operations for each mode in the network and are tested in the development of modal maps. Strategic objectives are developed for the following five modes:

- **Pedestrians** – all forms of active travel that typically travel at <10 km/h i.e. mobility scooter, running, walking
- **Cyclists** – all forms of active travel that typically travel >10 km/h i.e. scooters, skateboards, cargo bikes, e-scooters, e-bikes, and other low-powered vehicles
- **Public transport** – publicly available transport including tourist coaches and buses
- **General traffic** – private vehicles, taxis, and small commercial vehicles i.e., couriers
- **Freight traffic** – heavy commercial vehicles

Once initial strategic objectives are developed, network principles corresponding to each road user mode are developed. Principles guide the application of strategic objectives at a network level by attributing modal priority routes throughout the network.

Pedestrian, cyclist, and public transport modes typically have two principles – primary and secondary – to identify mode-based route priorities.

For general traffic, four levels of principles are developed to allow a greater level of prioritisation (from local access through to preferred access routes) to recognise the extent general traffic operates on the network.

For freight traffic, typically only one principle is developed to recognise that movement of freight does not require the specificity of other modes, but also because local distribution will be covered under general traffic. However, during the workshop sessions, secondary freight routes were identified to provide greater context with respect to local freight movements and to represent these important links in the network.

Network Links and Places

Identifying the key origins and destinations, population growth and land use changes in the study area is a core element to the NOF process. This is to better understand the changing land use context and demands in which the transport network and transport modes need to support.

Principles for each transport mode are used to define priority connections throughout the network in a workshop with stakeholders using maps.

Modal Priorities

Applying the network principles in a mode-by-mode approach, individual modal priority maps are developed defining mode-based priority around the network. The modal priority maps provide a framework for making decisions and trade-offs between modes around the network, where more than one mode shares the same infrastructure.

At a high-level, these maps identify the level of priority for each mode relative to other modes. This prioritisation is based on the assigned route priority as informed by interactive workshop sessions.

2.2 Stakeholders

The stakeholders were involved in the development of this Network Operating Framework:

– Dunedin City Council
– Otago Regional Council
– Waka Kotahi New Zealand Transport Agency
– Disabled Persons Assembly Dunedin
– CCS Disability Action
– Otago University
– ViaStrada (Cycling Subject Matter Expert)

3. Network Context

Surrounding the head of Otago Harbour on the southeast coast of New Zealand's South Island is the city of Dunedin – Edinburgh of the south. Dunedin's urban heart lies on flat land closest to the head of the harbour while the suburbs extend to the west into the surrounding hills and southeast out towards Otago Peninsula. Dunedin is the second-largest city in the South Island and lies approximately 350 km south of Christchurch.

Dunedin has a diverse economy of technology-based industries, education, tourism, and manufacturing. Home to the University of Otago and the Otago Polytechnic, students account for a large proportion of the population. The city is also relatively easy to get around and has recreational and cultural venues, shopping, cafes, and restaurants, as well as health care facilities in addition to the education facilities.

Dunedin's central city located around a central plaza known as 'the Octagon'. The Octagon is the heart of the CBD, with the rest of the central city stretching to the northeast and southwest.

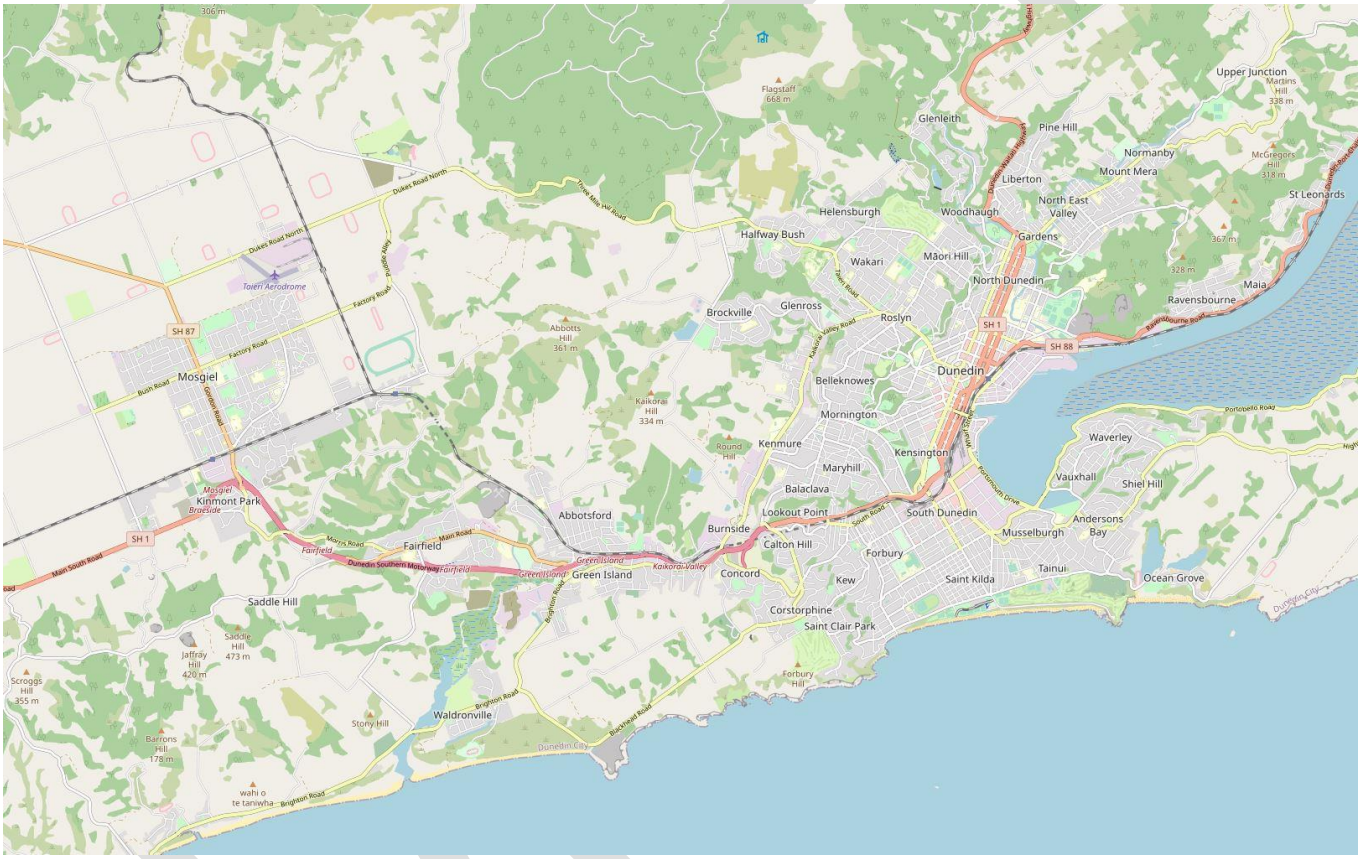


Figure 2 Map of Dunedin and surrounds

Well-known as a business-friendly centre there is a high degree of collaboration and support across sectors proving to be an attractive place for new businesses establish in or relocate to and enjoy a work-life balance.

Mosgiel, situated just 15 kilometres southwest of Dunedin, is a vibrant town that serves as a key link connecting the larger urban centre with the surrounding rural areas. Its location makes it a hub for various transportation networks, including road, rail, and air. The town is well-served by major state highways and has a railway station that facilitates the movement of goods and people. West of Mosgiel in Momona is the Dunedin airport, which plays a crucial role in connecting the region to domestic and international destinations and serves as a vital gateway and transportation hub.

3.1 Dunedin Demographics and Growth

For the following section please note that the data presented is based on the 2018 Census and pre COVID-19 pandemic. It is important to acknowledge that the pandemic has had a substantial impact on various societal factors, including population dynamics and economic growth. It is also important to highlight that updated Census data from the 2023 Census was not yet available at the time of this report update. Therefore, while the data provided offers insights into the trends and characteristics, it may not fully reflect the current situation.

Dunedin City's (comprising the Dunedin City territory) usually resident population increased from 118,683 at the time of the 2006 census to 126,255 at the time of the 2018 census, an increase of 6.38%. This growth is lower than that of the rest of New Zealand (16.58% over the same period), however, as with the rest of New Zealand, there has been an increase in growth since 2013 where it increased from 1.32% to 4.99%.

Most of the population growth that occurred over the past 12 years to 2018 has been in residents over the age of 60, with 60-64 and 65-69-year brackets both increasing by 45% while the number of people in the 70-74 years and 85+ years have increased by 37% and 38% respectively. Although this is where most of the growth has come from, residents aged 60 years and older make up just under 22% of the population. The largest proportion of Dunedin's residents fall into the 15-30-year age bracket, which represents 26.57% of the resident population in 2018. This is likely due to the University of Otago, which is one of Dunedin's most important activity centres.

Regarding ethnic composition, the 2018 census revealed higher proportions of people identifying as having European/Pākehā heritage than the rest of New Zealand. Table 1 and Figure 3 outline the ethnic heritage, sex, and age of the usually resident population of Dunedin at the time of the 2018 census. The ethnic composition is greater than 100% as people can select multiple ethnic groups.

Table 1 Ethnic group composition of New Zealand and Dunedin

Ethnic Group	New Zealand	Dunedin
European/Pākehā	70.2%	86.6%
Māori	16.5%	9.3%
Pacific Peoples	8.1%	3.2%
Asian	15.1%	7.8%
Middle Eastern/ Latin American/ African	1.5%	1.5%
Other Ethnicity	1.3%	0.2%

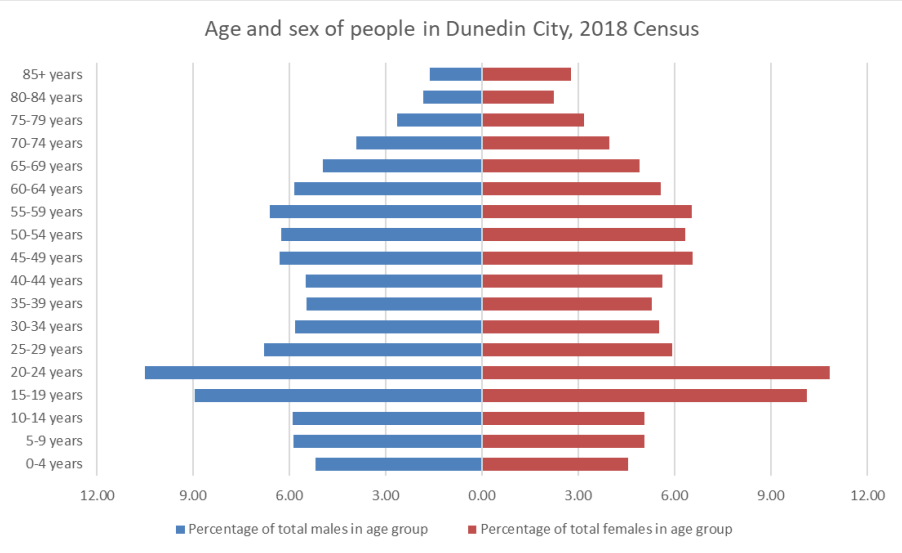


Figure 3 2018 census Age group and sex distribution of Dunedin residents[1]

[1] Statistics NZ, 2020. Statistical area 1 dataset for 2018 Census – updated March 2020. Individual part 1. Retrieved 02 Jun 2020, from **https://www.stats.govt.nz/information-releases/statistical-area-1-dataset-for-2018-census-updated-march-2020**

3.2 Transport Network Context

Road Network

Dunedin's urban centre runs northeast to southwest at the head of Otago Harbour. Serviced by a state highway network running through and connecting the centre of the district, Dunedin comprises of two highways – State Highway 1 (SH1) and State Highway 88 (SH88). The State Highway network provides the primary spine in the transport system, connecting the main urban areas and settlements throughout the region.

SH1 approaches Dunedin from the north, winding through the hills until it reaches the north-eastern end of the city. From here, SH1 splits between two parallel, one-way roads which bisect the city as they run northeast to southwest through the CBD. At the south-western end of the CBD, they converge again, heading out of the city to the southwest through some of the outer suburbs and nearby towns.

SH88 branches off from SH1 at the centre of the city to the northeast to provide a connection to Port Chalmers at the mouth of Otago Harbour.

Mosgiel is primarily served by State Highway 1 (SH1) running north-south through Mosgiel connecting with Dunedin to the northeast and Balclutha to the southwest. In addition to SH1, State Highway 87 (SH87) branches off from SH1 near Mosgiel and heads northwest, connecting the town with Outram and Middlemarch.

Mosgiel's urban network provides connectivity and accessibility for residents and visitors within the town and its surrounding areas. The layout consists of arterial roads, local streets, and residential areas. The main arterial roads in Mosgiel, such as Gordon Road (SH87), Gladstone Road, Factory Road, Dukes Road, and Wingatui Road, serve as key routes for vehicular traffic. These roads connect different parts of the town and provide access to amenities, including schools, shopping centres, commercial and industrial areas, and recreational facilities. They also serve as connectors to the wider network, facilitating travel to neighbouring towns and cities.

Cycling[2]

Dunedin's hill impose topographical constrains to cycling, However, with the recent popularity and increasing accessibility of electric bikes, many of Dunedin's hills have become less of a barrier for people wishing to commute and they are now willing and able to travel longer distances.

In recent years Dunedin has been experiencing growth in cycling, however, the implementation of Dunedin's Strategic Cycle Network as set out in Dunedin Integrated Transport Strategy (2013) has been slow. To date implementation has occurred through the South Dunedin Cycleways Programme 2013 – 2015, followed by the first and second Dunedin Urban Cycleways Programmes 2015 – 2020, ongoing Peninsula Connection project, The Waka Kotahi Dunedin SH1 separated cycle lanes 2017 – 2020, and SH88 shared path expected to be open mid-2023.

Dunedin also has a large recreational cycling network. Dunedin is blessed with ample terrain for on and off-road cycling with plenty of routes to explore in and around the city. Alongside the West Harbour and the Otago Peninsula are off-road cycle trails for scenic rides and cycle lanes running through the central city. Otago Peninsula is twice named one of the top ten rides in the world by Lonely Planet guide.

The Otago Central Rail Trail, the original Great Ride, starting in nearby in Middlemarch and can be enjoyed as either a day ride or a multi-day journey to Clyde in Central Otago.

Mosgiel also boasts shared paths, cycleways and trails that are suitable for recreational cycling and leisurely rides. These are found in parks, reserves, and green spaces, providing a peaceful and scenic environment for cyclists to enjoy. One prominent path is in Memorial Park, offering a scenic route for cyclists. This path allows riders to explore the park's green spaces and enjoy a ride in a picturesque setting. Another popular route is the Silverstream trail providing a route alongside Silver Stream.

[2] **https://www.newzealand.com/int/dunedin-coastal-otago%2Bcycling/**

Public Transport

The Otago Regional Council operates the bus service (Orbus) in Dunedin. The Orbus service was launched in 2017, with the completion of the Dunedin Central City Bus Hub officially opening in March 2019. The Public Transport network operates routes throughout the city with further routes operating throughout the region.

Dunedin's public transport network offers a range of routes that serve the city and surrounding areas. A significant number of bus routes in Dunedin operating along the main corridors in the CBD to and from places such as Port Chalmers, to the suburbs, the University of Otago and the Dunedin Hospital. The routes serve as a major transportation network for the city, linking residential areas, commercial districts, and educational institutions.

Mosgiel is served by route 77 which connects Mosgiel with Dunedin.

Figure 4 below provides a snapshot of Dunedin's public transport network (March 2019).

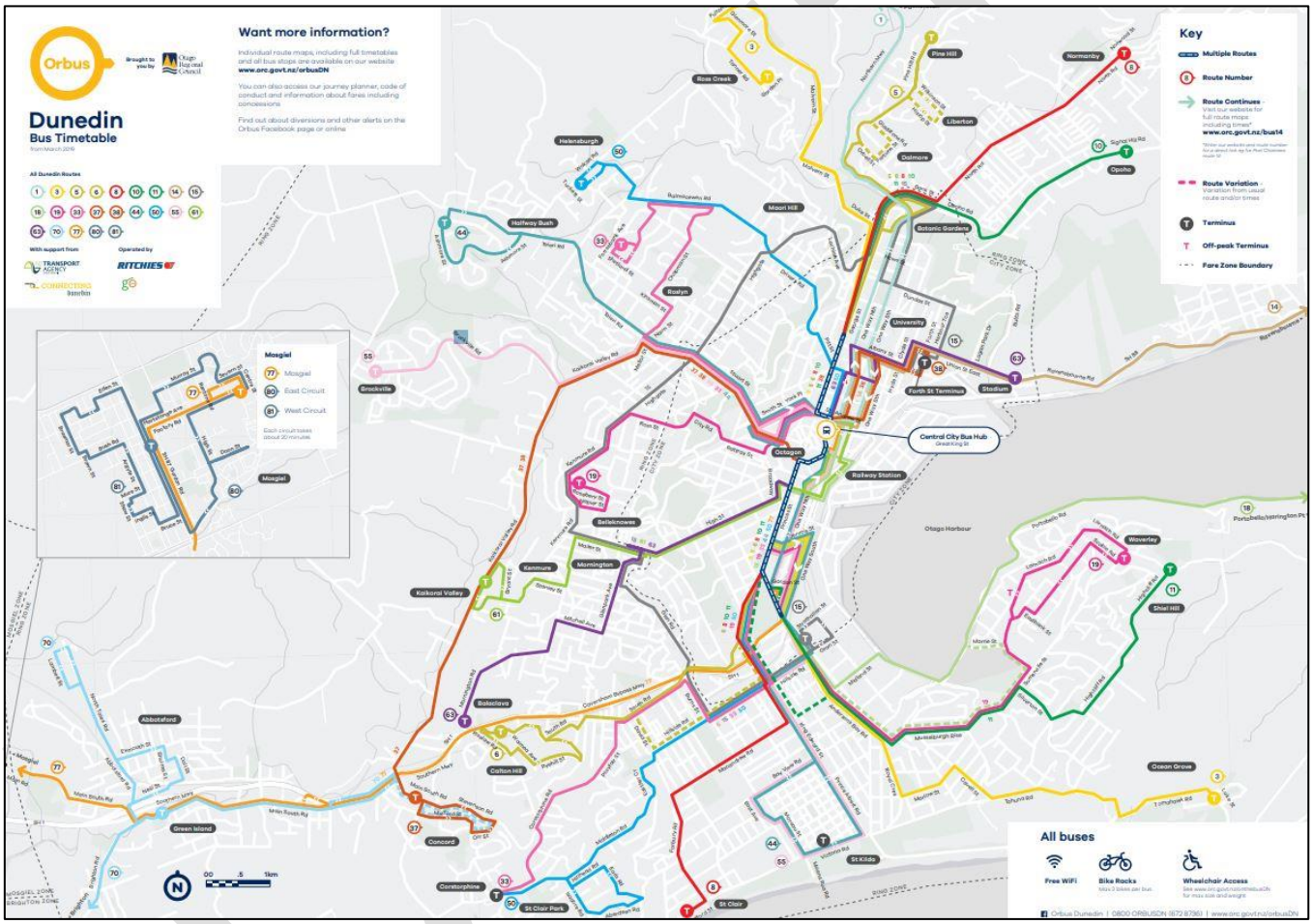


Figure 4 Dunedin Bus Routes[3]

Air Travel

Although Dunedin is the South Island's second largest city, it has the third busiest airport after Christchurch and Queenstown. Located approximately 30 minutes from the city centre, the airport serves as an important transportation hub for the region. It is also primarily functioning as a domestic airport with annual reports detailing the number of international passengers travelling through the airport decreasing year-on-year since 2014. This is despite total passenger numbers simultaneously increasing. In 2014, 64,216 (7.52%) of the 853,097 passengers travelling through Dunedin airport were international travellers, while for 2019 that has decreased to 42,238 (3.92%) of the 1,077,475 travellers passing through the airport. The airport focusses primarily on domestic flights.

[3] https://www.orc.govt.nz/media/6590/orbusdn-map-and-regularity.pdf

Rail Network

Dunedin Railway Station is one of the city's most prominent buildings, located to the southeast of the Octagon in the heart of the city. However, it is primarily a landmark, with the rail line no longer operating passenger services. The Main South Line connects Lyttleton Port in Christchurch to Invercargill, via Dunedin and forms part of the South Island Main Trunk Railway. The connection between Christchurch and Dunedin ran regular passenger services until 2002 when the Southerner was withdrawn as it was no longer economic. Since then, the only passenger trains using the station were those operated by Dunedin Railways, who provided tourist passenger services between Port Chalmers and Middlemarch until the line was mothballed in June 2020.

The Port Chalmers Branch connects Port Chalmers with Dunedin and is a dedicated freight line which was completed in 1873. Much of this line is now part of the Main South Line and enables long-distance freight movement from Port Otago to Christchurch and Invercargill.

Sea Transport

Otago Harbour is not particularly deep and initially ships could only travel as far as Port Chalmers, a town 15 km northeast of Dunedin. Although the Harbour was dredged to enable ships to reach city's wharves, the construction of a container port at Port Chalmers in the 1970s means this is the primary export port for southern New Zealand. Port Otago now operates two wharf systems in the harbour – Port Chalmers and Dunedin. In 2019 Port Otago handled 208,600 TEU and 1.8 million tonnes of bulk cargo – of which 1.15 million tonnes were logs for export.

In 2018, a ferry connecting Port Chalmers and Portobello began operating for the first time since 1954. The ferry privately operates two departures each direction.

Transport Behaviour

The 2018 census revealed the way that behaviours in people travelling to work and education have changed since 2013. The 2018 census saw an increase of 13.9% in the usually resident response numbers of people reporting how they travel to work, while the overall New Zealand response numbers improved by 22.2%. Due to the large increase in volume, comparisons will be made in terms of percentage of respondents rather than the number of respondents. The measure used is based on usual residence address rather than by workplace or education address. Travel to education cannot be compared to 2013 data, as it was not recorded. It should also be noted that the New Zealand data includes representation of trains and ferry's – forms of public transport not available in Dunedin. As a result, Dunedin vehicle use may be 1-2% higher than for New Zealand.

Overall, there was a significant increase in the percentage of people driving their own private vehicle throughout New Zealand and Dunedin. Nationally, the percentage of respondents who drove a private car to work increased from 48.6% to 57.8% (a 9.2% increase) with Dunedin seeing similar increases from 49.3% to 58.5% (also a 9.2% increase). As with the national numbers, the percentage of people driving work vehicles and being driven was almost the same in 2018 as 2013. Overall, increased car use on census day was comparable with the national rate increasing from 63.2% to 73.0% and Dunedin's increasing from 63.9% to 73.3%.

Although the national increase appeared to come at the expense of active modes (walking and cycling) nationally, this was not reflected in Dunedin. Nationally 7.5% of national respondents used active modes in 2013 (2.2% cycled and 5.3% walked/jogged) while in Dunedin many more people walked or jogged (11.3% comprised 2.2% cycling and 9.1% walking/jogging). However, in 2018 the national level dropped, but Dunedin's level increased. The national percentage dropped to 7.2% (2.0% cycling and 5.2% walking/jogging) while Dunedin increased to 12.0% (2.1% cycling and 9.9% walking/jogging).

In Dunedin, the increases in 2018 appeared to come from a large decrease in the 'Did not work on census day' which was 11.9% in 2013 but was not recorded in 2018. There were also 3.2% of respondents in Dunedin who were classed as 'Not elsewhere included' in 2013. The breakdown of 2013 and 2018 travel to work data can be seen in Figure 5 and Figure 6.

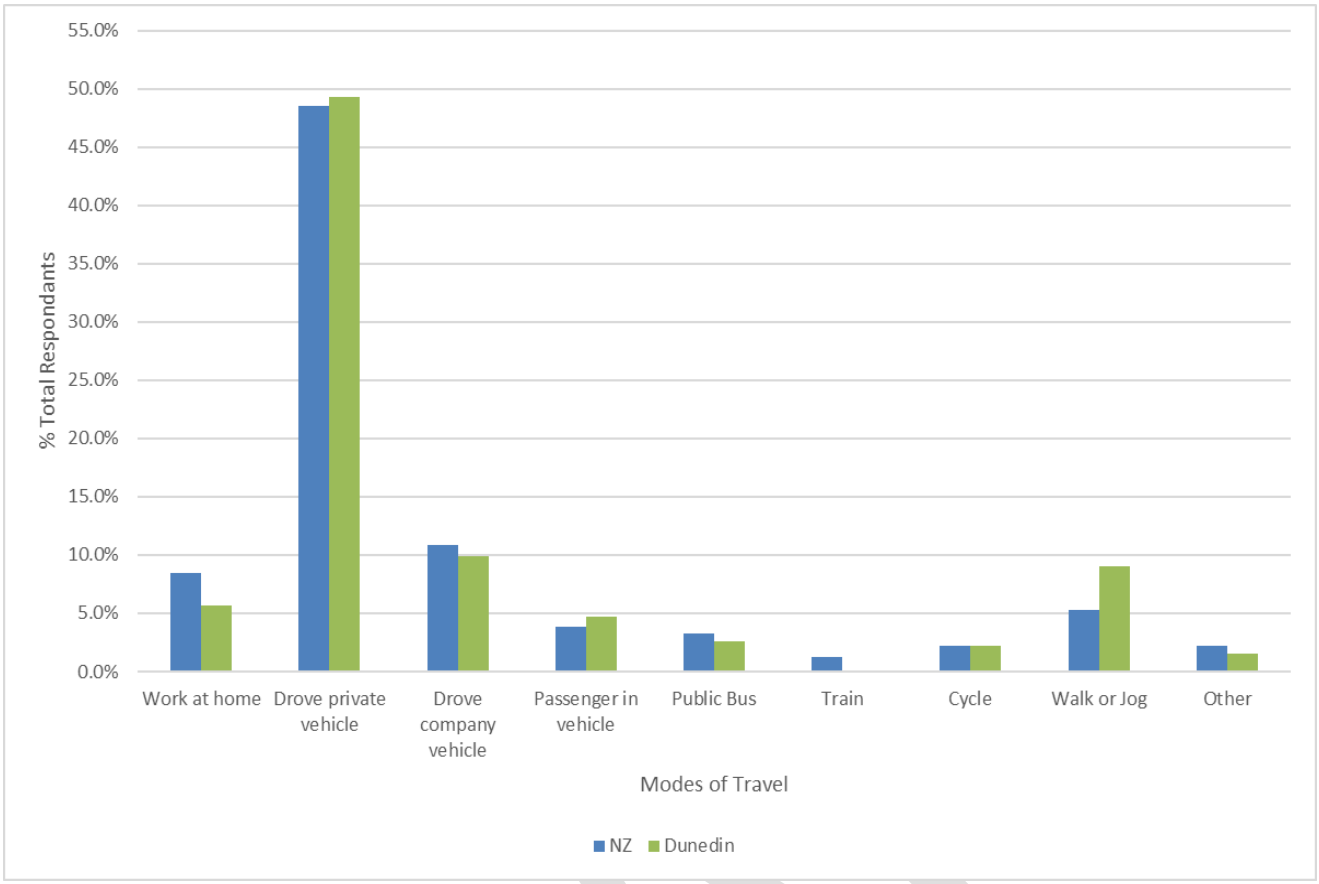


Figure 5 2013 mode of travel to work from residence

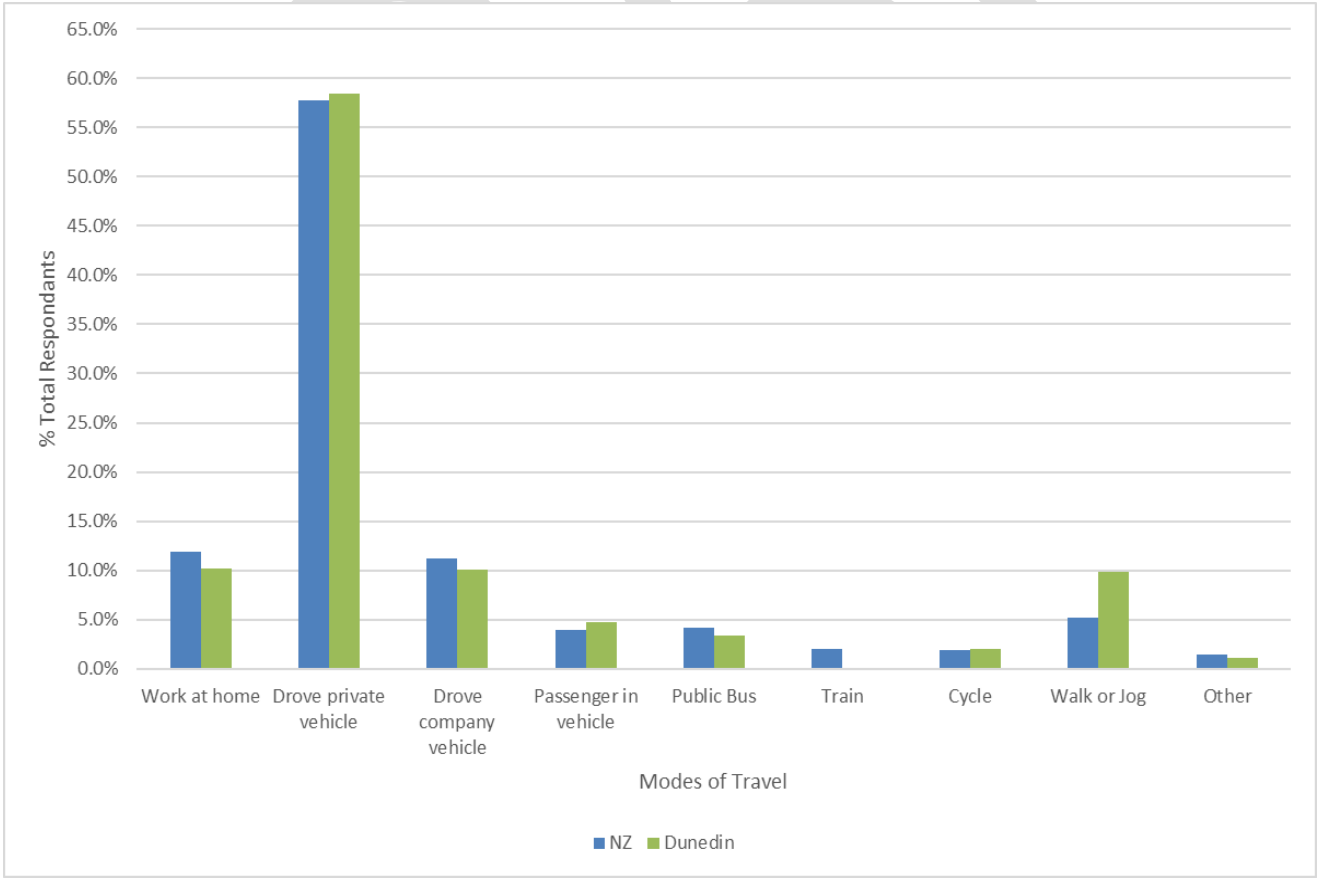


Figure 6 2018 mode of travel to work from residence

Travel to education respondents were less represented in car travel with those travelling privately or as a passenger. These respondents corresponded to 50.2% of national respondents but only 43.6% of Dunedin respondents. Of these, students were much more likely to be passengers – nationally 11.1% drove themselves, while the percentage was higher in Dunedin with 11.6%. This is likely due to the large number of tertiary students present in the city. Active modes were a much more popular mode of travel amongst students than workers – 24.1% nationally (3.6% cycling and 20.5% walking/jogging) and 43.4% in Dunedin (2.4% cycling and 40.9% walking/jogging). The location of student accommodation around the university and the large student composition of Dunedin will have had a significant impact on these rates. The travel to education percentages from the 2018 data can be seen in Figure 7.

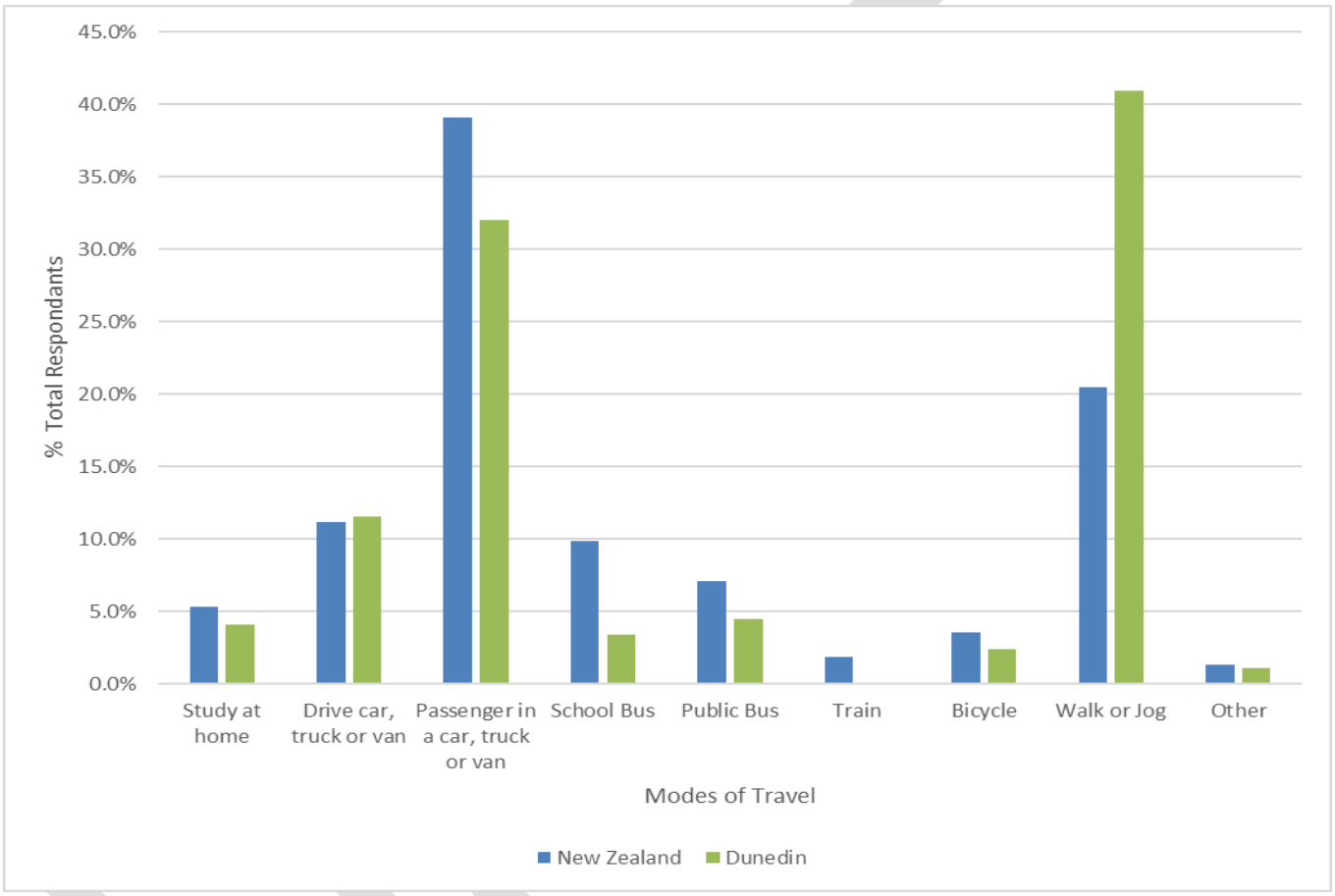


Figure 7 2018 mode of travel to study from residence

Visitor numbers

Visitor numbers increase pressures on the local transport network and infrastructure but are ideally suited to encourage uptake of public transport and active modes such as walking. Dunedin NZ reported that domestic and international travellers spent $105M on 'Other passenger transport', this amounted to 14.04% of the total visitor spend in the 12 months prior to March 2020.[4]

[4] DunedinNZ, 2020, Dunedin key visitor stats, page 3, Retrieved 03 Jun 2020, from **https://www.dunedinnz.com/business/toolkit-and-resources/research-and-statistics/dunedin-key-visitor-stats**

4. Strategic Policy and Planning Context

The following Table 2 summarises national, regional, and local plans and strategies that consider growth and development, and the transport network that inform and guide decisions for the transport system.

Note, documents are hyperlinked in the first column for easy reference to the formal document.

Table 2 National, Regional, and Local Policies, Plans and Strategies Summary

Policy Document	Summary
Government Policy Statement on Land Transport 2021/22-2030/31	GPS 2021 has four strategic priorities: Safety, Better Travel Options, Climate Change, Improving Freight Connection, which contribute to all five key outcomes of the Transport Outcomes Framework: Inclusive access, Healthy and safe people, Environmental sustainability, Resilience and security, Economic prosperity.
National Policy Statement on Urban Development (2020)	Provides a set of objectives and policies that applies to all local authorities that have all or part of an urban environment within their district or region; and planning decisions by any local authority that affect an urban environment. It sets out eight objectives and 11 policies with objective one broadly encapsulating the intent of all the objectives and policies: *"New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future."*
Waka Kotahi Arataki Version 2 2021-2031	Arataki presents Waka Kotahi NZ Transport Agency's 10-year view of what is needed to deliver on the government's current priorities and long-term outcomes for the land transport system. It shares the evidence-base that informs Waka Kotahi view and helps Waka Kotahi (and others) to better understand how joint decisions and choices will shape the future land transport system. Arataki version 2 is an update to reflect initial research and analysis regarding the regional impacts of COVID-19 on the land transport system and identify post-COVID-19 challenges and opportunities over the next 10 years. Arataki summarises six key drivers that will shape the future land transport system as demographic change, climate change, technology and data, customer desire, changing economic structure, and funding and financing challenges.
Otago Southland RLTP 2015 – 2021, Updated 2018	The Otago Southland Regional Land Transport Plan (RLTP) proposes a programme of activities to make the transport system safer and more sustainable and to support and enhance regional development. The RLTP is a requirement of the Land Transport Act and is required to seek funding from the National Land Transport Fund. Regional Council's long-term goal is *"a transport system in Otago and Southland that provides adequately for mobility, economic activity and productivity while minimising road trauma."*
Regional Public Transport Plan 2014	Otago Regional Council (ORC) in collaboration with relevant agencies (local councils, Waka Kotahi, transport providers and the community) developed the Regional Public Transport Plan 2014. The Plan has had addendums added in 2017 for changes in the Wakatipu Basin (May 2017) and Concord to Green Island Community Link (June 2017) and was under review. The Plan, 'describes the public transport networks that ORC proposes for the region, identifies services that are integral to the networks over the next ten years, and sets out the policies that apply to those services.'
Otago Regional Council Long Term Plan 2021 – 2031	Otago Regional Council's Long-Term Plan 2021-2031 outlines the strategic direction for the next ten years. Part 2: Community Outcomes, reflects outcomes Council seeks to achieve and its approach to achieving these outcomes. This plan outlines six key community outcomes sought: 1. Communities that connect with, and care for, Otago's environment 2. An environment that supports healthy people and ecosystems 3. Communities that are resilient in the face of natural hazards & climate change and other risks 4. A sustainable way of life for everyone in Otago 5. Te Ao Māori and Mātauranga Kāi Tahu are embedded in Otago communities. 6. Sustainable, safe and inclusive transport For Transport, the contribution to community outcomes aims for 'Sustainable, safe & inclusive transport' and 'a sustainable way of life for everyone in Otago' as described in Part 2.

Connecting Dunedin Partnership	Connecting Dunedin is a partnership between Dunedin City Council (DCC), Waka Kotahi NZ Transport Agency and Otago Regional Council. Together, partners are working on a co-ordinated approach to transport projects to deliver a transport system that helps everyone get around the city safely and sustainably. Whether it's by walking, cycling, taking the bus, or going by car.
Second Generation District Plan (2GP)	The District Plan is part of a hierarchy of plans. The plan contains objectives, policies to implement objectives and rules to implement policies. There are six strategic directions the plan outlines which reflect the strategic directions of the Spatial Plan broken down to several objectives and policies: 1. Dunedin is environmentally sustainable and resilient. 2. Dunedin is economically and socially prosperous. 3. Dunedin is a memorable city with a distinctive built and natural character. 4. Dunedin is a city that gives effect to the principles of the Treaty of Waitangi, protects Kāi Tahu values, culture and traditions, and enables Kāi Tahu to express kaitiakitaka. 5. Dunedin has quality housing choices and adequate urban land supply. 6. Dunedin has affordable and efficient public infrastructure. Regarding Transportation, the district plan seeks to "establish a range of objectives, policies, and rules with the aim of achieving an integrated transport network that supports sustainable development and growth." There are two variations to the 2GP: Variation 1 – Minor Amendments Variation 2 – Additional Housing Capacity: In February 2021 DCC notified Variation 2 to the Dunedin City Second Generation District Plan (2GP). Variation 2 proposed a suite of changes that would enable additional housing capacity through specific rule changes and through rezoning specific sites, as well as other improvements to the plan, including improvements to provisions related to greenfield development areas and three waters infrastructure.
DCC Integrated Transport Strategy 2013	The DCC has developed a 10-year action plan which outlines investment priorities up to 2023. This strategy is designed for a 30-year lifespan. As challenges and priorities will change and evolve over time, this strategy will be reviewed every five years. This strategy is developed in line with Dunedin Spatial Plan, Economic Development Strategy and Social Wellbeing Strategy and so "while this Strategy is focused specifically on transport, it is consistent with, and supports, a much broader set of priorities for the future of Dunedin." The vision for this strategy is, "Dunedin is one of the world's great small cities, with a safe low-carbon transport system that supports a compact city with resilient centres, inclusive and healthy communities, and national and international connectivity."

5. Land Use and Growth

To define an aspirational transport network, it is first important to understand how the transport networks need to respond to planned and proposed changes in land use. Understanding land use planning and growth changes, both predicted and known were presented to encourage forward-thinking to planning the transport network.

During the initial NOF workshops and development in 2020, DCC presented on:

– Existing education and community facilities, commercial, industrial, and retail areas
– 'Dunedin Towards 2050' Spatial Plan (2012)
– Central City Plan and Central City and surrounds planning issues and considerations
– Dunedin Hospital redevelopment project

In the subsequent 2023 workshop (as part of the update to this NOF), DCC presented on:

– Dunedin population growth, current and required housing capacity.
– Development trends, overview of growth areas (intensification and greenfield from Variation 2 and appeals)
– The Future Development Strategy (FDS)
– Update on City Centre Developments

This section outlines existing land uses, future aspirations and a summary of information presented.

5.1 Existing land use summary

Central Business District

The Central Business District encompasses the central part of Dunedin city. The CBD encompasses George Street to Albany Street including the Octagon and Moray Place, extends south along upper Princes Street to Hope Street, east to include the Dunedin Railway Station. The CBD is the focus for employment, retail, entertainment, leisure, visitor accommodation and art and culture activities.

Outlined in the Second-Generation District Plan a large portion of the CBD is classified as either primary pedestrian street frontage area or secondary pedestrian street frontage area. This is to encourage an environment suitable for pedestrian usage.

Education facilities

The north-eastern area of the Dunedin central city is the tertiary-medical precinct. The area is home to numerous education facilities, most notably the University of Otago and school of medicine, and Otago Polytechnic. Tertiary education in Dunedin attracts over 20,000 students with Otago known for its vibrant student life.

Industrial precinct

Located east of the CBD in the area surrounded by Fryatt Street and Wickliffe Street is the Dunedin Industrial precinct. The industrial area contains a range of industrial and commercial businesses ranging from engineering, manufacturing, and automotive services through to marshalling of export logs and liquigas services selling LPG for most of the South Island.

Dunedin Hospital[5]

Dunedin Hospital located in the city centre accessed off Great King Street between Hanover Street and Frederick Street. The Hospital provides tertiary services for a combined catchment of 289,000 for the lower South Island.

Dunedin Hospital is also a university teaching hospital with links to the University of Otago and the Otago Polytechnic Schools of Nursing, Midwifery and Health Sciences.

[5] **https://www.southernhealth.nz/work-us/working-southern-dhb/our-workplaces-and-facilities/dunedin-hospital**

5.2 ‘Dunedin Towards 2050’ Spatial Plan (2012)[6]

Dunedin Towards 2050 is a Spatial Plan (The Spatial Plan) for Dunedin released in September 2012 which serves as a strategic guide for the city's growth and development over the next 30+ years. It encompasses a wide range of principles, strategic directions, policies, and actions, visually illustrating the potential future development of the city. The Spatial Plan influences land-use planning, infrastructure provision, and service delivery. While primarily concerned with urban form and design, it also emphasises the protection of rural and natural areas and the support of their productive values and ecosystem services.

The Spatial Plan takes an integrated approach, considering the coordination of land-use, transportation planning, infrastructure, and service provision to contribute to a prosperous, liveable, vibrant, and sustainable city. It recognises the need to accommodate changing needs and preferences while preserving the unique aspects of Dunedin. Drawing on principles of good urban planning and design, the Spatial Plan reflects the aspirations and input of different communities in Dunedin, addressing the city's strengths, weaknesses, opportunities, and threats.

Potential improvements in the Central City and Tertiary-Medical Precinct and surrounds identified by the spatial plan summarised below included (with reference to Figure 8):

a. Improve Queens Gardens with better pedestrian connections, enhanced safety and amenity to provide a welcoming inner city green space with improved recreation and events opportunities.
b. Expand pedestrian space in lower Rattray Street and improve connections with Queens Gardens.
c. Remove the one-way system south of Leviathan Hotel. Redesign Crawford Street as a two-way street to provide an attractive environment for mixed uses, balancing the needs of pedestrians, cyclists and cars. Relocate both directions of the state highway to Cumberland Street without compromising the state highway.
d. Improve amenity in Vogel and Bond Streets, reducing the impact of vehicles and creating shared space environments to support creative industries in the Warehouse Precinct
e. Staged improvements to the Octagon to provide greater space for pedestrians, enhance the quality of public open space, and improve the prominence of historic buildings.
f. Implement improvements along Princes and George Streets to improve the pedestrian environment.
g. Develop pocket parks and micro spaces throughout the central city to increase the amount and quality of public open space.
h. Develop a safe, permanent connection for pedestrians and cyclists between central city and Steamer Basin
i. Implement amenity improvements to provide a better sense of place and identity for the different quarters within the central city.

Figure 8 Key actions: Central City, Tertiary-Medical Precinct, and surrounds

[6] **https://www.dunedin.govt.nz/__data/assets/pdf_file/0009/281817/Spatial-Plan-for-Dunedinv2.pdf**

5.3 Central City Plan[7]

The Dunedin Central City Plan aims to guide development of the central city area for the next 10-15 years. The Plan outlines a vision for the central city area through a place-based plan that divides the city into quarters described in the Plan as follows:

Retail Quarter area around George Street is Dunedin's key shopping area. Different retail styles on George Street and adjoining side streets, lanes and alleys include strip retail, malls, boutiques, and department stores.

Cultural and Entertainment Quarter is the cultural and entertainment quarter includes the Octagon and lower Stuart Street along with the Railway Station and connections to Toitū Otago Settlers Museum. The area is the city's civic, entertainment and tourism centre, providing a hub for visitors and locals alike.

Creative Quarter is the creative quarter occupying the area south of the Octagon and encompasses Princes Street, the southern half of Moray Place, the Exchange, south Princes Street, and intersecting streets.

Warehouse Precinct area is bounded by Queens Gardens, Police Street, Princes Street and Cumberland Street.

To embed and deliver sustainability into the outcomes five key aims for Dunedin have been established drawing on the NZ Ministry for the Environment *'People, places, spaces: A design guide for urban New Zealand'.* The specific aims for Dunedin are outlined in Figure 9. Key aims regarding movement acknowledges the importance of coordinating transport network changes with land use activities.

Broad Urban Design principles in line with "People + Places + Spaces"	Consolidation and dispersal	Integration and connectivity	Diversity and adaptability	Legibility and identity	Environmental responsiveness
	Development patterns and intensity	Movement networks; building interfaces	Range of densities; mix of uses; flexibility of buildings	Urban form; visual character; special places	Ecosystems; green network; energy
Specific key aims for Dunedin Central City Framework	**Community** •A strong sense of local identity, ownership, participation, and pride in the city •Buildings which resopond to the needs of ageing population and changing demographics •A streetscape that caters for the various groups that use the central city streets and places •Provisions for community and other facilities (including retail) as required to support the populations	**Land use** •Protecting and enhancing the city's character buildings and places •Increasing vibrancy and safety by combining complementing land uses with the city •The city centre as a magnet for people and goods, harnessing the movement economy •Enabling provision of higher density inner city living without adversely affecting existing land uses	**Movement** •Coordination between necessary road changes and land use activities •Accessibility between precincts without undermining the efficiency of State Highway traffic •Small urban blocks to facilitate walkability •Easily understood layouts and legible routes •Public transport where possible •A range of interconnected networks to maximise the choice and viability of as many modes as possible •Liveable and safe streets focused on pedestrians, and lower vehicle speeds encouraged on city centre streets	**Green and blue** •A high amenity interface between buildings and open spaces •Parks and reserves within walkable distance of employment and residential areas •Street trees and landscaping along key roads and wherever possible •Low impact solutions to stormwater management •Areas of native planting increased and improved to attract bird and insect life	**Employment and economy** •Buildings that cater for new and existing businesses •A streetscape that caters for a better exchange between customers and businesses and among workers •Encouraging both organisationsal physical connections between institutions to generate a wider range of employment opportunities than those currently available •A variety of efficient movement connections

Figure 9 Dunedin Central City Plan Broad Urban Design Principles

[7] Dunedin City Council – Dunedin Central City Plan

5.4 Central City and surrounds planning considerations

During the land use and growth presentations in the initial 2020 workshop sessions, several planning considerations were discussed. These were raised as import considerations when looking at transport network scenarios. These included the need to:

– Maintain a vibrant retail core with high pedestrian amenity.
– Protect heritage values (encourage maintenance, protection, restoration and reuse).
– Consider how low amenity / high vehicle use retail and commercial is provided for on the fringe of the central city (Noted as the CEC-N and CEC-S zones).
– Protecting key industrial sites for example Speights.
– Consider the new Dunedin Hospital redevelopment.

The Second Generation District Plan (2GP) has strong policies to maintain a concentrated retail core and like many cities, there is evidence of contraction in local retail and a concern about retail 'leak' to more parking friendly areas. In time the CBD has gradually 'shifted' north, away from Princes Street.

Several other considerations raised included:

– All central city Comprehensive Mixed-Use (CMU) zones provide for residential; however, there are no density limits and few or generally no parking requirements.
– More enabling rules for activities in heritage buildings in Waterfront Plan (WP) zones and other rules to encourage reuse, rather than removal and redevelopment.
– Monitoring business land use needs as required by the National Policy Statement on Urban Development Capacity (NPS-UD). Retail and office floorspace demand is predicted to rise through to 2023 then plateau or potential reduce. Sufficient retail and office land for long term growth and demand.
– It was noted the Council has seen high demand for good industrial land, but as result of COVID-19, there is a high level of uncertainty around future business land requirements.

5.5 Dunedin Hospital redevelopment project[8]

The Ministry of Health is delivering replacement of the existing Dunedin Hospital, which will involve the single biggest hospital build ever in New Zealand at a cost of up to $1.4 billion. The Ministry of Health website outlined the redevelopment will be the most modern hospital in New Zealand serving the people of Dunedin and the lower South Island for decades to come.

On 1 November 2018, the Ministry purchased a large block of land at the former Cadbury site between Cumberland Street and Castle Street along with acquiring a neighbouring block of land known as the 'Wilson Block'. The CBD location chosen for the new hospital is because the land is flat and close to the existing hospital, the University of Otago, and accessed by public transport.

A rebuild of this magnitude in central Dunedin will also have a significant impact on the CBD creating opportunities for the community, with up to 1,000 workers on site at its peak.

5.6 Update on City Centre Developments

Dunedin City Council provided a brief update on the City Centre developments, specifically noting current and upcoming developments in the City Centre including:

– Central city upgrade work
– Hospital rebuild.
– Carisbrook redevelopment.
– Hillside Workshop redevelopment.

[8] **https://www.health.govt.nz/our-work/hospital-redevelopment-projects/dunedin-hospital-redevelopment-project**

5.7 Shaping Future Dunedin

Outlined on the Waka Kotahi project website for Shaping Future Dunedin[9], Shaping Future Dunedin Programme Business case, developed by Waka Kotahi with DCC and ORC, aimed to find the best options for the city.

Dunedin's SH1 one-way system in the central city transport network has functioned largely unchanged for about 50 years and presents several barriers to people accessing and moving around the CBD. New developments, particularly construction of the new Dunedin Hospital, offered opportunity to consider whether the network is appropriate for the medium and long term.

A SH1 Dunedin Operational Review completed in March 2023 looked at the advantages and disadvantages of an enhanced Dunedin SH1 one-way system, building upon the existing one-way system, or a two-way alternative. The review found the enhanced one-way option saw a marginal reduction in operational performance of SH1 compared to current due to reduced traffic volumes, a lower speed environment and greater use of the harbour arterial. The two-way option had much less overall network vehicle capacity with increased delays at intersections, and traffic re-directing to the harbour arterial and other central city roads. This was expected to increase central city travel times, with longer delays at some key intersections and greater congestion at peak times.

In March 2023, Dunedin City Council councillors voted in favour of retaining the one-way, enhanced state highway system along Cumberland and Castle Streets flanking the new Dunedin Hospital.

5.8 Population Growth and Capacity

The following is summarised from information provided and presented by DCC during the 2023 workshop session.

DCC presented on more recent growth and housing capacity. In recent years, DCC indicated Dunedin has experienced a period of growth and has a narrative around high growth, but current data indicates that this growth has been slowing even before the impact of the COVID-19 pandemic (refer Figure 10). Peak growth of ~1.4% in 2016 saw an increase of 1,800 people, but this declined to -1.5% (approximately -2,000 people) in the year leading up to June 2021. There was a slight rebound to -0.3% (approximately -400 people) the following year. The drop in 2021 was primarily attributed to migration out of Dunedin to other locations across New Zealand. These trends were considered to generally align with the projections outlined in the 2021 Long Term Plan (LTP), which closely reflect projections from Stats NZ in 2021. These projections suggest Dunedin's growth will plateau around 2034.

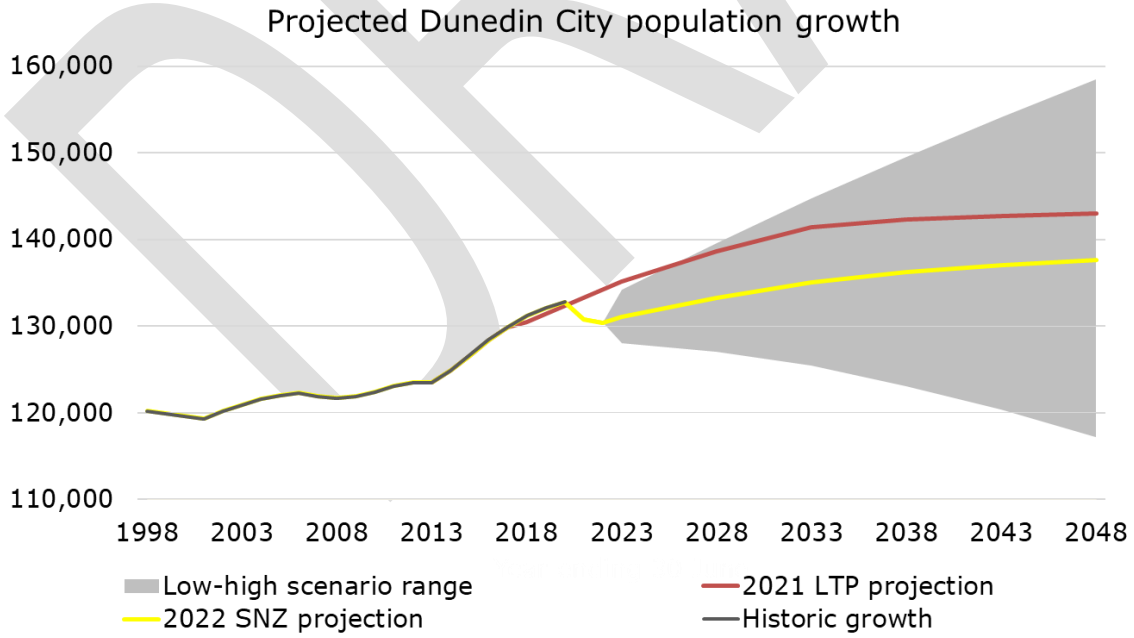


Figure 10 Projected Dunedin City population growth (Source: DCC)

[9] **https://www.nzta.govt.nz/projects/shaping-future-dunedin-transport/**

5.9 Development Trends and Growth Areas

The following is summarised from information provided and presented by DCC regarding development trends during the 2023 workshop session.

DCC outlined the need to provide sufficient development capacity that not only meets current demand but also includes a 15-20% buffer to enable choice and competition within the market. This was discussed in the context of what is required under a medium growth scenario across 3-year, 10-year and 30-year scales from 2024. In context, DCC currently consent between 600-650 homes annually, with about 400 homes constructed. It was noted Dunedin currently has capacity to accommodate somewhere between medium and high growth scenarios (both standalone and attached homes).

When analysing location and catchment areas, it was noted there is a shortfall in the CBD throughout all timeframes and in the inner suburbs during the short to medium term. On the other hand, DCC noted all other catchment areas show a surplus. In terms of recent development trends, it was noted there has been a significant shift. Previously, less than 30% of newly consented homes were attached homes, but in the past year, this proportion has risen to 56% marking a notable milestone as it represents the first time DCC are consenting more attached homes than standalone homes.

As for the sources of additional residential growth in the short to medium term DCC noted that with remaining appeals related to the 2GP, DCC anticipate any successful appeals will be resolved this year. Additionally, there are appeals specifically related to the greenfield rezoning as part of Variation 2. These are sites that DCC did not support, and the Panel rejected. The potential for private plan changes once the 2GP becomes fully operative, which is anticipated to occur in the mid to late 2023, was also raised.

5.10 Future Development Strategy

DCC jointly with ORC are developing a Future Development Strategy (FDS) in partnership with mana whenua and supported by Waka Kotahi and Kāinga Ora. The FDS is a requirement of the Government's NPS-UD.

The purpose of the FDS is to enable enough housing and business land capacity to meet Dunedin's anticipated future growth needs, and that the necessary infrastructure to support growth is planned and funded so that growth delivers 'well-functioning urban environments. The FDS is focused on the long-term growth needs, up to 30 years.

Given that there DCC consider there is already sufficient residential capacity enabled by the existing plan, the FDS will specifically consider growth areas that align well with national policy direction and the strategic directions outlined in the 2GP.

6. Network Operating Framework Development

When considering a balanced transport network approach using numerous transport solutions, it is important that there is a consideration of how the different road user groups use the network.

This NOF takes a forward-looking approach to support existing and future business cases, land use development considerations, and mode prioritisation in Dunedin. Within the focus area, it is also important to consider the key factor of variable user numbers, which will affect the way the transport network operates, and its efficiencies.

At the time of development of the initial NOF in 2020, Dunedin was in the process of considering the role of the state highway pairs through Dunedin Central. An outline of the work is provided in section 5.7 Shaping Future Dunedin. The outcome of the review was in March 2023, Dunedin City Council councillors voted in favour of retaining the one-way, enhanced state highway system along Cumberland and Castle Streets flanking the new Dunedin Hospital.

6.1 Network Operating Framework Horizon

The NOF is developed with a future time horizon considered that considers population and land use growth assumptions. This is to allow development of a future aspirational transport network considering future changes in land use and growth to encourage forward thinking for network planning.

Development of the strategic road network has this horizon in mind to determine how stakeholders ‘aspire’ to operate the network. The time horizon reflects a ‘step’ towards the networks long-term aspiration cognisant of the long-term aspirations.

This NOF builds on the initial one developed in 2020 which broadly considered a 20-year horizon for land use and 10 years for the transport network. A broad 20-year land use timeframe enables consideration of longer-term changes to transport generators with a 10-year transport network timeframe to encourage a responsive network that considers future land use changes within the network. It was noted there are some land use changes expected early in the time horizon such as the Dunedin Hospital redevelopment project.

7. Strategic Objectives and Principles

Strategic Objectives and Principles provide a guideline for the development of a strategic road network. The Dunedin NOF strategic objectives draw on stakeholder knowledge, existing policy and planning goals and visions to confirm the development of a common set of Strategic Objectives and Network Principles for the network.

Prior to the 2020 workshop, attendees responded to an online survey to outline and describe what was important to their organisation and the community for each transport mode. The results coupled with project team investigation into existing planning and policy documents, and corresponding workshop discussion, formed the basis of the overarching Strategic Objective for each mode and the corresponding Principles. Workshop discussions further refined the Strategic Objectives and Principles for each of the transport modes.

Common themes that emerged from development of the Strategic Objectives and Principles discussion for all modes centred on themes of safety, connection and integration between modes, universal access, ease-of-use, attractiveness, and clarity/distinction between modal routes. Key objectives stakeholders indicated as outcomes from the NOF discussions were:

– The importance of active mode use in the central city, particularly with the University and student quarters.
– The importance of this plan being able to work with the Central City Plan and Shaping Future Dunedin Programme Business Case and the changes that will result with the new Hospital.
– Connectivity between the suburbs and the CBD as well as nearby towns such as Mosgiel.
– Improved safety and universal access to the transport network for all users.

The Strategic Objectives and Principles frame the aspirations of stakeholders regarding the operation of the network as it relates to each mode. A summary of the Strategic Objectives and Principles is included in Table 3.

The Strategic Objectives and Principles developed have different focuses as the different modes serve different needs within the community and network. Active modes (cycling and walking) often tend to focus on developing networks that improve safety and encourage active movement while public transport will often see a focus on services and connectivity for the community and wider network.

While the NOF approach can appear to be ‘anti-vehicle’, general traffic provides an important mode of transport for many people and as general traffic typically have access to the entire network, there are often more trade-offs with this mode required to achieve the outcomes sought for other modes. This is an important aspect to recognise to balance the network, encouraging uptake of other modes.

During the 2023 workshop sessions, the original Strategic Objectives and Network Principles were presented and then used for the map updates.

The following section describes the development and refinement of the Strategic Objectives and Network Principles as developed in 2020 (2020 report).

Table 3 Dunedin Strategic Objectives and Network Principles (Original 2020 NOF)

Mode	Strategic Objectives	Network Principles
	Provide a connected and continuous pedestrian* network that promotes a thriving city, encouraging walking as a safe, convenient, and accessible mode of transport to inspire more sustainable transport behaviours. **Pedestrian network principles consider all forms of active travel that typically travel at <10 km/h (i.e. mobility scooter, running, walking) with the exception of cycling*	*Primary Pedestrian routes:* Provides direct connections and universal access to and between retail areas, education and employment areas, healthcare facilities, transport hubs, attractions, and the central city. *Secondary Pedestrian routes:* Provides connections and links to primary routes from connecting links and joins the wider pedestrian network to Primary routes from residential and commercial areas.
	A safe, functional, and connected network encouraging cycling* as an everyday mode of transport and recreation that is accessible and enjoyed by people of all ages and abilities inspiring more sustainable transport behaviours. **cyclists include scooters, skateboards, cargo bikes, e-scooters, e-bikes and other low-powered vehicles (LPVs)*	*Primary Cycle routes:* Direct connections that provide access through and around retail areas, between residential areas and educational and employment centres. *Secondary Cycle routes:* Cycling routes that complement primary routes and provide access to recreational trails, off-road networks and attractions within neighbourhoods or precincts.
	A frequent, reliable, and efficient service that provides equitable access and positive user experiences for all customers, encouraging public transport as a viable mode choice inspiring more sustainable transport behaviours.	*Primary Public Transport routes:* Direct routes on high demand corridors that enable a connected and accessible city between residential areas to places of work, education centres, healthcare facilities and commercial centres. *Secondary Public Transport routes:* Routes that complement primary routes providing local accessibility and access to emerging growth areas, recreational activities, local attractions, residential catchments, and the wider transportation network.
	A direct and connected network that minimises conflict with general traffic, other modes of travel and areas of high amenity, such as residential neighbourhoods and the city centre.	*Primary Freight routes:* Routes that provide direct and reliable access to major freight origins and destinations avoiding areas with high place function. *Secondary Freight routes:* Routes that provide connectivity between primary routes and local, commercial, and industrial areas that minimise impact on local high amenity land uses.
	A general traffic network that is safe, efficient, and coherent, and considers the needs of all modes to encourage a balanced and integrated transport system.	*Preferred Traffic Route:* Provides for longer distance travel as a preferred alternative to other routes with land use conflicts. *Traffic Route:* Provides connectivity between smaller centres and preferred routes. *Local Primary Access Route:* Provides access between local destinations and local commercial and residential areas. *Local Secondary Access Route:* Collects and distributes between primary local access routes for localised movement in centres.

7.1 Pedestrians

The aspirational pedestrian network in Dunedin is one that provides safe walking routes, pleasant and connected walkways and accessibility to all users. Stakeholders supported the promotion of a walking network that leverages access to the Octagon and surrounding businesses, while providing connections to key land use areas such as the University, Hospital, and attractions.

Key themes discussed by stakeholders in workshop sessions that informed development of the Strategic Objective and Principles included:

- Importance of safe walking routes to and from the tertiary precinct and schools
- Provision of facilities that are easy to use for people with disabilities, or people that are unfamiliar with the network.
- Connectivity and integration between modes and key land use areas within Dunedin, so that there is easy access to places of work, residential areas, commercial areas, medical facilities, and recreational areas.
- Promoting walking as an attractive mode of transport and the development of Dunedin as a “walkable” city for residents and visitors.

Strategic Objective

Provide a connected and continuous pedestrian* network that promotes a thriving city, encouraging walking as a safe, convenient, and accessible mode of transport to inspire more sustainable transport behaviours.

**Pedestrian network principles consider all forms of active travel that typically travel at <10 km/h (i.e. mobility scooter, running, walking) with the exception of cycling.*

Network Principles

Primary pedestrian routes

Provides direct connections and universal access to and between retail areas, education and employment areas, healthcare facilities, transport hubs, attractions, and the central city.

Secondary pedestrian routes

Provides connections and links to primary routes from connecting links and joins the wider pedestrian network to Primary routes from residential and commercial areas.

7.2 Cycling

The visions and outcomes sought for cycling are in line with those for pedestrians. Workshop discussions highlighted aspirations for a network that prioritises safety through dedicated routes and minimised conflict points and provides aesthetically pleasing cycling routes that cater for all ability levels. The discussion noted a direct approach also needs to be considered for every-day cyclists. Although this will appeal to the fearless and enthused and confident, to encourage and grow the confidence of new cyclists’ direct access needs to be balanced with the amenity– noting that sometimes a safer and continuous route might be more attractive than a direct route.

As with our pedestrian discussion, it was acknowledged that ‘cycling’ is now a broad definition including micro-mobility devices that travel at ≥10 km/h such as electric scooters and e-bikes.

Discussions during workshop sessions between stakeholders supported the promotion of active transport. Stakeholders noted their respective objectives for cyclists and considered:

- Connected/continuous networks – noting that that sometimes safer and continuous routes might be more attractive than a direct route.
- Family-friendly and accessible to people of all abilities – especially with the rise in use of e-bikes.
- Provision of supporting equipment and facilities such as secure bike parks/lockup points and traffic calming/cyclist facilities at conflict points with other modes.

– Commuter cycling connections to education and employment centres, the hospital, the CBD and tourist and recreational facilities.
– Recreational and ‘Green’ cycling routes.

The corresponding strategic objective and network principles formed are:

Strategic Objective

A safe, functional, and connected network encouraging cycling as an everyday mode of transport and recreation that is accessible and enjoyed by people of all ages and abilities inspiring more sustainable transport behaviours.

**Cyclists includes scooters, skateboards, cargo bikes, e-scooters, e-bikes and other forms of active travel that typically travel at ≥10 km/h.*

Network Principles

Primary cycling routes

Direct connections that provide access through and around retail areas, between residential areas and educational and employment centres.

Secondary cycling routes

Cycling routes that complement primary routes providing access to recreational trails, off-road networks and attractions within neighbourhoods or precincts.

7.3 Public Transport

Key themes in the discussion regarding public transport included provision of a public transport system that provides regular and reliable connections so that public transport is a realistic alternative to driving. The stakeholder discussion on public transport covered the following themes:

– A network that is safe, reliable, frequent, and attractive to use.
– Facilities that enable tie-ins with active modes.
– Universal access led to a discussion about including the user experience for people who have other access challenges such as those who struggle to or cannot hear, speak, or see.
– Predictability and equity of experience across routes and throughout the city was considered as a way of improving and encouraging uptake as an alternative to driving.

The corresponding strategic objective and network principles formed are:

Strategic Objective

A frequent, reliable, and efficient service that provides equitable access and positive user experiences for all customers, encouraging public transport as a viable mode choice inspiring more sustainable transport behaviours.

Network Principles

Primary public transport routes

Direct routes on high demand corridors that enable a connected and accessible city between residential areas to places of work, education centres, healthcare facilities and commercial centres.

Secondary public transport routes

Routes that complement primary routes providing local accessibility and access to emerging growth areas, recreational activities, local attractions, residential catchments, and the wider transportation network.

7.4 Freight

Freight movements play an important role in any city with a major port and Dunedin is no different with freight travelling to, from and through Dunedin. While there is a freight route through the waterfront industrial precinct, the location of SH1 means that it forms a necessary component of the freight network and as such, sometimes the waterfront route is not used. It also means that there are unavoidable and necessary interactions between freight and other modes as a complete bypass is not presently possible. Therefore, there is a need to balance directness, safety, and resilience, particularly as it is not always possible or economical to transfer all freight movements onto rail. Stakeholder discussions considered the following elements:

– Safety for all network users and a reduction of conflict points between freight and other modes – particularly for those travelling from the CBD to the university or the waterfront.
– Accessibility to industrial areas, the port and other key generators, and destinations.
– The importance of providing resilient transport infrastructure that can accommodate the freight movements and loadings.
– Efficient and reliable freight routes that have reliable journey times through and to key origins and destinations.
– The uncertainty of how freight movements would change if the system changed to a two-way network.

Strategic Objective

A direct and connected network that minimises conflict with general traffic, other modes of travel and areas of high amenity, such as residential neighbourhoods and the city centre.

Network Principles

Primary freight routes

Routes that provide direct and reliable access to major freight origins and destinations avoiding areas with high place function[10].

Secondary freight routes

Routes that provide connectivity between primary routes and local, commercial, and industrial areas that minimise impact on local high amenity land uses.

7.5 General Traffic

Stakeholders considered carefully how to balance private vehicle movements with the desire to promote more sustainable modes of transport where possible. The location and severance caused by SH1, and uncertainty over how traffic movements would change with future changes such as the new hospital, was considered along with the potential SH1 network change to a two-way system.

The approach taken in the development of the Dunedin NOF is the recognition of the fundamental need to make trade-offs in mode priority and identify areas where trade-offs may be required. The approach does not aim to bias vehicle movement but acknowledge that general traffic plays a role in supporting the safe and efficient movement of people in private motor vehicles, especially where this achieves social and economic benefits for the city or for people that may not have access or ability to utilise alternate modes.

An important consideration for prioritisation of general traffic is surrounding land use and amenity. Areas of high amenity are areas where people want to be due to facilities, shops, services, or environment – destination areas. As these are desirable areas, providing for high levels of access needs to be balanced with managing the speed and volume of traffic through centres to minimise as far as practicable potential impact on safety and amenity for pedestrians, whom in general should be given priority in these locations.

Key themes noted in workshop discussions informed the Strategic Objective and Principles:

[10] This refers to areas where people are likely to gather due to amenity or function such as main streets, shopping precincts and residential areas.

– The importance of accessibility SH1 provides and the severance that it causes.
– The number of movements that occur from the suburbs to the CBD and back out again – most trips are not across or through the city.
– General Traffic movement contributes to place function; however, it can be detrimental if not managed in a balanced approach. Likewise, completely removing general traffic can be detrimental to place function.
– There is a desire that motor vehicles do not feel out of place and are able to move freely, but do not dominate transport within the city.

Strategic Objective

A general traffic network that is safe, efficient, and coherent, and considers the needs of all modes to encourage a balanced and integrated transport system.

Network Principles

Preferred traffic routes

Provides for longer distance travel as a preferred alternative to other routes with land use conflicts[11].

Traffic routes

Provides connectivity between smaller centres and preferred routes.

Local primary access routes

Provides access between local destinations and local commercial and residential areas.

Local secondary access routes

Collects and distributes between primary local access routes for localised movement in centres.

[11] The term 'land use conflicts' recognises these routes typically have limited access or minimal abutting land uses i.e. regional State Highways.

8. Strategic Transport Networks

An effective multi-modal transport network generally adopts a balanced approach to network prioritisation, considering the needs of all transport and road users. The NOF approach aims to develop a strategic modal network to inform priority on a mode-by-mode basis. This moves away from a traditional road classification hierarchy and focuses more on the need to recognise the variety of transport modes, their interrelationships, and the strategic intent for the network.

To develop Dunedin's strategic transport network a collaborative stakeholder network-mapping exercise was undertaken for each transport mode (according to network principles developed in Section 7). This exercise is important for enabling further discussions and decisions around where and how trade-offs are made between modes, to support land use changes into the future.

In 2020 during the initial mapping, two sets of priority networks were established independently of one another to consider both a one-way network and a potential two-way network. Outlined in section 5.7, in a March 2023 Dunedin City Council meeting, councillors voted in favour of retaining the one-way, enhanced state highway system along Cumberland and Castle Streets flanking the new Dunedin Hospital. These initial 2020 modal priority maps for the one-way network were subsequently used as the basis for this update.

The following section describes the Dunedin and Mosgiel strategic transport networks developed and mapped by stakeholders for each transport mode.

Road user groups

Strategic networks were mapped for the following road user groups in the Dunedin study area:

– Active modes: Pedestrians[12] and Cyclists[13]
– Public Transport
– General traffic and Freight

Stakeholders mapped aspirational future (potential/proposed and some existing) routes for each of these road user groups. The aspirational future routes give effect to the network principles.

[12] Pedestrians include active travel typically at <10 km/h (i.e. mobility scooter, running, walking) with the exception of cycling.
[13] Cyclists includes scooters, skateboards, cargo bikes, e-scooters, e-bikes and other low-powered vehicles (LPVs).

9. Dunedin Strategic Network

The following section describes some of the key features for each modal map; However, attention is directed to the modal priority network maps included in Appendix A for Dunedin city.

9.1 Pedestrian Strategic Network

The strategic pedestrian network shown in Figure 11 below reflects the Strategic Objective aims to provide a connected and continuous network that promotes a thriving city. The purpose of this is to encourage walking as a safe, convenient, and accessible mode of transport and to inspire more sustainable transport behaviours. This all fits with the desire in the workshops to make Dunedin a 'walkable' city for residents and visitors.

The networks developed focus around the Octagon and the education precinct with clear links connecting the two. The network also considers links to schools and popular walking paths into and within the city noting not all off-road or recreational paths have been maps (focus is on the road network).

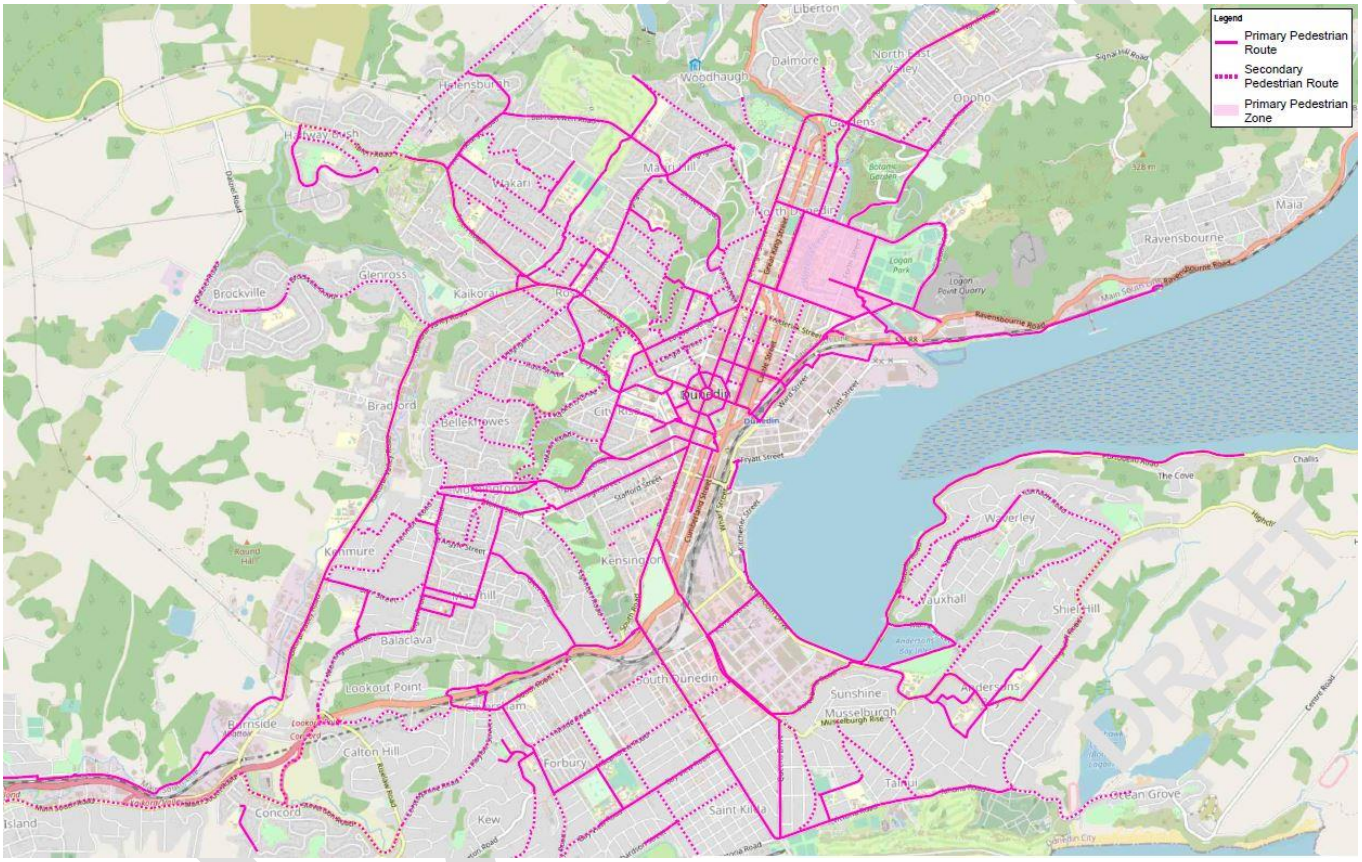


Figure 11 Dunedin Strategic Pedestrian Network (Draft)

Primary Pedestrian Routes

In alignment with the network principles agreed, primary pedestrian routes where identified which provide direct connection and access throughout the city. These routes connect retail areas, education facilities, workplaces, healthcare facilities, transport hubs and attractions within the central city area. Primary Pedestrian areas include:

– George Street and many of the streets attached to George Street. This street connects the north of the city directly through to the Octagon. Slightly north of the Octagon there are large areas of strip shopping.

– Albany Street from George Street to Anzac Avenue has been identified as a key corridor for students. There have already been pedestrian centric measures implemented along this corridor with Barnes Dance intersections being installed at the intersections with Great King Street and SH1/Gowland Street.

– Barnes Dance crossings have also been included at the following intersections – all of which are included in the primary pedestrian routes:
    - George Street with Octagon, Moray Place, St Andrew Street and Hanover Street with George Street and Princes Street
    - Princes Street with Moray Place and Octagon
    - Stuart Street (east of the Octagon) with Moray Place
    - Great King Street with Albany Street
– The University of Otago was identified as a Primary Pedestrian zone. Within this zone it is expected that most of the movements will be pedestrian and that this will be highly encouraged with a strong desire line between the university and the new hospital.
– In the wider network outside the CBD primary pedestrian routes were extensively mapped covering most key roads that connect between residential areas, commercial areas and schools. These include for example:
    - In the Western Hills: Stuart Street continuing along Kaikorai Valley Road, Taieri Road, Highgate, Balmacewen Road, Helensburgh Road, Drivers Road to the CBD edge. To the south, streets such as High Street through to and including Eglinton Road, Hawthorn Avenue, Elgin Road, Glenpark Avenue and Glen Road down to South Road near SH1.
    - In southern Dunedin, notable Primary routes included a continuation of Andersons Bay Road, Orari Street, Portsmouth Drive and along Portobello Road, Shore Street, King Edward Street, David Street, and roads such as Macandrew Road and Bay View Road near schools, and Victoria Road.

Secondary Pedestrian Routes

These routes tended to address areas where pedestrians are active but are not expected to congregate, such as residential areas and industrial areas. There are several routes providing connections between primary routes.

– Princes Street is marked as it is a catchment for residents walking into town from the Western Hills.
– Tennyson Street and Smith Street are both important routes due to the number of schools in the vicinity and London Street performs the same function.
– The pedestrian movements within the waterfront industrial area are not certain at this point and hence there is a block included to join French Street into the CBD.
– Great King Street north of Dundas Street connected with North Road as a catchment for students and people walking in from the north.
– In the south the connection on Crawford Street from Jetty Street to Anderson Bay Road was considered important to provide continuity and access to those in the south.
– In the Western Hills where the network has been expanded, the secondary routes are extensively mapped to reflect a shift in increasing the update of active transport while also recognising walking distances are typically shorter trips. Therefore, many roads in the network are reflected as secondary routes connecting the community and linking to Primary routes to emphasis a more connected and comprehensive network.
– Similar to the Western Hills, the expanded secondary network recognised a number of key connectors between key commercial, recreational and industrial areas connecting primary routes in South Dunedin.

9.2 Cycling Strategic Network

The cycling network developed for Dunedin aims to encourage a safe, functional, and connected network. The purpose of this is to make cycling accessible and to encourage people of all ages and abilities to enjoy and choose cycling as an everyday form of transport and recreation. The networks developed aim to fulfil this by providing routes into and across the city. Figure 12 outlines the strategic network developed.

It is noted that a separate piece of work focussed on active transport in Dunedin is being undertaken which could be expected to inform an update of below.

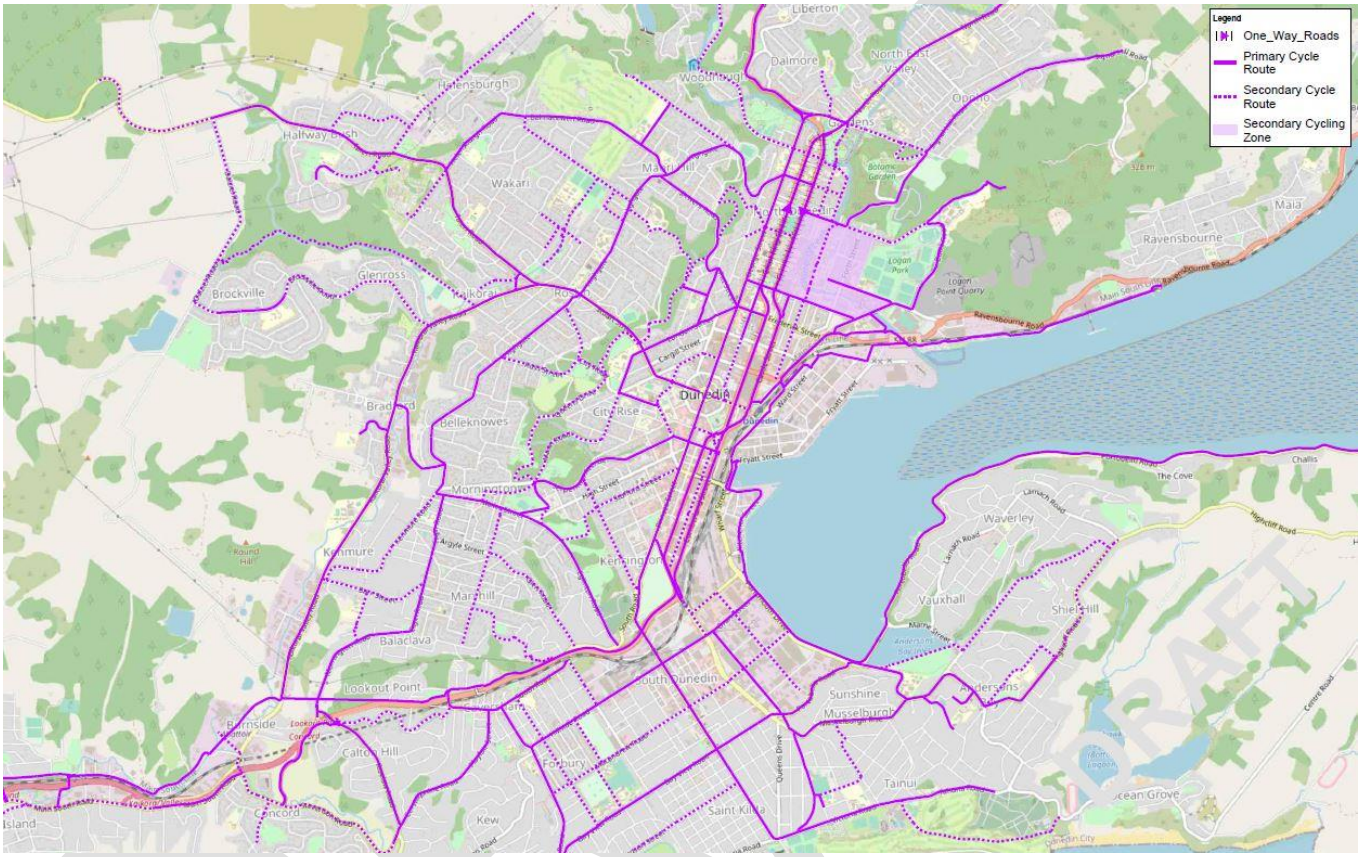


Figure 12 Dunedin Strategic Cycling Network (Draft)

Primary Cycling Routes

The primary cycling routes reflect the network principle of integrated connections between residential catchments and retail areas while providing access to education and employment centres. Primary cycling routes identified in Dunedin build on the 2020 network including:

- North-south connectivity in the CBD with a primary network including George Street and Princes Street, Great King Street North, Cumberland Street and Crawford Street.
- St David Street and Albany Street from George Street to Anzac Avenue are east-west connections between George Street and the university.
- The link from the shared pedestrian and cycling bridge over the Water of Leith to St Andrew Street alongside the railway is an aspirational route that is yet to be built.
- The east-west link of Serpentine Ave/Maclaggan Street/Rattray Street/Queens Gardens to Wharf Street is aspirational and dependent upon a bridge over the railway lines.
- On the east side of the railway line there is a dedicated cycle route which follows the road along Birch Street and Kitchener Street switching to an off-street route just before the Kitchener Street/Wharf Street intersection.
- Around the university is also a primary cycle route. Within the University is a secondary cycling zone, however Union Street East and Anzac Avenue indicated that cycling to the University is an activity to be encouraged.

– In the wider network outside the CBD primary cycling routes were extensively mapped covering most key roads that connect between residential areas, commercial areas and schools in a very similar manner to for pedestrians. These include for example:
    - In the Western Hills: Stuart Street continuing along Kaikorai Valley Road, Taieri Road, Highgate, Balmacewen Road, Helensburgh Road, Drivers Road to the CBD edge. To the south, streets such as Serpentine Avenue to Jubilee Park, Elgin Road, and Eglinton Road down to South Road near SH1.
    - In southern Dunedin, Primary routes included a continuation along Portsmouth Drive, Portobello Road, Shore Street, and Orari Street continuing along Hillside Road. Down King Edward Street and along Bay View Road near schools. There is also a primary connection parallel to Anderson Bay Road along the quieter Timaru Street and Royal Crescent to Victoria Road (including Victoria Road). In the south-east Forbury Road and Playfair Street/Corstorphine Road emphasis key corridors in this area.

Secondary Cycling Routes

Secondary routes focus is to complement primary routes and providing access to trails and attractions. Many of the links identified form east-west connections and connections to and in the southern suburbs. Some of these routes are collectors and provide important links to the primary network. The identified routes included:

– The University was marked as a secondary cycling zone where cycling would be encouraged, however to a lesser degree than pedestrian movements.
– Queens Drive a particular cycling area west of the CBD and could be a collector from the western suburbs.
– Butts Road provides access to the University as well as a popular mountain biking area.
– Fryatt Street performs a similar function to Kitchener Street and is currently used as the route alongside the railway line has not been completed yet.
– In the Western Hills where the network has been expanded, the secondary routes are not as extensively mapped as the pedestrian network. The secondary connections largely reflect key connections between primary routes such as Kenmure Road and Barr Street between Elgin Road and Kaikorai Valley Road, Glenpark Avenue and Glen Road, and Maori Road and Meadow Street. Additionally, Ross Street and City Road, Lynn Street and Newington Avenue, Waikari Road, and Carrington Road.
– Similar to the Western Hills, the expanded secondary network in South Dunedin recognised a number of key connectors between key commercial, recreational and industrial areas connecting primary routes. The secondary network in South Dunedin is not as extensive but classifies key roads such as Otaki Street, Macandrew Road and Midland Street, Surrey Street and Richardson Street to name a few.

9.3 Public Transport Strategic Network

The Strategic Objective for the Public Transport network highlighted an importance of a frequent, reliable, and efficient service that served all people within Dunedin. It aimed to encourage ongoing use and foster positive experiences while actively considering the opportunity to improve accessibility for mobility impaired persons.

The completion and opening of the bus hub on Great King Street in 2019 helped to centralise the bus network and according to the Otago Daily Times[14] has led to increased patronage compared with the previous year.

Figure 13 below shows the strategic public transport network established.

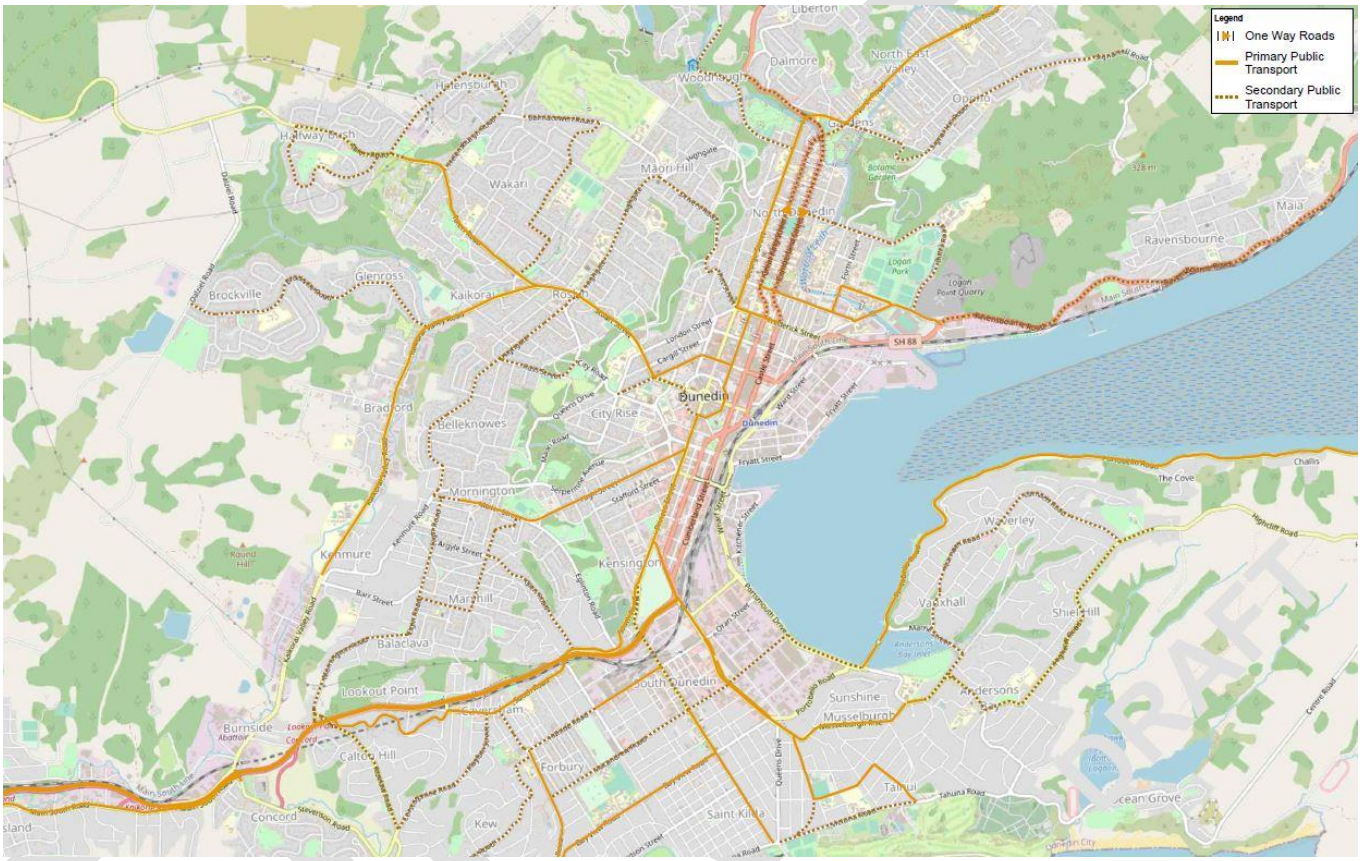


Figure 13 Dunedin Strategic Public Transport Network (Draft)

Primary and secondary routes generally reflect the current system, but not for all bus routes. The ORC representative during the workshop noted this would be subject to a subsequent review to confirm primary and secondary routes in the context of the wider network.

Primary Public Transport Routes

Primary Public Transport routes identified in Dunedin include:

– Great King Street south of Frederick Street, connecting the bus hub to Princes Street via Moray Place.
– Princes Street as key link south before branching to Andersons Bay Road/the Motorway and South Road.
– Frederick Street connects routes north of the Octagon, George Street as the primary north/south corridor.
– Routes to the west head along High Street and along London Street and Stuart Street from Frederick Street.

[14] Jessica Wilson, "Bus usage up since hub opens", Otago Daily Times, January 26, 2020, **https://www.odt.co.nz/news/dunedin/bus-usage-hub-opens**, accessed August 5, 2020.

Secondary Public Transport Routes

The secondary routes are complementary to primary routes generally serving fewer bus movements but providing accessibility to residential catchments, attractions, recreational activities, and growth areas.

Secondary Public Transport routes identified include:

– North Road and North Dunedin, Kaikorai Valley Road, Taieri Road and King Edward Street. All these routes branch off primary routes out to specific residential catchments.
– In both the one-way and two-way networks, SH1 is a secondary route. In the two-way network, the change in Great King Street to a two-way local road, changes its role and enables it to provide a more direct route that focuses on public transport services. A consequence of this is that George Street then changes from a primary to a secondary route as stated above.
– Albany Street will always have a role in the network as it services the University and residential areas up SH88.
– Finally, Moray Place between Princes Street and Stuart Street provides links between the western and southern origins and destinations.

9.4 Freight Strategic Network

The strategic freight network in Dunedin highlighted the need for direct connections, but also routes that minimised inter-modal conflicts. Although this cannot be achieved by a bypass or closed off routes, it seeks to provide safety for all road users and reduce noise and pollution from residential and public areas.

An important element is the freight network supports appropriate route choice with connections to national strategic freight routes enabling efficient supply chains. Existing freight networks, as well as future aspirational networks were recognised with consideration given to other modes using these routes as well as the ability of routes to accommodate heavy vehicle movements.

Freight movements considered here are focused on medium and heavy commercial vehicles (MCVs and HCVs), whereas light vehicles such as those for local deliveries are considered part of the General Traffic Network.

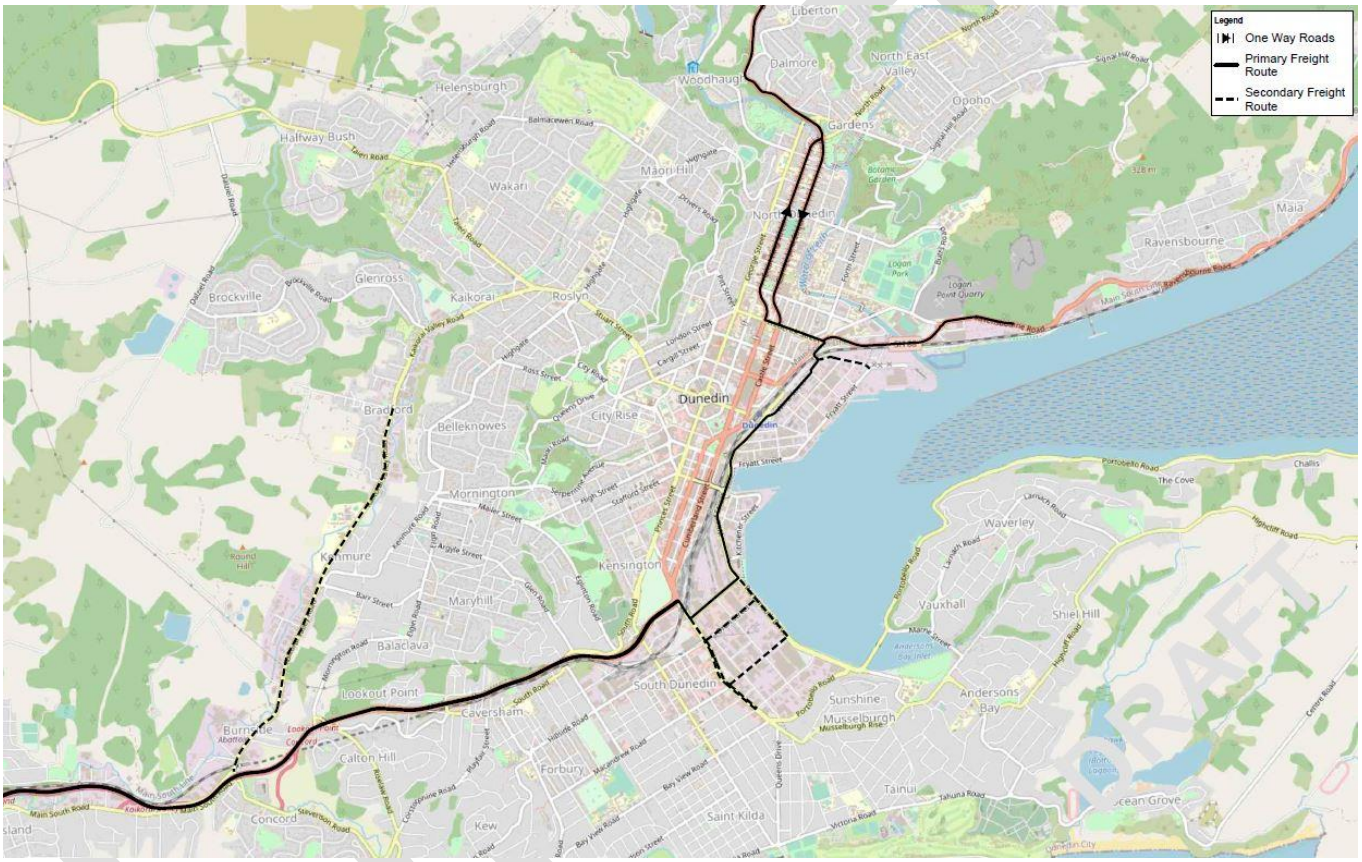


Figure 14 Dunedin Strategic Freight Network (Draft)

Primary Freight Routes

The network principle developed for freight reflect direct access, providing connections between origins and destinations while seeking to avoid areas not designed for freight movement.

With most of the freight either heading or arriving from the north and south, the routes focus on transporting this around the CBD or to/from the port. Primary freight routes are primarily on the state highway network. However, during the workshops the proposed Harbour Arterial was mapped as the preferred route.

[redacted]

Secondary Freight Routes

Secondary freight routes seek to support the primary routes by providing ‘last mile’ connections to commercial and industrial areas and businesses minimising impact on high amenity areas.

Secondary freight routes are mainly Kaikorai Valley Road, Midland Street, Teviot Street and Wickliffe Street.

9.5 General Traffic Strategic Network

General Traffic routes were prioritised for coherent, efficient, and safe movement across the network. Four types of general traffic routes as shown in Figure 15 were identified by stakeholders in the mapping exercise for Dunedin. These are classified as either, Preferred Traffic routes, Traffic routes, Local Primary Access routes or Local Secondary Access routes. The routes identified in the mapping sessions identified both existing and aspirational routes that support the development of balanced and integrated networks.

One of the comments made in the initial 2020 workshops was that part of the difficulty in making decisions about route categories is that many trips within Dunedin are to the CBD and then out again.

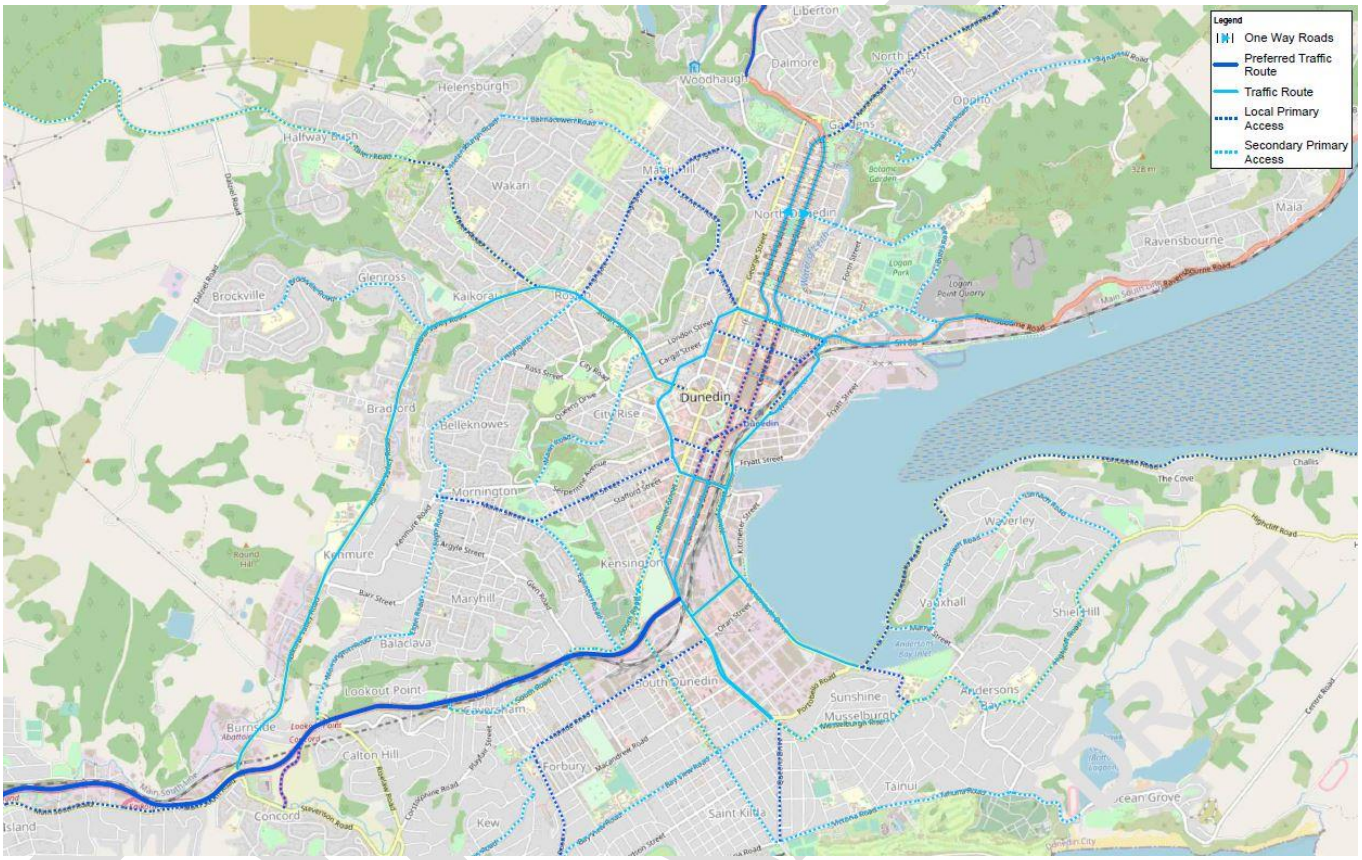


Figure 15 Dunedin Strategic General Traffic Network (Draft)

Preferred Traffic Routes

These routes provide for longer distance traffic as a preferred alternative to other routes with land use conflicts. The main route is SH1 north of Great King Street North intersection and south of Andersons Bay Road turn-off.

Traffic Routes

These routes provide connectivity between smaller centres and preferred routes. Routes identified include:

– SH1 pairs, north of Frederick Street and south of Jetty Street
– SH88
– Andersons Bay Road
– Eastern Arterial – from SH88 to Ward Street/Thomas Burns Street/Wharf Street/Portsmouth Drive to Portobello Road. Orari Street is also a Traffic Route.
– Around the western side of the Octagon is a Traffic Route which starts at the Frederick Street/London Street intersection and ends at the Jetty Street/Wharf Street intersection. It comprises of the following streets: London Street/Filleul Street/York Place/Smith Street/Rattray Street/Broadway/Manse Street/Jetty Street.
– In the Western Hills, Stuart Street continuing on to Kaikorai Valley Road

Local Primary Access Routes

Routes provide access between local destinations and local commercial and residential areas.

Routes identified include:

– One-way pair of SH1 of Cumberland Street and Castle Street between Frederick Street and Jetty Street
– Hanover Street and Rattray Street/Queens Gardens from the intersection with Broadway.
– Princes Street from Jetty Street down to Andersons Bay Road and to the intersection with Crawford Street
– In the Western Hills: Highgate Road, Taieri Road, Lachlan Avenue, High Street and Mailer Road
– In South Dunedin: Queens Drive, Portobello Road, Hillside Road and Forbury Road

Local Secondary Access Routes

These routes collect and distribute between primary local access routes for localised movement in centres. Some of the routes are:

– George Street north of Frederick Street
– Albany Street east of the intersection with SH1
– Anzac Avenue, Butts Road and Dundas Street as it loops around Forsyth Barr and after the Ward Street intersection down to the intersection with the St Andrews Street Extension.
– In and to the Western Hills: Princes Street, Eglinton Road, Elgin Road, Mornington Road, Maori Road, Balmacewen Road, Brockville Road, and the end of Taieri Road.
– In South Dunedin: King Edward Street, South Road, Bayview Road, Victoria Road, Lachlan Avenue, Middleton Road, Musselburgh Rise and Highcliff Road.

10. Mosgiel Strategic Network

The following section describes some of the key features for each modal map; However, attention is directed to the modal priority network maps included in Appendix B for Mosgiel.

10.1 Pedestrian Strategic Network

The strategic pedestrian network for Mosgiel shown in Figure 16 below reflects the Strategic Objective aims to provide a connected and continuous network applicable for both Dunedin and Mosgiel. The outcome sought for Mosgiel is to encourage walking as a safe, convenient, and accessible mode of transport and to inspire more sustainable transport behaviours. This all fits with the desire in the workshops to make Dunedin, and by extension Mosgiel, a 'walkable' city for residents and visitors.

The networks developed focus around a walking spine along SH87 Gordon Road with a network of supporting secondary routes. The network also considers links to schools and recreation areas (focus is on the road network).

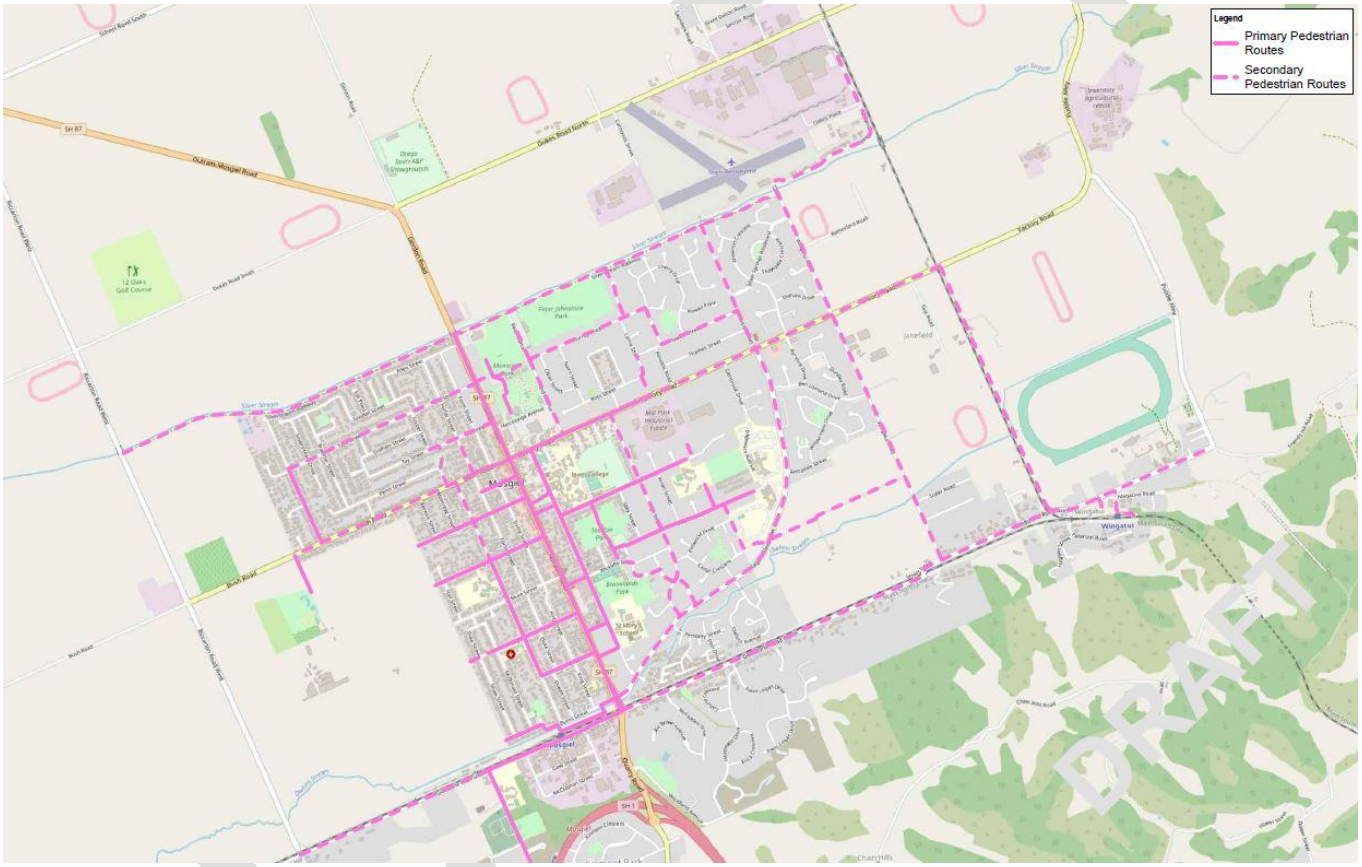


Figure 16 Mosgiel Strategic Pedestrian Network (Draft)

Primary Pedestrian Routes

Primary pedestrian routes in Mosgiel provide direct connection and access throughout. These routes connect retail areas, education facilities, and workplaces, as well as Mosgiel station / future transport hub.

Primary Pedestrian areas include SH87 Gordon Road and Church Road. Connectors down Bruce Street, Inglis Street, Ayr Street, Lanark Street, and Green Street and Doon Street. Additionally, Factory Road from Forfar Street to near Rentons Road which connect the commercial centre and schools.

Secondary Pedestrian Routes

The secondary routes, as seen in the figure above, complement the primary network with multiple connections prioritised for pedestrians throughout Mosgiel.

10.2 Cycling Strategic Network

The cycling network developed for Mosgiel aims to encourage a safe, functional, and connected network. The purpose of this is to make cycling accessible and to encourage people of all ages and abilities to enjoy and choose cycling as an everyday form of transport and recreation. The networks developed aim to fulfil this by providing routes into and across Mosgiel. Figure 17 outlines the strategic network developed.

It is noted that (as with Dunedin) a separate piece of work focussed on active transport in Mosgiel is being undertaken which could be expected to inform an update of below.

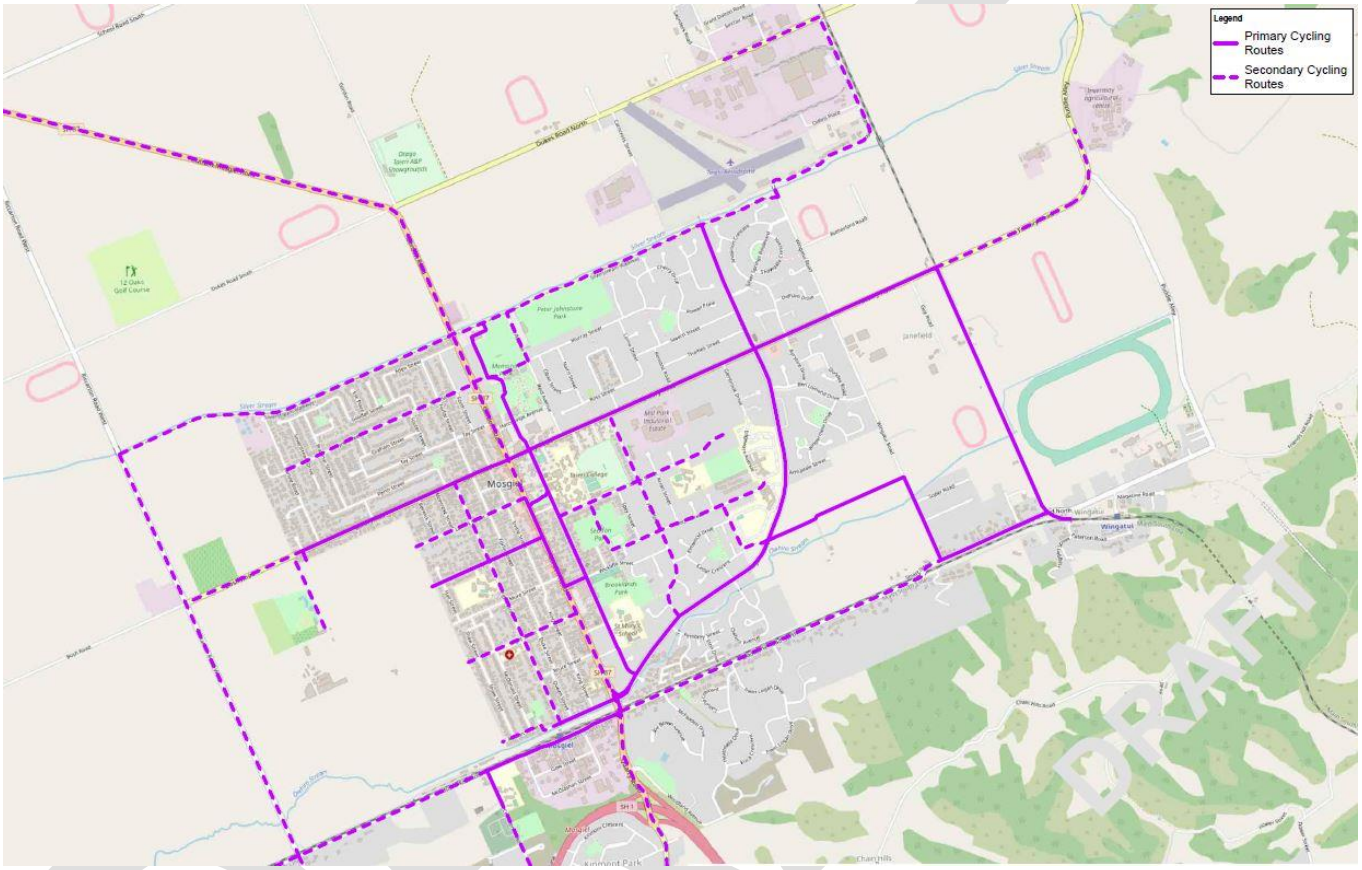


Figure 17 Mosgiel Strategic Cycling Network (Draft)

Primary Cycle Routes

Primary cycle routes in Mosgiel are predominantly on key connections that provide connectivity throughout Mosgiel. The main primary cycle routes are a section of SH87 Gordon Road in the centre with Church Road as a quiet parallel route connecting from Hagart-Alexander Drive in the south up to the Silver Stream off-road trail. Hagart-Alexander Drive is also a primary route itself, as is Factory Road and Wingatui Road.

Secondary Cycle Routes

Secondary cycle routes in Mosgiel complement and connect the primary network. They include the off-road trail alongside Silver Stream and a few urban routes that connect between schools, recreation and the main street.

10.3 Public Transport Strategic Network

The public transport network focussed on considering what routes would enable a connected and efficient service for Mosgiel with a primary route down SH87 Gordon Road. Figure 18 below shows the strategic public transport network established.

Figure 18 Mosgiel Strategic Public Transport Network (Draft)

Primary Public Transport Routes

There is a primary public transport route through Mosgiel on SH87 Gordon Road connecting to SH1 with a short link down to the Mosgiel station.

Secondary Public Transport Routes

Secondary public transport routes in Mosgiel were identified on the basis provide broad network coverage through the quadrants of Mosgiel split by SH87 Gordon Road and Factory Road. This includes secondary routes along Factory Road, Hagart-Alexander Drive, High Street, Tyne Street and Carlyle Road, as well as Argyle Street.

10.4 Freight Strategic Network

The strategic freight network in Mosgiel focusses on direct connections and routes that minimise inter-modal conflicts. Generally, the freight network consists of a primary route along SH1 south of Mosgiel and a few secondary routes along Riccarton Road West, Dukes Road North, and SH87 Gordon Road from SH1 to and along Gladstone Road South to the commercial area as shown in Figure 19 below.

As with Dunedin, it is important to note that the freight movements considered are focused on medium and heavy commercial vehicles (MCVs and HCVs), whereas light vehicles such as those for local deliveries are considered part of the General Traffic Network.

[redacted]

[redacted] ***Mosgiel Strategic Freight Network (Draft)***

10.5 General Traffic Strategic Network

General Traffic routes were prioritised for coherent, efficient, and safe movement across the network in the same manner as for Dunedin. Four types of general traffic routes as shown in Figure 20 were identified for Mosgiel.

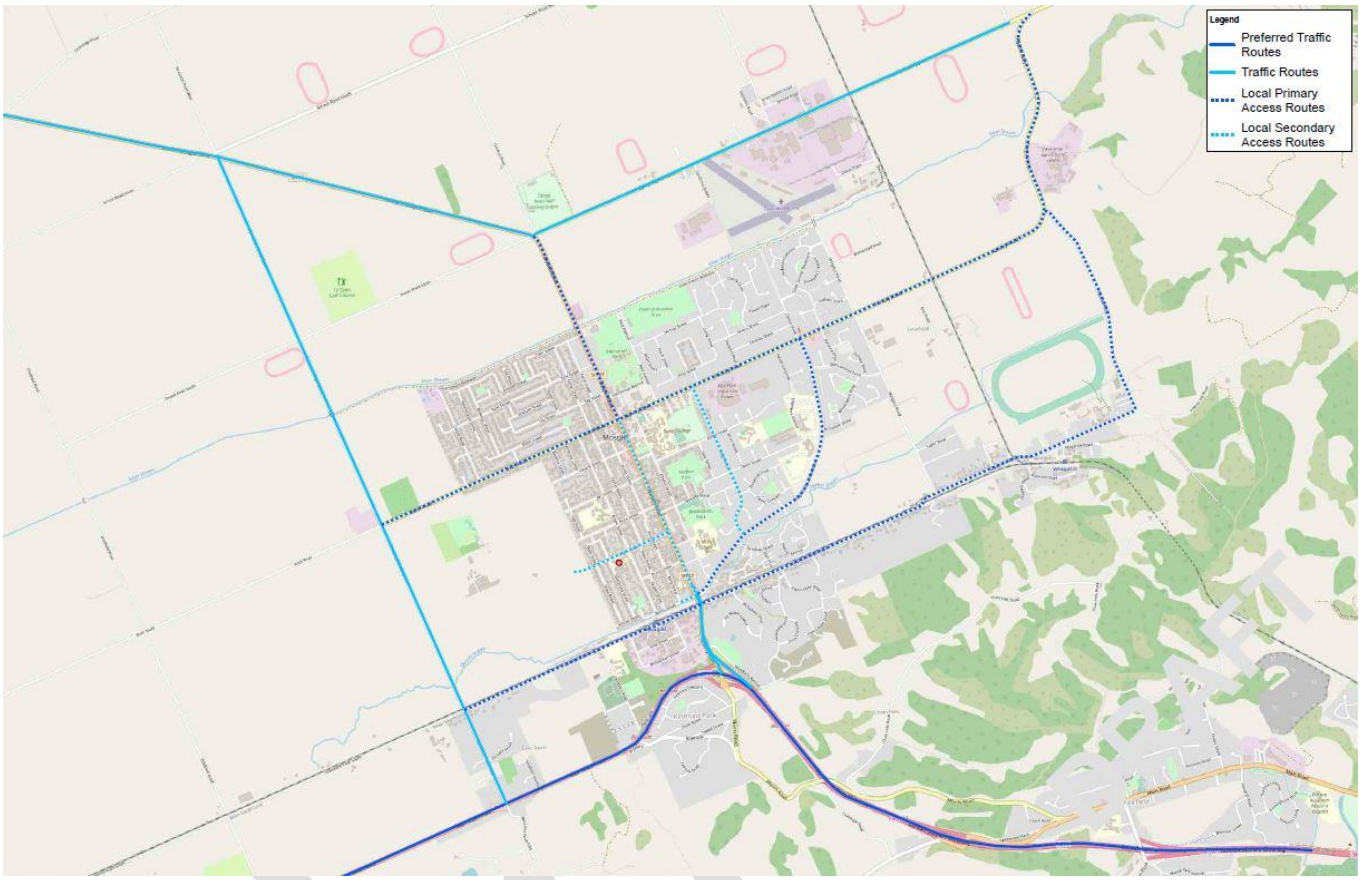


Figure 20 Mosgiel Strategic General Traffic Network (Draft)

Preferred Traffic Routes

These routes provide for longer distance traffic as a preferred alternative to other routes with land use conflicts. The only preferred traffic route in the Mosgiel area is SH1.

Traffic Routes

These routes provide connectivity between smaller centres and preferred routes.

Routes identified included Riccarton Road West up to SH87, SH87 north of (and including) Dukes Road North and south of Gladstone Road to SH1.

Local Primary Access Routes

Routes provide access between local destinations and local commercial and residential areas.

Routes identified primarily included Factory Road, Gladstone Road, SH87 Gordon Road north of Factory Road and Hagart-Alexander Drive. To the east Puddle Alley was also classified a Local Primary Access Route.

Local Secondary Access Routes

These routes collect and distribute between primary local access routes for localised movement in centres. In Mosgiel only a few were identified as local secondary access routes such as SH87 Gordon Road between Gladstone Road and Factory Road, and Inglis Street and High Street.

11. Next Steps

One Network Framework

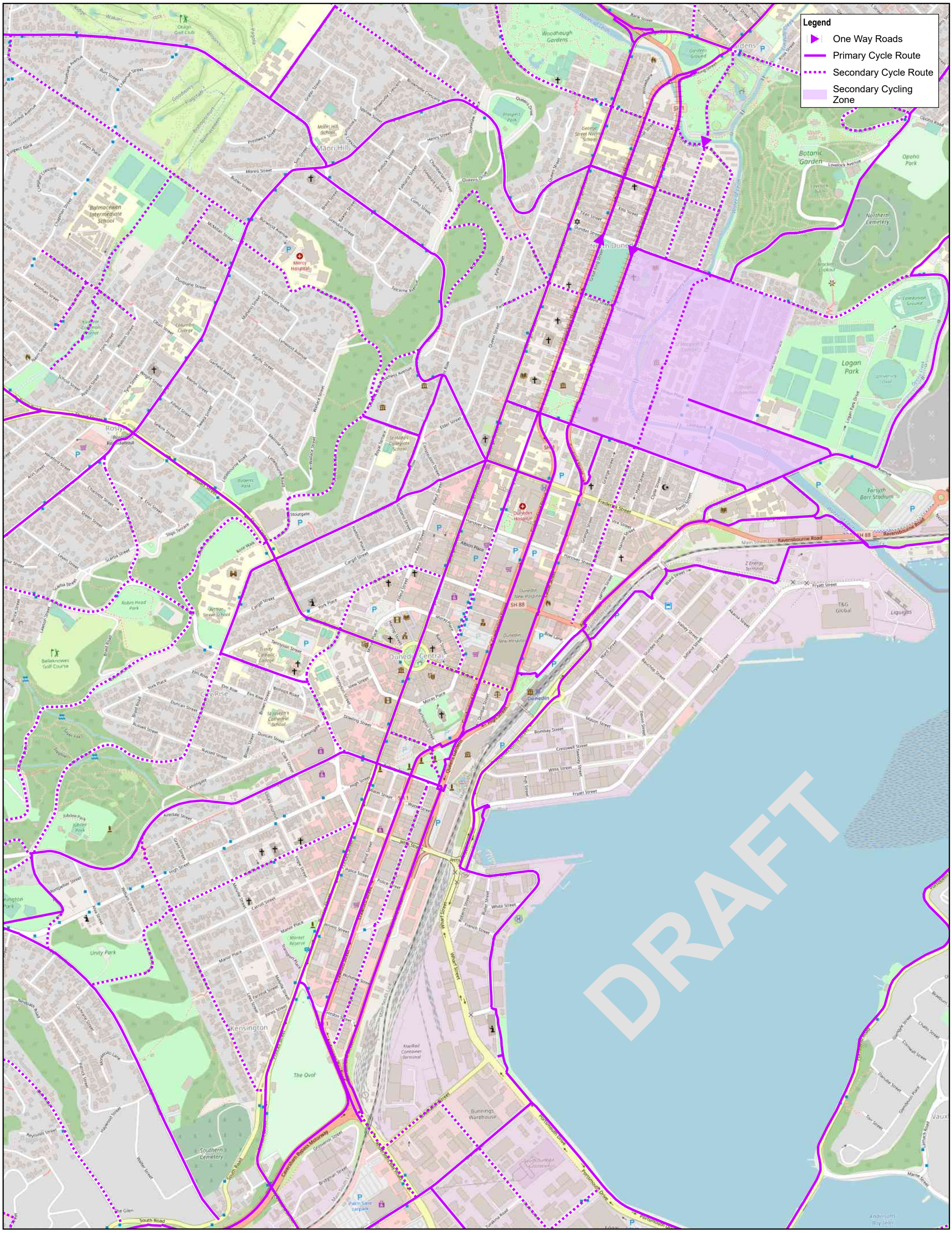
The One Network Framework is Waka Kotahi's new national classification system. It acknowledges both the role of movement and place in the classification of the network. All Streets in New Zealand have been classified according to its existing function with Councils being asked to identify aspirational networks. The aspirational networks will aim to reflect the strategic function of the network in the future i.e. how we want the network to perform in 10–15 years' time. The Network Operating Framework can assist in developing the aspirational One Network Framework.

Application of NOF

The development of this Network Operating Framework provides a forward-looking strategic network for different user mode types on the network. There is an opportunity to utilise the strategic networks developed to inform updates to wider planning and policy, and to provide consistency when establishing and updating existing network hierarchies. The NOF can be seen as a foundation framework that provides a multi-modal view of the network aspirations. It is also expected that as economic, political, and societal circumstances change updates are likely required. It is recommended this NOF is updated on a regular basis or when significant changes occur.

Appendix A

Dunedin Strategic Network Maps



Data Disclaimer:
Whilst every care has been taken to prepare this map, GHD (and DATA CUSTODIAN) make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind(whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Paper Size ISO A3

0 80 160 240 320

Meters

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

N

GHD

Dunedin City Council
Dunedin NOF

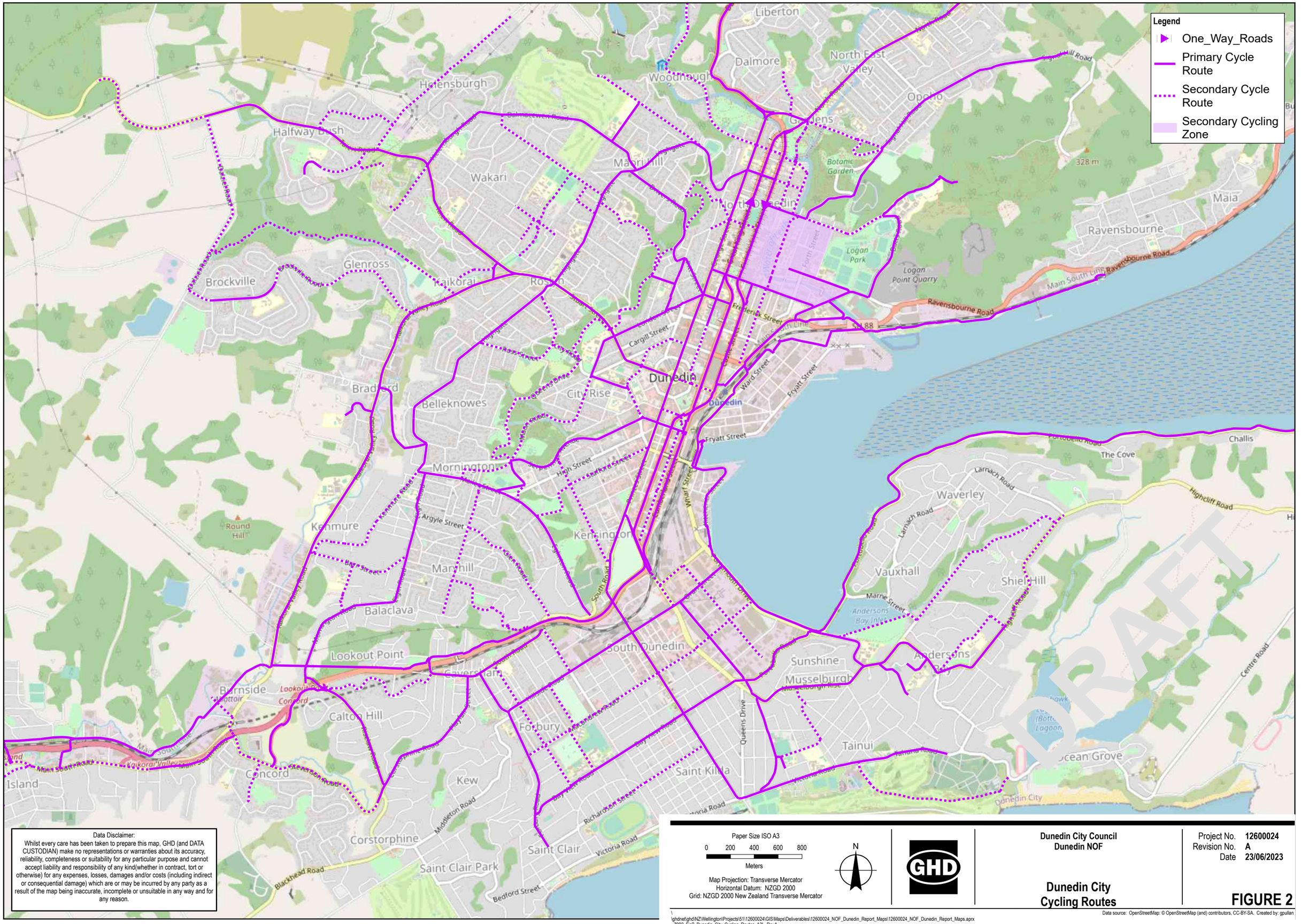
Dunedin Central Cycling Routes

Project No. **12600024**
Revision No. **A**
Date **23/06/2023**

FIGURE 1

\\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx - Z001_Fig1_Dunedin_Central_Cycling_Routes_A3P_RevA
Print date: 22 Jun 2023 - 16:33

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan



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Paper Size ISO A3

0 200 400 600 800

Meters

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

N

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Dunedin City Council
Dunedin NOF

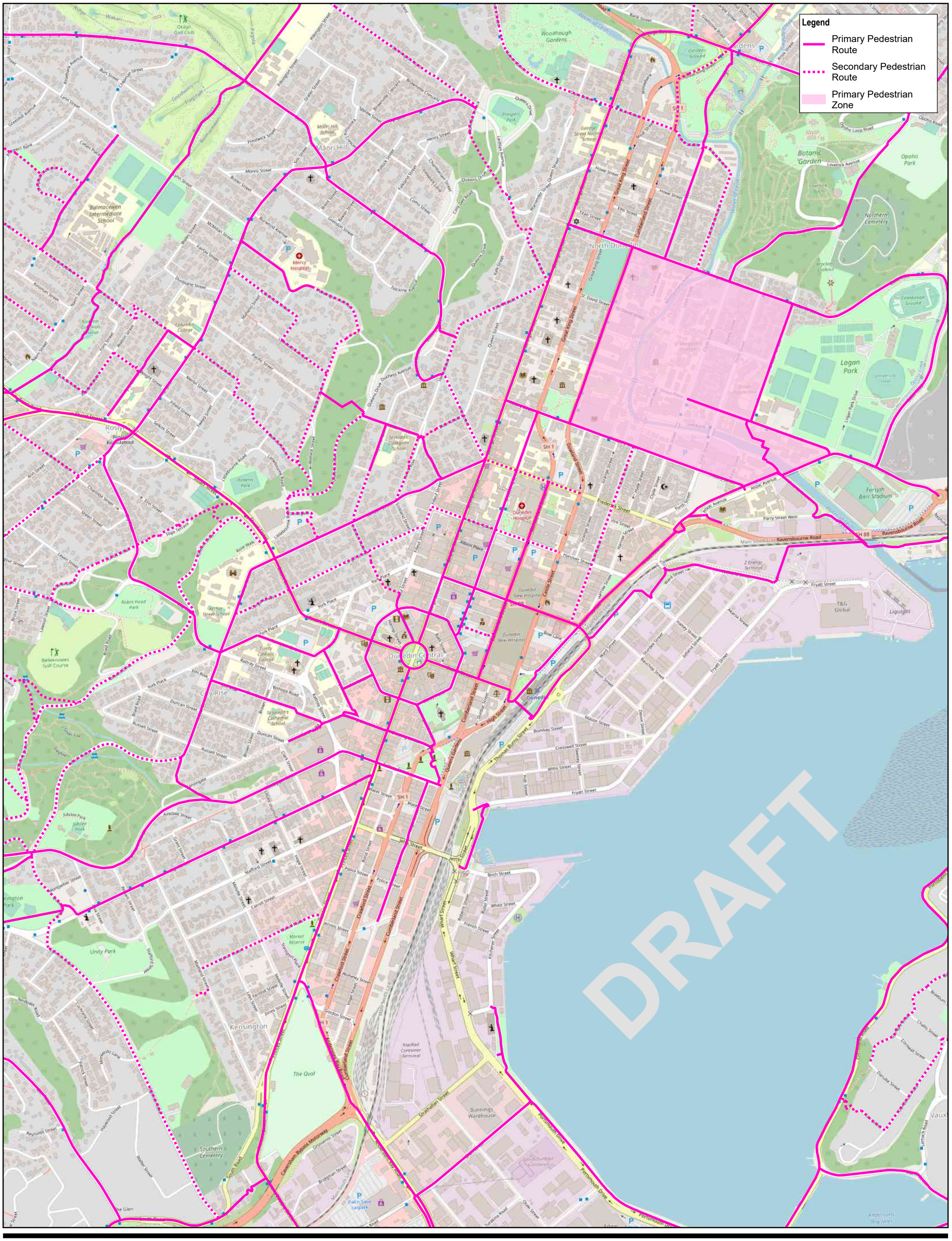
Dunedin City Cycling Routes

Project No. **12600024**
Revision No. **A**
Date **23/06/2023**

FIGURE 2

\\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx - 2002_Fig2_Dunedin_City_Cycling_Routes_A3L_RevA
Print date: 22 Jun 2023 - 16:34

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan



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Paper Size ISO A3

0 80 160 240 320

Meters

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

N

GHD

Dunedin City Council
Dunedin NOF

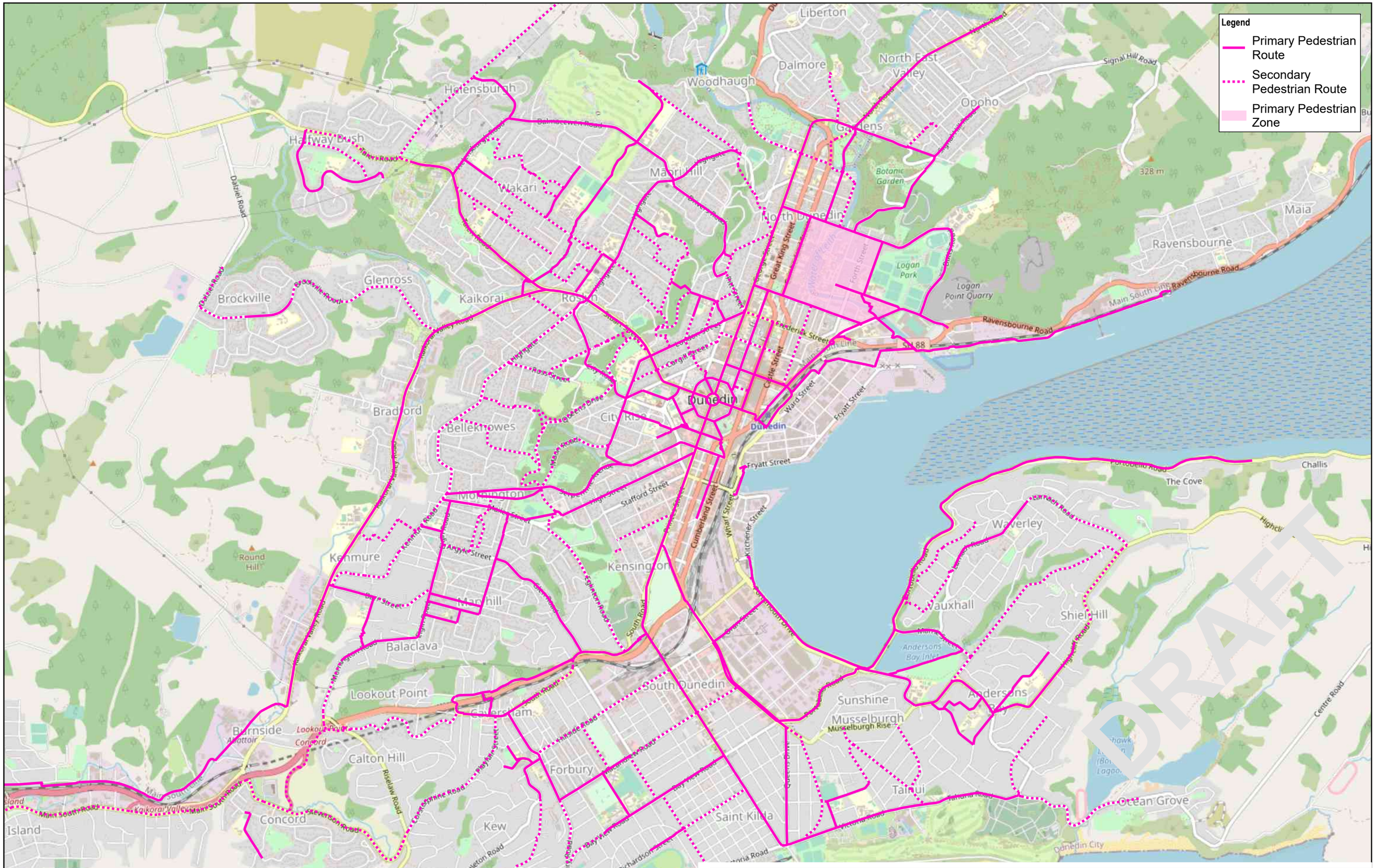
Dunedin Central Pedestrian Routes

Project No. **12600024**
Revision No. **A**
Date **23/06/2023**

FIGURE 3

\\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx - Z003_Fig3_Dunedin_Central_Pedestrian_Routes_A3P_RevA
Print date: 22 Jun 2023 - 16:35

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan



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Paper Size ISO A3

0 200 400 600 800

Meters

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

N

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Dunedin City Council
Dunedin NOF

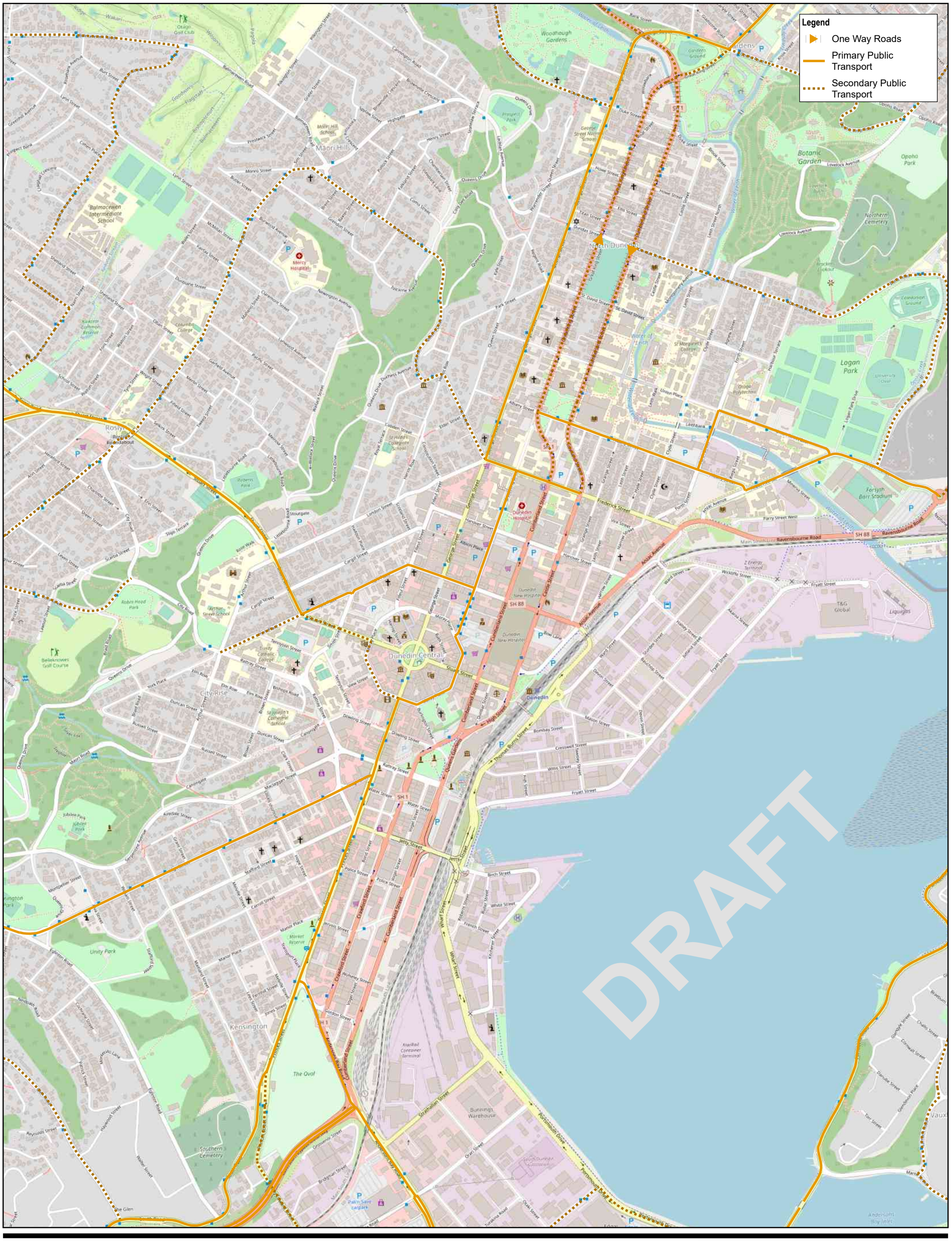
Dunedin City Pedestrian Routes

Project No. **12600024**
Revision No. **A**
Date **23/06/2023**

FIGURE 4

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan

\\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx - 2004_Fig4_Dunedin_City_Pedestrian_Routes_A3L_RevA
Print date: 22 Jun 2023 - 16:35



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Paper Size ISO A3

0 80 160 240 320

Meters

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

N

GHD

Dunedin City Council
Dunedin NOF

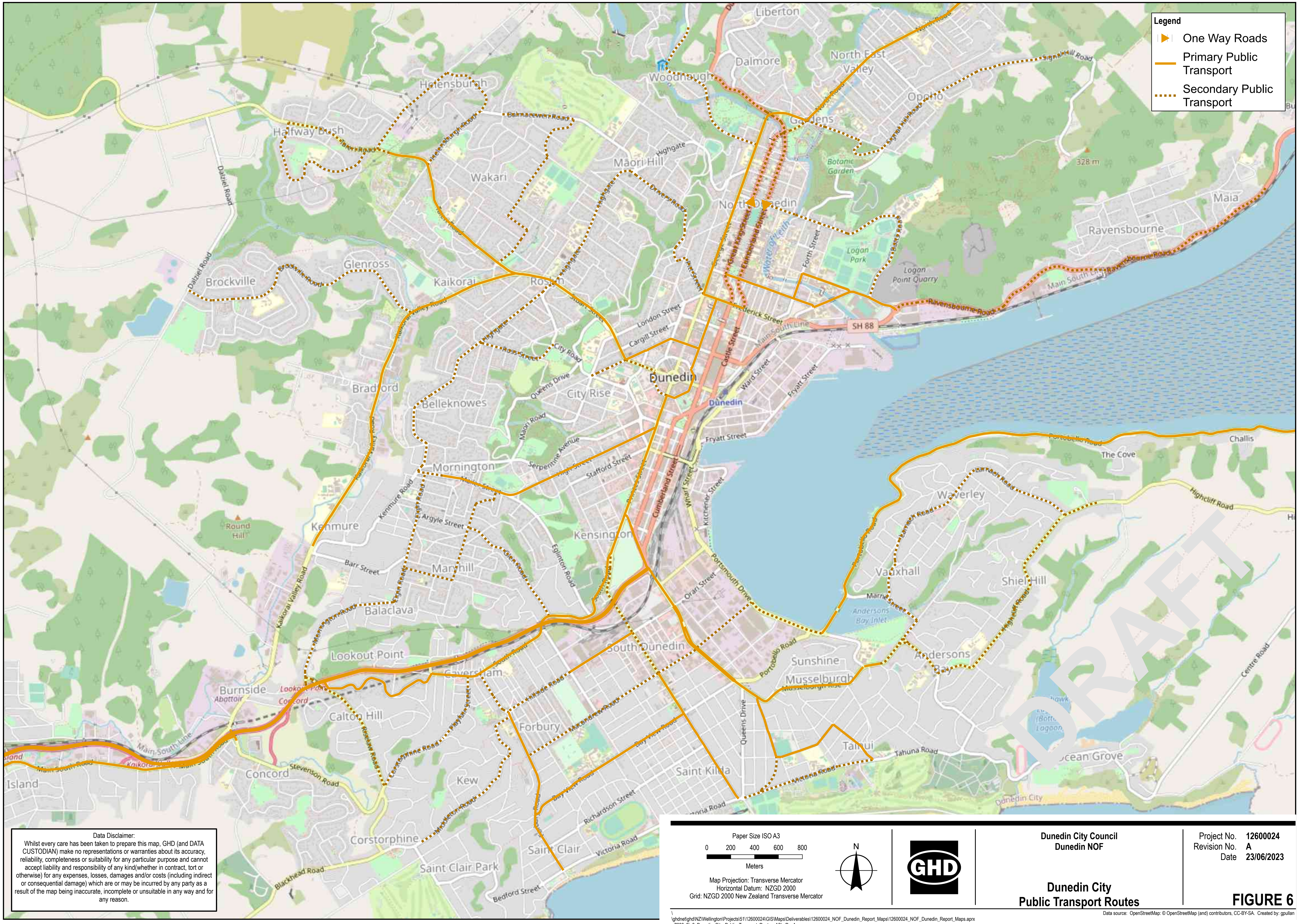
Dunedin Central
Public Transport Routes

Project No. **12600024**
Revision No. **A**
Date **23/06/2023**

FIGURE 5

\\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx - Z005_Fig5_Dunedin_Central_Public_Transport_Routes_A3P_RevA
Print date: 22 Jun 2023 - 16:36

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan


Legend
One Way Roads
Primary Public Transport
Secondary Public Transport
DRAFT
Liberton
Dalmore
North East Valley
Opoho
Woodhaugh
Gardens
Botanic Garden
Helensburgh
Halfway Bush
Wakari
Māori Hill
North Dunedin
Logan Park
Logan Point Quarry
Maia
Ravensbourne
Glenross
Brockville
Kaikorai
Roslyn
Dunedin
City Rise
Bradford
Belleknowes
Mornington
Kenmure
Round Hill
Maryhill
Kensington
Balaclava
Lookout Point
Caversham
Burnside
Calton Hill
Concord
Island
Forbury
Kew
South Dunedin
Sunshine
Musselburgh
Vauxhall
Waverley
Shiel Hill
Andersons Bay
Andersons Bay Inlet
The Cove
Challis
Tainui
Ocean Grove
Saint Kilda
Saint Clair
Saint Clair Park
Corstorphine
Portobello Road
Highcliff Road
Signal Hill Road
Ravensbourne Road
Main South Line
SH 88
Kaikorai Valley Road
Dalziel Road
Stevenson Road
Blackhead Road
Bedford Street
Victoria Road
Tahuna Road
Centre Road
Cumberland Street
Castle Street
Wharf Street
Portsmouth Drive
Queens Drive
Fryatt Street
328 m

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Paper Size ISO A3

0 200 400 600 800

Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

GHD

Dunedin City Council
Dunedin NOF

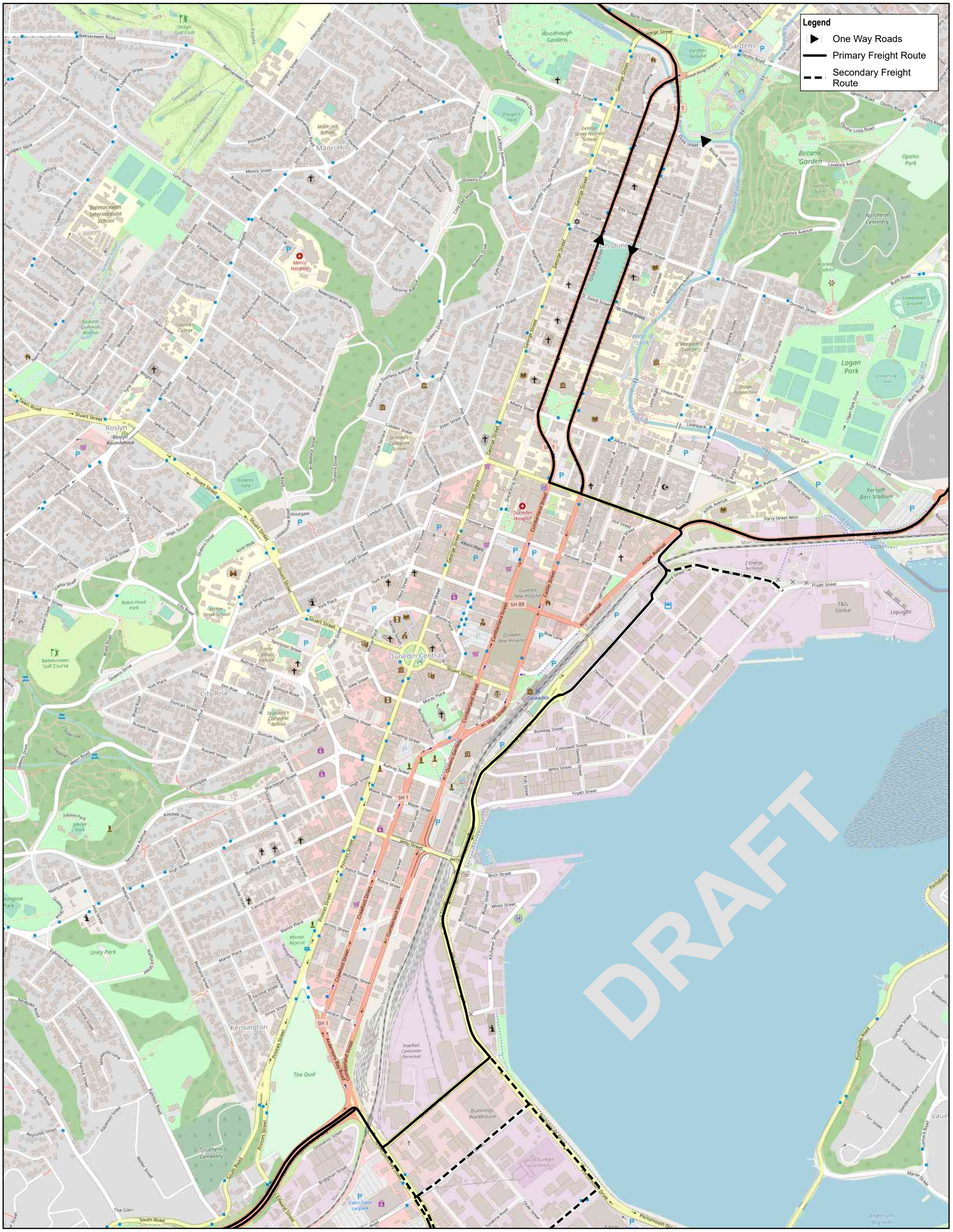
Dunedin City
Public Transport Routes

Project No. 12600024
Revision No. A
Date 23/06/2023

FIGURE 6

\\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx
- Z006_Fig6_Dunedin_City_Public_Transport_Routes_A3L_RevA
Print date: 22 Jun 2023 - 16:37

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan



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Paper Size ISO A3

0 80 160 240 320

Meters

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

N

GHD

Dunedin City Council
Dunedin NOF

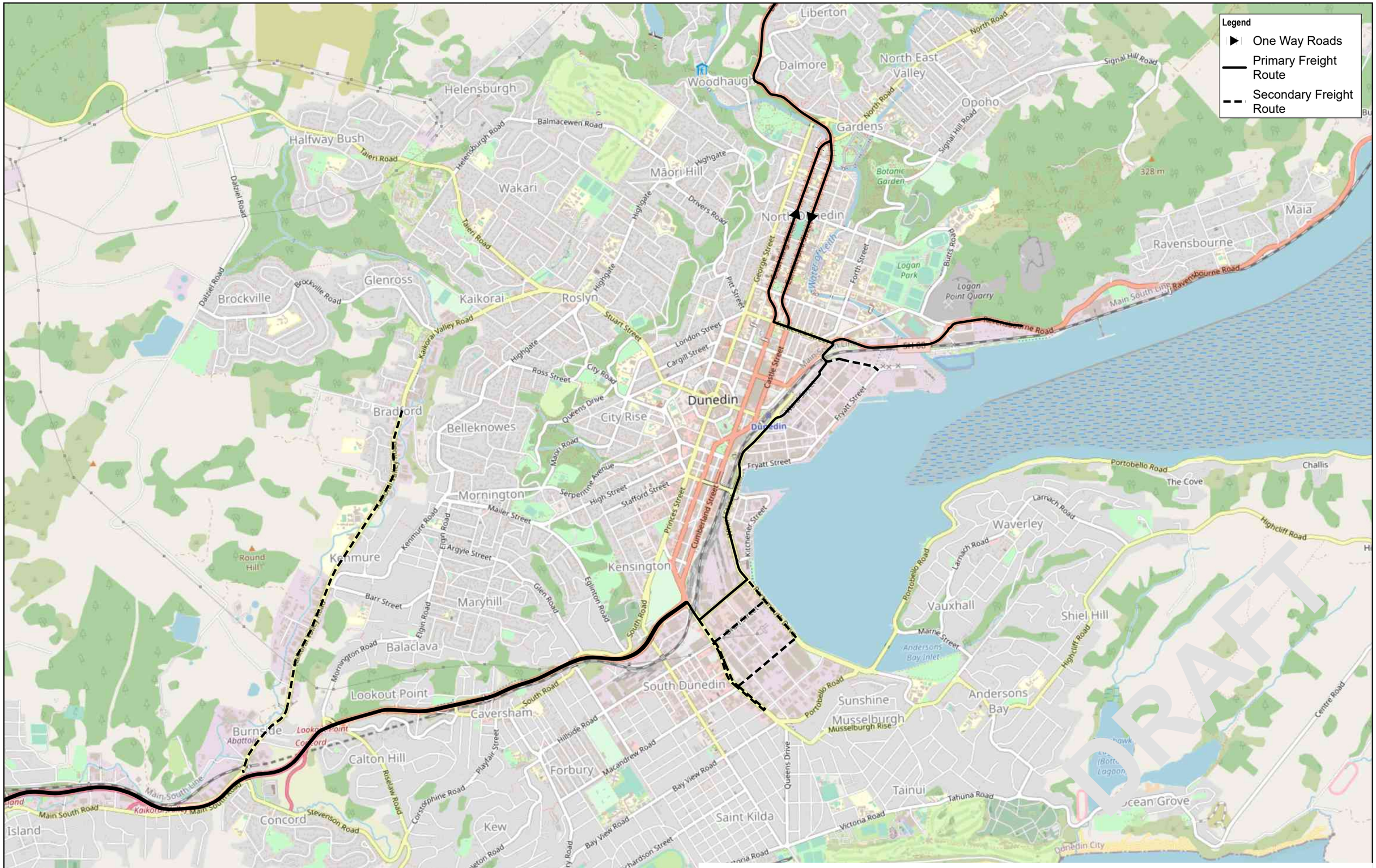
Dunedin Central Freight Routes

Project No. **12600024**
Revision No. **A**
Date **23/06/2023**

FIGURE 7

\\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx - Z007_Fig7_Dunedin_Central_Freight_Routes_A3P_RevA
Print date: 22 Jun 2023 - 16:38

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan


Legend
One Way Roads
Primary Freight Route
Secondary Freight Route
Liberton
Woodhaugh
Dalmore
North East Valley
Opoho
Gardens
Helensburgh
Halfway Bush
Balmacewen Road
Māori Hill
Wakari
Highgate
Drivers Road
North Dunedin
Botanic Garden
Signal Hill Road
North Road
328 m
Maia
Ravensbourne
Logan Park
Logan Point Quarry
Butts Road
Forth Street
George Street
Pitt Street
Water of Leith
Ravensbourne Road
Main South Line
Taieri Road
Dalziel Road
Brockville
Brockville Road
Glenross
Kaikorai
Kaikorai Valley Road
Roslyn
Stuart Street
London Street
Cargill Street
Castle Street
Dunedin
City Rise
Queens Drive
City Road
Ross Street
Bradford
Belleknowes
Maori Road
Serpentine Avenue
High Street
Stafford Street
Mornington
Mailer Street
Princes Street
Cumberland Street
Fryatt Street
Kitchener Street
Kenmure
Kenmure Road
Elgin Road
Argyle Street
Barr Street
Maryhill
Glen Road
Eglinton Road
Kensington
South Road
Round Hill
Balaclava
Mornington Road
Lookout Point
Caversham
Burnside
Abattoir
Calton Hill
Riselaw Road
Playfair Street
Hillside Road
Forbury
Macandrew Road
Bay View Road
Corstorphine Road
Concord
Stevenson Road
Kew
Middleton Road
Forbury Road
Corstorphine
Saint Clair
Saint Clair Park
Blackhead Road
Bedford Street
Victoria Road
Saint Kilda
South Dunedin
Portobello Road
Sunshine
Musselburgh
Musselburgh Rise
Andersons Bay
Andersons Bay Inlet
Waverley
Larnach Road
Vauxhall
Marne Street
Shiel Hill
Highcliff Road
Portobello Road
The Cove
Challis
Tainui
Tahuna Road
Ocean Grove
Dunedin City
Centre Road
Main South Road
Island
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Paper Size ISO A3
0 200 400 600 800
Meters
Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator
N
GHD
Dunedin City Council
Dunedin NOF
Dunedin City
Freight Routes
Project No. 12600024
Revision No. A
Date 23/06/2023
FIGURE 8
\\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx
- Z008_Fig8_Dunedin_City_Freight_Routes_A3L_RevA
Print date: 22 Jun 2023 - 16:38
Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan
DRAFT

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Paper Size ISO A3

0 80 160 240 320

Meters

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

N

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Dunedin City Council
Dunedin NOF

Dunedin Central
General Traffic Routes

Project No. **12600024**
Revision No. **A**
Date **23/06/2023**

FIGURE 9

\\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx - Z009_Fig9_Dunedin_Central_Traffic_Access_Routes_A3P_RevA
Print date: 22 Jun 2023 - 16:38

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan

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Paper Size ISO A3

0 200 400 600 800

Meters

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

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Dunedin City Council
Dunedin NOF

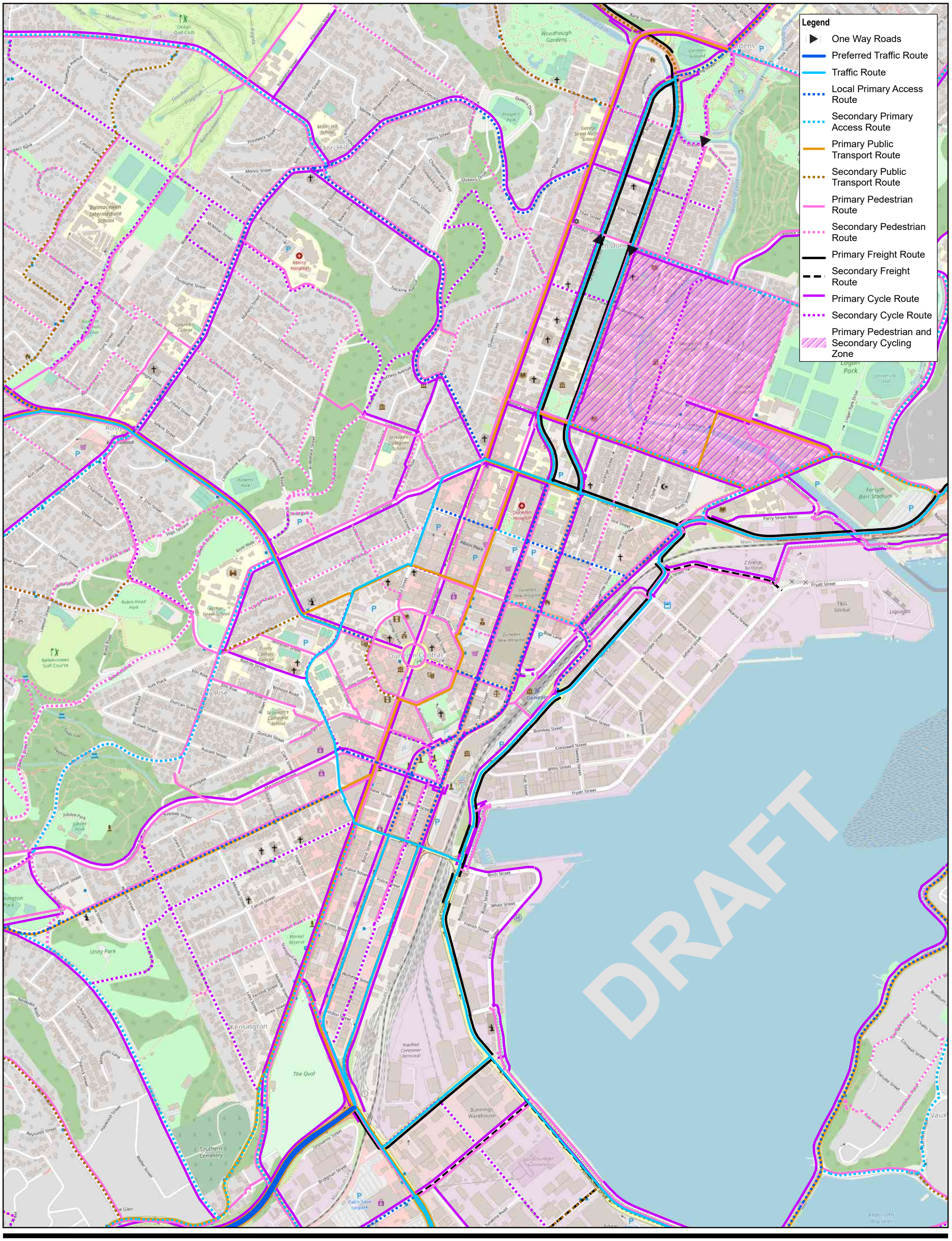
Dunedin City General Traffic Routes

Project No. **12600024**
Revision No. **A**
Date **23/06/2023**

FIGURE 10

\\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx - Z010_Fig10_Dunedin_City_Traffic_Access_Routes_A3L_RevA
Print date: 22 Jun 2023 - 16:39

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan



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Paper Size ISO A3

0 80 160 240 320

Meters

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

N

Dunedin City Council
Dunedin NOF

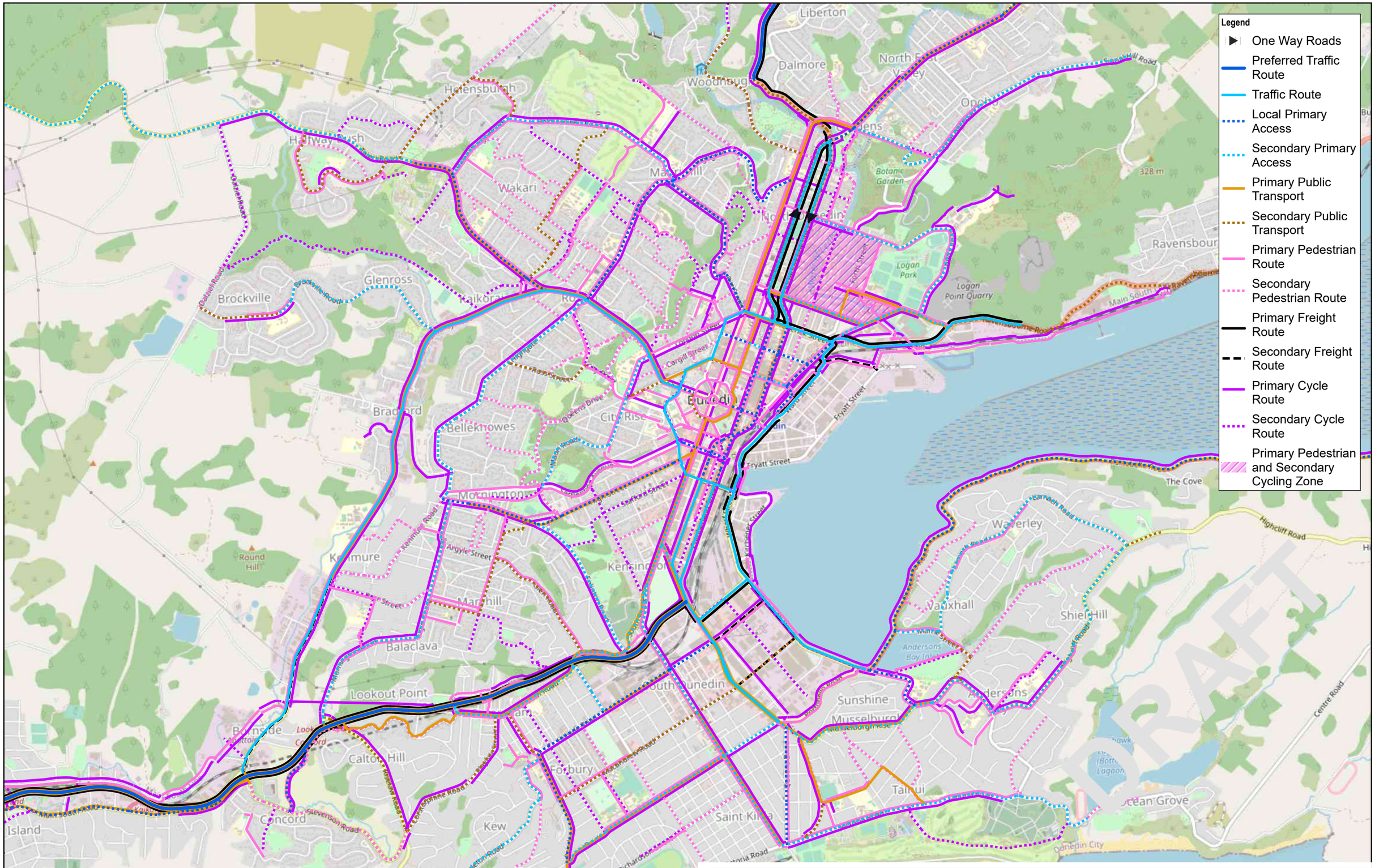
Dunedin Central
Combined Traffic Routes

Project No. **12600024**
Revision No. **A**
Date **23/06/2023**

FIGURE 11

\\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx - Z011_Fig11_Dunedin_Central_Combined_Routes_A3P_RevA
Print date: 22 Jun 2023 - 16:39

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan



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Paper Size ISO A3
0 200 400 600 800
Meters

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

N

Dunedin City Council
Dunedin NOF

Dunedin City Combined Traffic Routes

Project No.	**12600024**
Revision No.	**A**
Date	**23/06/2023**

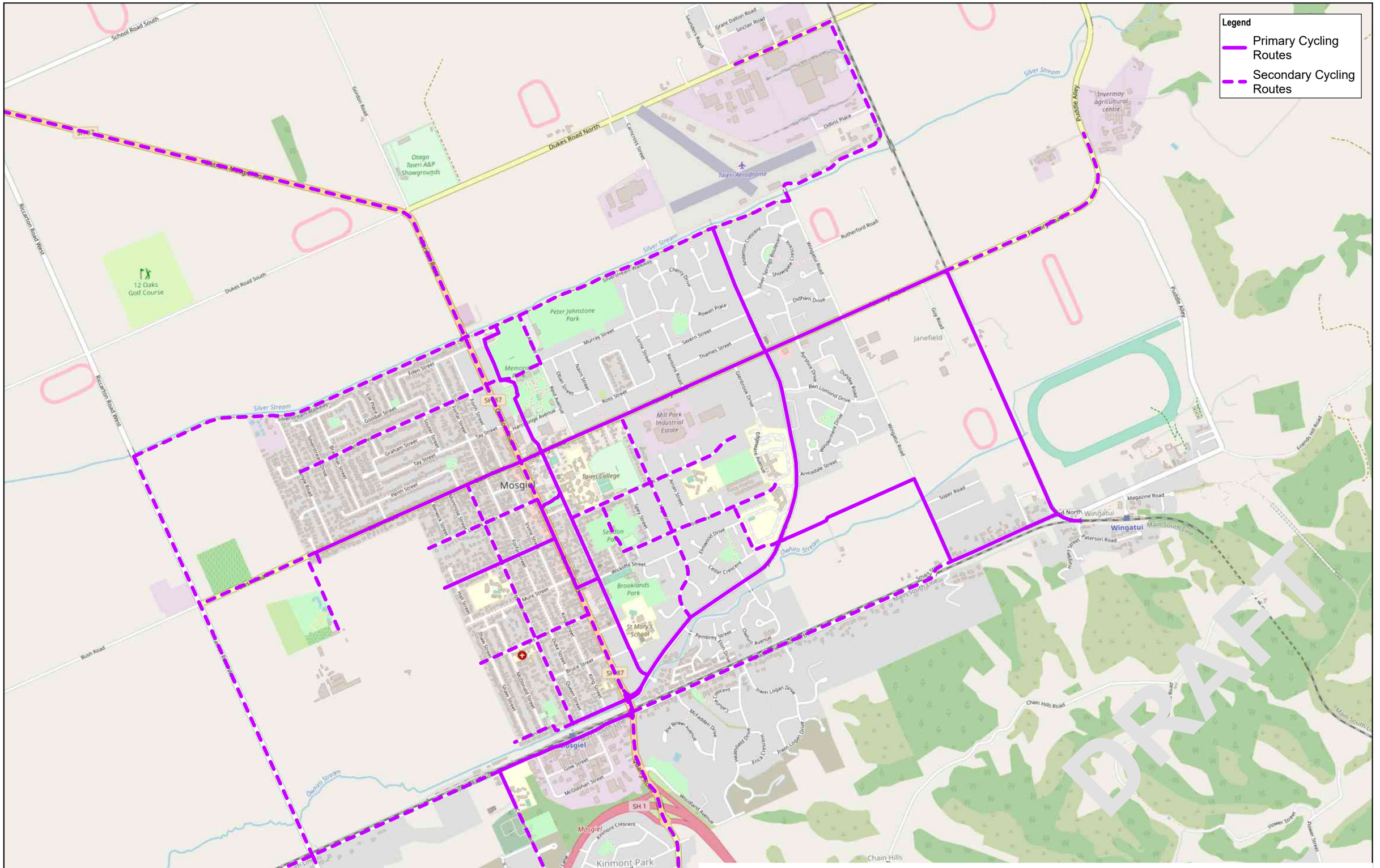
FIGURE 12

\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx
- Z012_Fig12_Dunedin_City_Combined_Routes_A3L_RevA
Print date: 22 Jun 2023 - 16:40

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan

Appendix B

Mosgiel Strategic Network Maps



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Paper Size ISO A3

0 150 300 450 600

Meters

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

N

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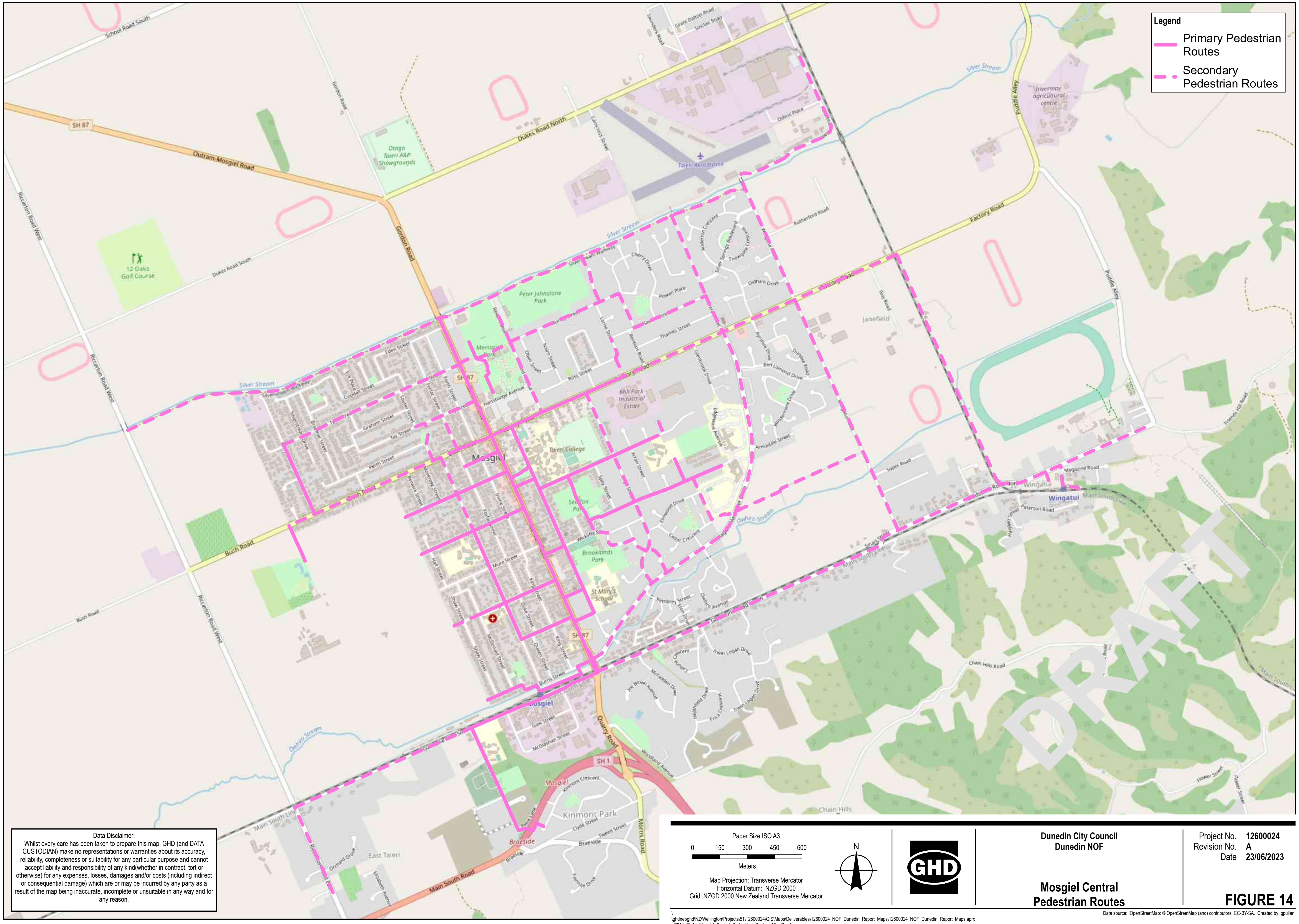
Dunedin City Council
Dunedin NOF

Mosgiel Central Cycling Routes

Project No. **12600024**
Revision No. **A**
Date **23/06/2023**

FIGURE 13

\\ghdnetighd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx - 2013_Fig13_Mosgiel_Central_Cycling_Routes_A3L_RevA
Print date: 22 Jun 2023 - 16:41



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Paper Size ISO A3
0 150 300 450 600
Meters
Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

N

GHD

Dunedin City Council
Dunedin NOF

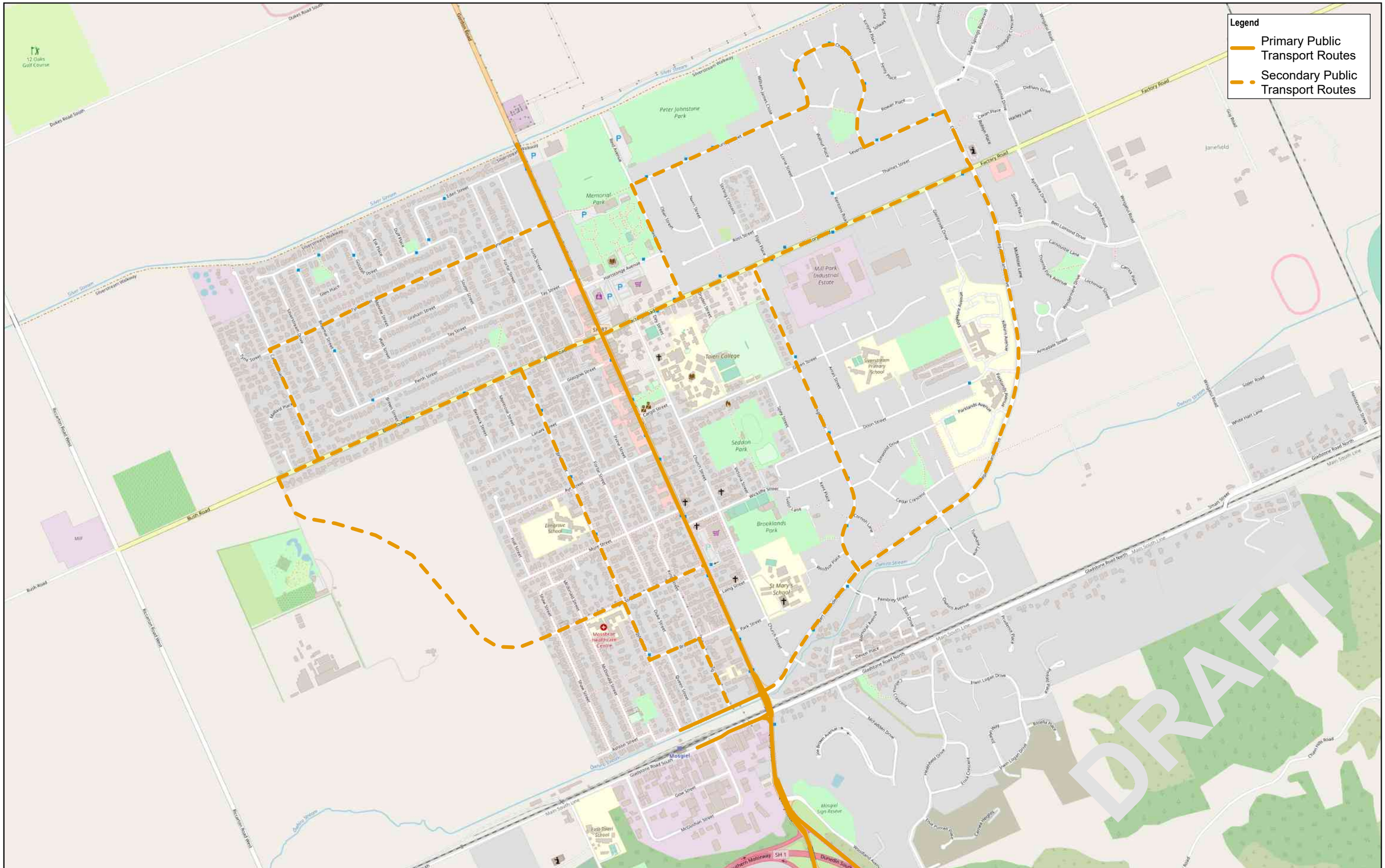
Mosgiel Central
Pedestrian Routes

Project No. 12600024
Revision No. A
Date 23/06/2023

FIGURE 14

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan

\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx - Z014_Fig14_Mosgiel_Central_Pedestrian_Routes_A3L_RevA
Print date: 22 Jun 2023 - 16:42



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Paper Size ISO A3

0 100 200 300 400

Meters

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

N

GHD

Dunedin City Council
Dunedin NOF

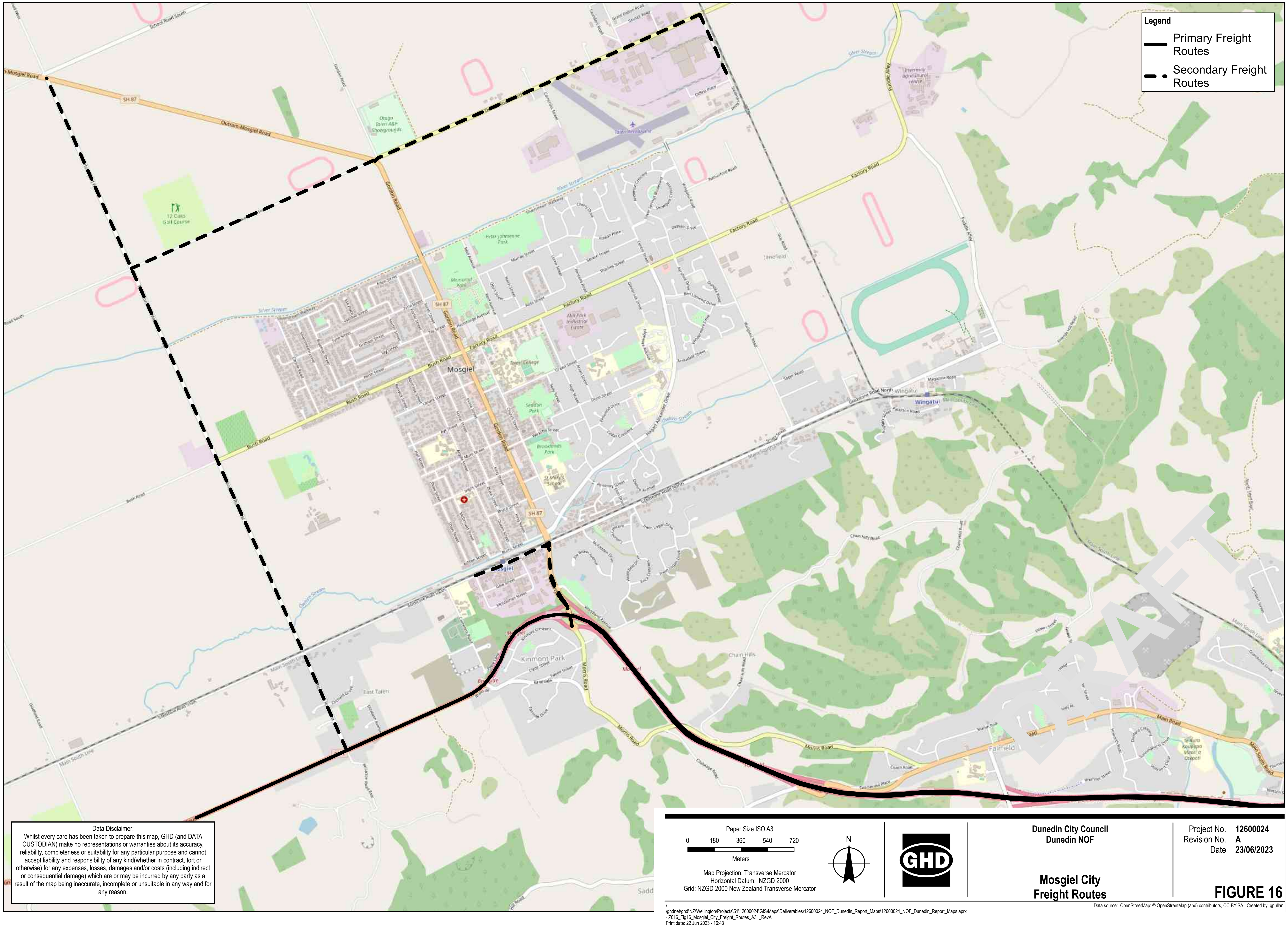
Mosgiel City Public Transport Routes

Project No. **12600024**
Revision No. **A**
Date **23/06/2023**

FIGURE 15

Data source: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: gpullan

\\ghdnet\ghd\NZ\Wellington\Projects\51\12600024\GIS\Maps\Deliverables\12600024_NOF_Dunedin_Report_Maps\12600024_NOF_Dunedin_Report_Maps.aprx - 2015_Fig15_Mosgiel_City_Public_Transport_Routes_A3L_RevA
Print date: 22 Jun 2023 - 16:43



Legend
Primary Freight Routes
Secondary Freight Routes
Mosgiel
Outram-Mosgiel Road
SH 87
Gordon Road
Factory Road
Bush Road
Gladstone Road North
Main South Line
Wingatui
Kinmont Park
East Taieri
Fairfield
Chain Hills
Morris Road
Main South Road
Taieri College
12 Oaks Golf Course
Otago Taieri A&P Showgrounds
Memorial Park
Peter Johnstone Park
Mill Park Industrial Estate
Taieri Aerodrome
Janefield
DRAFT
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Paper Size ISO A3
0 180 360 540 720
Meters
Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator
N
GHD
Dunedin City Council
Dunedin NOF
Mosgiel City
Freight Routes
Project No. 12600024
Revision No. A
Date 23/06/2023
FIGURE 16
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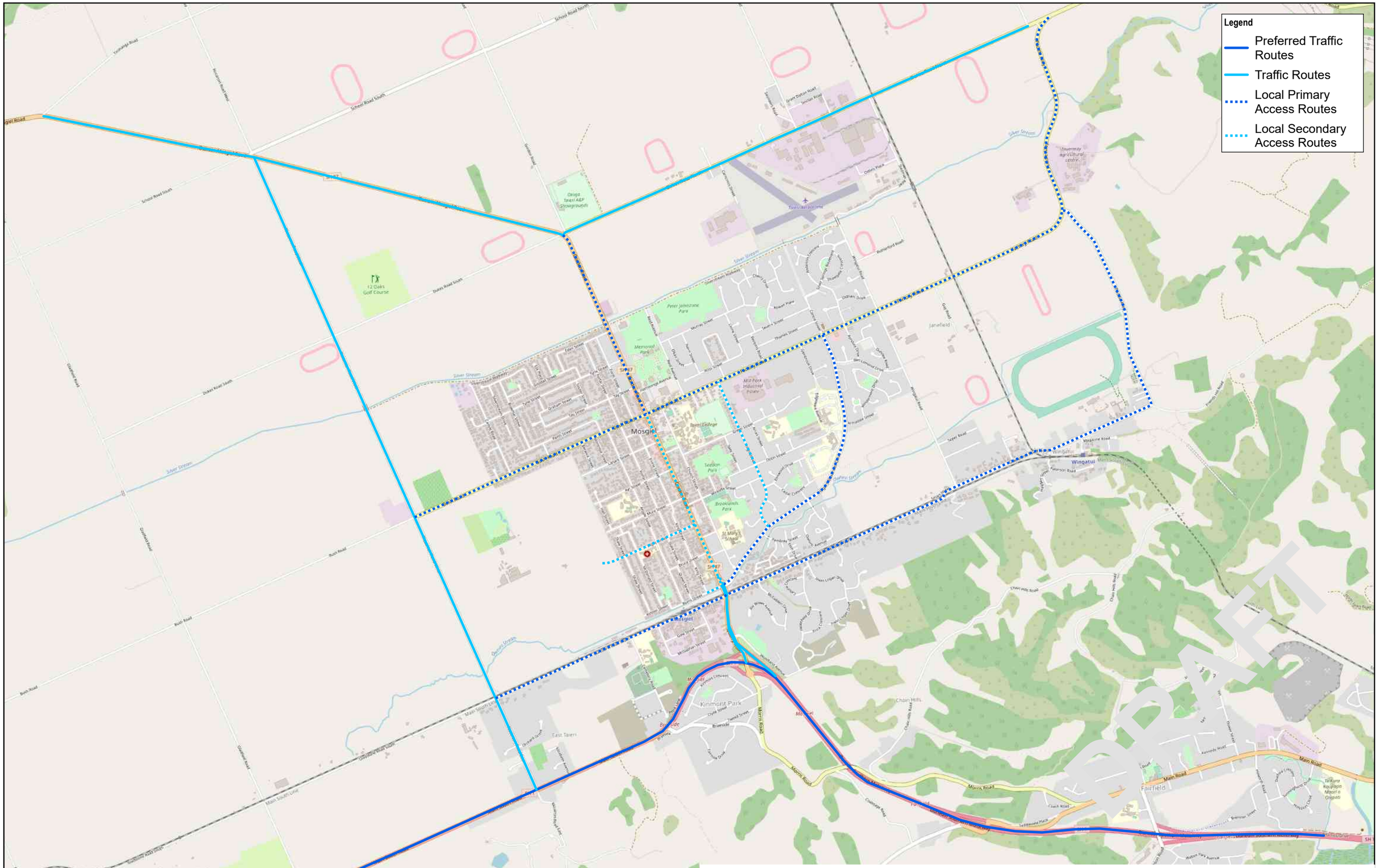

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GHD

Dunedin City Council
Dunedin NOF

Mosgiel City
General Traffic Routes

Project No. **12600024**
Revision No. **A**
Date **23/06/2023**

FIGURE 17

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The Power of Commitment

Dunedin City Council

Dunedin Network Operating Framework
Version 1.0

November 2020

Executive Summary

A Network Operating Framework (NOF) is an approach to planning which road-controlling authorities can utilise to consider all road users and the inter-relationship between infrastructure and non-infrastructure solutions. The framework provides a collaborative and integrated approach to managing the transport system; a 'one network' approach. The framework consists of operational strategies and objectives for managing the transport network to provide effective network management for all users. The purpose of the plan is to identify operating gaps, determine the suitability of interventions and to support monitoring the performance of a network at future stages.

The development of this Dunedin NOF encompasses central Dunedin, extending from Pine Hill Road in the north to The Oval in the south. It includes the Octagon to the west and the Wharf St/Thomas Burns St and the waterfront to the east. The Network Operating Framework incorporates the land use within the considered area and the transport demands that the land use generates. This NOF was prepared to assist in network decision making in conjunction with the Shaping Dunedin Programme Business Case. A NOF considers a future timeframe based on population and land use growth assumptions to allow consideration of a future aspirational network. Although only the one network was considered in this report, it was considered in two scenarios – one where it remained as a one-way network and the other where it changes to a two-way network. Stakeholders considered a mid-range 10-year horizon for the transport network; however, this did not limit consideration of a longer-term perspective for land use further into the future.

The NOF process considers the context of Dunedin – the existing network, priorities and transport operations and conditions, as well as the national policy and strategic guidelines, while also focussing on local policy and aspirations. The development of this NOF was informed through workshops held early in the process. These workshops focus on the development of the strategic setting where mode-based objectives are developed and mode prioritisation maps for the network are prepared with modal conflicts identified.

In the workshops, stakeholders developed strategic objectives and principles based on planning policies and guidelines from a national level down to local level. The objectives and principles were developed on a mode-by-mode basis – i.e. without considering other modes. These represented the aspirations for the transport network. Key objectives stakeholders targeted as outcomes from the Network Operating Framework discussions were as follows:

- A desire to enable people to choose how they travel – provision of safety, attractiveness and accessibility so that people of all ages are encouraged and have the ability to choose different modes of travel.
- Environmental and financial concern was expressed through the desire to have sustainable travel choices.
- Safety for all network users and a reduction of conflict points between modes throughout the network.

The strategic principles developed provided guidelines which stakeholders used to produce the strategic road network (maps) for each of the five transport modes (walking, cycling, public transport, general traffic, and freight) in the two scenarios outlined. Again, this was completed in a mode-by-mode manner to enable an aspirational vision of the local network to be achieved. The stakeholder group recognised that conflicts would arise where competing modes used the same road corridor when developing the network and there was good discussion about locations where this was likely to occur.

Section 10 explores areas within the network where conflict is currently occurring or is likely to occur in the future. The NOF does not specifically provide ‘solutions’ to priority conflict areas; however, it discusses how the different modes could be considered when addressing competing demands. The discussion in this section occurs in relation to the SmartRoads tool. The strategic network is plotted on GIS, then uploaded into the tool. The tool considers these networks along with different activity areas within Dunedin to provide a ‘level of emphasis’ that is placed on each mode for different time periods.

The Network Operating Framework, supplemented by a tool, supports required transport inputs for developing programmes of interventions considering the conflict points on a future aspirational transport network. The outputs indicate which transport corridors are suitable for altering to provide for modes i.e. support a place function, and what roads are required to place an emphasis on throughput to cater for the transport requirements.

This Network Operating Framework is considered ‘live’ and will evolve as there are changes in the strategic environment, new projects come on-line, further data and analysis becomes available, and new technologies. As such, the Network Operating Framework an iterative approach undertaken so that the framework compliments and supports outcomes. This may result in changes to primary or secondary routes for modes of transport; however, these would be justified and informed at future stages.

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1. Introduction

Dunedin City Council (DCC) has commissioned GHD to assist the 'Connecting Dunedin' partners – Waka Kotahi NZ Transport Agency (Waka Kotahi), Dunedin City Council (DCC) and Otago Regional Council (ORC) – in the development of a Network Operating Framework with an emphasis on the future network state and the inter-relationship with the Shaping Dunedin Programme Business Case. This Network Operating Framework provides stakeholders with a first principles approach to the development of the Dunedin transport network. It confirms an aspirational transport network that supports current and future land uses and caters to current and predicted future travel demands.

The development of this framework represents a proactive step by the Connecting Dunedin partners, as it provides a long-term, collaborative, and integrated 'one network' approach to managing the transport system in the area. This NOF may undertake a review at later stages in conjunction with the Shaping Dunedin Programme Business Case.

1.1 Network Operating Framework Purpose and Objectives

Development of a Network Operating Framework aims to recognise the diverse needs of road users. With a strategic and collaborative approach, stakeholders and road user groups provide input into the development of a framework to understand the needs of users in the existing network and focus investment in future schemes that suit the needs and demands of its users.

A Network Operating Framework provides a 'backbone' to support the development of Network Operating Plans and transport investments (through business cases and master planning) to supplement and support investment decisions. The Network Operating Framework provides road agencies with strategy guidance on how to respond to land use and transport network interactions in the road network. The Network Operating Framework will:

- Support decisions as part of a wider decision-making framework
- Provide a collaborative approach to planning outcomes
- Take a wider view of the network
- Provide transparency in decision-making
- Compliment Business Case development and Master Planning
- Assist with informing understanding of network interventions
- Form an iterative process to encourage an integrated transport network.

The Network Operating Framework takes the approach of considering the network needs of general traffic, freight, public transport users, pedestrians, and cyclists while considering the inter-relationship of those modes with land use. It will give guidance on network operations planning and where to consider trade-offs in terms of relative encouragement between modes.

This Network Operating Framework is considered 'live' and will evolve as there are changes in the strategic environment, new projects come on-line, further data and analysis becomes available, and new technologies are developed.

1.2 Study area

The focus area of this Network Operating Framework is central Dunedin as outlined in Figure 1. The indicative area extends from Pine Hill Road in the north to The Oval in the south. It includes the Octagon to the west and the Wharf St/Thomas Burns St and the waterfront to the east.

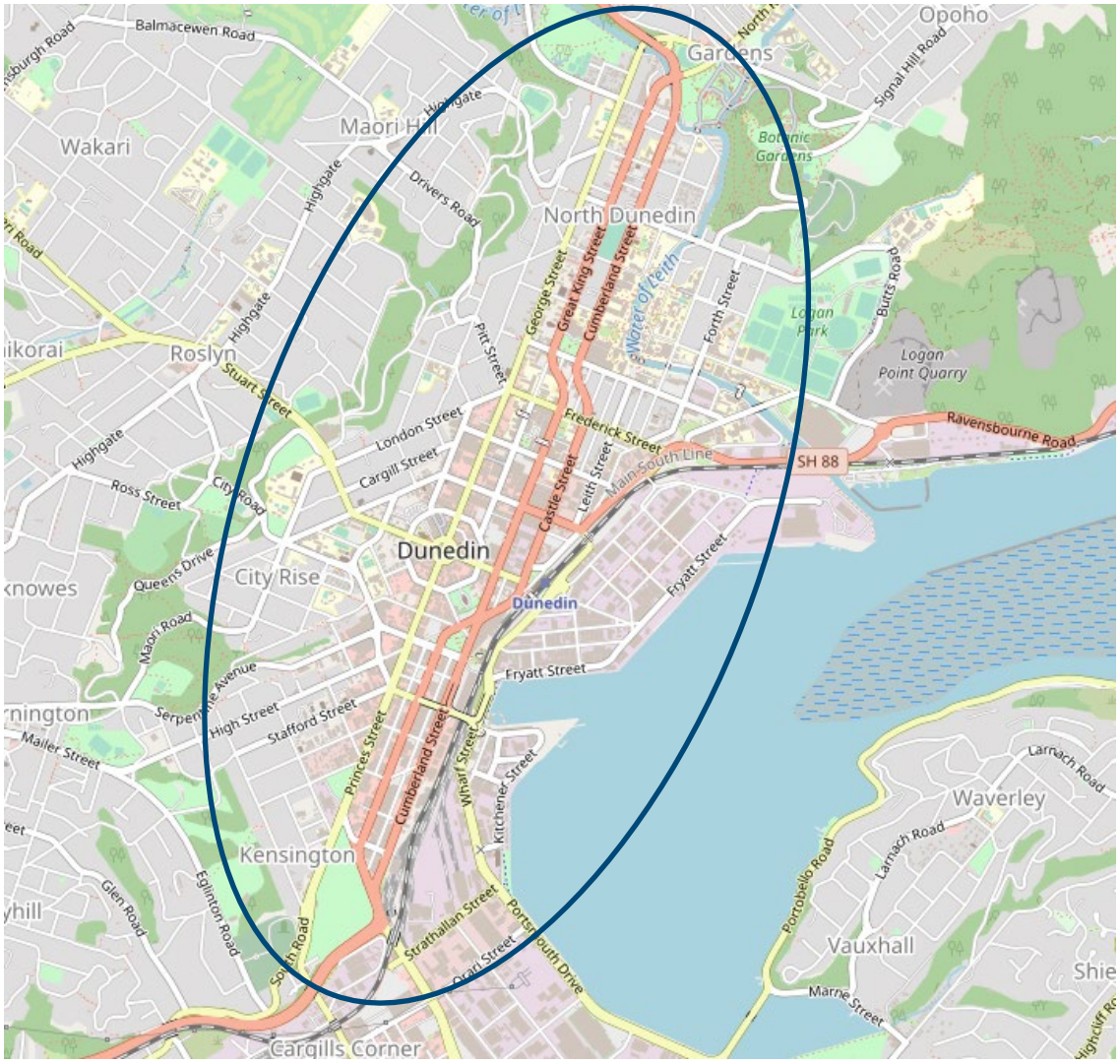


Figure 1 Dunedin NOF Focus Area[1]

1.3 Stakeholder involvement

Representatives from several stakeholder groups were involved in the development of this Dunedin Network Operating Framework through participation in workshops. Stakeholders included but where not limited to the following:

- Dunedin City Council
- Waka Kotahi NZ Transport Agency
- Otago Regional Council
- Automobile Association
- CCS Disability Action
- University of Otago

[1] Source: https://www.openstreetmap.org/

1.4 Purpose of this report

This report has been prepared by GHD for Dunedin City Council. The purpose of this report is to outline the Network Operating Framework developed, the process undertaken, and document the discussions.

1.5 Scope and limitations

This report commissioned by Dunedin City Council and prepared by GHD is for Dunedin City Council (the 'stakeholders'). It may only be used and relied on by Dunedin City Council for the purposes agreed between GHD and the Dunedin City Council.

GHD otherwise disclaims responsibility to any person other than Dunedin City Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible. The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

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. GHD has no responsibility or obligation to update this report to account for events or changes occurring after the date that the report was prepared.

GHD has prepared this report based on information supplied by stakeholders and others to GHD (including Government authorities), and which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report caused by errors or omissions in that information.

2. Network Operating Framework Development Process

The Austroads Network Operations Planning Framework and Part 4: Network Management guidelines informed the development of this Network Operating Framework. The development of the Framework incorporates multiple workshop sessions. The purpose of the workshops is to develop Strategic Objectives and Network Principles derived from existing planning and policy documentation. Collaborative exercises are also undertaken in a mode-by-mode approach, to develop modal priority networks throughout the focus area. This is undertaken with network maps and enables the group to determine and discuss mode priorities and conflict points within the network.

2.1 Process Overview

The Network Operating Framework process is adapted dependent upon requirements. The foundation for planning and assessing the network undertaken through interactive workshop sessions. These workshops focus on the development of the strategic setting whereby mode-based objectives are developed and mode prioritisation maps for the network are prepared with modal conflicts identified. Due to the global COVID-19 situation, workshops were undertaken virtually through several sessions. Summary post workshop reports are included in Appendix A.

The workshop sessions inform the development of the SmartRoads tool, from which high-level operational strategies are developed. The quantitative and qualitative assessment of the network enables understanding of network prioritisation and performance in a greater level of detail. Typically, this assists in assessing network interventions and provides understanding of current network performance. This generally requires multi-modal performance and volume data. Figure 2 outlines the process for developing this Network Operating Framework and the outputs produced. The NOF development process for Dunedin focused on the first three steps with development of the SmartRoads tool to identify modal priorities outlined in this report.

Future stages involving network performance data and assessment, as well as intervention testing and operating plan development was not undertaken.

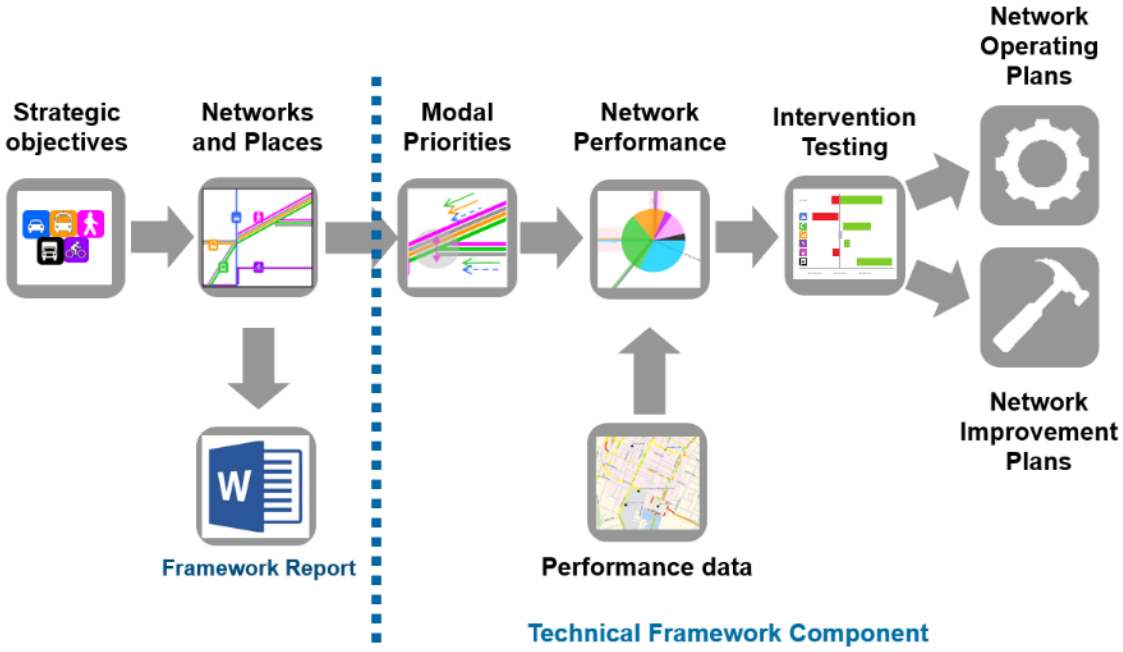


Figure 2 Network Operating Framework Process

Strategic Objectives and Principles

Strategic Objectives and Principles set the strategic context and mode-based aspirations for the network to inform the development of the NOF. These underpin and guide the development of the Strategic network. The development of Strategic Objectives outlines the aspirations and approach for operations for each mode in the network. Strategic Objectives are developed for the following five modes:

- Pedestrians – Walkers, motorised scooters, mobility impaired users
- Cyclists – Commuter and recreational
- Public transport – Publicly available transport including tourist coaches and school buses
- General traffic – Private vehicles, taxis, and small commercial vehicles i.e. couriers
- Freight traffic – Heavy commercial vehicles.

Once initial Strategic Objectives are developed, Principles corresponding to each road user mode are developed. Principles guide the application of Strategic Objectives at a network level by attributing modal priority routes throughout the network. For each mode, there are two Principles, Primary and Secondary, to identify mode-based route priorities.

For general traffic, four levels of principles are developed to allow a greater level of prioritisation (from local access through to preferred access routes) to recognise the extent general traffic operates on the network.

Development of Strategic Objectives and guiding Principles draw on National, Regional, and local planning and policy literature with key stakeholders. These are refined through collaborative workshop sessions and tested in development of the modal maps.

Network Links and Places

Identifying the key origins and destinations, population growth and land use changes in the study area is a core element to the Network Operating Framework process. This is to better understand the changing land use context and demands in which the transport network and transport modes need to support.

Principles for each transport mode are used to define priority connections throughout the network in a workshop with stakeholders using maps.

Modal Priorities

Applying the Network Principles in a mode-by-mode approach, individual modal priority maps are developed defining mode-based priority around the network. The modal priority maps provide a framework for making decisions and trade-offs between modes around the network, where more than one mode shares the same infrastructure. At a high-level, these maps identify the level of priority for each mode relative to other modes. This prioritisation is based on the assigned route priority as informed by interactive workshop sessions.

2.2 SmartRoads Tool

The SmartRoads tool (originally developed by VicRoads) assists in the application of network operation planning. The tool intends to:

- Provide an interactive tool to visualise road use priorities
- Facilitate the consistent application of the network operating framework
- Assess improvement opportunities for traffic, buses, freight, and active transport
- Support improvements to the network founded on strategic objectives

The SmartRoads tool has been updated to localise the process for New Zealand. The localisation of the tool to the New Zealand environment was undertaken in conjunction with the national NOF working group.

Dunedin Network Operating Framework developed using SmartRoads tool version 7.1.5.

Further information is on the SmartRoads website hosted by Austroads below:

https://austroads.com.au/network-operations/network-management/smartroads-tool

3. Network Context

Surrounding the head of Otago Harbour on the southeast coast of New Zealand's South Island is the city of Dunedin – Edinburgh of the south. Dunedin's urban heart lies on flat land closest to the head of the harbour while the suburbs extend to the west into the surrounding hills and southeast out towards Otago Peninsula. Dunedin is the second-largest city in the South Island and lies approximately 350 km south of Christchurch.

Dunedin has a diverse economy of technology-based industries, education, tourism, and manufacturing. Home to the University of Otago and the Otago Polytechnic, students account for a large proportion of the population. The city is also relatively easy to get around and has recreational and cultural venues, shopping, cafes, and restaurants, as well as health care facilities in addition to the education facilities.

Dunedin's central city located around a central plaza known as 'the Octagon'. The Octagon is the heart of the CBD, with the rest of the central city stretching to the northeast and southwest.

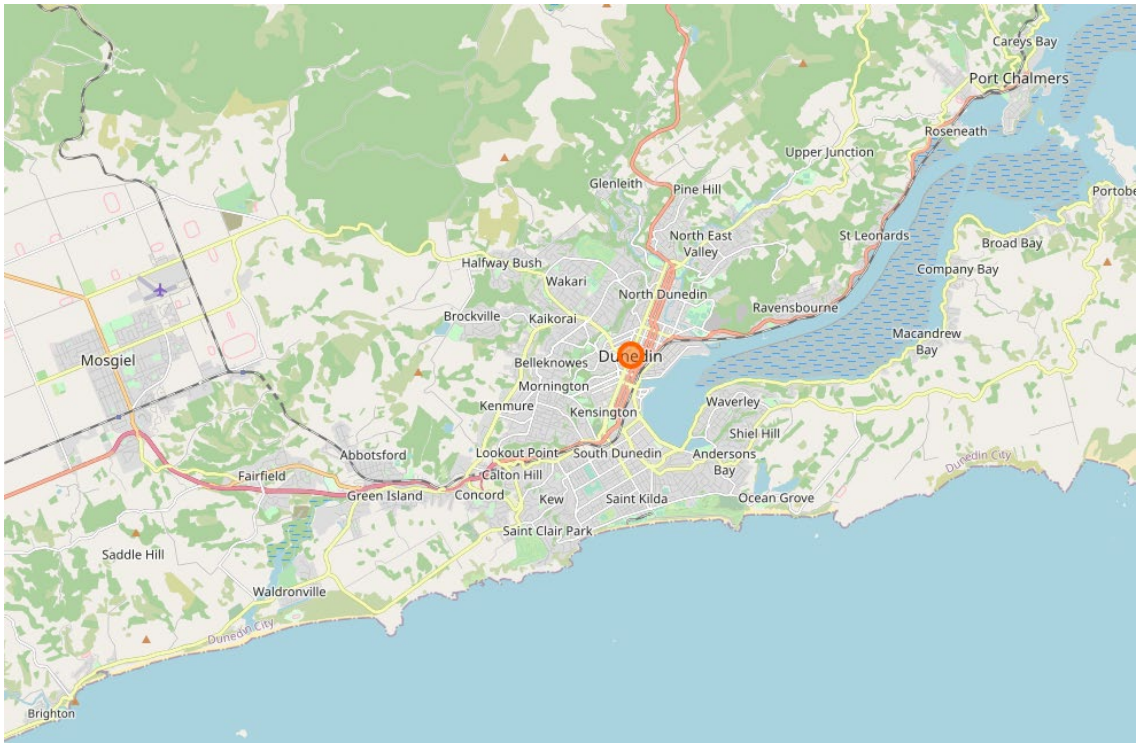


Figure 3 Map of Dunedin

Well-known as a business-friendly centre there is a high degree of collaboration and support across sectors proving to be an attractive place for new businesses establish in or relocate to and enjoy a work-life balance.

Understanding the context in which the transport network operates assists with informing the key drivers influencing the transport network. The following section outlines:

- Demographics and population growth in within the district, and future forecasts
- The current transport network form and function

3.1 Dunedin Demographics and Growth

Dunedin's usually resident population increased from 118,683 at the time of the 2006 census to 126,255 at the time of the 2018 census, an increase of 6.38%. Figure 4 illustrates that this growth is lower than that of the rest of New Zealand (16.58% over the same period), however, as with the rest of New Zealand, there has been an increase in growth since 2013 where it increased from 1.32% to 4.99%. Stats NZ's population estimate at 30 June 2019 included to show that the population in both New Zealand and Dunedin are increasing – 4.62% and 4.31% respectively – with Dunedin's population now estimated to be 131,700.

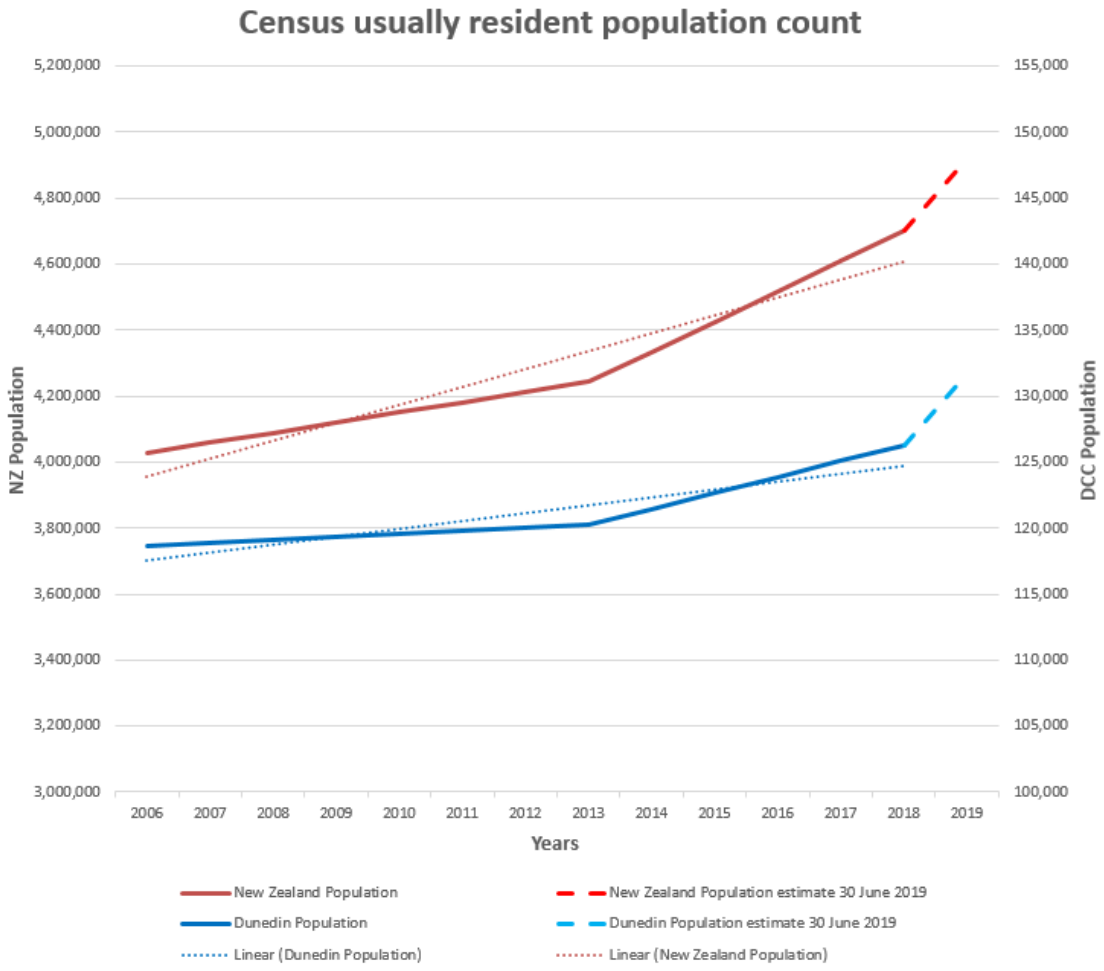


Figure 4 Dunedin City and New Zealand Population Growth 2006-2018[2]

The majority of the population growth that has occurred over the past 12 years has been in the number of residents over the age of 60, with 60-64 and 65-69 year brackets both increasing by 45% while the number of people in the 70-74 years and 85+ years have increased by 37% and 38% respectively. Although this is where most of the growth has come from, residents aged 60 years and older make up just under 22% of the population. The largest proportion of Dunedin's residents fall into the 15-30-year age bracket, which represents 26.57% of the resident population in 2018. This is likely due to the presence of the University of Otago, which is one of Dunedin's most important activity centres.

[2] Statistics NZ, 2020. Statistical area 1 dataset for 2018 Census – updated March 2020. Individual part 1. Retrieved 02 Jun 2020, from https://www.stats.govt.nz/information-releases/statistical-area-1-dataset-for-2018-census-updated-march-2020

Note: Usual resident population data for 2006, 2013 and 2018 used for Figure 3. A linear projection is assumed between each of these census years.

The impact of the University of Otago is not only reflected in the age of Dunedin's residents, but also in the breakdown of sex and ethnicity observed. Typically, in New Zealand, tertiary centres have a higher number of female residents and the population predominately has European or Asian heritage.

Of the 126,252 responses, 60,765 residents identified as male and 65,487 residents identified as female. Regarding ethnic composition, the 2018 census revealed higher proportions of people identifying as having European/Pākehā heritage than the rest of New Zealand.

Table 1 and Figure 5 outline the ethnic heritage, sex and age of the usually resident population of Dunedin at the time of the 2018 census. The ethnic composition is greater than 100% as people can select multiple ethnic groups.

Table 1 Ethnic group composition of New Zealand and Dunedin

Ethnic Group	New Zealand	Dunedin
European/Pākehā	70.2%	86.6%
Māori	16.5%	9.3%
Pacific Peoples	8.1%	3.2%
Asian	15.1%	7.8%
Middle Eastern/ Latin American/ African	1.5%	1.5%
Other Ethnicity	1.3%	0.2%

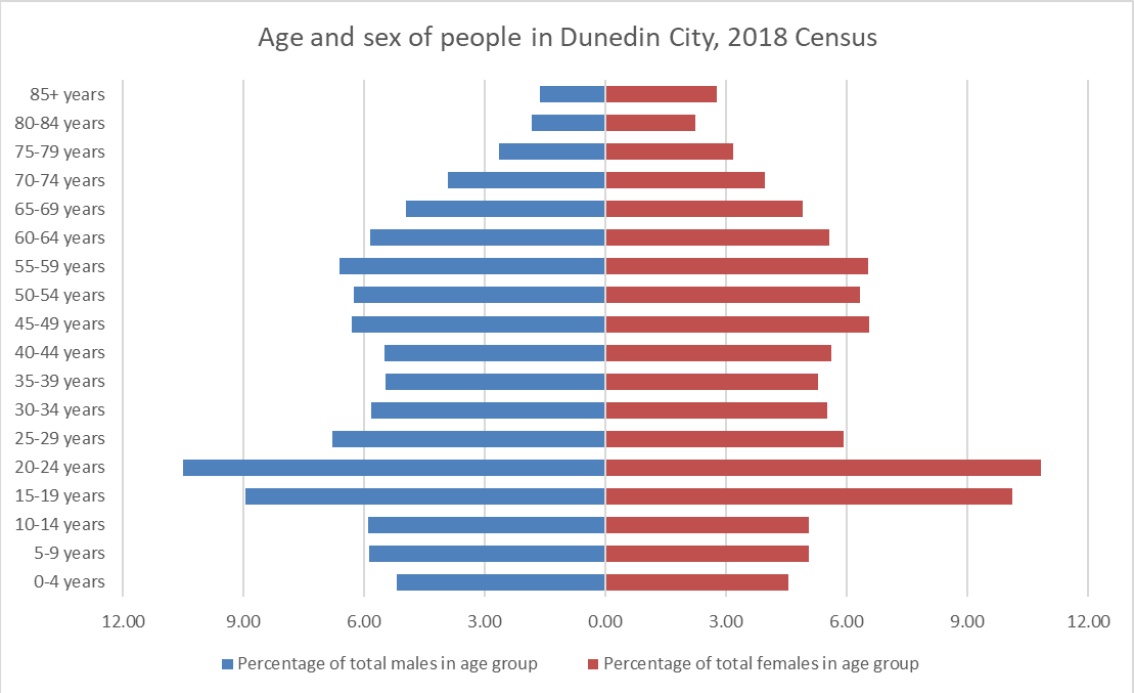


Figure 5 2018 census Age group and sex distribution of Dunedin residents[3]

[3] Statistics NZ, 2020. Statistical area 1 dataset for 2018 Census – updated March 2020. Individual part 1. Retrieved 02 Jun 2020, from https://www.stats.govt.nz/information-releases/statistical-area-1-dataset-for-2018-census-updated-march-2020

3.2 Transport Network Context

Dunedin's urban centre runs northeast to southwest at the head of Otago Harbour. Serviced by a State Highway network running through and connecting the centre of the district Dunedin comprises of two highways – State Highway 1 (SH1) and State Highway 88 (SH88). The State Highway network provides the primary spine in the transport system, connecting the main urban areas and settlements throughout the region.

SH1 approaches Dunedin from the north, winding through the hills until it reaches the north-eastern end of the city. From here, SH1 splits between two parallel, one-way roads which bisect the city as they run northeast to southwest through the CBD. At the south-western end of the CBD, they converge again, heading out of the city to the southwest through some of the outer suburbs and nearby towns.

SH88 branches off from SH1 at the centre of the city to the northeast to provide a connection to Port Chalmers at the mouth of Otago Harbour.

Central Roading network

The proposed Second-Generation Dunedin City District Plan contains a road hierarchy and rules to manage effects of land-use activities along each road. The Road Hierarchy is also used by other DCC departments to manage different aspects of the network. The road hierarchy was reviewed in development of the Second-Generation District Plan and is outlined in Figure 6.

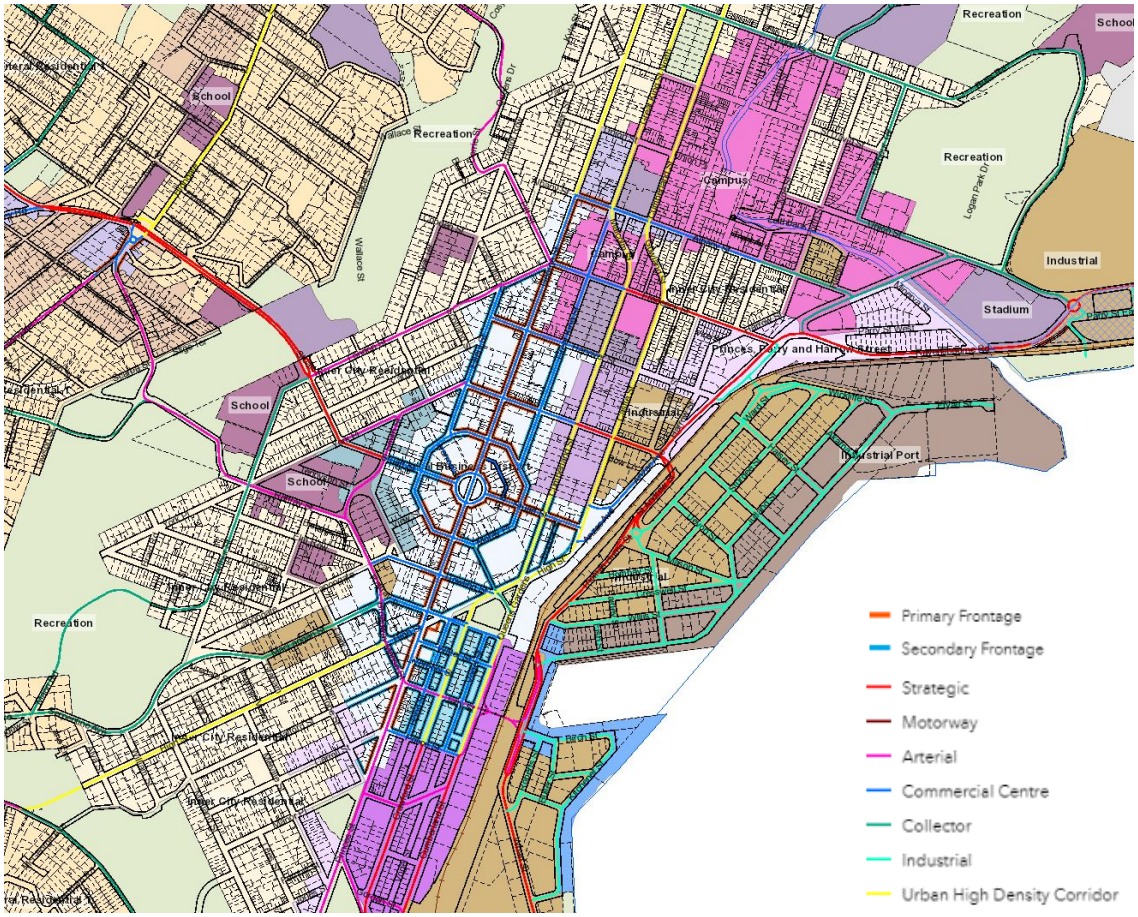


Figure 6 Road Classification Hierarchy and Pedestrian Frontages

The Second Generation District Plan outlines: *"the classification reflects not only the transport function of a road but also the place function or its contribution to the surrounding environment, taking into account the surrounding land use, and the role the road plays in contributing to the amenity values, identity and public space of the adjoining area."*

Road classification descriptions extracted from the Second-Generation District Plan are outlined below in Figure 7. The Second-Generation District Plan descriptors clearly demonstrate the important link between movement and place functions in a network.

Motorway

Any NZ Transport Agency classified motorway.

Strategic

High capacity roads (including state highways) that form part of the national and/or regional network. A strategic road provides through movement for freight, tourists and vehicular traffic; and connect main centres, outlying settlements and goods to markets. In urban areas, these roads also support local transport, various modes of transport and a mixed land use environment. Provision is made for pedestrians in urban areas, and where provided, cycle facilities should be physically separated from traffic. Public transport operates on these roads, but stops are limited.

Arterial

Roads that connect, distribute, and collect within and between residential, rural, commercial and industrial areas; as well as providing access to properties. In urban areas, these roads support a range of travel modes including frequent public transport services and considerable pedestrian and cycle activity. On an arterial road, it may be appropriate to prioritise road space allocation/road design to support safe cycling and/or public transportation. This can result in less space for on-street parking. In rural areas, an arterial road carries moderate volumes of general traffic, including a higher percentage of heavy vehicles serving key sites of primary industry. Although it may also support some residential development, an arterial road in a rural area is not expected to meet the same standards that apply in urban areas such as kerb and channel gutters and street lighting.

Urban High-Density Corridor

A high use arterial road in a densely developed environment. These corridors typically support a combination of moderate to high traffic volumes, moderate to high pedestrian volumes, frequent bus services, cycling, freight movements, medium density residential land use, and commercial or tertiary education activity. Through traffic should be catered for, however it is expected that the form and speed of the corridor will evolve to support the integration of the transport corridor function with adjacent land use. On-street parking is generally provided where space allows, but priority is given to public transport and to cycle and pedestrian infrastructure over parking, where space is limited.

Commercial Centre Streets

Roads located within the Central Business District and centres zones, the CBD edge mixed use zones and other commercial zones. It is expected that the form of these streets will evolve to support a complementary integration of the transport corridor function with adjacent land use. The design elements of these streets should be conducive to a high level of pedestrian activity; and to supporting active frontages and high-quality public spaces. The highest level of safety, connectivity, accessibility and amenity for pedestrians, cyclists and public transport users should be provided on these streets. Where parking is provided in urban areas, it should increasingly be provided off-street rather than on-street, and toward the periphery of the centre or zone.

Collector

Roads in local neighbourhoods that collect and distribute local traffic. A collector road provides a local through movement function as well as access to properties. In urban areas, a collector road supports some public transport services, with frequent stopping points. Considerable pedestrian and cycle activity are expected, so the road layout should be designed to discourage speed.

Local

Roads that are not intended to act as main through routes for motorised vehicle traffic but primarily provide for access to properties. These roads can be different in nature depending on the land use environments they serve. In residential environments, layout and design discourages speed as the intention is to provide an environment that supports safe and balanced access for cars, pedestrians and cyclists. A local road may support bus routes.

Industrial

Roads that have a primary role of providing access to industrial sites. Sufficient width needs to be maintained for the manoeuvring of larger and heavier vehicles. Footpaths and on-street parking are generally provided, but where necessary, space should be prioritised for the manoeuvring needs of heavy vehicles. Speeds are managed to a level consistent with safe on-street manoeuvring, and high levels of access to properties for heavy vehicles should be provided. Parking should generally be controlled to serve the primary purpose of industrial access. An industrial road may support alternative cycle routes.

Figure 7 Second Generation District Plan Road Classification descriptions

Cycling[4]

Dunedin's hill impose topographical constrains to cycling, However, with the recent popularity and increasing accessibility of electric bikes, many of Dunedin's hills have become less of a barrier for people wishing to commute and they are now willing and able to travel longer distances.

In recent years Dunedin has been experiencing growth in cycling, however, the implementation of Dunedin's Strategic Cycle Network as set out in Dunedin Integrated Transport Strategy (2013) has been slow. The implementation to date has occurred through the South Dunedin Cycleways Programme 2013 – 2015, followed by the first and second Dunedin Urban Cycleways Programmes 2015 – 2020, the Peninsula Connection project 2013 - ongoing and Waka Kotahi's Dunedin SH1 separated cycle lanes project 2017 – 2020 and SH88 shared path project 2006 – ongoing.

As such, the commuter network of cycleways, bike parking and wayfinding is in its infancy. There have also been small changes that are also helping, such as the addition of bike racks to public buses also provides cyclists with an option for travelling uphill or if the weather changes.

Dunedin also has a large recreational cycling network. As outlined on newzealand.com, Dunedin is blessed with ample terrain for on and off-road cycling with plenty of routes to explore in and around the city. Local operators provide tours and bike hire. Alongside the West Harbour and the Otago Peninsula are off-road cycle trails for scenic rides and cycle lanes running through the central city. Otago Peninsula is twice named one of the top ten rides in the world by Lonely Planet guide.

The Otago Central Rail Trail, the original Great Ride, starting in nearby in Middlemarch and can be enjoyed as either a day ride or a multi-day journey to Clyde in Central Otago.

[4] https://www.newzealand.com/int/dunedin-coastal-otago%2Bcycling/

Public Transport

The Otago Regional Council operates the bus service (Orbus) in Dunedin. The Orbus service was launched in 2017, with the completion of the Dunedin Central City Bus Hub officially opening in March 2020. The Public Transport network operates 23 routes throughout the city with further routes operating throughout the region.

The Otago Regional council are currently investigating a service to connect the central city to Dunedin Airport. Currently, Dunedin is the only city in New Zealand where there is no service connecting to the international airport, which is attributed to population, airport volumes and the distance between the airport and the central city.

Air Travel

Although Dunedin is the South Island's second largest city, it has the third busiest airport after Christchurch and Queenstown. It is also primarily functioning as a domestic airport with annual reports detailing the number of international passengers travelling through the airport decreasing year-on-year since 2014. This is despite total passenger numbers simultaneously increasing. In 2014, 64,216 (7.52%) of the 853,097 passengers travelling through Dunedin airport were international travellers, while for 2019 that has decreased to 42,238 (3.92%) of the 1,077,475 travellers passing through the airport.

Rail Network

Dunedin Railway Station is one of the city's most prominent buildings, located to the southeast of the Octagon in the heart of the city. However, it is primarily a landmark, with the rail line no longer operating passenger services. The Main South Line connects Lyttleton Port in Christchurch to Invercargill, via Dunedin and forms part of the South Island Main Trunk Railway. The connection between Christchurch and Dunedin ran regular passenger services until 2002 when the Southerner was withdrawn as it was no longer economic. Since then, the only passenger trains using the station were those operated by Dunedin Railways, who provided tourist passenger services between Port Chalmers and Middlemarch until the line was mothballed in June 2020.

The Port Chalmers Branch connects Port Chalmers with Dunedin and is a dedicated freight line which was completed in 1873. Much of this line is now part of the Main South Line and enables long-distance freight movement from Port Otago to Christchurch and Invercargill.

Sea Transport

Otago Harbour is not particularly deep and initially ships could only travel as far as Port Chalmers, a town lying 15 km northeast of Dunedin. Although the Harbour was dredged to enable ships to reach city's wharves, the construction of a container port at Port Chalmers in the 1970s means that this is the primary export port for southern New Zealand. Port Otago now operates two wharf systems in the harbour – Port Chalmers and Dunedin. In 2019 Port Otago handled 208,600 TEU and 1.8 million tonnes of bulk cargo – of which 1.15 million tonnes were logs for export.

In 2018, a ferry connecting Port Chalmers and Portobello began operating for the first time since 1954. The ferry privately operates two departures each direction.

Transport Behaviour

The 2018 census revealed the way that behaviours in people travelling to work and education have changed since 2013. The 2018 census saw an increase of 13.9% in the usually resident response numbers of people reporting how they travel to work, while the overall New Zealand response numbers improved by 22.2%. Due to the large increase in volume, comparisons will

be made in terms of percentage of respondents rather than the number of respondents. The measure used is based on usual residence address rather than by workplace or education address. Travel to education cannot be compared to 2013 data, as it was not recorded. It should also be noted that the New Zealand data includes representation of trains and ferry's – forms of public transport not available in Dunedin. As a result, Dunedin vehicle use may be 1-2% higher than for New Zealand.

Overall, there was a significant increase in the percentage of people driving their own private vehicle throughout New Zealand and Dunedin. Nationally, the percentage of respondents who drove a private car to work increased from 48.6% to 57.8% (a 9.2% increase) with Dunedin seeing similar increases from 49.3% to 58.5% (also a 9.2% increase). As with the national numbers, the percentage of people driving work vehicles and being driven was almost the same in 2018 as 2013. Overall, increased car use on census day was comparable with the national rate increasing from 63.2% to 73.0% and Dunedin's increasing from 63.9% to 73.3%.

However, although the national increase appeared to come at the expense of active modes (walking and cycling) nationally, this was not reflected in Dunedin. Nationally 7.5% of national respondents used active modes in 2013 (2.2% cycled and 5.3% walked/jogged) while in Dunedin many more people walked or jogged (11.3% comprised 2.2% cycling and 9.1% walking/jogging). However, in 2018 the national level dropped, but Dunedin's level increased. The national percentage dropped to 7.2% (2.0% cycling and 5.2% walking/jogging) while Dunedin increased to 12.0% (2.1% cycling and 9.9% walking/jogging).

In Dunedin, the increases in 2018 appeared to come from a large decrease in the 'Did not work on census day' which was 11.9% in 2013 but was not recorded in 2018. There were also 3.2% or respondents in Dunedin who were classed as 'Not elsewhere included' in 2013. The breakdown of 2013 and 2018 travel to work data can be seen in Figure 8 and Figure 9.

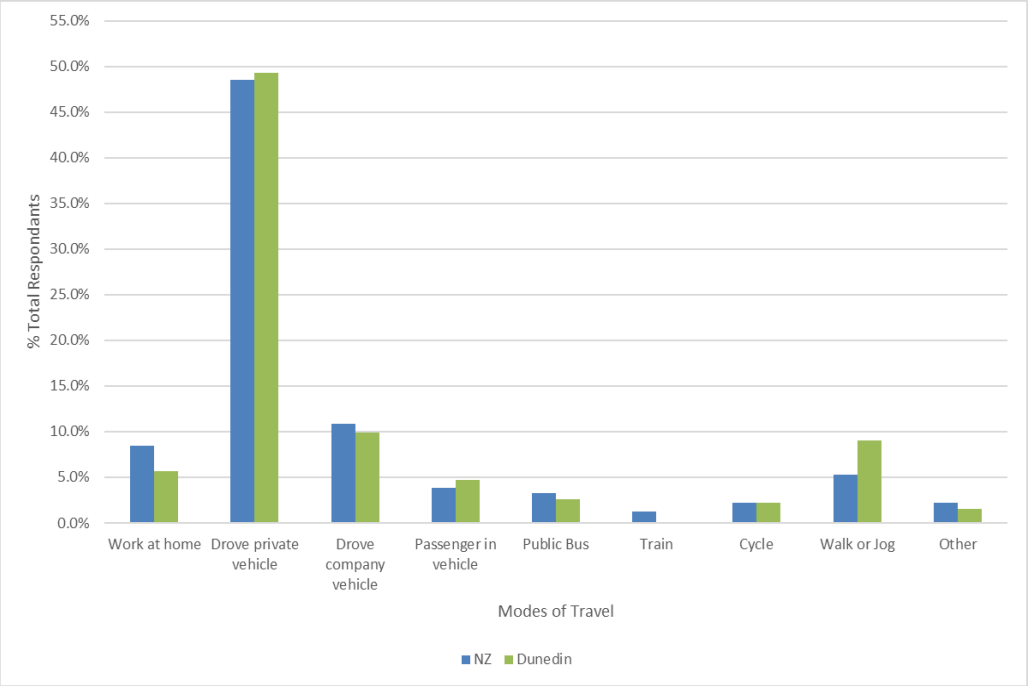


Figure 8 2013 mode of travel to work from residence

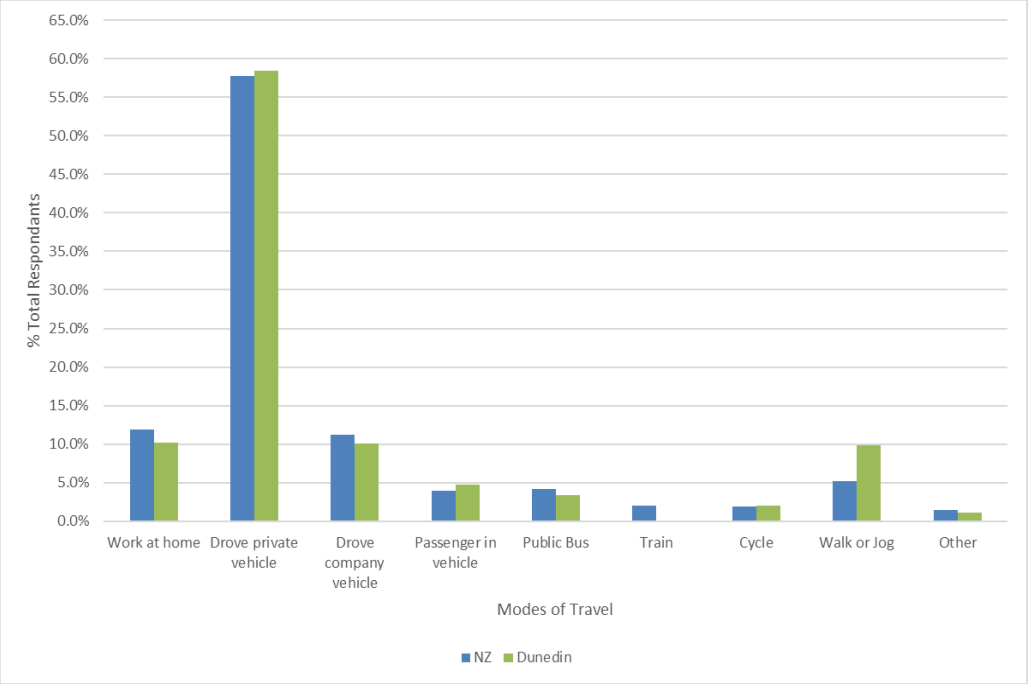


Figure 9 2018 mode of travel to work from residence

Travel to education respondents were less represented in car travel with those travelling privately or as a passenger. These respondents corresponded to 50.2% of national respondents but only 43.6% of Dunedin respondents. Of these, students were much more likely to be passengers – nationally 11.1% drove themselves, while the percentage was higher in Dunedin with 11.6%. This is likely due to the large number of tertiary students present in the city. Active modes were a much more popular mode of travel amongst students than workers – 24.1% nationally (3.6% cycling and 20.5% walking/jogging) and 43.4% in Dunedin (2.4% cycling and 40.9% walking/jogging). The location of student accommodation around the university and the large student composition of Dunedin will have had a significant impact on these rates. The travel to education percentages from the 2018 data can be seen in Figure 10.

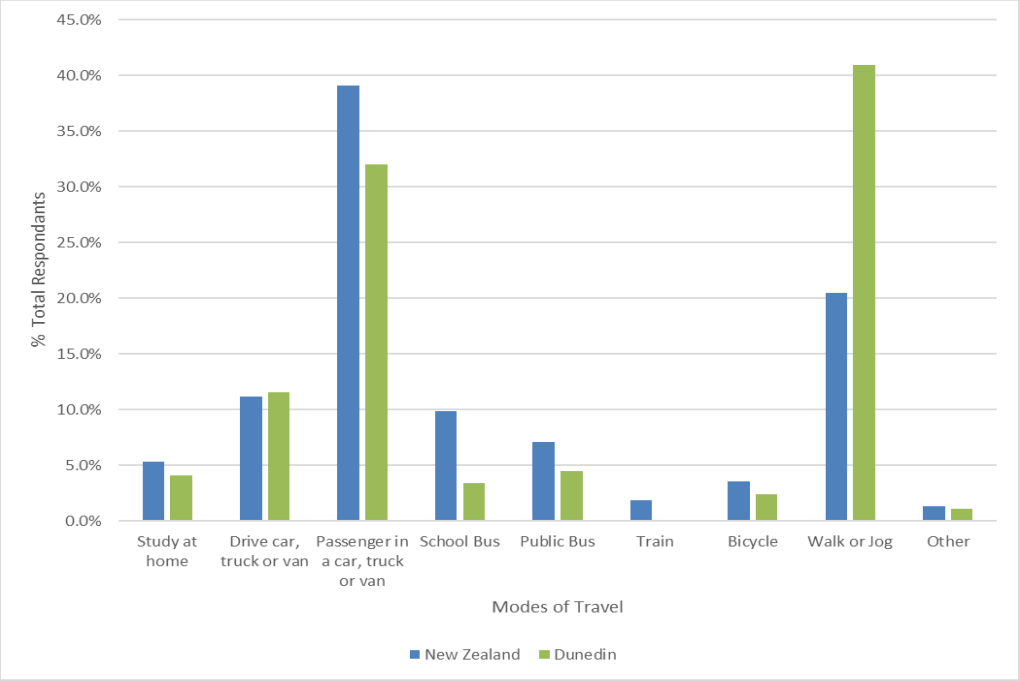


Figure 10 2018 mode of travel to study from residence

Visitor numbers

Visitor numbers increase pressures on the local transport network and infrastructure but are ideally suited to encourage uptake of public transport and active modes such as walking. Dunedin NZ reported that domestic and international travellers spent $105M on 'Other passenger transport', this amounted to 14.04% of the total visitor spend in the 12 months prior to March 2020.[5]

[5] DunedinNZ, 2020, Dunedin key visitor stats, page 3, Retrieved 03 Jun 2020, from https://www.dunedinnz.com/business/toolkit-and-resources/research-and-statistics/dunedin-key-visitor-stats

4. Strategic Policy and Planning Context

The following outlines national and local plans and strategies developed that consider growth and development, and the transport network in the region. Further information summarising planning and policy at a national, regional, and local level are in Appendix B.

4.1 Government Policy Statement on Land Transport 2018

The Government Policy Statement (GPS) on land transport released in 2018 influences how money from the National Land Transport Fund is spent. It does this by informing decision makers of the government's priorities for expenditure for the next 10 years to help them prioritise transport investment. Although the draft Government Policy Statement on land transport 2021/22–2030/31 (the draft GPS 2021) has been released for public feedback, it has not yet been adopted.

The GPS 2018 signalled a change in government through a shift in priorities, prioritising a safer transport system free of death and injury, accessible and affordable transport, reduced emissions, and value for money. The draft GPS 2021 builds on the strategic direction of GPS 2018 by maintaining the priorities but updating them to align with recent policy work and simplifying them. The Government is proposing to prioritise safety, better transport options, improving freight connections, and climate change. Figure 11 below shows the 2018 GPS strategic priorities alongside the draft GPS 2021 strategic priorities out for public feedback.

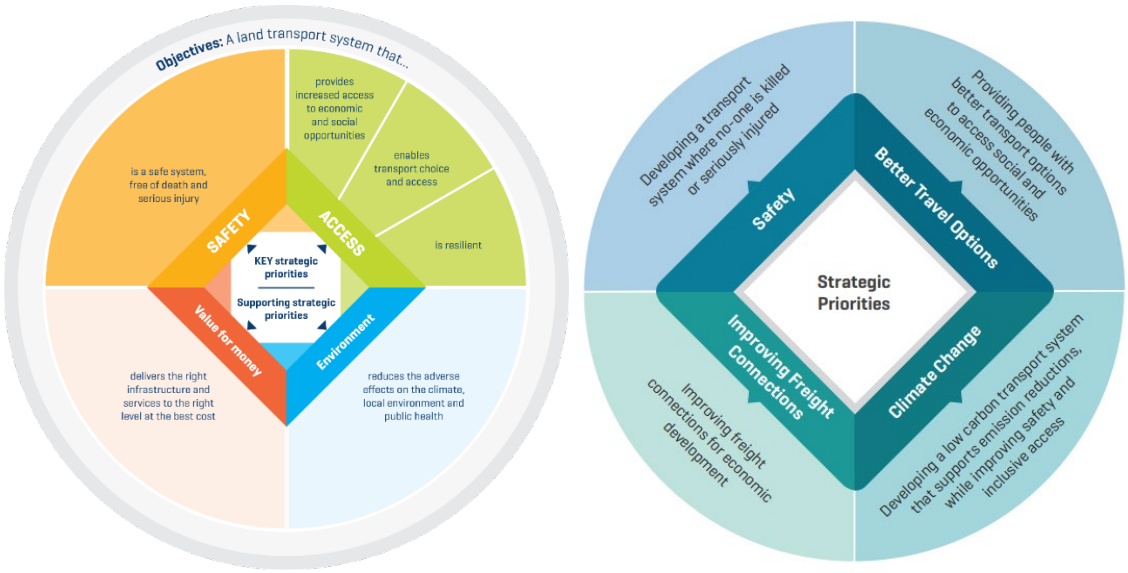


Figure 11 Strategic Priorities GPS 2018 and draft GPS 2021 side-by-side

As shown in the figure above, key outcomes sought relevant to appropriate network planning include enabling transport choice and access, providing increases access to economic and social activities and social opportunities, and a system free of death and serious injury.

A move towards achieving the strategic priorities can be achieved through planning appropriate prioritisation of transport modes in alignment with land use planning outcomes sought.

4.2 Otago Southland RLTP 2015 – 2021, Updated 2018

The Otago Southland Regional Land Transport Plan (RLTP) proposes a programme of activities to make the transport system safer and more sustainable and to support and enhance regional development. The RLTP is a requirement of the Land Transport Act and is required to seek funding from the National Land Transport Fund.

Regional Council's long-term goal is *"a transport system in Otago and Southland that provides adequately for mobility, economic activity and productivity while minimising road trauma."*

Investment from local authority and the National Land Transport Fund for Otago and Southland seeks to achieve a number of results including:

- A network that is reliable and resilient.
- Major externalities are reduced (road risk and resultant trauma, carbon emissions).
- Exporting is supported.
- Tourism is enabled and supported.
- Growth is enabled.
- There is an increased choice in travel modes.
- Community resilience has been enhanced (including climate change adaptation).
- Decision-making is timely and relevant.

In order to achieve these results, the focus over the next three to ten years will be to invest in activities that realise the benefits and outcomes in Table 2.

Table 2 RLTP: Benefits and outcomes sought by investment

Benefits	Associated Outcomes
Improvement in the performance and capability of the transport network, and network resilience.	Maintain current network Enhance network performance and capability (where needed e.g. as shown by the ONRC analysis).
Improved safety and reduction in the social impact of fatalities and injuries.	Improve safety.
Focus on areas of regional economic development, productivity, and connectivity.	Increase economic growth and productivity (the focus areas for this are Queenstown, Dunedin, and key routes).
Increased customer voice on connectivity, accessibility and modality shifts and the role of transport in ensuring wellbeing.	Enhance community resilience and cohesion. Increase health, wellbeing, and environmental management. Improve support of customer groups.
Greater value for money of transport investments.	Enhance system performance, and cost.
Optimisation of systems through communication, technology, innovation, and improved people capability.	Increase partnership and adaptive management. Increase communication and technology solutions.

The policies that the Otago and Southland Regional Transport Committees will be responsible for implementing to achieve the benefits, outcomes and long-term results are as follows:

1. Supporting the carriage of freight and exporting
2. Supporting and enabling tourism and visitor travel
3. Minimising road trauma
4. Ensuring community and resilience
5. Providing for mode choice including walking, cycling and public transport.
6. Fostering integrated transport and land use planning
7. Reducing the environmental externalities arising from transport

4.3 Regional Public Transport Plan 2014

The Otago Regional Council (ORC) in collaboration with relevant agencies (local councils, Waka Kotahi, transport providers and the community) developed the Regional Public Transport Plan 2014 (The Plan). The Plan has had addendums added in 2017 for changes in the Wakatipu Basin (May 2017) and Concord to Green Island Community Link (June 2017) and was under review.

The Plan, 'describes the public transport networks that ORC proposes for the region, identifies services that are integral to the networks over the next ten years, and sets out the policies that apply to those services.' The Plan the following eight changes which will impact Dunedin:

1. Routes generally use main roads not small residential streets, without route variations.
2. Routes will be as direct as possible.
3. The bus standards we adopt are consistent with the national standard set by the New Zealand Transport Agency.
4. A new network of bus routes and frequencies that are stable and simple to remember will be introduced.
5. ORC will progressively withdraw from providing contracted school bus services. The new Dunedin bus network and ticketing system enables school pupils to access their school of choice without the need for separate school bus services provided by ORC.
6. The northern services become part of the Dunedin network (Palmerston, Waikouaiti, Karitane, Evansdale and Waitati).
7. Wingatui is no longer part of the network.
8. Dunedin's seven-zone fare structure will change to a five-zone fare structure when the new ticketing system is introduced.

Many of these changes have been implemented since the release of The Plan with routes and fares changing in 2016[6] and 2017[7].

The policies that influenced the development of The Plan and their implications are outlined in Table 3, taken from page 18 of The Plan. Note that the document references do not reflect current documents, rather the ones that were in place at the time The Plan was developed.

[6] "Upcoming changes to the Dunedin bus network", Otago Regional Council media release, 11 August 2016, https://www.orc.govt.nz/news-and-events/news-and-media-releases/2016/august/upcoming-changes-to-the-dunedin-bus-network, accessed 06/08/2020

[7] "New public transport contracts to bring service improvements in Dunedin", Otago Regional Council media release, 08 June 2017, https://www.orc.govt.nz/news-and-events/news-and-media-releases/2017/june/new-public-transport-contracts-to-bring-service-improvements-in-dunedin, accessed 06 August 2020

Table 3 RPTP 2014: Policy implications of other influencing documents

Document	Policy implications
Government Policy Statement on land transport funding	Highlights the Government's focus areas of economic growth and productivity, value for money and road safety. Focuses on the need for public transport to deliver value for money, provide access to economic opportunities, and provide better transport choices.
NZTA farebox recovery policy	Seeks to improve value for money by increasing the proportion of operating costs recovered from user fares. Requires the Plan to include a farebox recovery policy and targets.
Regional Land Transport Strategy Regional Land Transport Plan	Adopted in 2011 and currently under review, the Strategy focuses on having a transport system that provides connections between communities, leading to regional prosperity, the creation of wealth and employment, social inclusion and the minimisation of adverse environmental effects. With the recent amendment to the LTMA, the Strategy will no longer be required as a stand-alone document. We are required to prepare a Regional Land Transport Plan incorporating a strategic component. This Regional Land Transport Plan will not be in place until 1 July 2015, after the adoption of the Plan. The LTMA requires us to take the public transport components of the Strategy into account when preparing the Plan.
Otago Regional Council Long-term Plan	The long-term plan describes activities of the ORC as a whole, and enables the public to participate in the decisions made on those activities. Because the long-term plan details the level of public transport investment over the next ten years, it enables the community to be involved in the longer-term planning of public transport.
Local authority plans and strategies	Otago's district and city council transport strategies and plans all take into account the elements of the regional Strategy, so by default, the plan should be consistent with those local plans and strategies. To ensure good links with local direction, ORC works together with district and city councils when planning public transport services in their district or city boundary. Public transport contributes to and is a key component of achieving the outcomes sought in the Dunedin City Council Transportation Strategy.
New Zealand Energy-Efficiency and Conservation Strategy	The 'strategy' provides an action plan for energy efficiency and conservation, and the use of renewable sources of energy. It sets an objective of a more energy-efficient transport system, with a greater diversity of fuels and alternative energies.

The Plan outlines 44 policies that ORC will seek to implement. Policies 1 – 10 relate to the current (2014) public transport operation. Policies 11 – 42 seek to "guide our journey to a better public transport system for Otago" and Policies 43 and 44 relate to reviewing The Plan.

For public transport services in Otago relevant to setting a Strategic Objective for this Network Operating Framework, ORC expect:

- Coordinated public transport services.
- Good service reliability, frequency, coverage, and integration between services will encourage more users.
- That the public transport market will enable operators to compete for services, increasing your confidence in services being priced appropriately.
- To incentivise operators to increase patronage and reduce the reliance on government money for public transport services.
- Planning and procurement of public transport services to be transparent.

4.4 Otago Regional Council Long Term Plan 2018 – 2028

The Otago Regional Council's Long-Term Plan 2018-2028 outlines the ORCs strategic direction for the next ten years. This plan outlines five key community outcomes:

- **Healthy environment**

  A place where people can enjoy their environment safely, productively, and respectfully.

- **Connected community**

  Service delivery that puts the community first and ensures that operations are customer driven, efficient and fit for purpose

- **Engaged and proud community**

  Communities empowered to be the champions and custodians of their Otago environment

- **Strong economy**

  A region that prioritises sustainability as an economic measure whilst being attractive to industry

- **Future-proof region**

  A region that is prepared for future environmental challenges and that retains the characteristics that make Otago a great place for everyone.

The Council's vision is "For our future – a prosperous and sustainable future for Otago."

Table 4 outlines the four strategic priorities that the council has committed.

Table 4 Long Term Plan Strategic Priorities

Strategic Priorities	Explanation
Environment	Maintain and enhance the natural environment.
Community	Resilient communities; engaged and connected to the ORC Otago Regional Council is accountable and responsible to the communities it serves
Future Focus	Readiness for change; anticipate change, don't just react to the detrimental effects Proactive approach; future focus with ORC seen as a thought leader Risk focused; offer solutions through our education process, not just information
Operational Efficiency	Internal systems and processes; efficient and fit for purpose Capable people; able to deliver changing nature of the work of ORC

The Council seeks to achieve these through setting strategic direction of financial and infrastructure management as well as policies and plans to implement their vision.

The Otago Regional Council is responsible for implementing public transport provisions. The ORC contracts the provision of the public transport services in Dunedin and Queenstown. It states that the aim is "a viable, affordable, quality service that will attract patronage growth". The council also administers the Total Mobility scheme and is responsible for managing sites where stock effluent can be disposed for safely.

4.5 Second Generation District Plan (2GP)

The District Plan is part of a hierarchy of plans. The plan contains objectives, policies to implement objectives and rules to implement policies.

There are six strategic directions the plan outlines which reflect the strategic directions of the 2012 Spatial Plan broken down to several objectives and policies:

1. Dunedin is environmentally sustainable and resilient.
2. Dunedin is economically and socially prosperous.
3. Dunedin is a memorable city with a distinctive built and natural character.
4. Dunedin is a city that gives effect to the principles of the Treaty of Waitangi, protects Kāi Tahu values, culture and traditions, and enables Kāi Tahu to express kaitiakitaka.
5. Dunedin has quality housing choices and adequate urban land supply
6. Dunedin has affordable and efficient public infrastructure

Regarding Transportation, the district plan seeks to "establish a range of objectives, policies, and rules with the aim of achieving an integrated transport network that supports sustainable development and growth." The plan includes a road hierarchy classification to reflect transport function of roads and the place function, or its contribution to the surrounding environment. This was reviewed as part of the development of the Second Generation District Plan outlined earlier in section 3.2, page 10.

4.6 DCC Integrated Transport Strategy 2013

The DCC has developed a 10-year action plan which outlines investment priorities up to 2023. This strategy is designed for a 30-year lifespan. As challenges and priorities will change and evolve over time, this strategy will be reviewed every five years.

This strategy is developed in line with Dunedin Spatial Plan, Economic Development Strategy and Social Wellbeing Strategy and so "while this Strategy is focused specifically on transport, it is consistent with, and supports, a much broader set of priorities for the future of Dunedin."

The vision for this strategy is, "Dunedin is one of the world's great small cities, with a safe low-carbon transport system that supports a compact city with resilient centres, inclusive and healthy communities, and national and international connectivity."

The strategy details five Areas of Focus and six Transport Objectives. These are outlined below, and the relationship between them is demonstrated in Table 5.

Areas of Focus:

1. Safety
2. Travel Choices
3. Centres
4. Freight
5. Resilience

Transport Objectives:

1. Integrated, affordable, responsive, effective, and safe transport network for all modes
2. Affordable and convenient public transport.
3. Well connected for business, freight, and visitors, including excellent connections to key gateways such as Port Otago and Dunedin International Airport.
4. Transportation system provides a platform for sustainable transport choices and the city's dependence on oil for transport is reduced.
5. Transportation network provides for the efficient movement of people and goods.
6. Urban form and design creates high levels of accessibility to key destinations such as healthcare, education, recreation, and employment.

Table 5 Relationship between Areas of Focus and Transport Objectives

Area of Focus	Transport objective* 1	2	3	4	5	6	Challenges addressed by Area of Focus
Safety	1		3	4	5	6	Road safety. Population trends.
Travel Choices	1	2	3	4	5	6	Road safety. Motor vehicle dependence. Population trends. Public health issues. Transport equity. Infrastructure threats and contraints.
Centres	1	2	3	4		6	Road safety. Motor vehicle dependence. Population trends. Public health issues. Transport equity. Infrastructure threats.
Freight	1		3	4	5		Road safety. Infrastructure threats.
Resilience	1	2	3	4		6	Motor vehicle dependence. Infrastructure threats.

The relationship between the vision, objectives and focus areas is summarised in Figure 12.

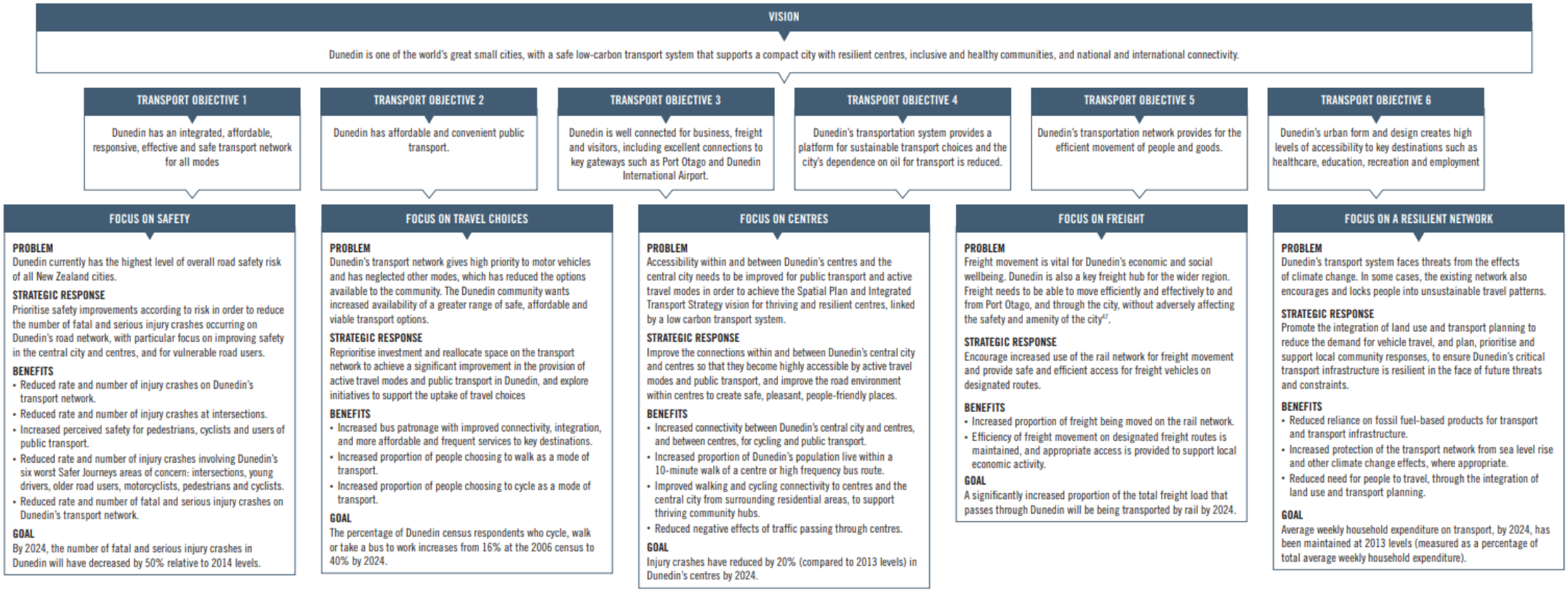


Figure 12 Overview of the Integrated Transport Strategy strategic approach

5. Land Use and Growth

To define an aspirational transport network, it is first important to understand how the transport networks need to respond to planned and proposed changes in land use. Understanding land use planning and growth changes, both predicted and known, form an important step in the process and were presented to encourage a forward-thinking approach to planning the transport network. During a workshop, stakeholders presented on:

- Existing education and community facilities, commercial, industrial, and retail areas
- 'Dunedin Towards 2050' Spatial Plan (2012)
- Central City Plan and Central City and surrounds planning issues and considerations
- Dunedin Hospital redevelopment project

This section outlines land uses and trip generators, and future aspirations for Dunedin from a land use and development perspective and outlines existing development projects.

5.1 Existing land use summary

Central Business District

The Central Business District encompasses the central part of Dunedin city. The CBD encompasses George Street to Albany Street including the Octagon and Moray Place, extends south along upper Princes Street to Hope Street, east to include the Dunedin Railway Station. The CBD is the focus for employment, retail, entertainment, leisure, visitor accommodation and art and culture activities.

Outlined in the Second-Generation District Plan a large portion of the CBD is classified as either primary pedestrian street frontage area or secondary pedestrian street frontage area. This is to encourage an environment suitable for pedestrian usage.

Education facilities

The north-eastern area of the Dunedin central city is the tertiary-medical precinct. The area is home to numerous education facilities, most notably the University of Otago and school of medicine, and Otago Polytechnic. Tertiary education in Dunedin attracts over 20,000 students with Otago known for its vibrant student life.

Industrial precinct

Located east of the CBD in the area surrounded by Fryatt Street and Wickliffe Street is the Dunedin Industrial precinct. The industrial area contains a range of industrial and commercial businesses ranging from engineering, manufacturing, and automotive services through to marshalling of export logs and liquigas services selling LPG for most of the South Island.

Dunedin Hospital[8]

Dunedin Hospital located in the city centre accessed off Great King Street between Hanover Street and Frederick Street. The Hospital provides tertiary services for a combined catchment of 289,000 for the lower South Island.

Dunedin Hospital is also a University teaching hospital with links to the University of Otago and the Otago Polytechnic Schools of Nursing, Midwifery and Health Sciences.

[8] https://www.southernhealth.nz/work-us/working-southern-dhb/our-workplaces-and-facilities/dunedin-hospital

5.2 'Dunedin Towards 2050' Spatial Plan (2012)[9]

'Dunedin Towards 2050 – a Spatial Plan for Dunedin' released in September 2012 sets the strategic direction for Dunedin's growth and development for the next 30 years. The Spatial Plan outlines a broad set of principles, strategic directions, policies, and actions and visually illustrates how the city may develop in the future. The Plan is based on six strategic directions including **an accessible and connected city**, which sets out a vision for Dunedin in 2050:

> *"The vision is that in 2050 Dunedin's residential and business communities are connected by a highly efficient transportation network that allows all residents to access the goods and services they need to maintain their quality of life.*
>
> *The majority of Dunedin's urban residents live within a ten-minute, safe and pleasant walk of a suburban or town centre that provides for most of their day-to-day shopping needs and a range of community services and facilities. These centres are connected to the central city and each other by a frequent and fast public transport service. It is safe to cycle to the local centre, and from the local centre to other local centres and the central city. Vehicular traffic is slowed in all local centres, many of which operate as shared spaces with a high amenity value.*
>
> *Within the central city, most people move around on foot, by bicycle or by public transport. These travel modes are well provided for, and many central city streets have been transformed into attractive boulevards and avenues. The State Highway network has been redesigned to provide a high quality amenity experience, with excellent pedestrian connectivity, so it is easy and safe to walk or cycle around the city, and between the central city, the Tertiary-Medical Precinct and the Harbourside area in particular.*
>
> *The city's public transport service is fully accessible, affordable, reliable, pleasant and well-utilised, with most people in urban Dunedin living on a public transport route. Accident rates are far lower because there are fewer cars on the roads and more people use active modes and public transport. The transport network supports healthy lifestyles with more people using active modes. A high proportion of vehicles are small, lightweight and more efficient.*
>
> *Dunedin's townships are large enough to support a limited range of local services, such as schools, libraries, community centres, healthcare facilities, and food shopping, to minimise people's dependence on coming into the central city. Rural communities are linked to the central city by a mixture of ride-share, local private transport arrangements and a public transportation service, accessible and useable by wheelchair users and mobility impaired people, which connects the towns in the region.*
>
> *Dunedin is an important hub in an efficient regional and national freight network based around a successful international port and Dunedin International Airport with strong air and rail links to the rest of the country. A large proportion of the freight sent to Port Otago at Port Chalmers is transported by rail. The road links to Dunedin International Airport and to the wider region are to a similar high standard both for efficiency and safety."*

Potential improvements to the public realm in the Central City and Tertiary-Medical Precinct and surrounds identified by the spatial plan included (with reference to Figure 13):

a. Improve Queens Gardens with better pedestrian connections, enhanced safety and amenity to provide a welcoming inner-city green space with improved recreation and events opportunities.

b. Expand pedestrian space in lower Rattray Street and improve connections with Queens Gardens.

[9] https://www.dunedin.govt.nz/__data/assets/pdf_file/0009/281817/Spatial-Plan-for-Dunedinv2.pdf

c. Remove the one-way system south of the Leviathan Hotel. Redesign Crawford Street as a two-way street to provide an attractive environment for the mixed uses in the buildings along it, balancing the needs of pedestrians, cyclists, and cars. Relocate both directions of the State Highway to Cumberland Street without compromising the State Highway.

d. Improve amenity in Vogel and Bond Streets, reducing the impact of vehicles and creating shared space environments to support creative industries in the Warehouse Precinct.

e. Staged improvements to the Octagon to provide greater space for pedestrians, enhance the quality of public open space, and improve the prominence of historic buildings.

f. Implement improvements along Princes and George Streets to improve the pedestrian environment.

g. Develop pocket parks and micro spaces throughout the central city to increase the amount and quality of public open space.

h. Develop a safe, permanent connection for pedestrians and cyclists between the central city and the Steamer Basin.

i. Implement amenity improvements to provide a better sense of place and identity for the different quarters within the central city.

Figure 13 Key actions: Central City, Tertiary-Medical Precinct, and surrounds

5.3 Central City Plan[10]

The Dunedin Central City Plan aims to guide development of the central city area for the next 10-15 years. The Plan outlines a vision for the central city area through a place-based plan that divides the city into quarters described in the Plan as follows:

The Retail Quarter is the area around George Street is Dunedin's key shopping area. The different retail styles on George Street and adjoining side streets, lanes and alleys include 'strip retail', malls, boutiques, and department stores.

The Cultural and Entertainment Quarter is the cultural and entertainment quarter includes the Octagon and lower Stuart Street along with the Railway Station and connections to Toitū Otago Settlers Museum. The area is the city's civic, entertainment and tourism centre, providing a hub for visitors and locals alike.

The Creative Quarter is the creative quarter occupying the area south of the Octagon and encompasses Princes Street, the southern half of Moray Place, the Exchange, south Princes Street, and intersecting streets.

The Warehouse Precinct incorporates the area bounded by Queens Gardens, Police Street, Princes Street and Cumberland Street.

To embed and deliver sustainability into the outcomes five key aims for Dunedin have been established drawing on the NZ Ministry for the Environment *'People, places, spaces: A design guide for urban New Zealand'.* The specific aims for Dunedin are outlined in Figure 14. Key aims regarding movement acknowledges the importance of coordinating transport network changes with land use activities.

Broad Urban Design principles in line with "People + Places + Spaces"	Consolidation and dispersal	Integration and connectivity	Diversity and adaptability	Legibility and identity	Environmental responsiveness
	Development patterns and intensity	Movement networks; building interfaces	Range of densities; mix of uses; flexibility of buildings	Urban form; visual character; special places	Ecosystems; green network; energy
Specific key aims for Dunedin Central City Framework	**Community** •A strong sense of local identity, ownership, participation, and pride in the city •Buildings which resopond to the needs of ageing population and changing demographics •A streetscape that caters for the various groups that use the central city streets and places •Provisions for community and other facilities (including retail) as required to support the populations	**Land use** •Protecting and enhancing the city's character buildings and places •Increasing vibrancy and safety by combining complementing land uses with the city •The city centre as a magnet for people and goods, harnessing the movement economy •Enabling provision of higher density inner city living without adversely affecting existing land uses	**Movement** •Coordination between necessary road changes and land use activities •Accessibility between precincts without undermining the efficiency of State Highway traffic •Small urban blocks to facilitate walkability •Easily understood layouts and legible routes •Public transport where possible •A range of interconnected networks to maximise the choice and viability of as many modes as possible •Liveable and safe streets focused on pedestrians, and lower vehicle speeds encouraged on city centre streets	**Green and blue** •A high amenity interface between buildings and open spaces •Parks and reserves within walkable distance of employment and residential areas •Street trees and landscaping along key roads and wherever possible •Low impact solutions to stormwater management •Areas of native planting increased and improved to attract bird and insect life	**Employment and economy** •Buildings that cater for new and existing businesses •A streetscape that caters for a better exchange between customers and businesses and among workers •Encouraging both organisationsal physical connections between institutions to generate a wider range of employment opportunities than those currently available •A variety of efficient movement connections

Figure 14 Dunedin Central City Plan Broad Urban Design Principles

[10] Dunedin City Council – Dunedin Central City Plan

5.4 Central City and surrounds planning considerations

During the land use and growth presentations in the workshop session several planning considerations were discussed. These were raised as import considerations when looking at transport network scenarios. These included the need to:

- Maintain a vibrant retail core with high pedestrian amenity
- Protect heritage values (encourage maintenance, protection, restoration and reuse)
- Consider how low amenity / high vehicle use retail and commercial is provided for on the fringe of the central city (Noted as the CEC-N and CEC-S zones)
- Protecting key industrial sites for example Speights.
- Consider the new Dunedin Hospital redevelopment.

The 2GP has strong policies to maintain a concentrated retail core and like many cities, there is evidence of contraction in local retail and a concern about retail 'leak' to more parking friendly areas. In time the CBD has gradually 'shifted' north, away from Princes Street.

Several other considerations raised included:

- All central city CMU zones provide for residential; however, there are no density limits and few or generally no parking requirements.
- More enabling rules for activities in heritage buildings in WP zones and other rules to encourage reuse, rather than removal and redevelopment.
- Monitoring business land use needs as required by the National Policy Statement on Urban Development Capacity. Retail and office floorspace demand is predicted to rise through to 2023 then plateau or potential reduce. Sufficient retail and office land for long term growth and demand.
- It was noted the Council has seen high demand for good industrial land, but as result of COVID-19, there is a high level of uncertainty around future business land requirements.

5.5 Connecting Dunedin

Connecting Dunedin is a partnership between the NZ Transport Agency, Dunedin City Council and Otago Regional Council. The coordinated approach to delivering transport projects in an integrated manner. Projects include the Dunedin City Council led Safe and Sustainable Travel programme to promote safer and more sustainable travel, the Harbour shared path link creating a circuit of cycle and pedestrian paths around Dunedin's inner harbour, and new bicycle lanes along State Highway 1 designed to improve commuter safety.

Shaping Future Dunedin Transport, a project underway, is an investigation designed to understand how the new Dunedin Hospital redevelopment will affect transport in the central city. Outcomes seek to identify safe, integrated, and accessible transport connections.

5.6 Dunedin Hospital redevelopment project[11]

The Ministry of Health is delivering replacement of the existing Dunedin Hospital, which will involve the single biggest hospital build ever in New Zealand at a cost of up to $1.4 billion. The Ministry of Health website outlined the redevelopment will be the most modern hospital in New Zealand serving the people of Dunedin and the lower South Island for decades to come.

On 1 November 2018, the Ministry purchased a large block of land at the former Cadbury site between Cumberland Street and Castle Street along with acquiring a neighbouring block of land known as the 'Wilson Block'. The CBD location chosen for the new hospital is because the land is flat and close to the existing hospital, the University of Otago, and accessed by Public Transport.

Figure 15 Dunedin Hospital redevelopment location

A rebuild of this magnitude in central Dunedin will also have a significant impact on the CBD creating opportunities for the community, with up to 1,000 workers on site at its peak.

[11] https://www.health.govt.nz/our-work/hospital-redevelopment-projects/dunedin-hospital-redevelopment-project

6. Network Operating Framework Development

When considering a balanced transport network approach using numerous transport solutions, it is important that there is a consideration of how the different road user groups use the network.

This Network Operating Framework takes an integrated approach to support existing and future business cases, land use development considerations and mode prioritisation in Dunedin. Within the focus area, it is also important to consider the key factor of variable user numbers, which will affect the way the transport network operates, and its efficiencies.

Challenges specific to the network around Dunedin are important to consider, such as the role of the State Highway pairs through Dunedin Central, State Highway 88 to Port Chalmers and access corridors along the peninsula. State Highway 1 provides the primary access corridor into Dunedin from both the North and South.

6.1 Operating Framework Horizon

The Network Operating Framework is developed with a future time horizon considered that considers population and land use growth assumptions. This is to allow development of a future aspirational transport network considering future changes in land use and growth to encourage forward thinking for network planning.

Development of the strategic road network has this horizon in mind to determine how stakeholders ‘aspire’ to operate the network. The time horizon reflects a ‘step’ towards the networks long-term aspiration cognisant of the long-term aspirations.

During workshop sessions stakeholders agreed a timeframe of 20 years for land use considerations and 10 years for the transport network. A 20-year land use timeframe enabled consideration of longer-term changes to transport generators in the focus area. A 10-year transport network timeframe aims to encourage a responsive network that considers future land use changes within the network. It was noted there are some land use changes expected early in the time horizon such as the Dunedin Hospital redevelopment project.

7. Strategic Objectives and Principles

Strategic Objectives and Principles provide a guideline for the development of a strategic road network. The Dunedin NOF strategic objectives draw on stakeholder knowledge, existing policy and planning goals and visions to confirm the development of a common set of Strategic Objectives and Principles for the network.

Prior to the workshop, attendees responded to an online survey to outline and describe what was important to their organisation and the community for each transport mode. The results coupled with project team investigation into existing planning and policy documents, and corresponding workshop discussion, formed the basis of the overarching Strategic Objective for each mode and the corresponding Principles. Workshop discussions further refined the Strategic Objectives and Principles for each of the transport modes.

Common themes that emerged from development of the Strategic Objectives and Principles discussion for all modes centred on themes of safety, connection and integration between modes, universal access, ease-of-use, attractiveness, and clarity/distinction between modal routes. Key objectives stakeholders indicated as outcomes from the Network Operating Framework discussions were:

- The importance of active mode use in the central city, particularly with the University and student quarters.
- The importance of this plan being able to work with the Central City Plan and Shaping Future Dunedin PBC and the changes that will result with the new Hospital.
- Connectivity between the suburbs and the CBD as well as nearby towns such as Mosgiel.
- Improved safety and universal access to the transport network for all users.

The Strategic Objectives and Principles frame the aspirations of stakeholders regarding the operation of the network as it relates to each mode. A summary of the Strategic Objectives and Principles is included at the end of this section in Table 6. A post workshop information pack containing a summary of the survey results and outcomes is included in Appendix A.

The Strategic Objectives and Principles developed have different focuses as the different modes serve different needs within the community and network. Active modes (cycling and walking) often tend to focus on developing networks that improve safety and encourage active movement while Public Transport will often see a focus on services and connectivity for the community and wider network. While the Network Operating Framework approach can appear to be ‘anti-vehicle’, general traffic provides an important mode of transport for many people and as general traffic typically have access to the entire network, there are often more trade-offs with this mode required to achieve the outcomes sought for other modes. This is an important aspect to recognise to balance the network, encouraging uptake of other modes.

7.1 Pedestrians

The aspirational pedestrian network in Dunedin is one that provides safe walking routes, pleasant and connected walkways and accessibility to all users. Stakeholders supported the promotion of a walking network that leverages access to the Octagon and surrounding businesses, while providing connections to key land use areas such as the University, Hospital, and attractions.

Key themes discussed by stakeholders in workshop sessions that informed development of the Strategic Objective and Principles included:

- Importance of safe walking routes to and from the tertiary precinct and schools
- Provision of facilities that are easy to use for people with disabilities, or people that are unfamiliar with the network.
- Connectivity and integration between modes and key land use areas within Dunedin, so that there is easy access to places of work, residential areas, commercial areas, medical facilities, and recreational areas.
- Promoting walking as an attractive mode of transport and the development of Dunedin as a “walkable” city for residents and visitors.

Strategic Objective

Provide a connected and continuous pedestrian* network that promotes a thriving city, encouraging walking as a safe, convenient, and accessible mode of transport to inspire more sustainable transport behaviours.

**Pedestrian network principles consider all forms of active travel that typically travel at <10 km/h (i.e. mobility scooter, running, walking) with the exception of cycling.*

Network Principles

Primary pedestrian routes

Provides direct connections and universal access to and between retail areas, education and employment areas, healthcare facilities, transport hubs, attractions, and the central city.

Secondary pedestrian routes

Provides connections and links to primary routes from connecting links and joins the wider pedestrian network to Primary routes from residential and commercial areas.

7.2 Cycling

The visions and outcomes sought for cycling are in line with those for pedestrians. Workshop discussions highlighted aspirations for a network that prioritises safety through dedicated routes and minimised conflict points and provides aesthetically pleasing cycling routes that cater for all ability levels. The discussion noted a direct approach also needs to be considered for every-day cyclists. Although this will appeal to the fearless and enthused and confident, to encourage and grow the confidence of new cyclists direct access needs to be balanced with the amenity– noting that sometimes a safer and continuous route might be more attractive than a direct route.

As with our pedestrian discussion, it was acknowledged that ‘cycling’ is now a broad definition including micro-mobility devices that travel at ≥10 km/h such as electric scooters and e-bikes.

Discussions during workshop sessions between stakeholders supported the promotion of active transport. Stakeholders noted their respective objectives for cyclists and considered:

- Connected/continuous networks – noting that that sometimes safer and continuous routes might be more attractive than a direct route.
- Family-friendly and accessible to people of all abilities – especially with the rise in use of e-bikes.
- Provision of supporting equipment and facilities such as secure bike parks/lockup points and traffic calming/cyclist facilities at conflict points with other modes.
- Commuter cycling connections to education and employment centres, the hospital, the CBD and tourist and recreational facilities.
- Recreational and 'Green' cycling routes.

The corresponding strategic objective and network principles formed are:

Strategic Objective

A safe, functional, and connected network encouraging cycling as an everyday mode of transport and recreation that is accessible and enjoyed by people of all ages and abilities inspiring more sustainable transport behaviours.

**Cyclists includes scooters, skateboards, cargo bikes, e-scooters, e-bikes and other forms of active travel that typically travel at ≥10 km/h.*

Network Principles

Primary cycling routes

Direct connections that provide access through and around retail areas, between residential areas and educational and employment centres.

Secondary cycling routes

Cycling routes that complement primary routes providing access to recreational trails, off-road networks and attractions within neighbourhoods or precincts.

7.3 Public Transport

Key themes in the discussion regarding public transport included provision of a public transport system that provides regular and reliable connections so that public transport is a realistic alternative to driving. The stakeholder discussion on public transport covered the following themes:

- A network that is safe, reliable, frequent, and attractive to use.
- Facilities that enable tie-ins with active modes.
- Universal access led to a discussion about including the user experience for people who have other access challenges such as those who struggle to or cannot hear, speak, or see.
- Predictability and equity of experience across routes and throughout the city was considered as a way of improving and encouraging uptake as an alternative to driving.

The corresponding strategic objective and network principles formed are:

Strategic Objective

A frequent, reliable, and efficient service that provides equitable access and positive user experiences for all customers, encouraging public transport as a viable mode choice inspiring more sustainable transport behaviours.

Network Principles

Primary public transport routes

Direct routes on high demand corridors that enable a connected and accessible city between residential areas to places of work, education centres, healthcare facilities and commercial centres.

Secondary public transport routes

Routes that complement primary routes providing local accessibility and access to emerging growth areas, recreational activities, local attractions, residential catchments, and the wider transportation network.

7.4 Freight

Freight movements play an important role in any city with a major port and Dunedin is no different with freight travelling to, from and through Dunedin. While there is a freight route through the waterfront industrial precinct, the location of SH1 means that it forms a necessary component of the freight network and as such, sometimes the waterfront route is not used. It also means that there are unavoidable and necessary interactions between freight and other modes as a complete bypass is not presently possible. Therefore, there is a need to balance directness, safety, and resilience, particularly as it is not always possible or economical to transfer all freight movements onto rail. Stakeholder discussions considered the following elements:

- Safety for all network users and a reduction of conflict points between freight and other modes – particularly for those travelling from the CBD to the university or the waterfront.
- Accessibility to industrial areas, the port and other key generators, and destinations.
- The importance of providing resilient transport infrastructure that can accommodate the freight movements and loadings.
- Efficient and reliable freight routes that have reliable journey times through and to key origins and destinations.
- The uncertainty of how freight movements would change if the system changed to a two-way network.

Strategic Objective

A direct and connected network that minimises conflict with general traffic, other modes of travel and areas of high amenity, such as residential neighbourhoods and the city centre.

Network Principles

Primary freight routes

Routes that provide direct and reliable access to major freight origins and destinations avoiding areas with high place function[12].

Secondary freight routes

Routes that provide connectivity between primary routes and local, commercial, and industrial areas that minimise impact on local high amenity land uses.

[12] This refers to areas where people are likely to gather due to amenity or function such as main streets, shopping precincts and residential areas.

7.5 General Traffic

Stakeholders considered carefully how to balance private vehicle movements with the desire to promote more sustainable modes of transport where possible. The location and severance caused by SH1, and uncertainty over how traffic movements would change with future changes such as the new hospital, was considered along with the potential SH network change to a two-way system.

The approach taken in the development of the Dunedin Network Operating Framework is the recognition of the fundamental need to make trade-offs in mode priority and identify areas where trade-offs may be required. The approach does not aim to bias vehicle movement, but acknowledge that general traffic plays a role in supporting the safe and efficient movement of people in private motor vehicles, especially where this achieves social and economic benefits for the city or for people that may not have access or ability to utilise alternate modes.

An important consideration for prioritisation of general traffic is surrounding land use and amenity. Areas of high amenity are areas where people want to be due to facilities, shops, services, or environment – destination areas. As these are desirable areas, providing for high levels of access needs to be balanced with managing the speed and volume of traffic through centres to minimise as far as practicable potential impact on safety and amenity for pedestrians, whom in general should be given priority in these locations.

Key themes noted in workshop discussions informed the Strategic Objective and Principles:

- The importance of accessibility SH1 provides and the severance that it causes.
- The number of movements that occur from the suburbs to the CBD and back out again – most trips are not across or through the city.
- General Traffic movement contributes to place function; however, if can be detrimental if not managed in a balanced approach. Likewise, completely removing general traffic can be detrimental to place function.
- There is a desire that motor vehicles do not feel out of place and are able to move freely, but do not dominate transport within the city.

Strategic Objective

A general traffic network that is safe, efficient, and coherent, and considers the needs of all modes to encourage a balanced and integrated transport system.

Network Principles

Preferred traffic routes

Provides for longer distance travel as a preferred alternative to other routes with land use conflicts[13].

Traffic routes

Provides connectivity between smaller centres and preferred routes.

Local primary access routes

Provides access between local destinations and local commercial and residential areas.

Local secondary access routes

Collects and distributes between primary local access routes for localised movement in centres.

[13] The term land use conflicts is used to recognise that these routes typically have limited access or minimal abutting land uses i.e. regional State Highways.

Table 6 Dunedin Strategic Objectives and Network Principles

Mode	Strategic Objectives	Network Principles
	Provide a connected and continuous pedestrian* network that promotes a thriving city, encouraging walking as a safe, convenient, and accessible mode of transport to inspire more sustainable transport behaviours. **Pedestrian network principles consider all forms of active travel that typically travel at <10 km/h (i.e. mobility scooter, running, walking) with the exception of cycling*	*Primary Pedestrian routes:* Provides direct connections and universal access to and between retail areas, education and employment areas, healthcare facilities, transport hubs, attractions, and the central city. *Secondary Pedestrian routes:* Provides connections and links to primary routes from connecting links and joins the wider pedestrian network to Primary routes from residential and commercial areas.
	A safe, functional, and connected network encouraging cycling* as an everyday mode of transport and recreation that is accessible and enjoyed by people of all ages and abilities inspiring more sustainable transport behaviours. **cyclists include scooters, skateboards, cargo bikes, e-scooters, e-bikes and other low-powered vehicles (LPVs)*	*Primary Cycle routes:* Direct connections that provide access through and around retail areas, between residential areas and educational and employment centres. *Secondary Cycle routes:* Cycling routes that complement primary routes and provide access to recreational trails, off-road networks and attractions within neighbourhoods or precincts.
	A frequent, reliable, and efficient service that provides equitable access and positive user experiences for all customers, encouraging public transport as a viable mode choice inspiring more sustainable transport behaviours.	*Primary Public Transport routes:* Direct routes on high demand corridors that enable a connected and accessible city between residential areas to places of work, education centres, healthcare facilities and commercial centres. *Secondary Public Transport routes:* Routes that complement primary routes providing local accessibility and access to emerging growth areas, recreational activities, local attractions, residential catchments, and the wider transportation network.
	A direct and connected network that minimises conflict with general traffic, other modes of travel and areas of high amenity, such as residential neighbourhoods and the city centre.	*Primary Freight routes:* Routes that provide direct and reliable access to major freight origins and destinations avoiding areas with high place function. *Secondary Freight routes:* Routes that provide connectivity between primary routes and local, commercial, and industrial areas that minimise impact on local high amenity land uses.
	A general traffic network that is safe, efficient, and coherent, and considers the needs of all modes to encourage a balanced and integrated transport system.	*Preferred Traffic Route:* Provides for longer distance travel as a preferred alternative to other routes with land use conflicts. *Traffic Route:* Provides connectivity between smaller centres and preferred routes. *Local Primary Access Route:* Provides access between local destinations and local commercial and residential areas. *Local Secondary Access Route:* Collects and distributes between primary local access routes for localised movement in centres.

8. Strategic Transport Network

An effective multi-modal transport network generally adopts a balanced approach to network prioritisation, considering the needs of all transport and road users. A Network Operating Framework utilises this type of approach through the development of a strategic road network that defines a roads priority by mode and place. This moves away from a traditional road classification hierarchy and focuses more on the need to recognise the variety of transport modes, their interrelationships, and the strategic intent for the network.

To develop Dunedin's strategic transport network and the key connections, it is helpful to understand how different modes interact with one another. In the Network Operating Framework process, this is achieved through a collaborative stakeholder, network-mapping exercise where aspirational routes are drawn on maps for each transport mode (according to network principles developed in Section 7). This exercise is important for enabling further discussions and decisions around where and how trade-offs are made between modes, to support land use changes into the future.

In total, two sets of five priority network modal maps were developed independently of one another for Dunedin. Usually there are only five maps developed, however because we were asked to consider both the current one-way network and a potential two-way network, two sets of maps were required. The single mode maps enable targeted consideration and mapping of key routes and the land use connections required for each mode, without the direct influence of other transport modes. The development of the draft modal priority maps was based on workshop discussions independent of data or analysis, as the approach is not intended to be data driven and outputs are open to review and development. As stated above, this is not prescriptive, rather outcome focussed as it provides the basis for further discussion about network interactions to develop greater understanding and common direction.

Due to the disruption of Covid-19, the in-person workshops that typically form the basis of this discussion were unable to occur. Instead, a new approach was implemented for this NOF, where the workshops were conducted online with the use of a web-based app used to capture the routes discussed by participants.

Due to the change in how the maps were going to be created, mapping of the five modes occurred over two different workshops. In the first workshop the Freight, General Traffic and Public Transport networks for the one-way system were mapped, with discussion occurring afterwards about the changes that would occur in the two-way system. In the second workshop the same process was followed for the Cycling and Pedestrian modes. Both workshops had representatives from each of the relevant stakeholders – DCC, Waka Kotahi, ORC, AA, CCS Disability Action and University of Otago. As well as the two sets of five modal maps created, there were two combined maps produced – one for each of the different network configurations.

The following section describes the Dunedin strategic transport networks developed and mapped by stakeholders for each transport mode.

Strategic Network Maps

While insets are provided in each section, modal priority network maps are included in Appendix C in addition to a combined mode priority map.

8.1 Road user groups

Strategic networks were mapped for the following road user groups in the Dunedin study area:

- Active modes: Pedestrians[14] and Cyclists[15]
- Public Transport
- General traffic and Freight

Stakeholders mapped aspirational future (potential/proposed and some existing) routes for each of these road user groups. The aspirational future routes give effect to the network principles.

8.2 Pedestrian Strategic Network

The strategic pedestrian network shown in Figure 16 below reflects the Strategic Objective aims to provide a connected and continuous network that promotes a thriving city. The purpose of this is to encourage walking as a safe, convenient, and accessible mode of transport and to inspire more sustainable transport behaviours. This all fits with the desire in the workshops to make Dunedin a 'walkable' city for residents and visitors. There relatively minor differences between the one-way and two-way systems which are further explained below.

The networks developed focus around the Octagon and the education precinct with clear links connecting the two. The network also provides safe links to central schools and popular walking paths into and within the city.

Areas that are not highlighted on the map are areas where high pedestrian activity is not expected or specifically encouraged. This does not prevent further areas from functioning this way, it just means that some areas were not correctly identified when the mapping occurred.

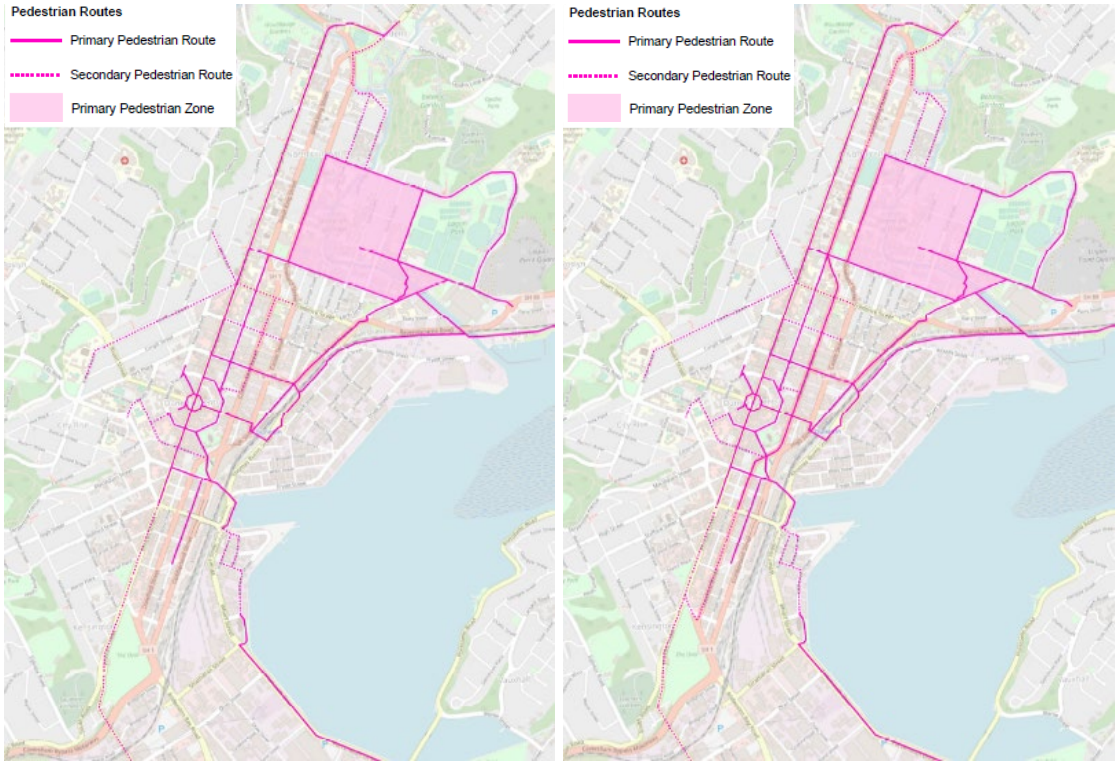


Figure 16 Pedestrian Network: One-way system (L) and two-way system (R)

Refer to Appendix C for a full-scale version of the above maps.

[14] Pedestrians include active travel typically at <10 km/h (i.e. mobility scooter, running, walking) with the exception of cycling.

[15] Cyclists includes scooters, skateboards, cargo bikes, e-scooters, e-bikes and other low-powered vehicles (LPVs).

Primary Pedestrian Routes

In alignment with the network principles agreed, primary pedestrian routes where identified which provide direct connection and access throughout the city. These routes connect retail areas, education facilities, workplaces, healthcare facilities, transport hubs and attractions within the central city area. Primary Pedestrian areas include:

- George Street and many of the streets attached to George Street. This street connects the north of the city directly through to the Octagon. Slightly north of the Octagon there are large areas of strip shopping.
- Albany Street from George Street to Anzac Avenue has been identified as a key corridor for students. There have already been pedestrian centric measures implemented along this corridor with Barnes Dance intersections being installed at the intersections with Great King Street and SH1/Gowland Street.
- Barnes Dance crossings have also been included at the following intersections – all of which are included in the primary pedestrian routes:
    - George Street with Octagon, Moray Place, St Andrew Street and Hanover Street with George Street and Princes Street
    - Princes Street with Moray Place and Octagon
    - Stuart Street (east of the Octagon) with Moray Place
    - Great King Street with Albany Street
- The University of Otago is identified as a Primary Pedestrian zone. Within this zone it is expected that most of the movements will be pedestrian and that this will be highly encouraged with a strong desire line between the university and the new hospital.
- In the two-way network scenario, a primary route has been identified from Dundas Street down Great King Street/Malcom Street/Cumberland Street/Queens Gardens/Crawford Street to Jetty Street alongside the local road.
- Noted there are a lack of connections to the west, up the hill and south of Jetty Street.

Secondary Pedestrian Routes

These routes tended to address areas where pedestrians are active but are not expected to congregate, such as residential areas and industrial areas where parking is easier. There are also several routes providing connections between primary routes.

- Princes Street is marked as it is a catchment for residents walking into town from the hill.
- Tennyson Street and Smith Street are both important routes due to the number of schools in the vicinity and London Street performs the same function.
- The pedestrian movements within the waterfront industrial area are not certain at this point and hence there is a block included to join French Street into the CBD.
- Great King Street north of Dundas Street connected with North Road as a catchment for students and people walking in from the north.
- In the south the connection on Crawford Street from Jetty Street to Anderson Bay Road was considered important to provide continuity and access to those in the south.
- For the Botanic Gardens it was agreed that although they form a common route for pedestrian movements from North Dunedin, they are not open 24/7 and not in conflict with vehicle traffic. Therefore, a secondary route around the gardens was included.
- As with primary routes, gaps to the south were noted.

8.3 Cycling Strategic Network

The cycling networks (both for the one-way and two-way options) developed for Dunedin aim to provide a safe, function and connected network. The purpose of this is to make cycling accessible and to encourage people of all ages and abilities to enjoy and choose cycling as an everyday form of transport and recreation. The networks developed aim to fulfil this by providing safe routes into and across the city. Figure 17 outlines the two different networks developed.

Although developed independently of current maps, the primary routes identified in the Workshop exercise are a close match to the system that DCC has already developed and implemented.

Refer to Appendix C for a full-scale version

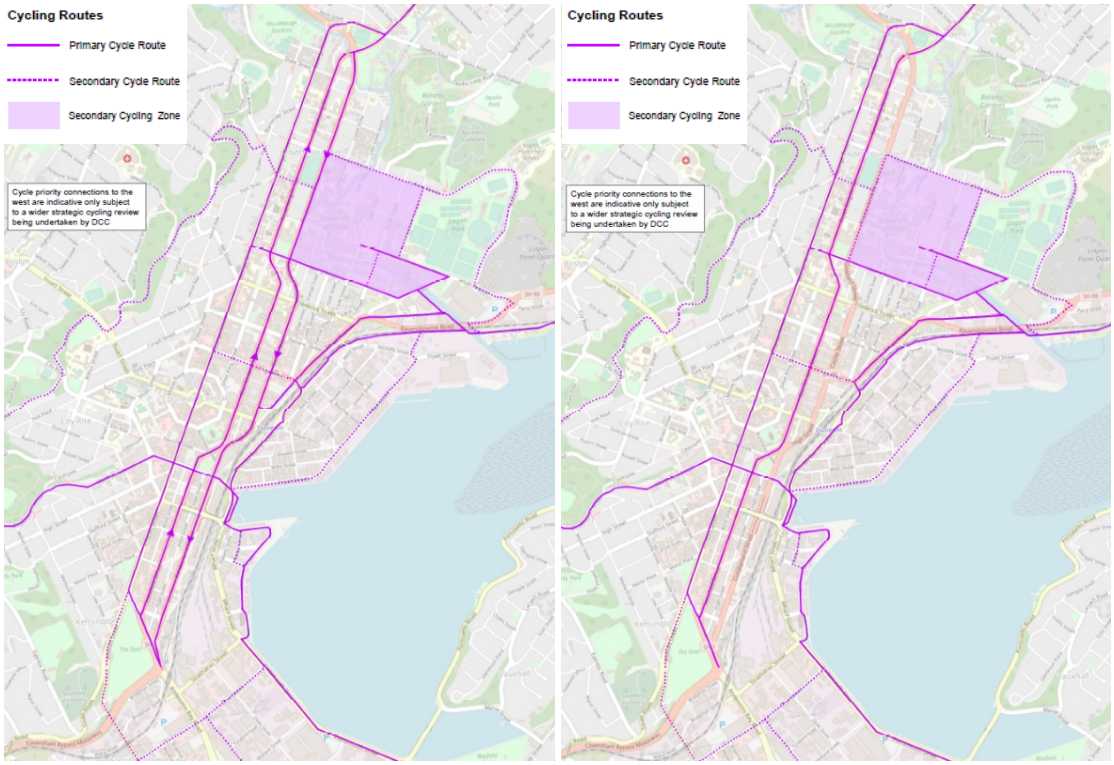


Figure 17 Cycling Network: One-way system (L) and two-way system (R)

Primary Cycling Routes

Both the one-way and two-way primary cycling routes reflect the network principle of integrated connections between residential catchments and retail areas while providing access to education and employment centres. Primary cycling routes identified in Dunedin include:

- An aspiration to provide a north-south connection with a primary spine. George Street is promoted as a shared two-way route with sharrows. It was noted that Princes Street and Vogel Street are often preferred as north-south links than SH1.
- In February 2019 Waka Kotahi finished work on the Dunedin one-way separated cycleway which also achieves this aim. However, under the two-way system, cycling down SH1 (presently SH1 southbound) would no longer be a primary cycling route due to the increased traffic volumes.
- Albany Street from George Street to Anzac Avenue a key corridor for students.
- The link from the shared pedestrian and cycling bridge over the Water of Leith to St Andrew Street alongside the railway is an aspirational route that is yet to be built.

- The east-west link of Serpentine Ave/Maclaggan Street/Rattray Street/Queens Gardens to Wharf Street is aspirational and dependent upon a bridge over the railway lines.
- On the east side of the railway line there is a dedicated cycle route which follows the road along Birch Street and Kitchener Street but switches to an off-street route just before the Kitchener Street/Wharf Street intersection.
- The area around the university is also a primary cycle route. Within the university is a secondary cycling zone, however Union Street East and Anzac Avenue indicated that cycling to the University is an activity that can be encouraged.
- Wharf Street/Thomas Burns connect to to-be-completed route alongside the rail line.
- Noted on the cycling maps, cycle priority connections to the west are indicative only subject to a wider strategic cycling review to be undertaken by DCC.

Secondary Cycling Routes

Secondary routes complement primary routes, providing access to trails and attractions. Many of the links identified form east-west connections and connections to the southern suburbs. Some of these routes are collectors and provide important links to the primary network. The identified routes included:

- University was marked as a secondary cycling zone where cycling would be encouraged, however to a lesser degree than pedestrian movements. There was also some uncertainty about exactly where to encourage cycling movements within the area noted.
- Queens Drive was noted as a particular cycling area west of the CBD and could be a collector from the western suburbs.
- There were some noted gaps around Andersons Bay and Musselburgh Rise.
- The Timaru Street link, which is currently a heavy pedestrian zone, is aspirational but could become a parallel route to Andersons Bay Road.
- St David Street, Albany Street and St Andrew Street are all aspirational east-west connections between George Street and the university.
- Butts Road provides access to the university as well as a popular mountain biking area.
- Fryatt Street performs a similar function to Kitchener Street and is currently used as the route alongside the railway line has not been completed yet.

8.4 Public Transport Strategic Network

The Strategic Objective for the Public Transport network highlighted an importance of a frequent, reliable, and efficient service that served all people within Dunedin. It aimed to encourage ongoing use and foster positive experiences while actively considering the opportunity to improve accessibility for mobility impaired persons.

The completion and opening of the bus hub on Great King Street in 2019 helped to centralise the bus network and according to the Otago Daily Times[16] has led to increased patronage compared with the previous year. The extent COVID-19 impacted bus patronage is unknown.

Two networks developed are outlined in Figure 18.

Refer to Appendix C for full-scale maps.

[16] Jessica Wilson, "Bus usage up since hub opens", Otago Daily Times, January 26 2020, https://www.odt.co.nz/news/dunedin/bus-usage-hub-opens, accessed August 5, 2020.

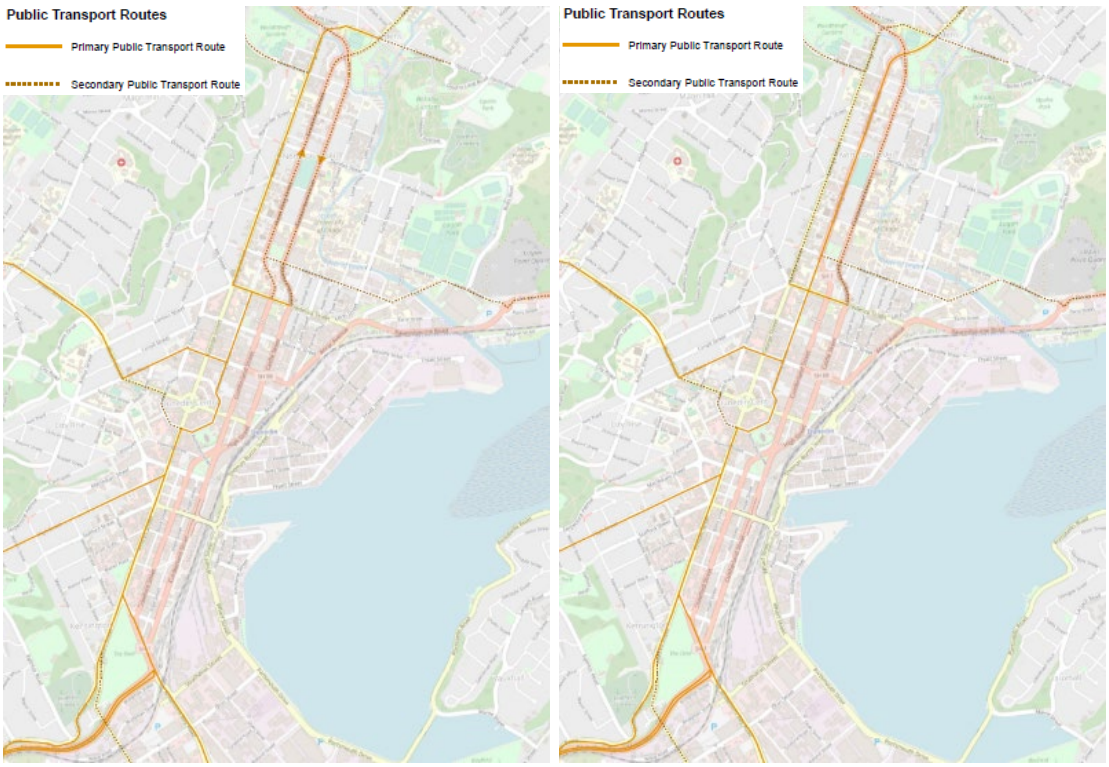


Figure 18 Public Transport: One-way system (L) and two-way system (R)

Primary Public Transport Routes

As with cycling, the routes outlined here greatly reflect the current system, with primary and secondary more indicating the importance of links to the entire network.

This reflects the principle of direct routes along high demand corridors that enable a connected and accessible city. These routes connect residential areas with workplaces, education centres, healthcare facilities and commercial areas.

Primary Public Transport routes identified in Dunedin include:

- Great King Street south of Frederick Street, connecting the bus hub to Princes Street via Moray Place.
- Princes Street is the key link to the south before branching to Andersons Bay Road/the Motorway and South Road.
- Frederick Street connects routes north of the Octagon and in the one-way scenario, George Street functions as the primary north/south corridor. However, in the two-way scenario, the primary route will continue straight up Great King Street to North Road without turning onto Frederick Street. George Street becomes a secondary route.
- Routes to the west head along High Street and along London Street and Stuart Street from Frederick Street.

Secondary Public Transport Routes

The secondary routes are the complementary routes and the routes that provide access to the wider network – serving fewer bus movements but providing accessibility to residential catchments, attractions, recreational activities, and growth areas.

Secondary Public Transport routes identified include:

- North Road and north Dunedin, Kaikorai Valley Road, Taieri Road and King Edward Street. All these routes branch off primary routes out to specific residential catchments.

- In both the one-way and two-way networks, SH1 is a secondary route. In the two-way network, the change in Great King Street to a two-way local road changes its role and enables it to provide a more direct route that focuses on Public Transport services. A consequence of this is that George Street then changes from a primary to a secondary route as stated above.
- Albany Street will always have a role in the network as it services the university and residential areas up SH88.
- Finally, Moray Place between Princes Street and Stuart Street provides links between the western and southern origins and destinations.

8.5 Freight Strategic Network

The strategic freight network in Dunedin highlighted the need for direct connections, but also routes that minimised inter-modal conflicts. Although this cannot be achieved by a bypass or closed off routes, it seeks to provide safety for all road users and reduce noise and pollution from residential and public areas.

An important element is the freight network supports appropriate route choice with connections to national strategic freight routes enabling efficient supply chains. Existing freight networks, as well as future aspirational networks were recognised with consideration given to other modes using these routes as well as the ability of routes to accommodate heavy vehicle movements.

It is worth noting that the freight movements considered here are more focused on medium and heavy commercial vehicles (MCVs and HCVs), whereas light vehicles such as those for local deliveries are considered part of the General Traffic network.

Two networks developed are outlined in Figure 19. Refer to Appendix C for full-scale maps.

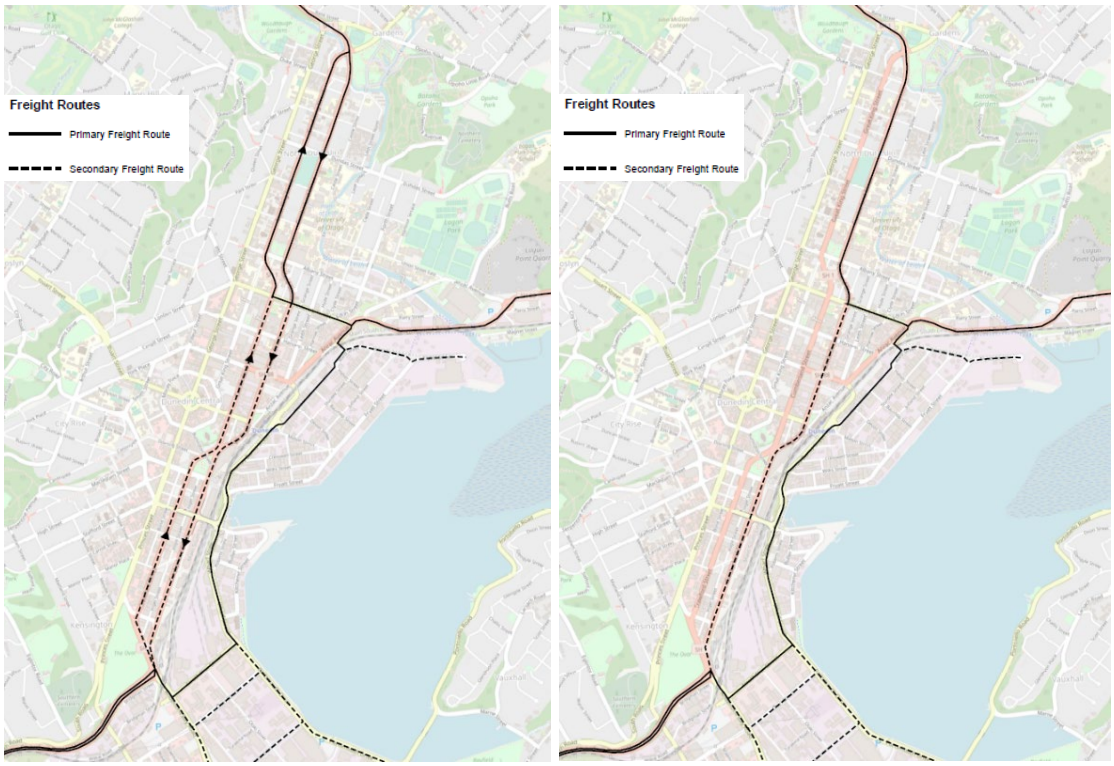


Figure 19 Freight Network: One-way system (L) and two-way system (R)

Primary Freight Routes

The network principle developed for freight reflect direct access, providing connections between origins and destinations while seeking to avoid areas not designed for freight movement.

With most of the freight either heading or arriving from the north and south, the routes focus on transporting this around the CBD or to/from the port.

Primary freight routes include:

- The one-way system includes the north and south SH1 routes north of Frederick Street. These cannot be avoided for freight heading to or arriving from the north. If the system were to become a two-way network, then Great King Street would not be expected to function in this manner.
- Frederick Street is the key connector from SH1 to SH88 without travelling further south down SH1. Vehicles can either head straight to the port from here or access the industrial area from Ward Street or the St Andrew Street Extension.
- In the Waterfront industrial area, freight heads south along Thomas Burns Street/Wharf Street before turning onto Strathallan Drive either to access the shunting yards.
- From the eastern arterial freight vehicles access the SH1 Caversham Bypass Motorway.

Secondary Freight Routes

Secondary freight routes seek to support the primary routes by providing 'last mile' connections to commercial and industrial areas and businesses minimising impact on high amenity areas.

Secondary freight routes include:

- The SH1 network between Frederick Street and Andersons Bay Road. This route, particularly the southbound leg (one-way network), has several truck stops and services that currently discourage freight vehicles from using the eastern arterial. The aspiration however is to encourage the movement to the eastern arterial, so that freight vehicles only use the state highway as needed. As stated, in the two-way system, freight vehicles would not use Crawford Street/Great King Street.
- Kaikorai Valley Road contains several 'last mile' connections to industrial areas and can be accessed from the motorway.
- Several industrial facilities through Andersons Bay that contain 'last mile' connections.

8.6 General Traffic Strategic Network

General Traffic routes were prioritised for coherent, efficient, and safe movement across the network. Four types of general traffic routes as shown in Figure 20 were identified by stakeholders in the mapping exercise for Dunedin. These are classified as either, Preferred Traffic routes, Traffic routes, Local Primary Access routes or Local Secondary Access routes. The routes identified in the mapping sessions identified both existing and aspirational routes that support the development of balanced and integrated networks.

One of the comments made in the workshops was that part of the difficulty in making decisions about route categories is that 80% of trips within Dunedin are to the CBD and then out again which makes sorting different priorities difficult.

Refer to Appendix C for full-scale maps.

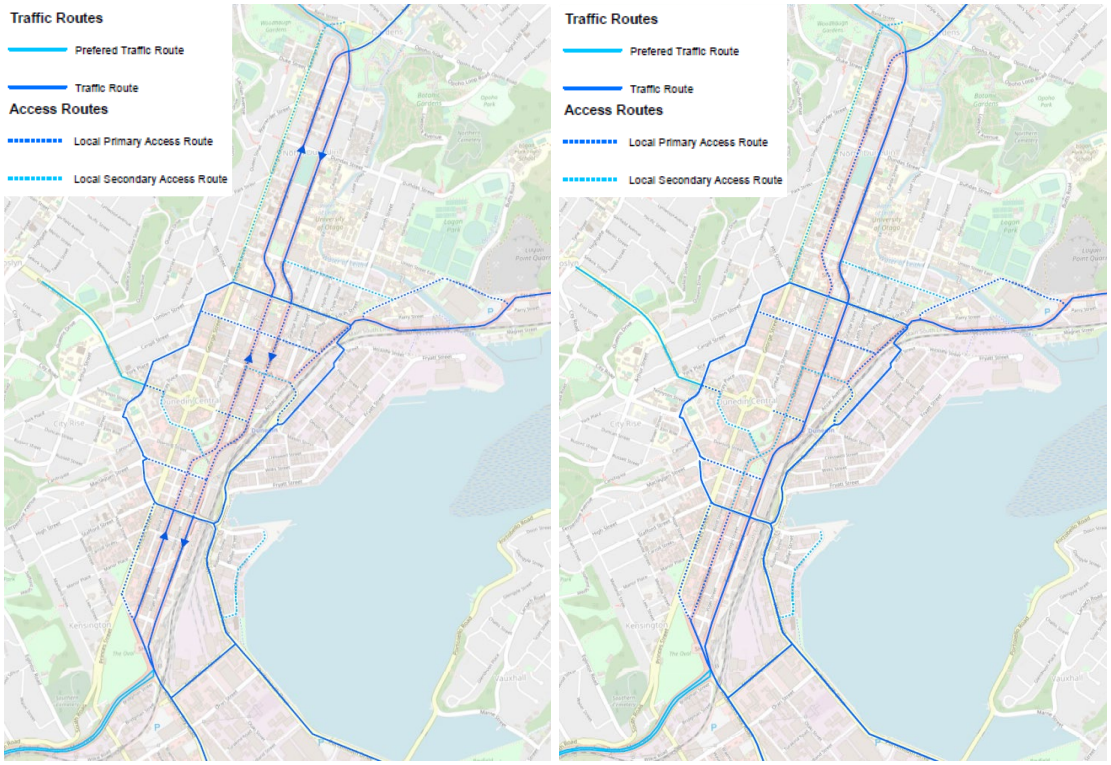


Figure 20 General Traffic: One-way system (L) and two-way system (R)

Preferred Traffic Routes

These routes provide for longer distance traffic as a preferred alternative to other routes with land use conflicts. Routes identified include:

- SH1 north of Great King Street intersection and south of Andersons Bay Road turn-off.
- Stuart Street west of Smith Street.

Traffic Routes

These routes provide connectivity between smaller centres and preferred routes.

Routes identified include:

- In the one-way system the SH1 north and south pair north of Frederick Street and south of Jetty Street
- In the two-way system only SH1 is a traffic route (the local road is not) and this is for the entire length of the road.

- North Road and Andersons Bay Road.
- The Eastern Arterial – from SH88 to Ward Street/Thomas Burns Street/Wharf Street/Portsmouth Drive to Portobello Road. Orari Street is also a Traffic Route.
- Around the western side of the Octagon is a Traffic Route which starts at the Frederick Street/London Street intersection and ends at the Jetty Street/Wharf Street intersection. It comprises of the following streets: London Street/Filleul Street/York Place/Smith Street/Rattray Street/Broadway/Manse Street/Jetty Street.

Local Primary Access Routes

Routes provide access between local destinations and local commercial and residential areas.

Routes identified include:

- Anzac Avenue as it loops around Forsyth Barr and after the Ward Street intersection down to the intersection with the St Andrews Street Extension.
- The one-way system includes one-way pair between Frederick Street and Jetty Street.
- In the two-way system it includes Crawford Street south of Jetty Street.
- Hanover Street and Rattray Street/Queens Gardens from the intersection with Broadway.
- Princes Street from Jetty Street down to Andersons Bay Road and to the intersection with Crawford Street
- Stuart Street east and west of Moray Place

Local Secondary Access Routes

These routes collect and distribute between primary local access routes for localised movement in centres. Routes identified include:

- George Street north of Frederick Street
- Albany Street east of the intersection with SH1
- Burlington Street and Moray Place around to the western arm of Stuart Street.
- Kitchener Street
- In the two-way system it includes the current northbound arm of SH1 between Frederick Street and Jetty Street.

8.7 Summary of network scenarios

One-way system

The one-way system seeks to balance and make use of the current layout. The approach looks to optimise the SH1 links north of Frederick Street and make greater use of George Street to take further pressure off those two links. The aspiration to move freight and general traffic onto the eastern arterial aims to provide a safer environment between Frederick Street and Jetty Street for more sustainable modes.

Two-way system

The two-way system recognises that if there is only one State Highway link through Dunedin, the focus will be on directing through traffic onto this road so that the local road can provide more service to local movements – with modes such as public transport and cycling having more road share than is currently possible. As such the priorities on SH1 increase while those on the, now local road, decrease.

9. Modal Priority

An effective multi-modal transport network recognises that different modes operate in different parts of the network, but in some instances land use factors can lead to modal priority conflicts. Modal conflicts can occur on the roads or corridors that have several modes at a single location competing for priority. The following considers mode prioritises assigned using the SmartRoads tool indicative operational or infrastructure responses where modal priority conflicts may exist.

All modal priorities are relative and detailed consideration of improvements or changes along with wider network impacts will still be required when considering responses.

9.1 Mode Prioritisation

Relative user priorities vary by time of the day and are based on the assigned route priority and surrounding activity area. The SmartRoads tool considers the surrounding land use and aspirations with 'Activity Areas'. These are based on the nationally adopted four-level definition for 'Activity Areas' shown in Table 7 below which considers areas that generate a high movement of people and areas where higher amenity or place function is preferred.

Table 7 NOF Activity Area definitions

Activity Area	Characteristics
Activity Area Level 1 (AA1)	Services the whole city/region and provides a significant retail offer. Has a significant function as a regional centre Intense concentration of development and business It has an extensive residential component, together with community, recreational and entertainment facilities Is the central hub for public transport. *Examples: Auckland CBD, Wellington CBD, Christchurch CBD.*
Activity Area Level 2 (AA2)	Has a regional catchment for some activities. Contains a wide mix of uses including community services Has diverse range of retail and commercial activities and services contributing and is focal point for the town or suburban centre The category is also applicable for a large university / campus activity area (e.g. University of Auckland / Massey) or large hospital (Auckland Hospital, Wellington Hospital etc.). Is well served by public transport *Examples: Hamilton CBD, Dunedin CBD, Takapuna, Botany*
Activity Area Level 3 (AA3)	Provides for the needs of the surrounding local community Contains moderate retail Within close walking distance of major residential areas More comprehensive than a single row of shops abutting a major road This category is also applicable to a large high school or a medium size hospital. Accessible by public transport *Examples: Howick, Flagstaff, Island Bay, Bethelhem*
Activity Area Level 4 (AA4)	Continuous, predominantly retail and commercial development which directly abuts either one or both sides of a major arterial or state highway Generally with kerbside parking resulting in frequent parking manoeuvres Separated from a larger activity area by a distance of at least a few kilometres. This category is also applicable to a small high school, primary school or a small medical facility. *Examples: Kumeu, Katikati, Karori Shops*

The strategic road network developed in the workshops and the identified activity areas entered in the SmartRoads tool provide relative levels of encouragement. The SmartRoads tool establishes priorities assigned by mode at intersections while considering different times of day.

These modal priority maps help to identify points of conflict and provide a framework for making decisions and trade-off between modes around the network. They identify levels of 'encouragement' for each mode relative to other modes based on the assigned route priority.

The term 'levels of encouragement' is another way of referring to different levels of priority – i.e. 'Strongly Encourage' is the highest level of priority while 'Local Access Only' is the lowest level of priority. 'Encouragement' is not intended to suggest increases in traffic. The level of encouragement given to each mode is represented as an arrow as outlined in Figure 21 below to indicate the extent to which a mode is encouraged based on place and time.

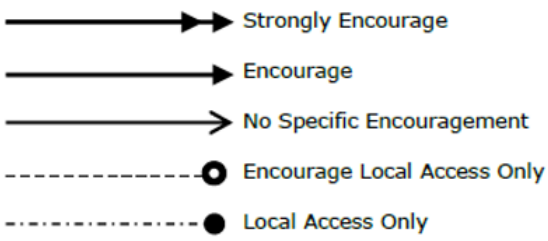


Figure 21 Relative Levels of Encouragement (SmartRoads tool)

The levels of encouragement reflect the changing needs of road user groups during different periods. For example, morning and evening peak periods for commuters and increasing levels of encouragement in activity centres for walking and cycling. The changing levels of encouragement given to modes based on place and time assists decision making on competing road user demands.

The SmartRoads tool provides functionality for representing these modal priorities across the network as an easy way to find information about the levels of encouragement assigned on a given route by period. Modal Priority can be viewed in associated SmartRoads tool for the Dunedin network.

9.2 Dunedin Central Area Relative Levels of Encouragement

The SmartRoads tool provides information for understanding the inter-relationship between the different levels of encouragement between the various modes throughout the day (morning, inter-peak and evening peak periods) in the centre and south of Dunedin. The first six images focus on the network in the one-way configuration while the second six images demonstrate the two-way configuration.

As can be seen in central Dunedin, there are many competing demands with large intersections in user demand being seen along the State Highway leg/s between Albany Street and Frederick Street. The different levels of encouragement that can be seen in these snapshots demonstrate how we can balance the need to move competing modes through similar areas by utilising common time of day movement groups.

The differences that can be seen between the different peak hours relate to the encouragement of different modes. This simply shows that operations in the AM and PM peak hours correspond to prioritising commuter movements such as cycling and public transport movements, while the inter-peak periods tend to correspond to movements of freight and pedestrian movements. While this does not solve problems, it does provide a good visual representation of the areas of our network that warrant particular attention at different periods of the day.

9.3 Approach to Operational and Infrastructure Strategies

The SmartRoads tool has been utilised to focus on several areas in Dunedin where there is modal priority conflict or opportunity following discussions held in workshops. This section considers high-level operational and infrastructure strategies for these conflict areas outlined below. These are intended to provide guidance on modes to prioritise and by time of day for any operational and infrastructure responses. It should be noted that the areas chosen involve conflicts in both the one-way and two-way system and they are not particularly influenced by the system that is selected. However, to avoid ambiguity, where the phrase ‘SH1’ is used, in the one-way system it refers to both the northbound and southbound corridor, while in the two-way system it refers only to the current southbound route – Cumberland Street/Gowland Street/Castle Street/High Street.

Indicative modal priority focus areas in the Dunedin focus area covered for discussion include:

1. Albany Street
2. Frederick Street
3. Active mode Harbourside corridors
4. SH88/Forsyth Barr Stadium

9.3.1 Focus area 1: Albany Street

Albany Street is one of the clearest examples within Dunedin of aspirational transport compromises where multiple mode priorities exist. Alongside the University of Otago, Albany Street is prioritised for four of the five modes; however, the priority and level of these modes show a consideration for active mode users within the area while balancing that with transport access. The intersections with SH1 are important for Albany Street as the levels of priority and volumes of traffic change quite significantly at these locations, particularly with the introduction of HCVs. There are very few differences in the mode priority interactions between Albany Street and the surrounding streets regardless of whether the one-way or two-way system is implemented as outlined in Figure 22 – Figure 27.

Throughout the day active modes receive considerable priority/encouragement. In the AM peak hour Pedestrian movements are encouraged while throughout the inter-peak (IP) and PM peak hours they are strongly encouraged. Cycling movements are strongly encouraged in the AM and PM peak hours and encouraged in the IP peak hour. The Barnes Dance crossings at the intersection of Albany Street and the SH1 corridor/s and the SH1 separated cycleway/s which tie into Albany Street all demonstrate an increased focus on active mode movement. Further actions that improve active mode safety and priority, particularly as Albany Street intersects with the State Highway network.

Public Transport ties in with this by operating as a secondary route alongside the university. This compliments the priority of active modes without dominating it, providing an alternative means of transport to the CBD and suburbs other than walking. This mode is encouraged in the AM and PM peak hours but receives no specific encouragement in the IP. Interventions to encourage this mode and help achieve these aims come through efficiency improvements and user-friendly design improvements such as bus priority at signalised intersections, dedicated traffic lanes, covered bus shelters and real-time arrival displays.

“Encourage local access only” is the level of priority for freight to and around the university (aside from on the state highways) in all peak periods, while the level of priority for general traffic on Albany Street between SH1 and Anzac Avenue is “Local Access Only” in all peak periods. This suggests corridors and street design may be considered in supporting and enabling local access and localised movements for those who require it recognising these are lower priority movements. Interventions such as targeted parking (mobility, elderly, ride-share and taxi), narrower streets, low speed environments, restrictions on mode use by time of day, and speed humps are all interventions which enable mode use without encouraging it.

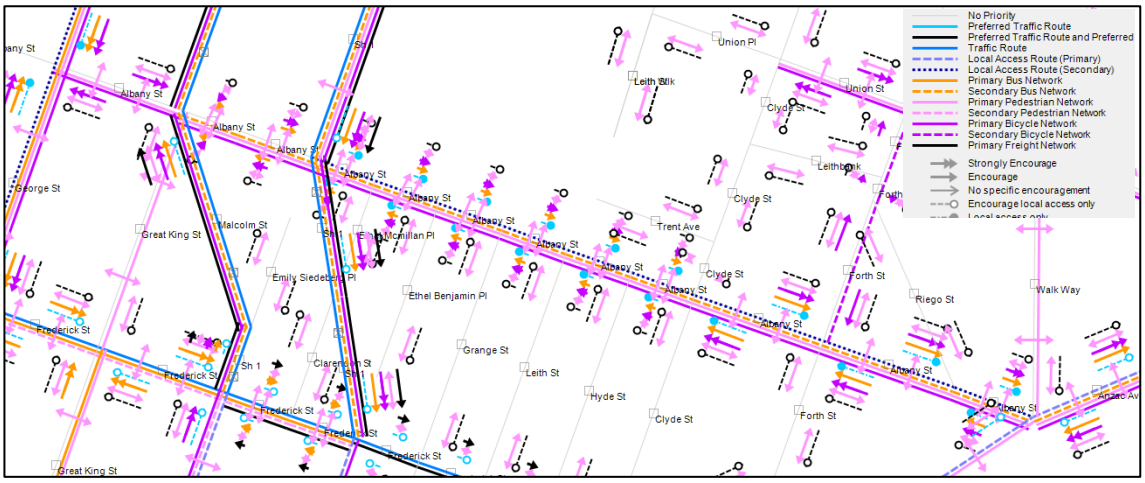


Figure 22 One-way AM peak hour mode priorities Albany Street

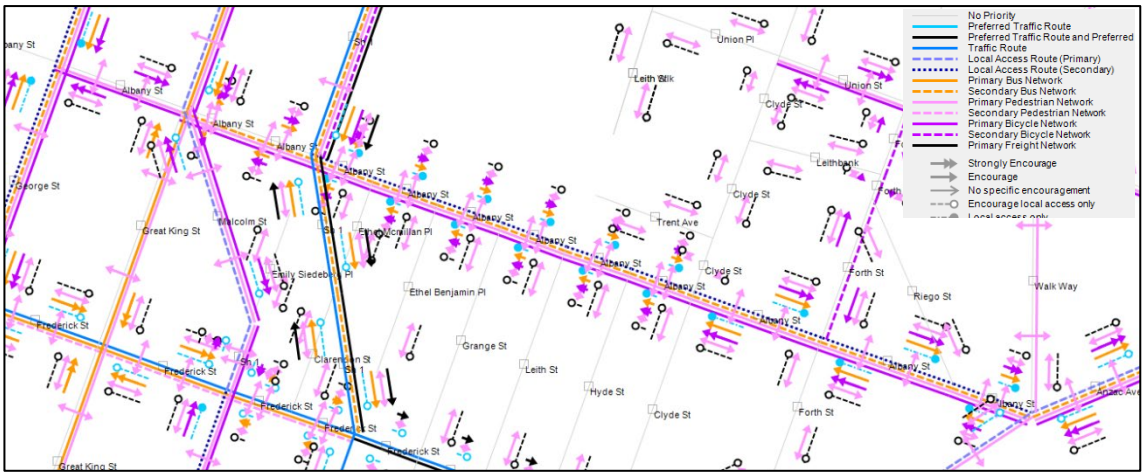


Figure 23 Two-way AM peak hour mode priorities Albany Street

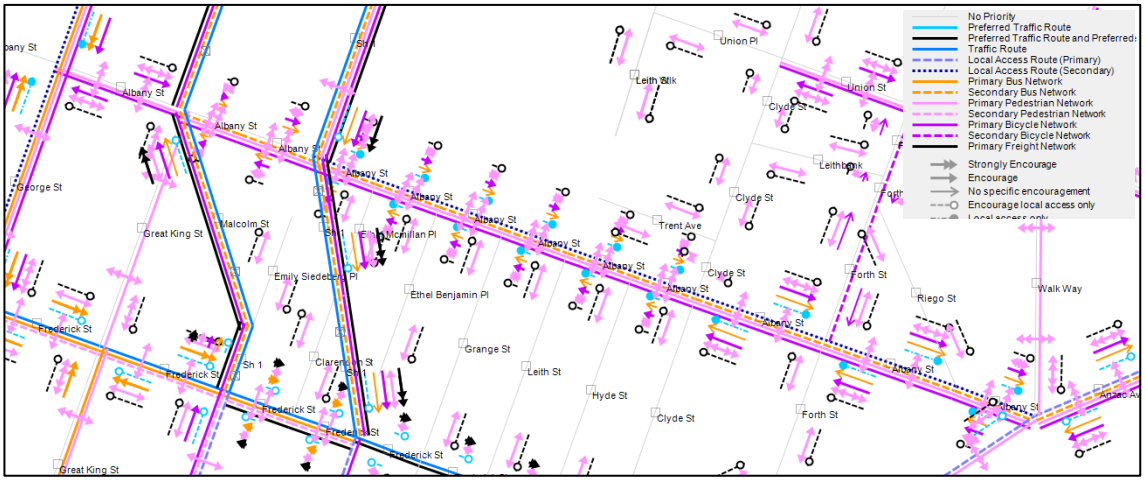


Figure 24 One-way IP peak hour mode priorities Albany Street

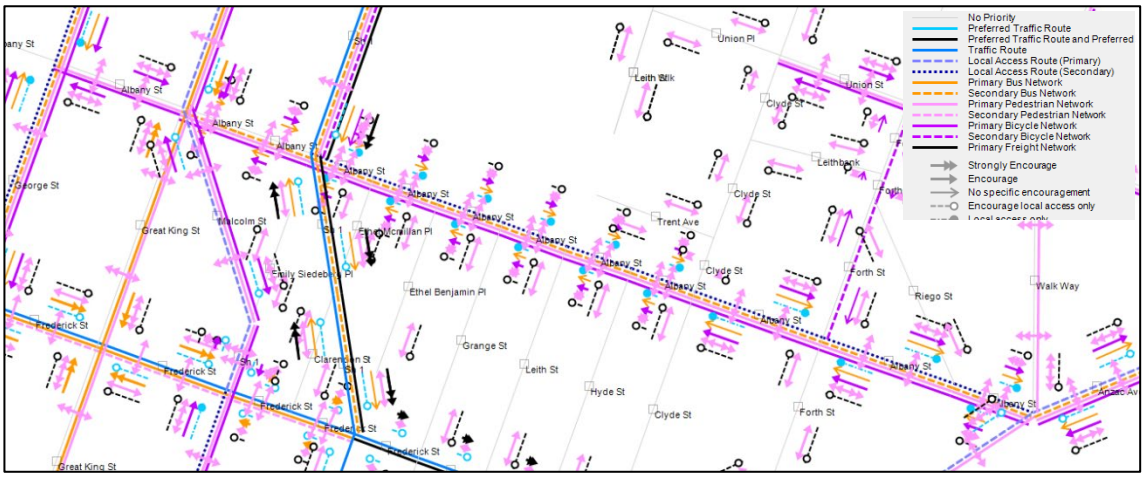


Figure 25 Two-way IP peak hour mode priorities Albany Street

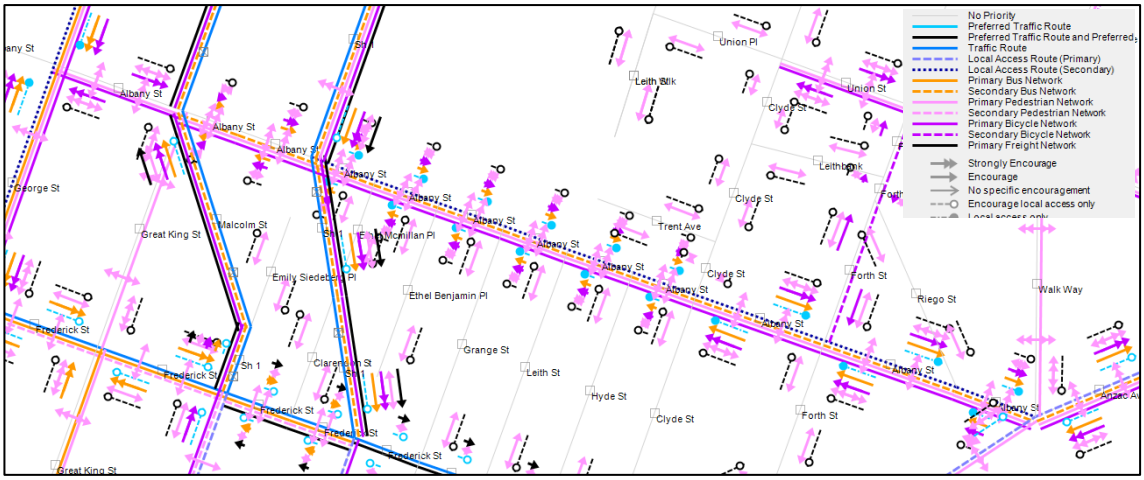


Figure 26 One-way PM peak hour mode priorities Albany Street

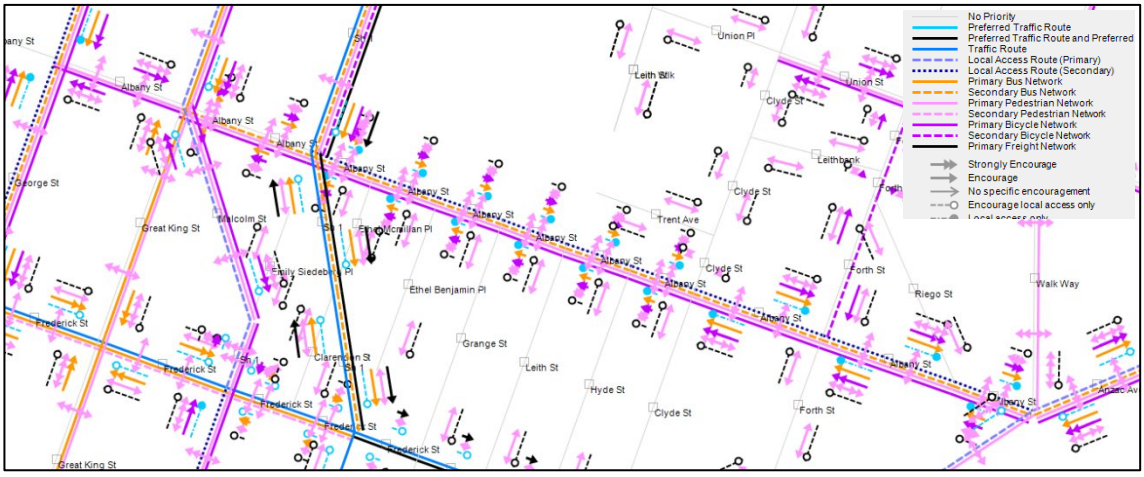


Figure 27 Two-way PM peak hour mode priorities Albany Street

9.3.2 Focus Area 2: Frederick Street

Frederick Street may require interventions if the link between SH1 and SH88 is encouraged as a freight bypass for the CBD discussed during workshop. With connections between the State Highways as well as into the harbourside industrial area, Frederick Street is likely to become an increasingly important connection in the network. The area between the SH1 corridors is especially important as in this short corridor there are several interactions between different modes that will need to be considered in different ways. There are very few differences in the mode priority interactions between Frederick Street and the surrounding streets regardless of whether the one-way or two-way system is implemented as outlined in Figure 28 – Figure 33.

Throughout the day pedestrian activity is encouraged west of the SH1 corridor. Due to the interactions noted between pedestrians and vehicles, particularly heavy vehicles between the two state highway corridors, safety interventions and improving user experience for pedestrians should be considered. Interventions which could be considered include longer signal phase times for pedestrians and improve pedestrian crossing points with island refuges or similar facilities, and consider facilities separating active modes from traffic at the SH1 intersections.

Public transport is strongly encouraged throughout the day, as Frederick Street is used to funnel traffic into and out of the Central Bus Station on Great King Street. Interventions such as separated lanes or bus priority signals would encourage these movements to operate more efficiently and safely along the corridor.

For freight movement between SH1 and SH88, freight is encouraged in the AM and PM peak hours and strongly encouraged in the IP peak hour on this corridor. Freight interventions include stronger pavement choices and inclusion of longer and wider turning bays to provide overall improved level of service for heavy vehicles. Interventions could consider engaging with freight companies regarding route choice and time-of-day operations and encouraging inner-city centre deliveries to off-peak hours to contribute to reduced traffic volumes and congestion.

The aspirational network classifies entire length of Frederick Street as a traffic route, forming the northern part of a ring around the CBD. Throughout the day the encouragement for this corridor is “encourage local access only”. While this does not mean that vehicles would not be able to use this, the operation of the corridor would acknowledge that there will be some trade-offs in efficiency of movement and delay as they will not be prioritised for movement along the route.

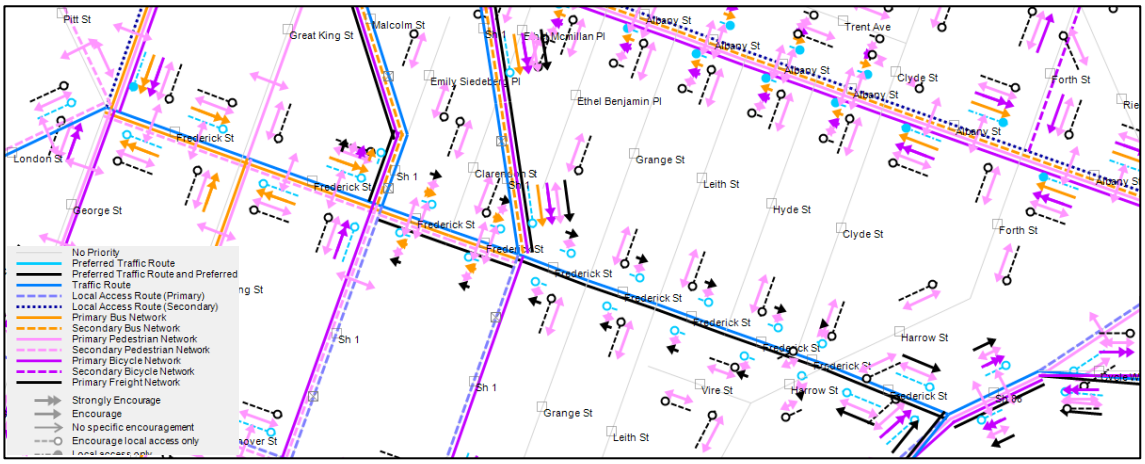


Figure 28 One-way AM peak hour mode priorities Frederick Street

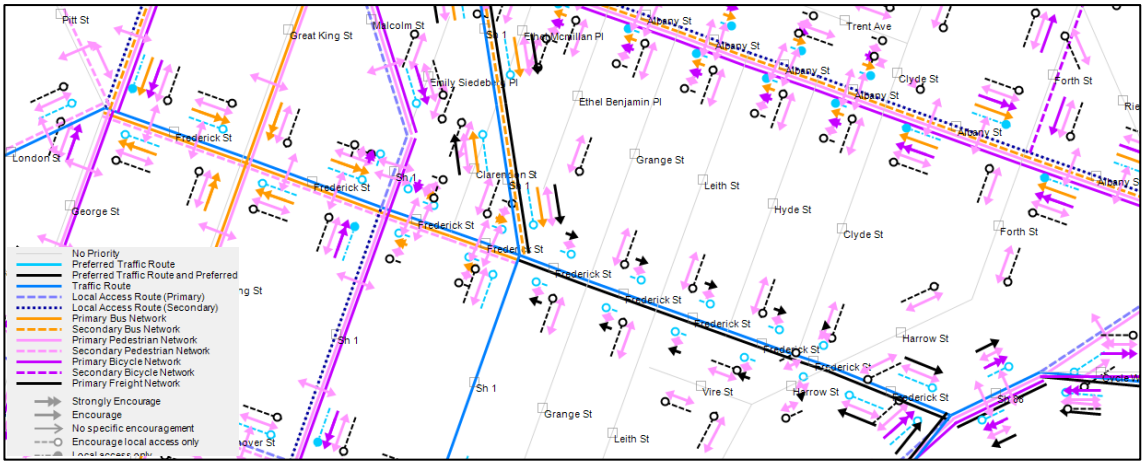


Figure 29 Two-way AM peak hour mode priorities Frederick Street

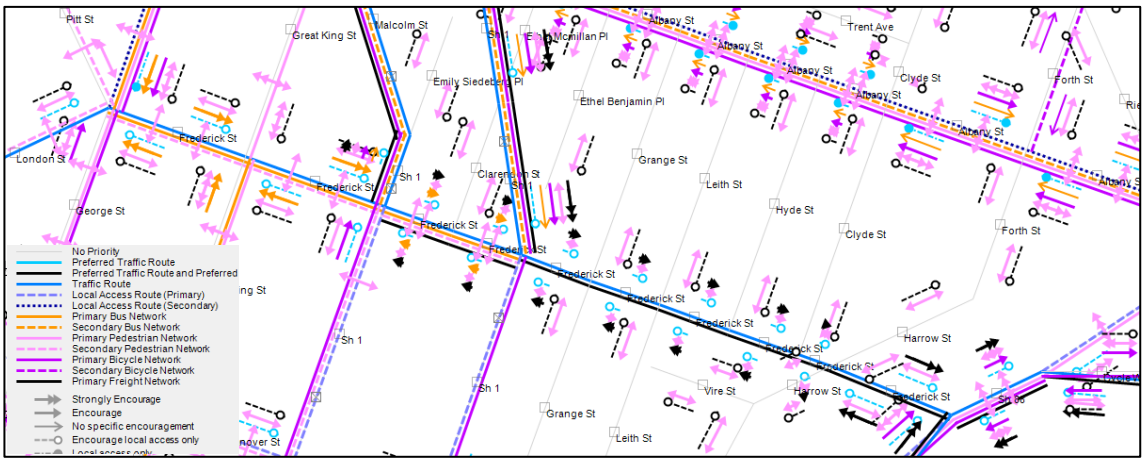


Figure 30 One-way IP peak hour mode priorities Frederick Street

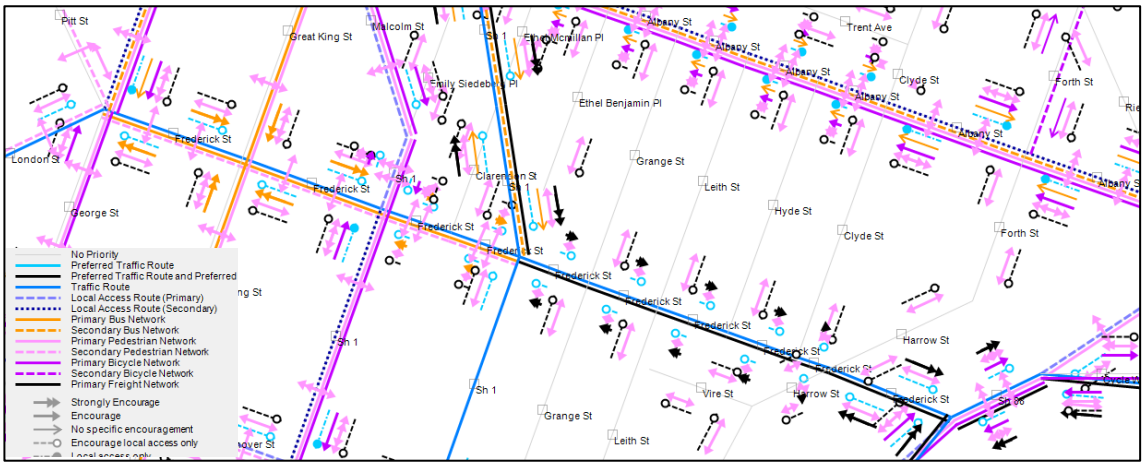


Figure 31 Two-way IP peak hour mode priorities Frederick Street

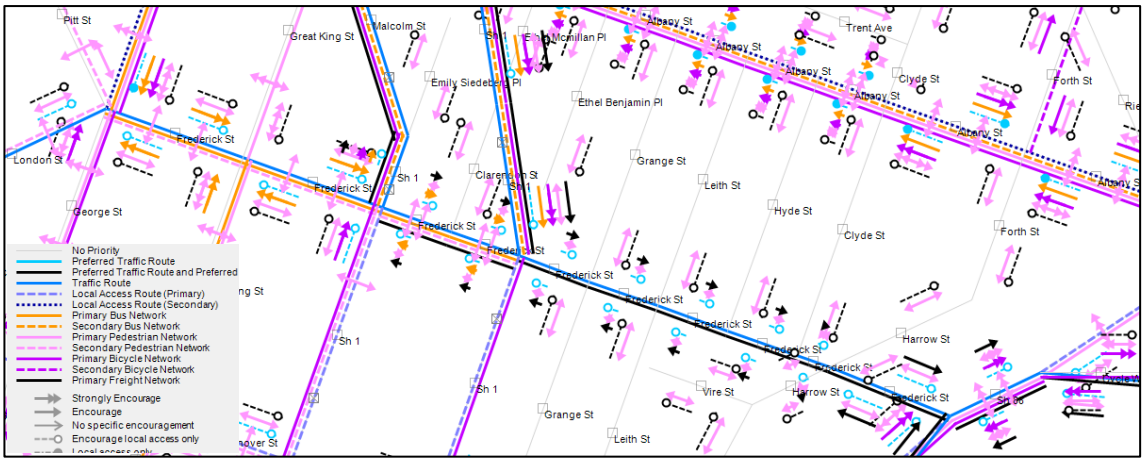


Figure 32 One-way PM peak hour mode priorities Frederick Street

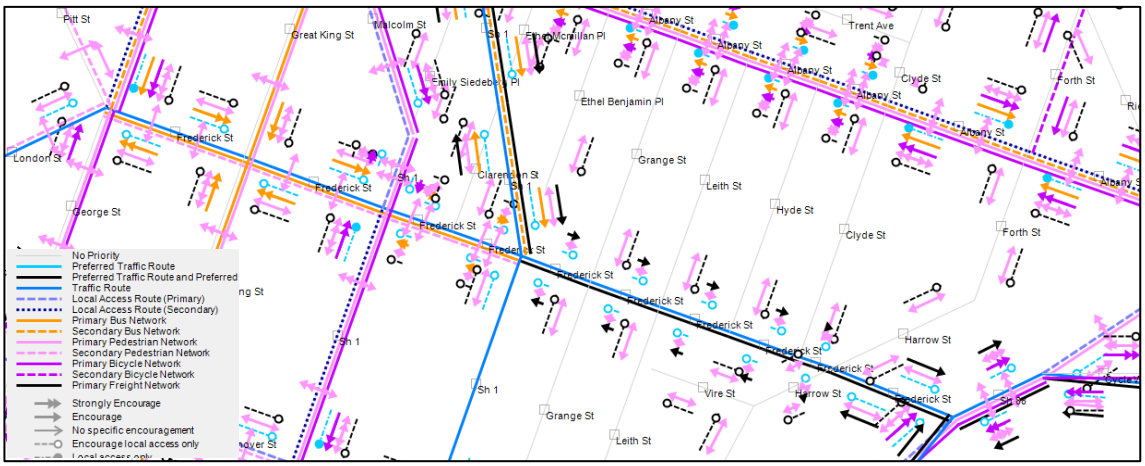


Figure 33 Two-way PM peak hour mode priorities Frederick Street

9.3.3 Focus Area 3: Active mode Harbourside corridors

The harbourside industrial area is a key route for active modes as well as general traffic and freight. The freight bypass travels through here; however, it is also a key part of the active mode commuter route. The aspirational network shows that the desire is for the bypass to also serve general traffic seeking to travel through/around the CBD, as well as freight. There is also a focus on increasing the active mode facilities within this area to improve safety and accessibility. There are few differences in the mode priority interactions between the active mode Harbourside corridors and the surrounding streets regardless of one-way or two-way system is implemented as outlined in Figure 34 – Figure 36.

Between the Leith Bridge beside Forsyth Barr Stadium and Portsmouth Drive, there are a range of current and aspirational active mode routes connecting to and through the industrial harbourside area. There is a desire to better connect Otago Harbour to the city by providing safe and separated active mode connections to the waterfront, particularly as these areas serve many active mode commuters. Some of these connections such as the bridge connecting Queens Gardens to Wharf Street and the link between Leith Bridge and St Andrew Street have not been constructed yet but will form important components of the network when in place. Currently there are on-road active mode links along Fryatt Street, Birch Street and Kitchener Street with off-street paths linking Fryatt and Birch Street and Kitchener Street to Portsmouth Drive. This will likely remain the primary cycle route through these industrial areas until the links mentioned above are connected. In the aspirational network the Fryatt Street link has a slightly lower level of encouragement for cyclists than all the other links within the area throughout the day. In the AM and PM peak hours cycle movements along Fryatt Street are “encouraged”, while in the IP peak hour there is “no specific encouragement”. In contrast, all other cycle movements along Thomas Burns Street, Wharf Street and others in the industrial area are “strongly encouraged” in the AM and PM peak hours and “encouraged” in the IP peak hour, reflecting that these are important priority movements. Interventions which could continue to promote these levels of priority include lighting, separated cycleways, active mode priority at intersections or user activated signals or detectors that enable active mode users to cross freight routes safely, advanced stop boxes, refuge islands and staged crossings or even underpasses and overpasses.

Freight movements through the industrial area are expected to mainly occur along the bypass, with “encouragement” during morning and evening peak hours and “strong encouragement” off-peak. As with Frederick Street, freight interventions consider stronger pavement choices and inclusion of longer and wider turning bays to provide overall improved level of service for heavy vehicles. Interventions could consider engaging with freight companies regarding route choice and time-of-day operations and encouraging inner-city centre deliveries to off-peak hours to contribute to reduced traffic volumes and congestion.

Ward Street, Thomas Burns Street and Wharf Street (all part of the considered freight bypass) down to Jetty Street and Strathallan Street would function as a traffic route for northbound and southbound vehicles avoiding the CBD. While vehicles will be able to access the CBD and travel across the CBD using the state highways, the aspiration is to encourage cross city movements along this parallel route. Interventions should encourage these movements such as prioritised movements, longer green signal phase times on preferred routes, signage and reduced conflict corridor, while discouraging movement through other areas with interventions such as slower speeds, shorter cycle times favouring pedestrians, and priority of other modes, particularly at certain times of the day.

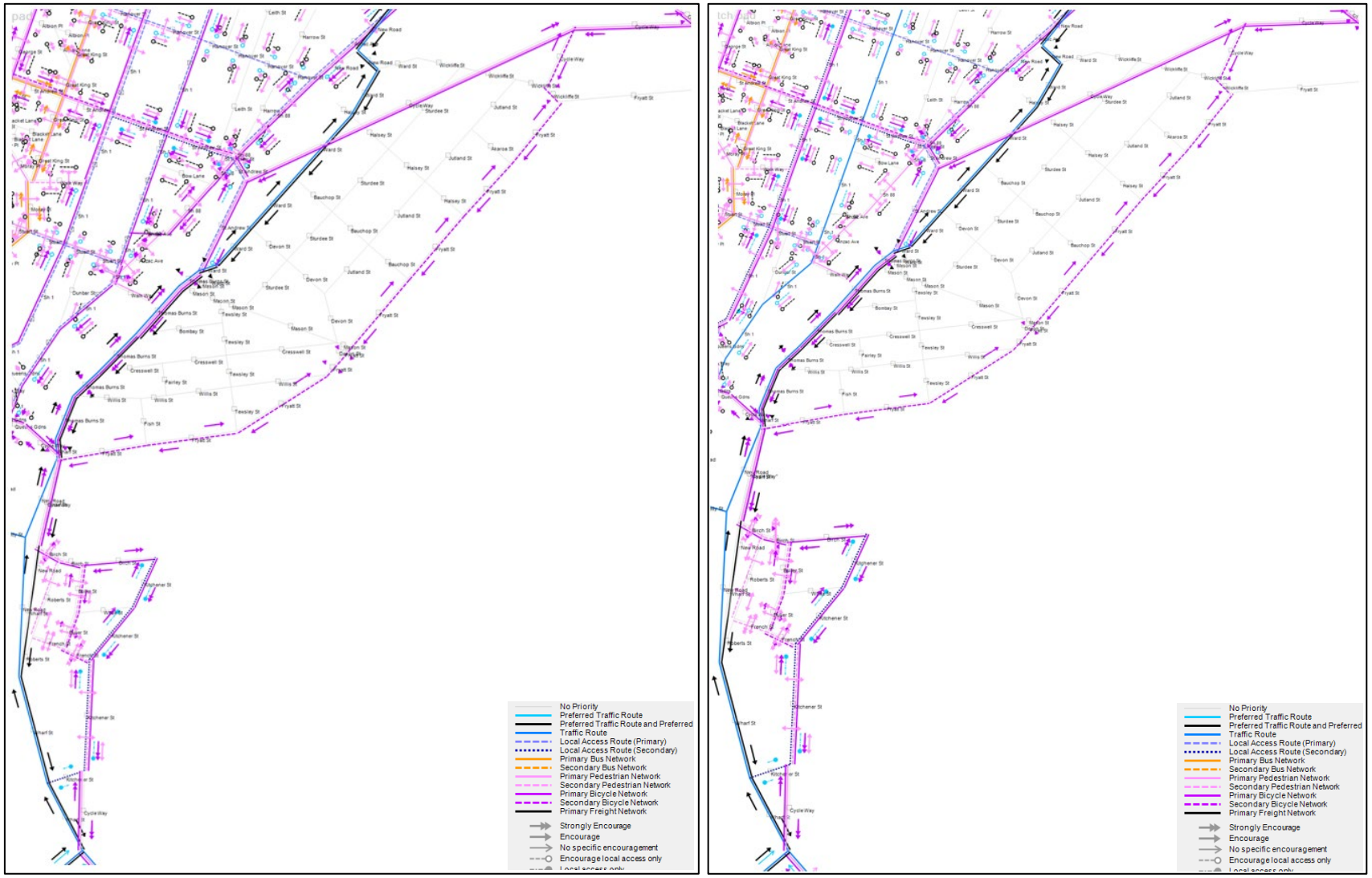


Figure 34 One-way (L) and two-way (R) AM: Harbourside – Leith Bridge to Portsmouth Drive

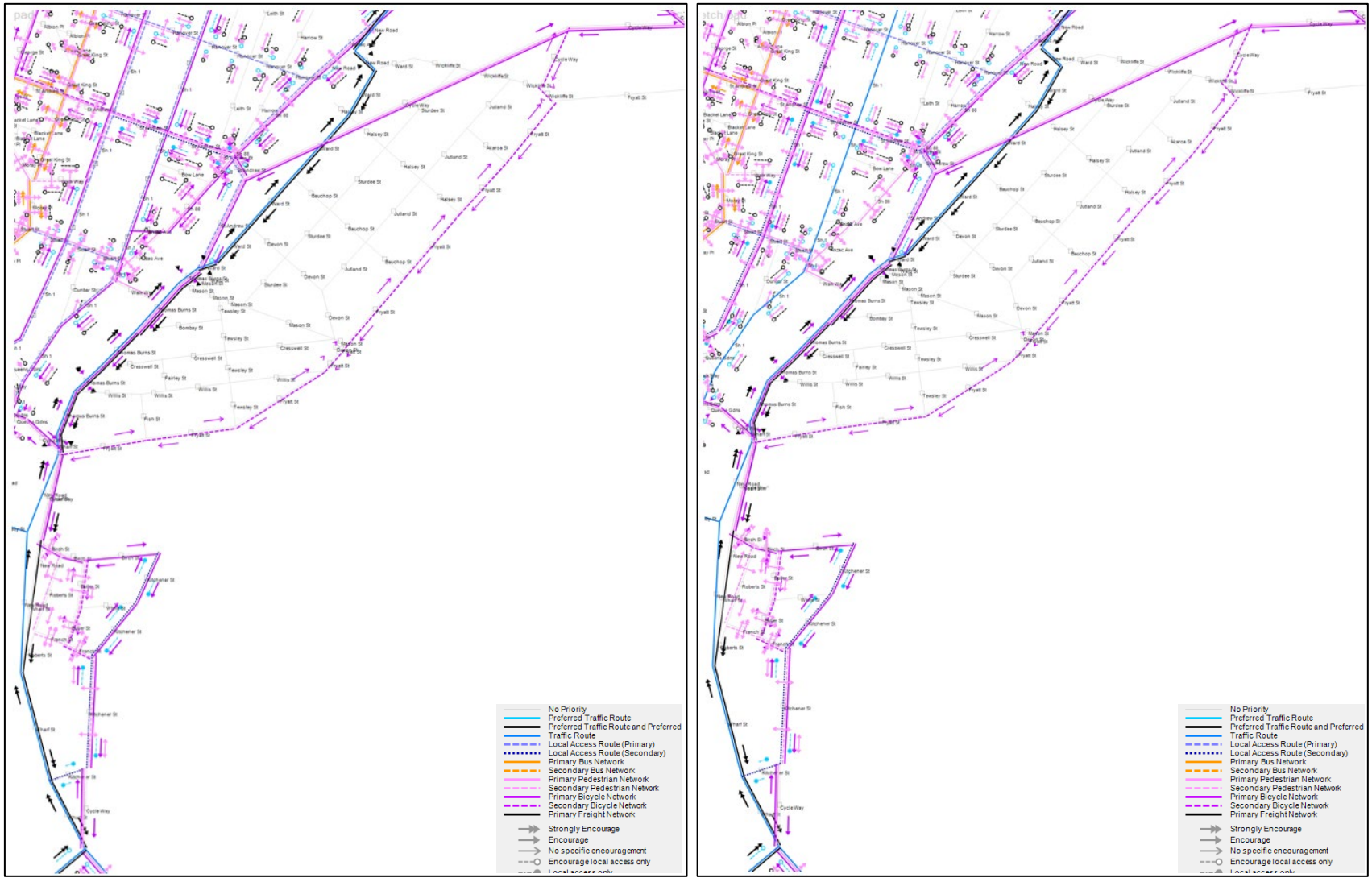


Figure 35 One-way (L) and two-way (R) IP: Harbourside – Leith Bridge to Portsmouth Drive

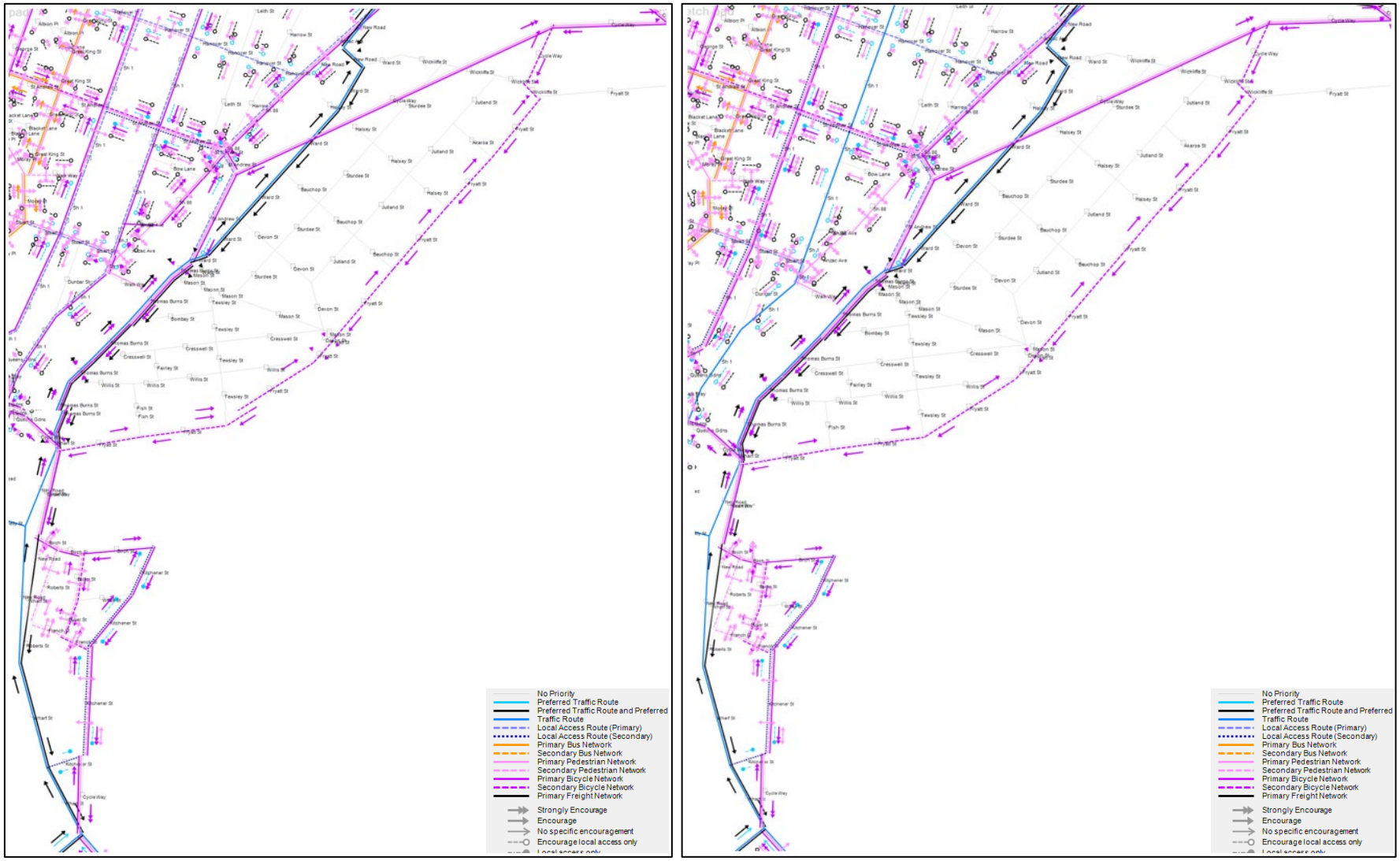


Figure 36 One-way (L) and two-way (R) PM: Harbourside – Leith Bridge to Portsmouth Drive

9.3.4 Focus Area 4: SH88/Forsyth Barr Stadium

The intersection of Anzac Avenue and SH88 beside Forsyth Barr Stadium results in a confluence of all five modes. The fact that most of the routes converging here is helpful in that the discussion recognised that this intersection is important for a variety of modes some of the time (e.g. during stadium events), but the state highway is important for freight and to a lesser extent general traffic almost all the time. There are very few differences in the mode priority interactions between the Anzac Avenue and SH88 and the surrounding streets regardless of whether the one-way or two-way system is implemented as outlined in Figure 34 – Figure 36.

Active modes in this area of the city have wide and separated paths and facilities such as Leith Bridge which reduce the need to interact with other modes. The connection alongside the Water of Leith under SH88 provides connections from Leith Bridge to the University which enable cyclists and pedestrians from having to cross SH88. In the AM peak hour cycling is “strongly encouraged” along this link while pedestrians are only “encouraged”. In the IP peak hour this priority is reversed with pedestrians “strongly encouraged” and cycling only “encouraged” while in the PM peak hour both active modes are “strongly encouraged” along this route. Minor interventions may be helpful in this area such as ensuring there is sufficient lighting, active mode priority at intersections or user activated signals or detectors that enable active mode users to cross freight routes safely, advanced stop boxes and refuge islands or staged crossings.

While Anzac Avenue and SH88 west of the roundabout are secondary Public Transport routes, they form an important connection for students and commuters living in Ravensbourne and further northeast. Being the only link out towards this area it is important that there are services available that meet the needs of the population in this area. The movements along Anzac Ave and onto SH88 are shown to be “encouraged” in the AM and PM peak hours, with “no specific encouragement” in the IP peak hour. Encouragement along this corridor could be provided through higher frequency services, higher amenity at bus stops, and bus stops at locations of high demand, and improving bus access and egress from SH88.

SH88 is a primary freight route out to Port Chalmers. As with freight movements along CBD freight bypass, provision of positive interventions such as right turning bays and negative interventions, such as kerb build outs within the CBD, can help encourage and discourage freight movements at specific locations. Along this route freight movements are “encouraged” in the AM and PM peak hours and “strongly encouraged” in the IP peak hour. Many of the interventions suggested for other routes such as resurfacing, and pavement strengthening do not apply here as this is a state highway and those interventions are already in place.

SH88 towards Ravensbourne is a Traffic Route, it has high level of encouragement – this can be achieved through removing delays to through traffic by providing right turn bays as well as using street design and/or signage to encourage different speeds, particularly at locations where conflict with other modes is designed to occur.

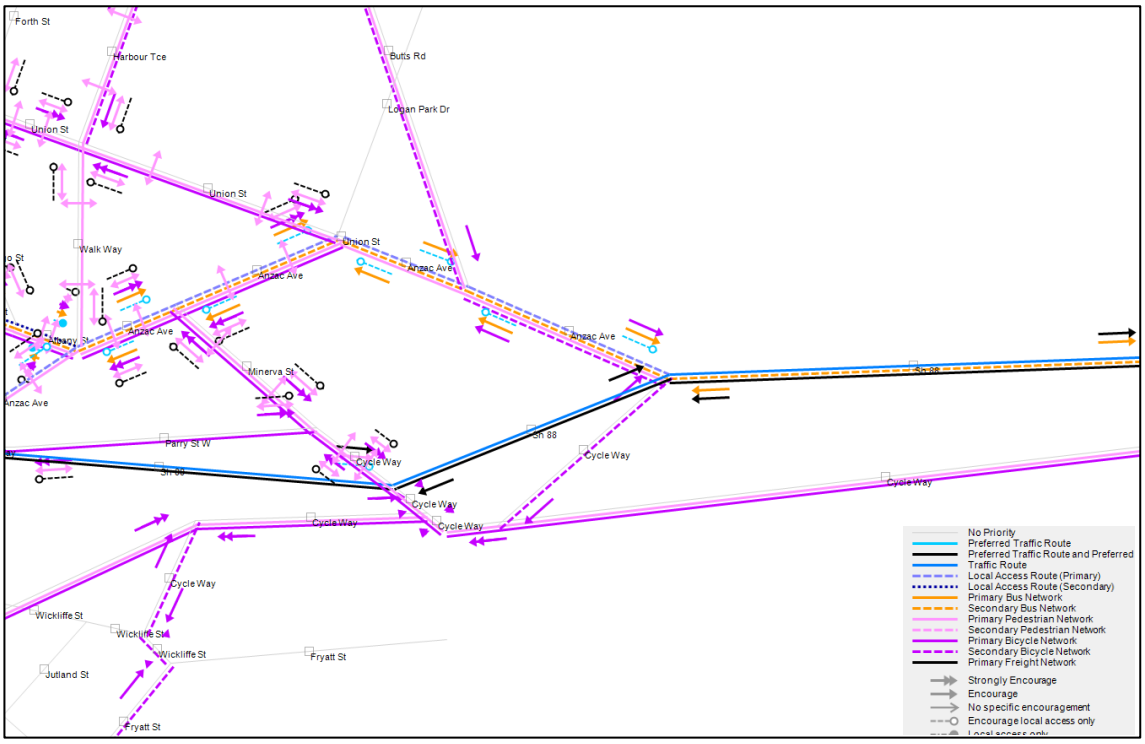


Figure 37 One-way AM peak hour mode priorities SH88/Forsyth Barr Stadium

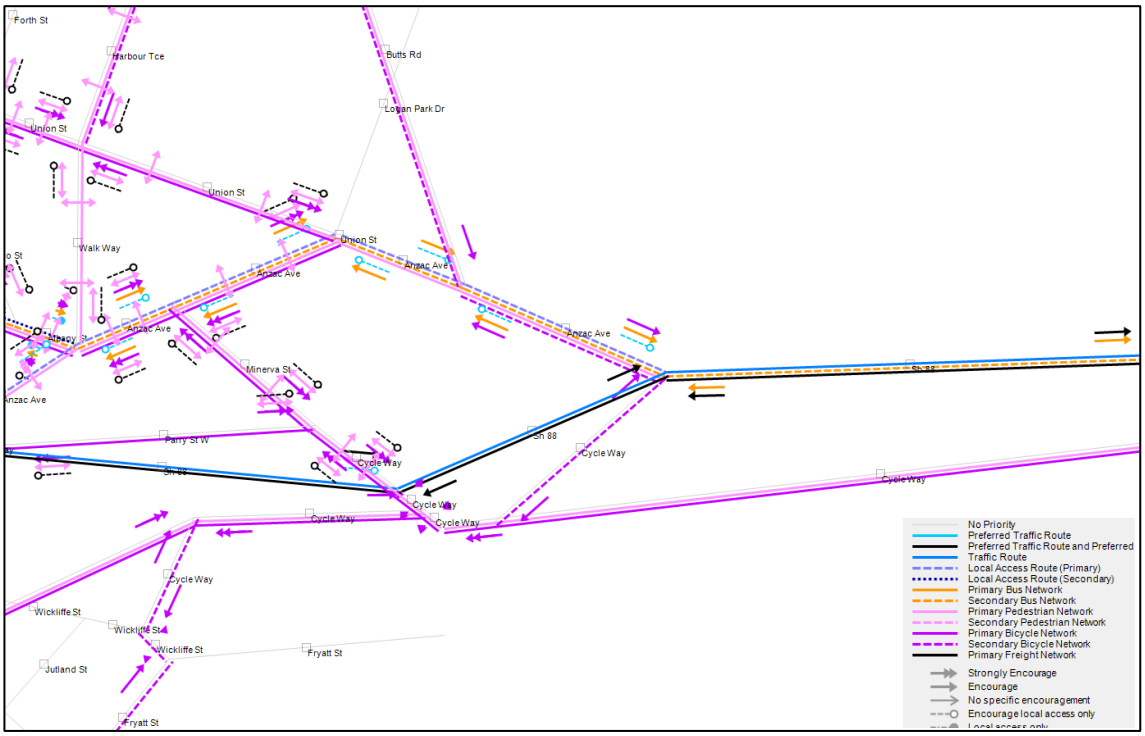


Figure 38 Two-way AM peak hour mode priorities SH88/Forsyth Barr Stadium

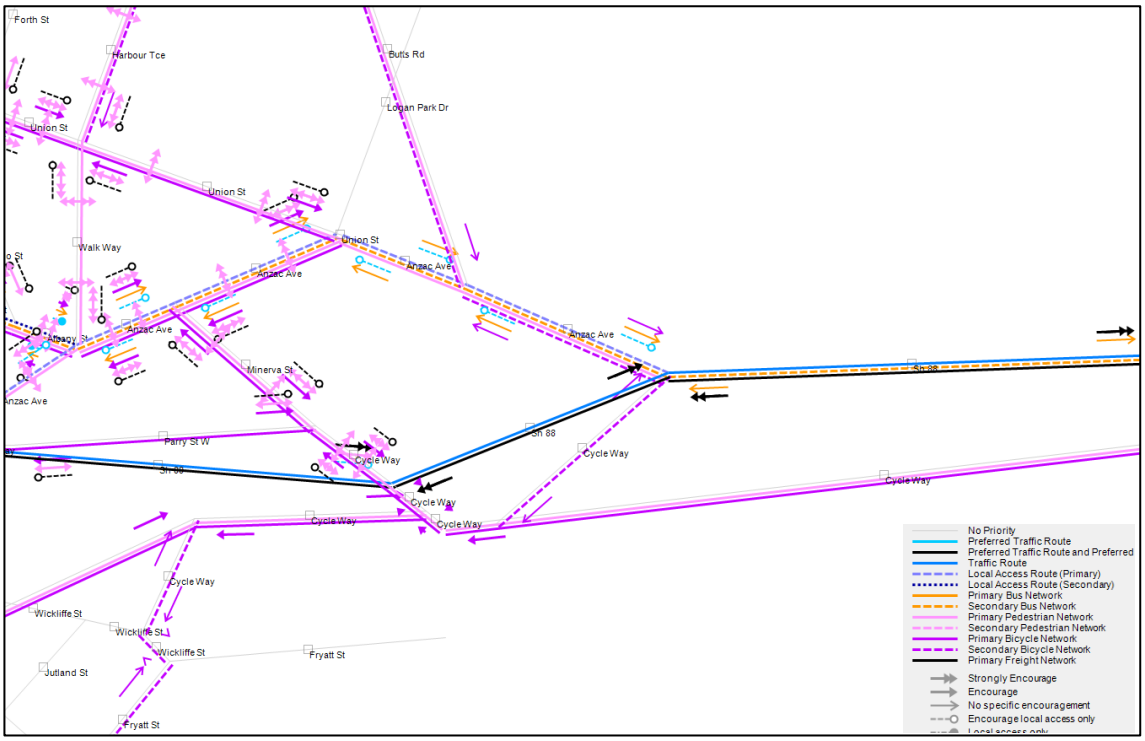


Figure 39 One-way IP peak hour mode priorities SH88/Forsyth Barr Stadium

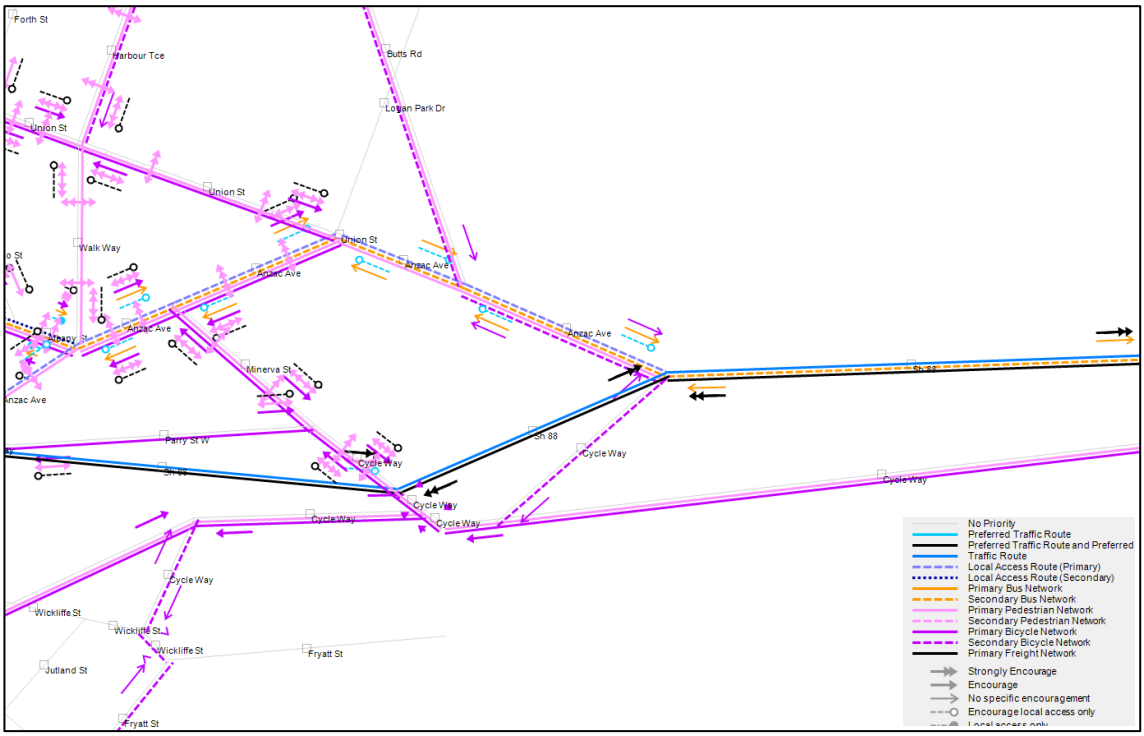


Figure 40 Two-way IP peak hour mode priorities SH88/Forsyth Barr Stadium

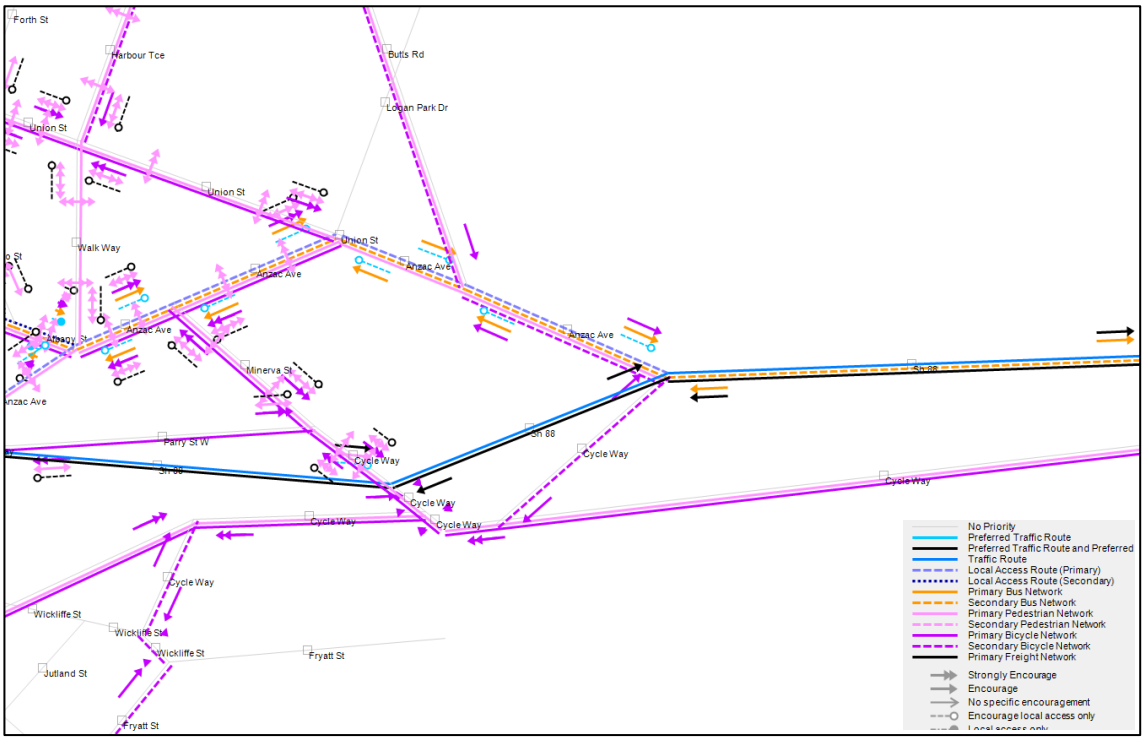


Figure 41 One-way PM peak hour mode priorities SH88/Forsyth Barr Stadium

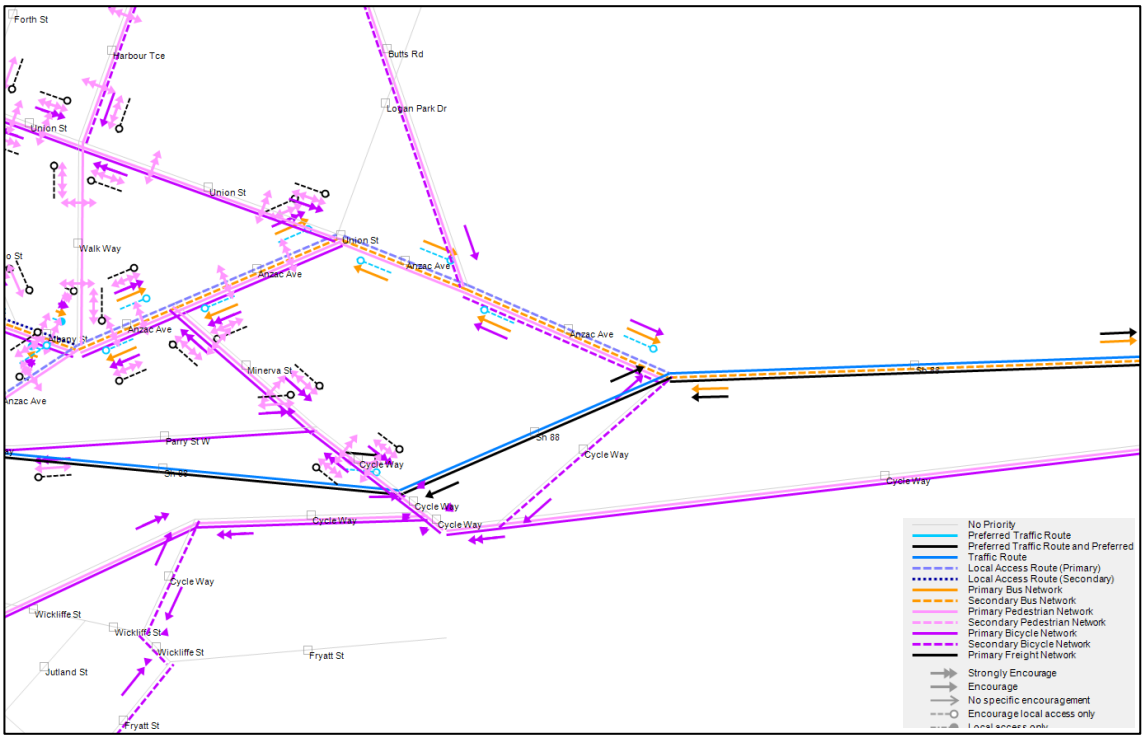


Figure 42 Two-way PM peak hour mode priorities SH88/Forsyth Barr Stadium

10. Future NOF Application

This Network Operating Framework focused on the development of Strategic Objectives and Network Principles followed by assigning network priorities and SmartRoads tool development.

The following outlines future application options for the Network Operating Framework and SmartRoads tool subject to information available and outcomes sought.

10.1 Strategic Network Programme of Interventions

The Network Operating Framework is a tool that supports the required transport inputs for developing programmes of infrastructure and non-infrastructure interventions considering the conflict points on a future aspirational transport network. The outputs indicate which transport corridors are suitable for altering to provide for modes i.e. to support a place function, and what roads are required to place an emphasis on throughput to cater for the transport requirements.

10.2 SmartRoads tool application

Future use of the SmartRoads tool can be for qualitative or quantitative assessment of network and intervention performance. Below is an outline of the approaches.

Network Performance (Performance Measures, Targets and Gap Analysis)

Network performance data collected and entered in the SmartRoads tool forms the base performance data. The base performance data combined with the model priorities identify 'gaps' between the base and performance targets. The performance targets are set within the tool based on the assigned route priorities and reflect the activity areas. For example, in higher activity areas pedestrians have higher levels of encouragement on priority routes compared with general traffic and so are assigned a higher aspirational performance target.

Performance assessment outputs are 'Operating Gaps' and can identify where the network is performing below aspirational targets.

Intervention Testing

Network strategies developed to address network shortcomings come in a variety of responses and complexity levels. The NOF allows assessment of potential interventions against the strategic aspirations of the network. These assessments allow road controlling authorities to see how well the response addresses performance short falls and the likely 'fit' within the strategic context of the network. The assessments are Network Fit Assessments undertaken on planned or committed infrastructure improvement schemes.

10.3 Network Operating Framework lifecycle

This Network Operation Framework is a live document based on the outcome of workshop sessions with stakeholders. This Network Operating Framework will inform strategic planning through Master Planning and Business Cases in the future. Conversely, changes in policy, land use and the network, as well as outcomes from Master Planning and Business Cases may alter thinking with more refined understanding. As such, the Network Operating Framework is live, and an iterative approach is undertaken so that the framework compliments and supports outcomes. This may result in changes to primary or secondary routes for modes of transport; however, these would be justified and informed at any future reviews of the Network Operating Framework.

Appendices

Appendix A – Workshop Information Packs

Dunedin Network Operating Framework

Post Workshop Summary - Land use, growth and Strategic Objectives

Andrew Metge | NOF technical lead

Tim Eldridge | Workshop facilitation

Joel Strijbis | NOF development support

Attendees

Name	Organisation
Tim Eldridge	GHD
Andrew Metge	GHD
Joel Strijbis	GHD
Dougal List	RDC
Kelly Blackie	NZTA
Chris Harris	NZTA
Robert Woods	NZTA
Letitia McRodden	ORC
Nick Sargent	DCC
Simone Handwerk	DCC
Anna Johnson	DCC
Merrin Dougherty	DCC
Emma Christmas	DCC

Name	Organisation
Sarah Connolly	Stantec
Mary O'Brien	CCS Disability Action
Ray O'Brien	University of Otago
Murray Clarke	AA

Agenda

Thursday 14th May 2:00 p.m. – 4:00 p.m.

2:00 pm Welcome and introductions

- Background context and overview

2:20 pm NOF process overview

2:45 pm Planning presentation/discussion

- Dunedin City Council

3:45 pm Strategic Objectives and Principles briefing

4:00 pm Meeting close

Target Outcomes

1. Understand the purpose of developing a Network Operating Framework

2. Understand future land use and growth changes in Dunedin

3. Briefing on Strategic Objectives and Principles development (questionnaire)

Network Operating Framework – Purpose

'how the network needs to be managed'

- Working collaboratively and effectively to deliver integrated transport outcomes that respond to land use and growth
- Recognises different transport modes do not function in isolation, but together as an integrated transport system
- Balance the needs for each transport mode to deliver a more integrated network
- Managing change through understanding wider network impacts

What is a Network Operating Framework?

Moving People and Goods over Vehicles

Transport supporting land use

Balancing competing demands for limited road space

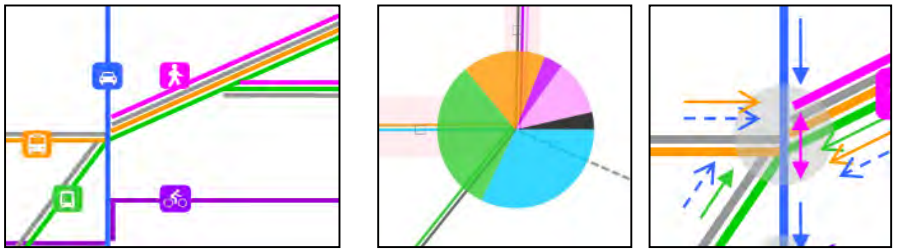
Thinking about ‘Networks’ rather than sites or routes

Benefits of a Network Operating Framework

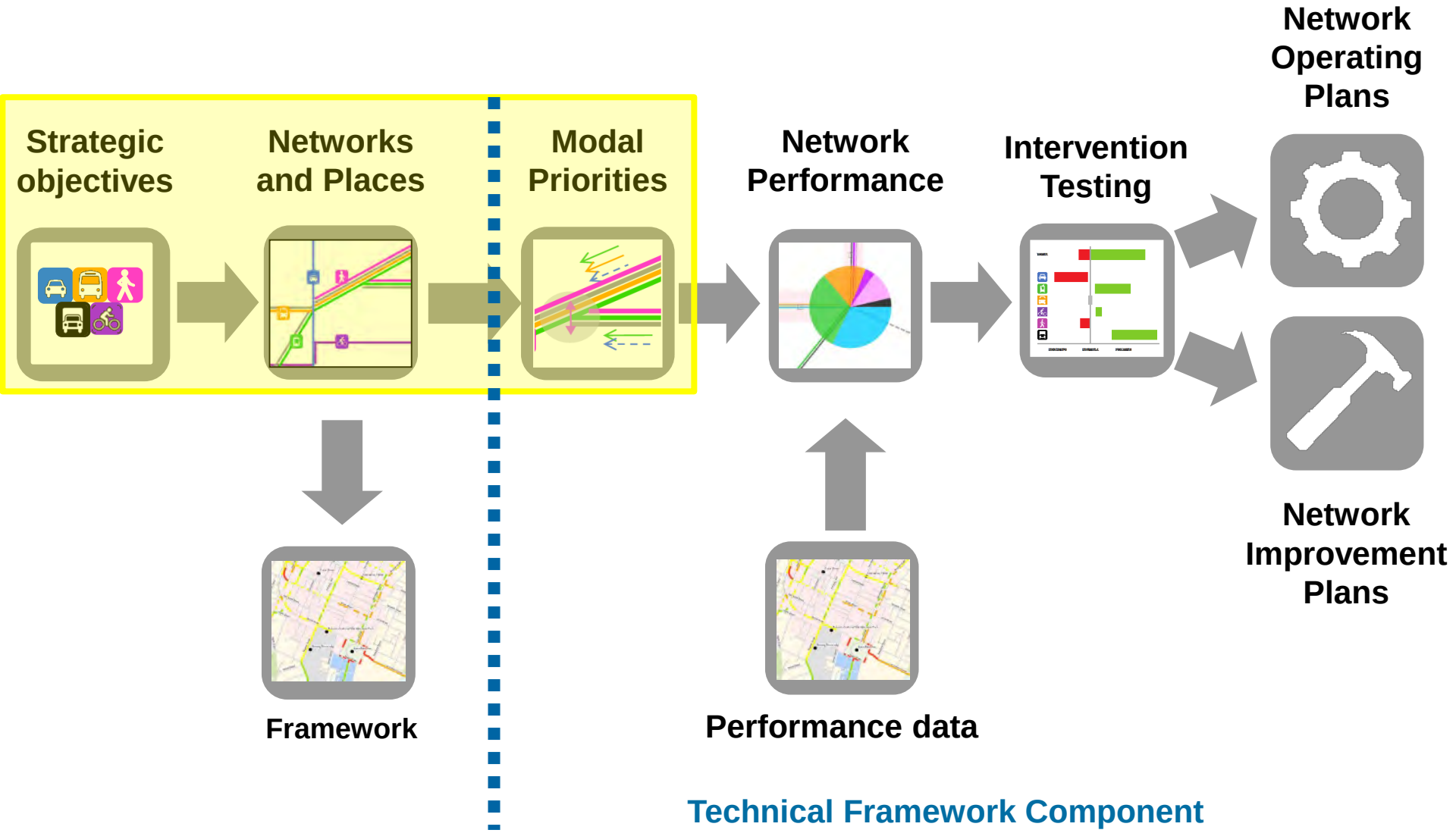
- Support decisions as part of a wider decision making framework, it is a decision supporting framework
- Provides a collaborative approach to planning outcomes
- Take a wider view of the network
- Provide transparency in decision-making
- Compliments master planning and business case development

What the NOF approach doesn't do?

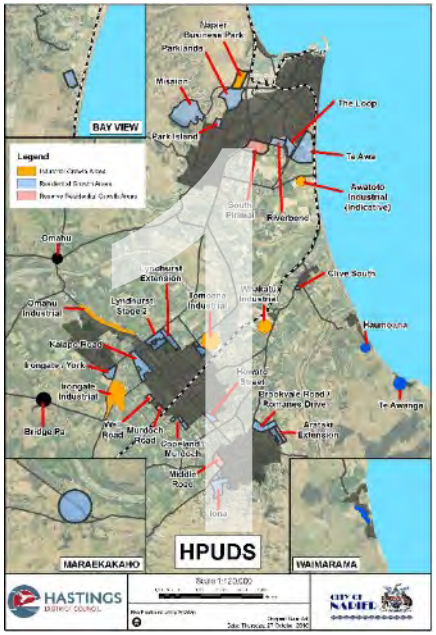
- It won't tell you what to do – it's not a silver bullet
- It does not remove your decision making freedom



Network Operating Framework - Process

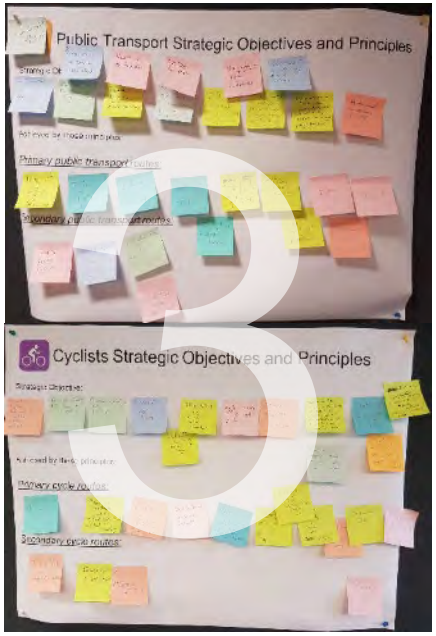


Undertaken through workshop sessions



Understanding growth and land use changes

Future challenges at agreed timeframe



Develop Strategic Objectives and guiding Network Principles

Develop strategic mode network based on Principles

Dunedin City Council Presentation

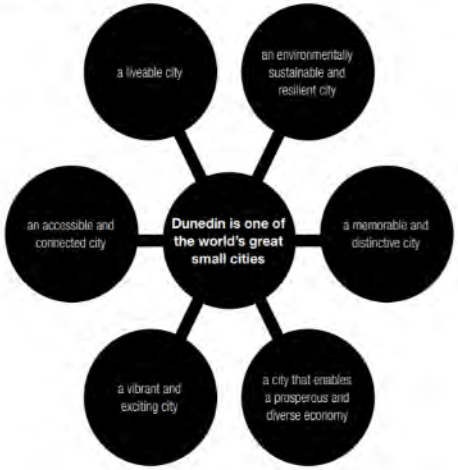
Land Use and Growth

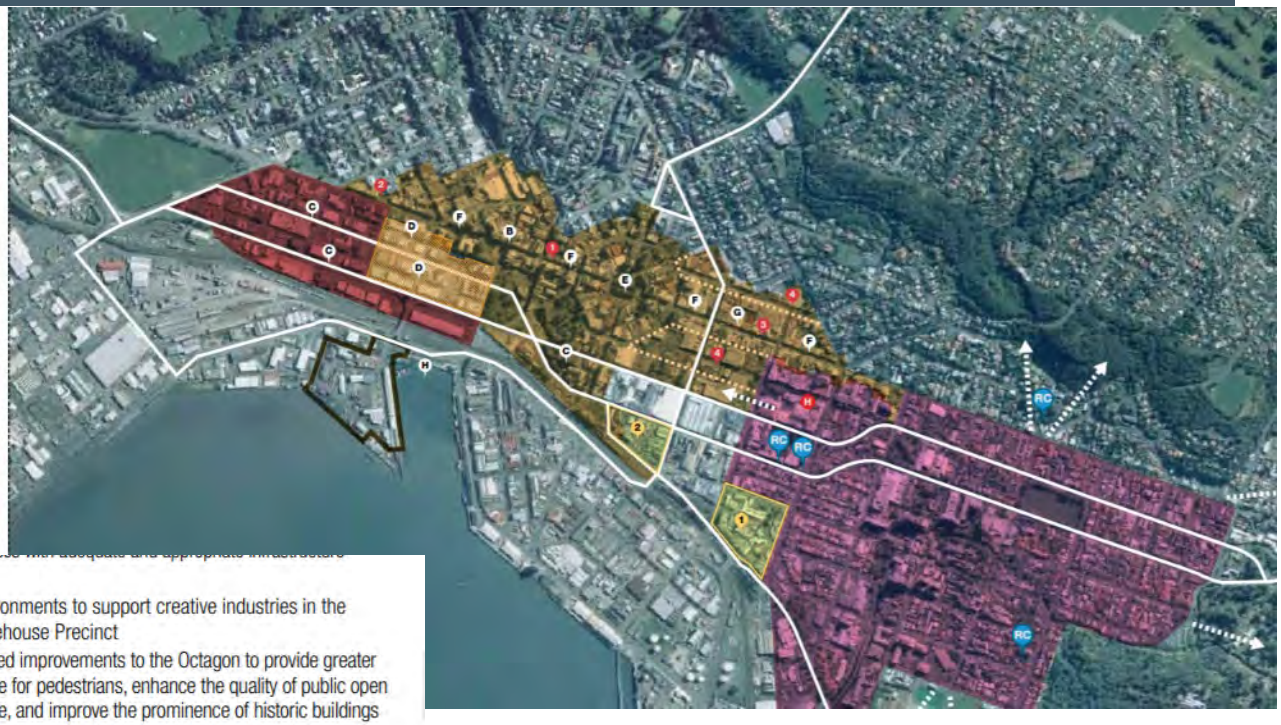
NOF workshop

DCC City Development

Spatial Plan 2012

Figure 2 – Strategic directions





Potential improvements to the public realm

- **A** Improve Queens Gardens with better pedestrian connections, enhanced safety and amenity to provide a welcoming inner city green space with improved recreation and events opportunities
- **B** Expand pedestrian space in lower Rattray Street and improve connections with Queens Gardens.
- **C** Remove the one-way system south of the Leviathan Hotel. Redesign Crawford Street as a two-way street to provide an attractive environment for the mixed uses in the buildings along it, balancing the needs of pedestrians, cyclists and cars. Relocate both directions of the State Highway to Cumberland Street without compromising the State Highway.
- **D** Improve amenity in Vogel and Bond Streets, reducing the impact of vehicles and creating shared space environments to support creative industries in the Warehouse Precinct
- **E** Staged improvements to the Octagon to provide greater space for pedestrians, enhance the quality of public open space, and improve the prominence of historic buildings
- **F** Implement improvements along Princes and George Streets to improve the pedestrian environment
- **G** Develop pocket parks and micro spaces throughout the central city to increase the amount and quality of public open space
- **H** Develop a safe, permanent connection for pedestrians and cyclists between the central city and the Steamer Basin
- **I** Implement amenity improvements to provide a better sense of place and identity for the different quarters within the central city

Central City Plan

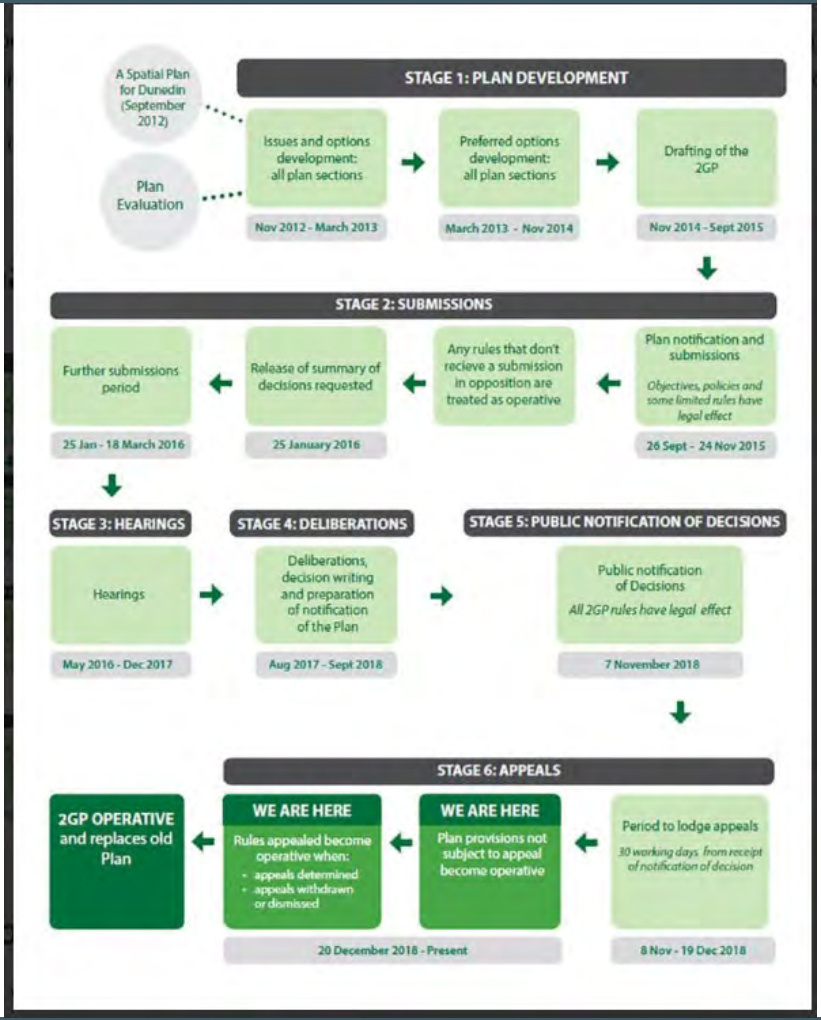
Broad Urban Design principles in line with "People + Places + Spaces"	Consolidation and dispersal	Integration and connectivity	Diversity and adaptability	Legibility and identity	Environmental responsiveness
	Development patterns and intensity	Movement networks; building interfaces	Range of densities; mix of uses; flexibility of buildings	Urban form; visual character; special places	Ecosystems; green network; energy
Specific key aims for Dunedin Central City Framework	**Community** •A strong sense of local identity, ownership, participation, and pride in the city •Buildings which resopond to the needs of ageing population and changing demographics •A streetscape that caters for the various groups that use the central city streets and places •Provisions for community and other facilities (including retail) as required to support the populations	**Land use** •Protecting and enhancing the city's character buildings and places •Increasing vibrancy and safety by combining complementing land uses with the city •The city centre as a magnet for people and goods, harnessing the movement economy •Enabling provision of higher density inner city living without adversely affecting existing land uses	**Movement** •Coordination between necessary road changes and land use activities •Accessibility between precincts without undermining the efficiency of State Highway traffic •Small urban blocks to facilitate walkability •Easily understood layouts and legible routes •Public transport where possible •A range of interconnected networks to maximise the choice and viability of as many modes as possible •Liveable and safe streets focused on pedestrians, and lower vehicle speeds encouraged on city centre streets	**Green and blue** •A high amenity interface between buildings and open spaces •Parks and reserves within walkable distance of employment and residential areas •Street trees and landscaping along key roads and wherever possible •Low impact solutions to stormwater management •Areas of native planting increased and improved to attract bird and insect life	**Employment and economy** •Buildings that cater for new and existing businesses •A streetscape that caters for a better exchange between customers and businesses and among workers •Encouraging both organisationsal physical connections between institutions to generate a wider range of employment opportunities than those currently available •A variety of efficient movement connections

Key transformational projects

Second Generation District Plan (2GP)

2GP

THE PROPOSED
SECOND GENERATION DISTRICT PLAN



Key planning issues related to Central City

- Need to maintain vibrant retail core with high pedestrian amenity
- Very enabling rule framework for residential use
- Protect heritage values (encourage maintenance, protection, restoration and reuse)
- Low amenity / high vehicle use retail and commercial use provided for on fringe of central city (CEC-N and CEC-S zones)
- Protecting some key industrial sites (Speights)
- New Dunedin Hospital

Key planning issues surrounding areas

- Waterfront (Harbourside)
- Campus – new student accommodation; high density residential in and around Campus
- Increased provision for multi-unit development in City Rise (Inner City Residential zone)

2GP Commercial and mixed use zones

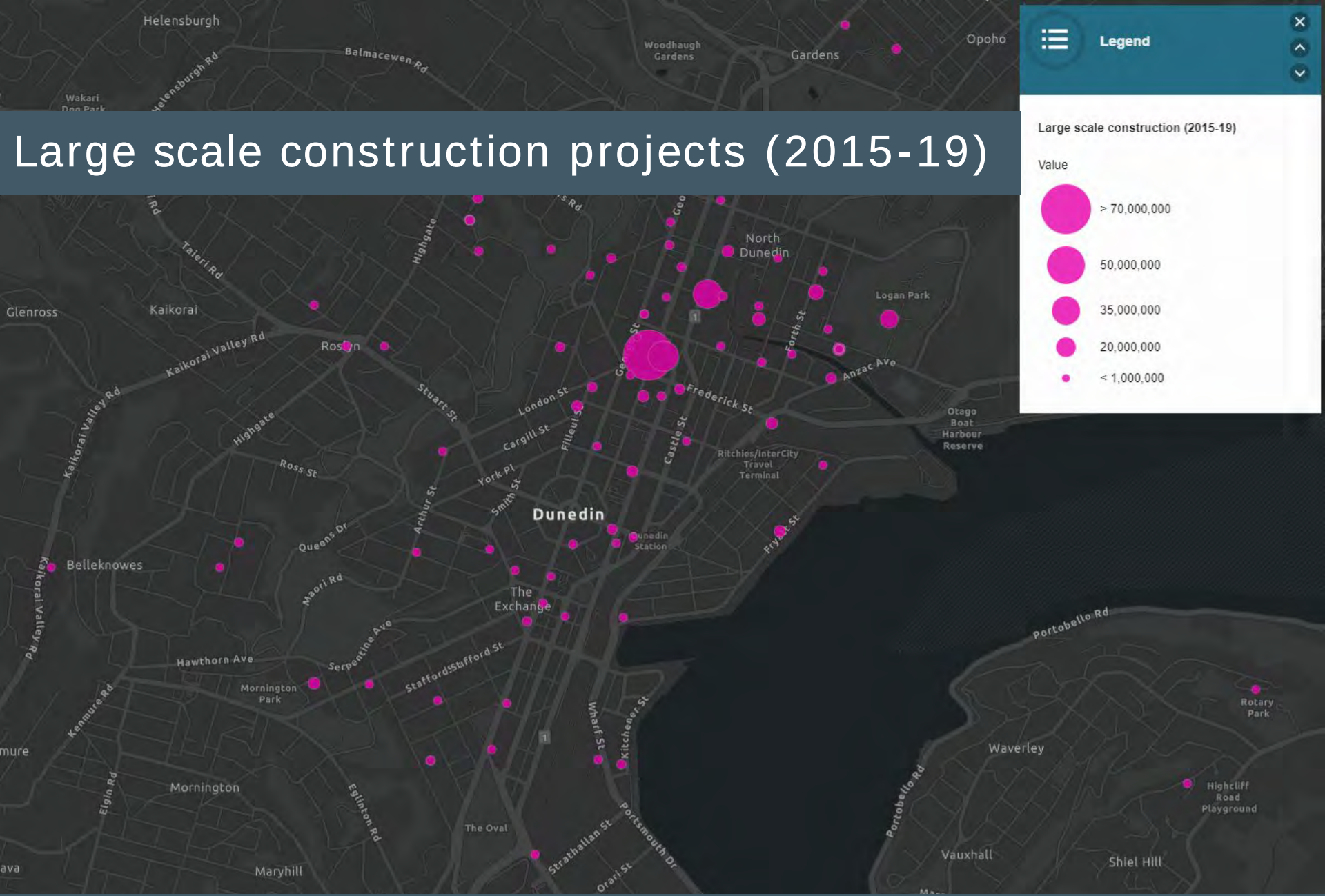
Road hierarchy and Pedestrian Frontages

High trip generators

Areas of change (growth)

- New Dunedin Hospital
- Waterfront (Harbourside)
- Increased residential development in Inner City Residential Zone and North Dunedin
- Inner city apartments
- Office developments
- Campus (student hostel on Anzac Ave; Dental School redevelopment)
- Movie studio

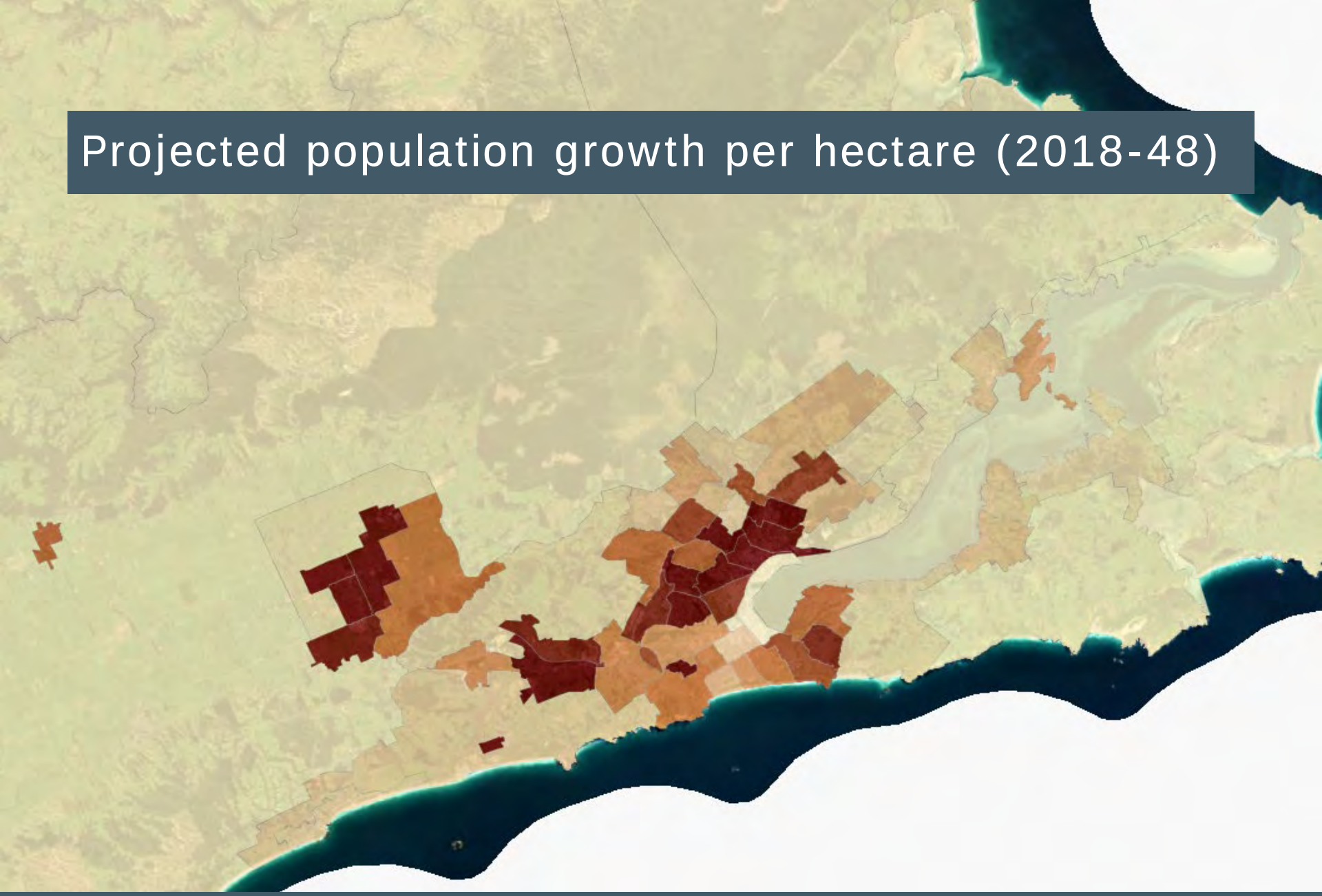
Large scale construction projects (2015-19)



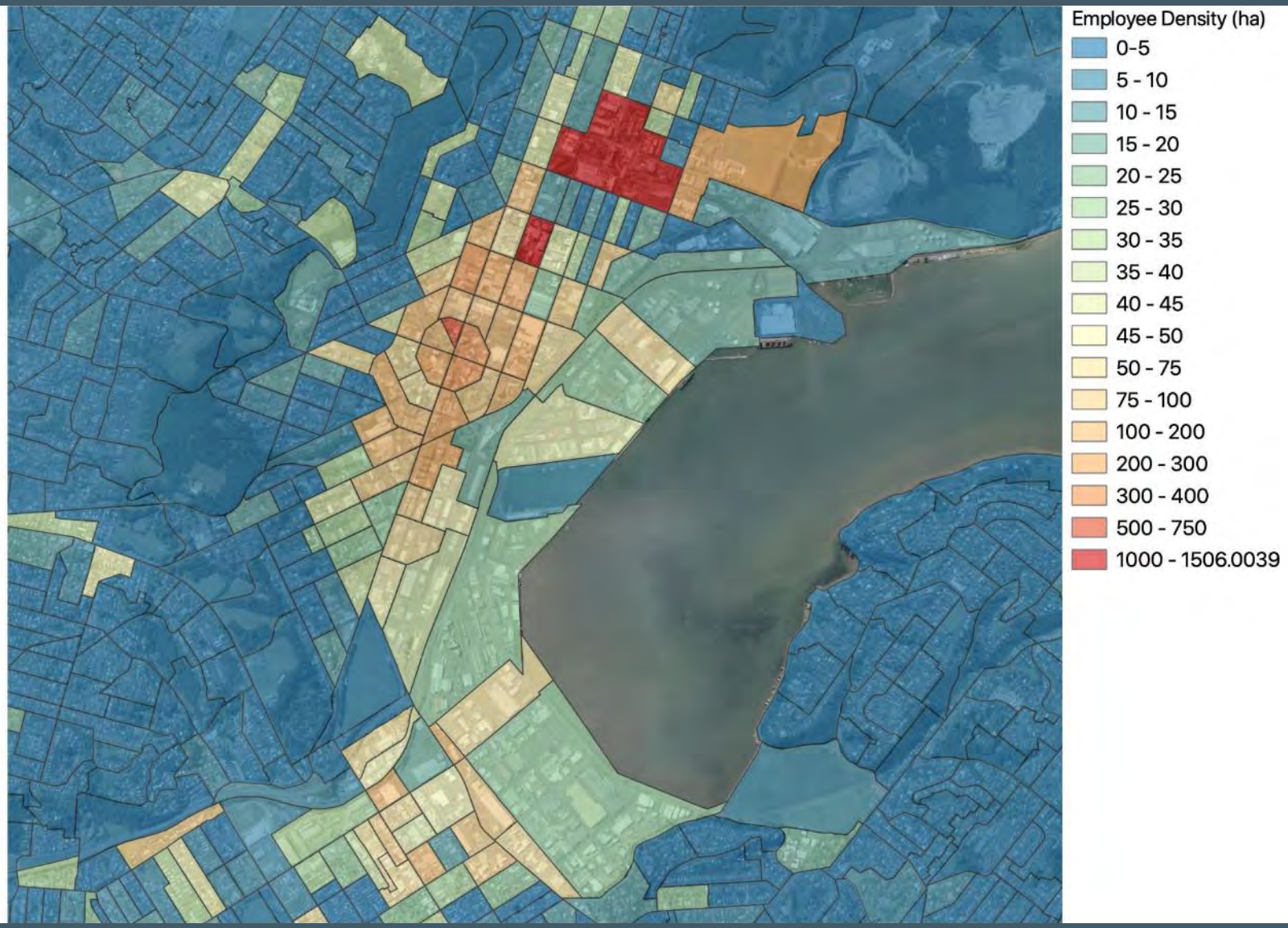
Areas of uncertainty

- Business land needs
- Impact of Covid
- PPH zone – future need for light industry vs residential
- Andersons Bay - pressure to expand retail
- Central city hotel?

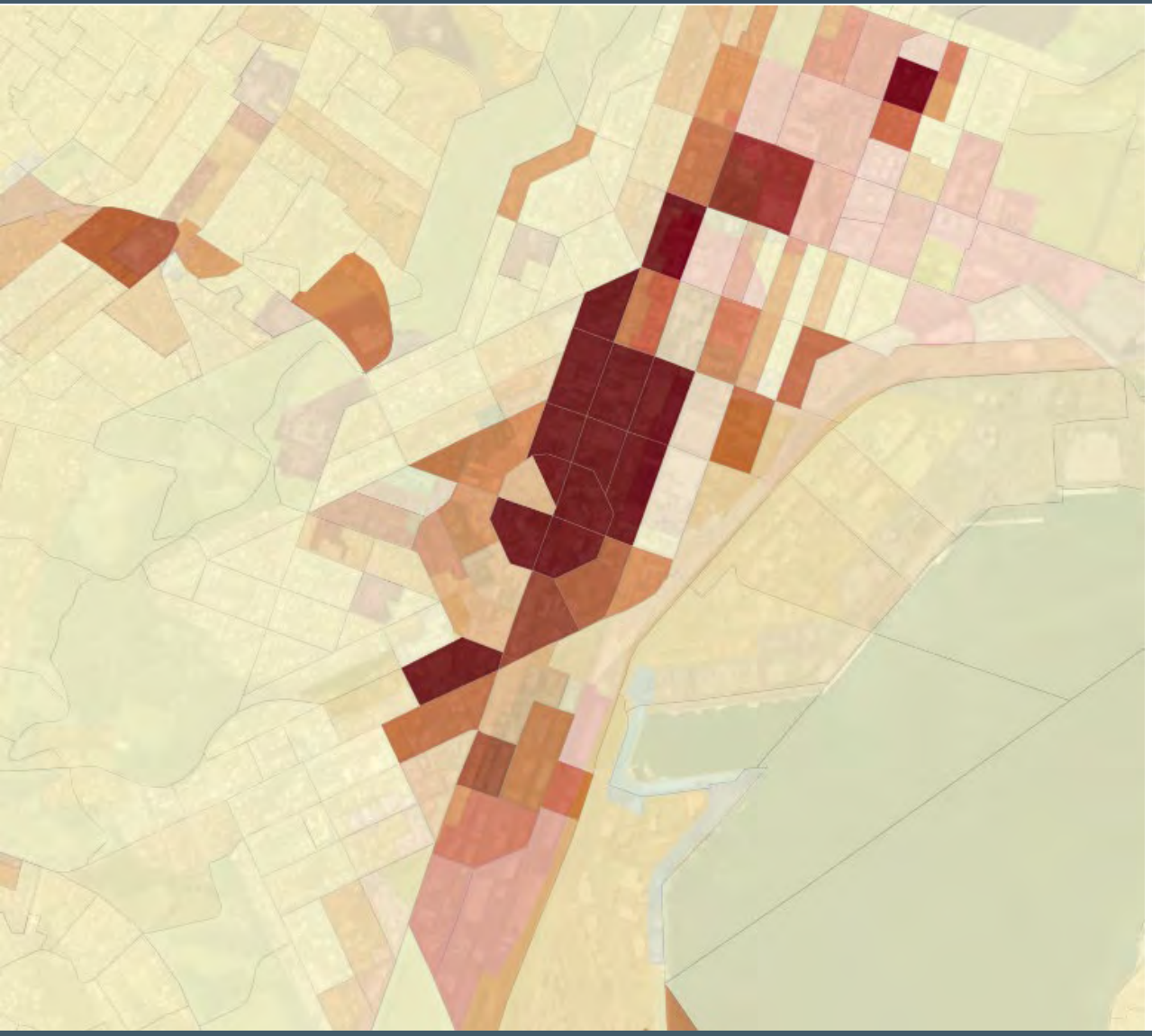
Projected population growth per hectare (2018-48)



Employee density



Retail employee density



Webmap link

[Webmap
https://arcg.is/0bb08i](https://arcg.is/0bb08i)

Strategic Objectives and Network Principles

Strategic Objectives and Network Principles

- A core principle of the Network Operating Framework is developing Strategic Objectives and Network Principles for the network.
- These are based on existing Strategies to establish collaborative objectives for the outcomes sought at a modal level.
- The approach helps to inform the development of network principles by which to operate and plan the network.
- Developed collectively these represent multi-modal thinking.
- These will be developed through input via a survey post-workshop and refined in a subsequent session.

Strategic Objectives and Network Principles

	**Provide a network for pedestrians* that promotes walking as a safe and everyday mode of transport with permeability through the network and connections, both within and between, key origins and destinations.** Primary pedestrian routes: Routes in areas of high pedestrian activity with linkages that enable connections between new and existing neighbourhoods, education and employment centres, recreational facilities and alternative transport options such as Public Transport. Secondary pedestrian routes: Pedestrian linkages to Primary routes from residential and commercial areas. Connections from residential areas to local shops and education centres.
	**Promote cycling* as a safe everyday mode of transport and recreation with convenient networks that encourage use, reducing reliance on private vehicles.** Primary cycle routes: Provides connections to and between major centres. Connects residential areas with recreational trails, educational and employment centres and other sustainable modes to facilitate a cohesive active mode network. Secondary cycle routes: Routes that link to and complement primary routes from residential centres, provide green urban connections and to recreational facilities.
	**Promote safe, direct and reliable connections to and within centres with appropriate supporting infrastructure and inter-modal hubs.** Primary public transport routes: Routes that form the backbone of the network providing connections between major centers as a legitimate alternative for major transport journeys. Secondary public transport routes: Local routes that complement primary routes providing local connections and access to town centers, emerging growth areas, residential catchments and the wider transportation network.
	**Facilitate and support a connected region providing equitable access to a network that encourages multi-modal options with safe and legible routes that enable trade-offs in higher amenity areas.** Preferred Traffic Route: Provides for longer distance traffic as a preferred alternative to other routes with land use conflicts. Traffic Route (Arterial Road): Provides connectivity between smaller centers and to preferred routes. Local Primary Access Route: Provides access to/from local destinations within local centers to local facilities. Local Secondary Access Route: Collects and distributes between primary local access routes.
	**Promote and facilitate direct and reliable connections between key origins and destinations. Prioritise safety by avoiding high amenity areas where possible and minimising areas and times of active mode conflicts.** Primary freight routes: Routes that provide inter-regional connection to major freight origins and destinations. Secondary freight routes: Connectivity between primary freight routes and local commercial and industrial areas.


Legend
Preferred Traffic Route
Traffic Route
Local Primary Access Route
Local Secondary Access Route
Primary Public Transport Route
Secondary Public Transport Route
Primary Freight Route
Secondary Freight Route
Primary Cycle Route
Secondary Cycle Route
Primary Pedestrian Route
Secondary Pedestrian Route

Stakeholder Survey

Strategic Objectives and Network Principles development

Dunedin Network Operating Framework Stakeholder Survey

In preparing the Dunedin Network Operating Framework (NOF) it is important for the network to reflect the values and aspirations of the community it serves. These values are encapsulated in a set of 'Strategic Objectives' and 'Network Principles' that guide the development of framework. This survey seeks to capture the views of the relevant community stakeholders to develop strategic objectives that provide a high level outcome sought for each transportation mode across the network.

Information from this survey will be used to inform a draft set which will be refined during an online session. As you answer the questions, consider what your aspirations for each mode are in the Dunedin network. Please fill in as much or as little as you are able as responses will be collated to develop broad themes.

A general comments box is provided at the end of the survey should you want to add any further discussion.

www.ghd.com

Dunedin Network Operating Framework

Post Workshop Pack – Development of Strategic Objectives and Network Principles

Andrew Metge | NOF technical lead
Tim Eldridge | Workshop facilitation
Joel Strijbis | NOF development support

Background

The purpose of Workshop One was to understand future land use and growth changes in Dunedin, and to provide a briefing on the Strategic Objectives and Principles development questionnaire

The answers to this questionnaire were used to develop Strategic Objectives and Principles, alongside existing planning and policy documents. These were then reviewed and discussed with participant feedback during workshop 2.

The following information pack outlines the revised Strategic Objectives and Principles.

Agenda

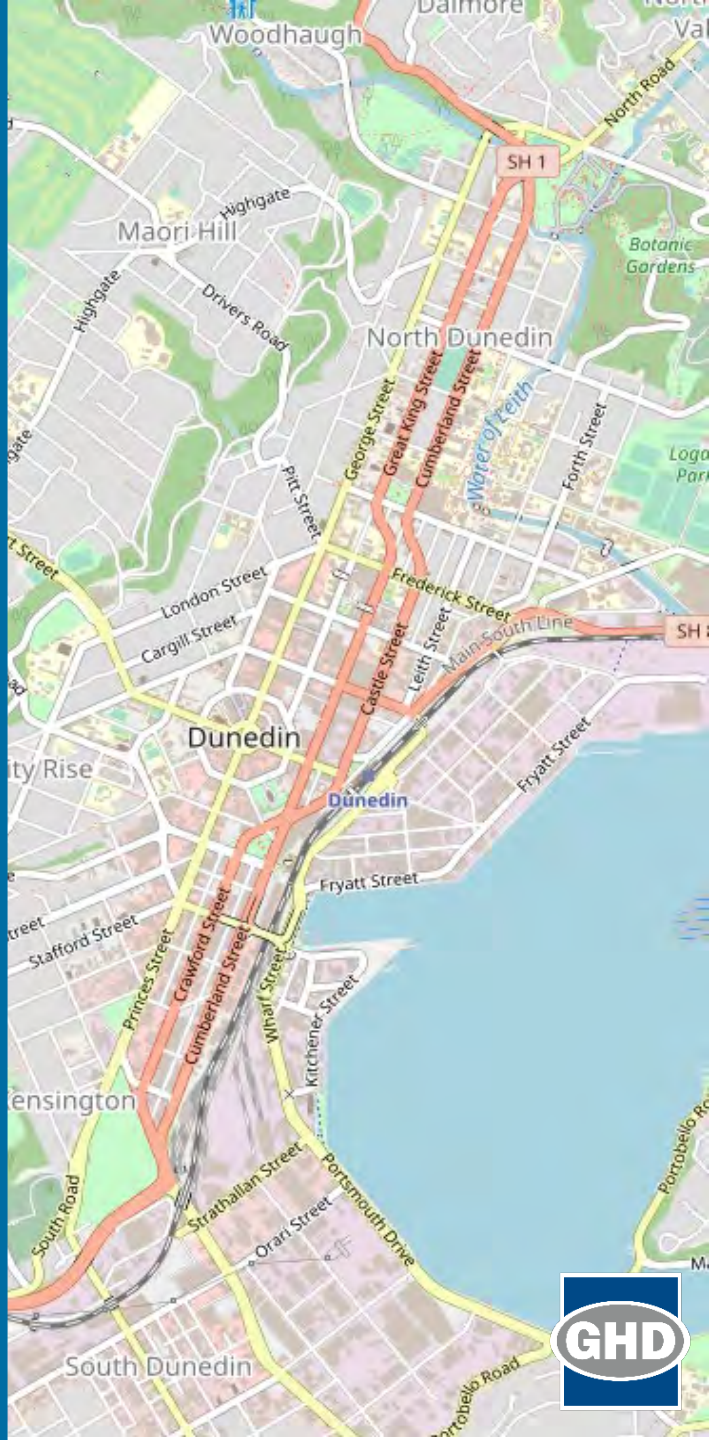
Thursday 28th May 3:00 p.m. – 4:30 p.m.

3:00 pm Welcome and introductions, overview of session.

3:15 pm Strategic Objectives and Network Principles review

- Pedestrians
- Cycling
- Public Transport
- General Traffic
- Freight

4:30 pm Meeting close



Pedestrians – your feedback

Key origins and destinations	• Octagon and surrounding streets • Waterfront and Octagon • Tourist destinations • Octagon and bus exchange to education centers • Education centers/work places/commercial, industrial and retail centers • To and from the bus exchange • Car parks to shops/work • Town belt • Car park to amenities • Suburbs to commercial centers, education centers and city center
What would a successful network look like?	• Safe at all times and for all people • Direct and connected network with multimodal links • Attractive routes with high amenity • A connected network where places of conflict are controlled and managed • Distinctions between recreational walking routes and commuter/final-mile routes
Your Strategic Objective	• That the tertiary precinct is a safe and calm environment in which to work and live. It is an environment that inspires more sustainable transport behaviours in graduates wherever they live after graduating. • A network that is safe, pleasant and easy to use for all types of pedestrians, providing excellent access to city centre goods, services and facilities. • comfortable movement in the city centre with a busy thriving retail industry with access to convenient affordable car parks. • Provide a well defined, easy, accessible and safe pedestrian network, with amenity, that increases the number of people walking to and through the city centre • Everyone feels welcome - the city is safe and everyone is able to live, learn work and play • A pedestrian network that is safe and easy for all abilities to navigate which improves the health and wellbeing of the community • Create safe and pleasant pedestrian networks that promote active travel and contribute to Dunedin being a "walkable" city

Original Pedestrian Strategic Objectives and Principles

Strategic Objective:

Provide a network that promotes a thriving city, encouraging walking as safe, accessible, and convenient choice, particularly in areas of high amenity, to inspire more sustainable transport behaviours.

Achieved by these Network Principles:

Primary pedestrian* routes:

Provides direct connections to and between residential areas, education and employment areas, healthcare facilities, town centre, high amenity areas and transport hubs.

Secondary pedestrian* routes:

Provides indirect links and joins the wider pedestrian network to Primary routes from residential and commercial areas.

*Pedestrian network principles consider all forms of active travel that typically travel at <10km/h (i.e. mobility scooter, running, walking) with the exception of cycling

Feedback discussion notes:

- High amenity removed from the objective or moved to the end (an outcome) alternative "an appropriate level of urban comfort"
- Add "connected and continuous" network to SO
- Should all areas be high amenity? - high amenity environments have been prioritised for pedestrians
- Creating urban comfort for pedestrians - could this cover urban frontages such as verandas
- Amenity seems to lend itself well to priority rather than being part of the SO - the level of amenity should dictate how we invest
- Drop the word "indirect"
- Tourist destinations added? Recognising the importance of these attractions to Dunedin - they don't fit into a high amenity areas
- Central city/centre city not town centre
- Residential areas - where do these fit?
- Secondary routes should sit outside of centre city but connect to those areas outside, residential areas shouldn't have primary and secondary levels
- Adding all abilities
- Designed for "universal access" in NPs - primary particularly but maybe should be included in SO

Revised Pedestrian Strategic Objectives and Principles

Strategic Objective:

Provide a connected and continuous network that promotes a thriving city, encouraging walking as a safe, convenient and accessible mode of transport to inspire more sustainable transport behaviours.

Achieved by these Network Principles:

Primary pedestrian* routes:

Provides direct connections and universal access to and between retail areas, education and employment areas, healthcare facilities, transport hubs, attractions and the central city.

Secondary pedestrian* routes:

Provides connections and links to primary routes from connecting links and joins the wider pedestrian network to Primary routes from residential and commercial areas.

*Pedestrian network principles consider all forms of active travel that typically travel at <10km/h (i.e. mobility scooter, running, walking) with the exception of cycling

Cycling – your feedback

Key origins and destinations	• Tertiary Precinct • Octagon • Suburbs/Residential areas • Education centers/work places/commercial, industrial and retail centers • Healthcare/Hospital • The Peninsula • Waterfront/harbourside • Recreational - Signal Hill, Mt Cargill, Swampy, Flagstaff
What would a successful network look like?	• Family friendly and accessible for all, making our community accessible for cycle users • Alignment with public transport • Cycling a prioritised mode of transport • Safe, innovative and functional • Smooth, safe, integrated, comprehensive • Dedicated (and separated) cycle lanes and facilities • Direct and clear cycling routes • Minimum and/or controlled conflict points • Shared use lanes for all wheeled devices • Attractive routes so that commute/recreational ride can be enjoyed
Your Strategic Objective	• Create safe, welcoming and pleasant cycle networks that enables travel choice across the city for people of all ages and abilities. • That potential staff consider the ability to safely travel to work by bike as part of the attraction of working in the tertiary precinct- a reason to leave a bigger and busier city. • High quality cycle routes are provided from suburbs to the main workplaces, schools and other destinations. • Key origin-destinations have fit-for-purpose, continuous cycle facilities and/or traffic calmed environment with easy and safe connections across roads and intersections. • A safe and efficient spider network that provides connectivity through and around areas with high amenity values (i.e. not on major arterials). Improved connectivity across the KiwiRail shunting yards and through to the Taieri Plains. • Provide a safe alternative to vehicles which improves the health and wellbeing of the community

Original Cyclists Strategic Objectives and Principles

Strategic Objective:

A high quality network that encourages cycling as a safe and everyday mode of transport that is accessible and enjoyed by people of all ages and abilities to inspire more sustainable transport behaviours.

Achieved by these Network Principles:

Primary cycle routes:

Connections that are integrated with other modes and provide improved access through and around areas with high amenity and commercial value, between residential areas and educational and employment centres.

Secondary cycle routes:

Cycling routes that complement primary routes providing access to recreational trails, off-road networks and attractions.

*cyclists includes scooters, skateboards, cargo bikes, e-scooters, e-bikes and other low-powered vehicles (LPVs)

Feedback discussion notes:

- "**Direct and connected**" instead of high quality, add avoiding conflict with freight and GT - high quality is the outcome.
- Direct is not necessarily the fastest - a continuous network can be longer if it is safer and continuous.
- **Functional rather than direct**? - "A Safe, functional and aesthetically pleasing network that connects people from home to places of work, recreation and commercial areas so cycling is an attractive way to inspire more sustainable behaviour."
- Similar to Whakatāne SO - “A safe, accessible and enjoyable everyday mode of transport and recreation with well identified and integrated networks that improve cycling access and linkages throughout Whakatāne District”
- Another SO suggestion “Safe, functional and aesthetically pleasing network that connects people from home to places of work, recreation and commercial areas and promotes more sustainable transport behaviour”
- Primary - To the shops/retail areas rather than "high amenity and commercial" make it simple
- Tidy up Primary NP - remove 'ands'
- Recreation/leisure is not really captured in these - it is probably picked up in secondary. "… **mode of transport and recreational activity …**" added to SO
- Do we want to include healthy and sustainable in the SO?
- walking/cycling should connect to recreational areas, tracks and trails

Revised Cyclists Strategic Objectives and Principles

Strategic Objective:

A safe, functional and connected network encouraging cycling as an everyday mode of transport and recreation that is accessible and enjoyed by people of all ages and abilities inspiring more sustainable transport behaviours.

Achieved by these Network Principles:

Primary cycle routes:

Connections that are integrated with other modes and provide improved access through and around retail areas, between residential areas and educational and employment centres.

Secondary cycle routes:

Cycling routes that complement primary routes providing access to recreational trails, off-road networks and attractions.

*cyclists includes scooters, skateboards, cargo bikes, e-scooters, e-bikes and other low-powered vehicles (LPVs)

Public Transport – your feedback

Key origins and destinations	• City Centre • Suburbs/residential areas • Mosgiel and wider district links • Education centers/work places/commercial, industrial and retail centers • Healthcare/Hospital • Tourist attractions • Airport
What would a successful network look like?	• Affordable, frequent, reliable and direct • Accessible to all particularly for those with wheelchairs and prams • Sufficient supporting infrastructure • Integrated with train, bus and park and ride shuttles (all one pass) • Serving commuters and education centers • Safe and high quality – an attractive and enjoyable system • An affordable public transport close to homes and with enough use to be viable (pay its on way. • Easy to use and understand • A wider variety of PT options – various vehicles and size appropriate for demand
Your Strategic Objective	• Good quality public transport that can offer realistic alternative to driving • Safe regular transport that takes minimal planning and is either free or heavily discounted. • A first class service - frequent electric buses connect to form a low cost, high quality network connecting the city effectively. Delays are minimal, buses are modern. • pubic transport that encourages enough people (far more than at present) to us it. • Cheap, frequent services on higher demand routes, improved bus stop infrastructure and crossing points, reduced intersection delays for bus travel using clean, well branded and environmentally sustainable buses • Everyone feels welcome i.e. everyone can safely use PT • Right size the offering and increase the frequency. PT can be a tourist drawcard if done right (Melbourne/San Francisco). Improve reliability and customer oversight of real-time tracking at stops and on-line to increase patronage • Support an efficient reliable Public transport network that integrates with other travel modes supporting sustainable travel choices within the city

Original Public Transport Strategic Objectives and Principles

Strategic Objective:

A network that is integrated with other modes providing, frequent, reliable and efficient services as a realistic transport choice to inspire more sustainable transport behaviours.

Achieved by these Network Principles:

Primary public transport routes:

Direct routes on high demand corridors that enable a connected and accessible city from residential areas to places of work, schools, healthcare facilities and commercial centres.

Secondary public transport routes:

Routes that complement primary routes providing local accessibility and access to emerging growth areas, residential catchments and the wider transportation network.

Feedback discussion notes:

- Affordability is a consideration but not a driver for defining strategic network outcomes
- Is there another word for 'realistic'? **Attractive/viable**
- We also need to include non-visible accessibility - so it relates to user experience - people who can't speak, hear and see. Not just economic disadvantage. Need to encapsulate this. **Navigation/way finding**
- Is this weaker than others? It seems like it is saying that integrated with other modes is the most important? Start with frequent, reliable safe
- **Equity of experience/access**
- Route enables reliable or **predictable** travel times

Network Principle notes:

- Swap schools for education centres
- Primary - reference direct and efficient
- Secondary - include "attractions" and "recreational areas"

Refined Public Transport Strategic Objectives and Principles

Strategic Objective:

A frequent, reliable and efficient service that provides equitable access and positive user experiences for all customers, encouraging public transport as a viable mode choice inspiring more sustainable transport behaviours.

Achieved by these Network Principles:

Primary public transport routes:

Direct routes on high demand corridors that enable a connected and accessible city between residential areas to places of work, education centres, healthcare facilities and commercial centres.

Secondary public transport routes:

Routes that complement primary routes providing local accessibility and access to emerging growth areas, recreational activities, local attractions, residential catchments and the wider transportation network.

General Traffic – your feedback

Key origins and destinations	• City centre • Suburbs/residential • Education centers/work places/commercial, industrial and retail centers • Healthcare/Hospital • Recreational areas – beach, walking tracks, Peninsula • Wider region – central Otago, north and south
What would a successful network look like?	• Direct, efficient, safe, coherent and quick • Encouragement to use other modes but ability to drive if needed • Through traffic separated from local/clear route choice • Serves all modes/dedicated mode lanes/integrated last mile connections • Get to and from where I need to go in a reasonable timeframe • added park and ride, less cars, less mixed use zones, bus specific/prioritised zones, through traffic separate from in city traffic. • A network that accommodates all to go about their daily business. • Well defined and maintained network with clear car parking options at destinations priced appropriately • Future proofed • Controlled conflict points
Your Strategic Objective	• Safe and well maintained network that does not have undue delays at peak times • Reduce car use through realistic and beneficial alternatives • The road network provides a reasonable level of service for those not able to use other modes for their trip, or who prefer to drive. Good access is provided to the inter-regional network and to car parking areas for supermarkets and hospitals. • Multi-modal network that enables those who require vehicles to still use them. • Reliable journeys on well defined road network with clear easy to access car parking options • Every one feels welcome Motor Transport moves freely but does not dominate transport within the city. Motor vehicle use is considerably reduced, free buses etc to move around the central city • Safety, efficiency & amenity. Appropriate speeds and efficient connections.

Original General Traffic Strategic Objectives and Principles

Strategic Objective:

A general traffic network that is safe, efficient and coherent, and considers the needs of all modes to encourage a harmonious (or equitable?) transport system where private vehicles do not dominate.

Achieved by these Network Principles:

Preferred Traffic Routes:

Provides for longer distance travel as a preferred alternative to other routes with land use conflicts.

Traffic Routes:

Provides connectivity between smaller centers and preferred routes.

Local Primary Access Routes:

Provides access between local destinations and local commercial and residential areas.

Local Secondary Access Routes:

Collects and distributes between primary local access routes for localised movement in centres.

Feedback discussion notes:

- The Strategic Objective is too broad, needs to be more specific
- How are we reflecting East-West severance? Due to the dominance of the north-south movements
- **Equitable or balanced rather than harmonious**
- Should the objective reflect the hierarchy more - how do we say promoting other modes in a more positive way?
- Good wording on Freight objective that could potentially be considered in alignment
- **Equitable** and vulnerable users are important - these people can't always use the other modes even when they are available
- Integrated might be a better way to talk about its relationship rather than "do not dominate", could potentially also use something to talk about the north-south
- Global street design guide has a good line to describe the place of cars - Kathryn will try email to Dougal

Refined General Traffic Strategic Objectives and Principles

Strategic Objective:

A general traffic network that is safe, efficient and coherent, and considers the needs of all modes to encourage a balanced and integrated transport system.

Achieved by these Network Principles:

Preferred Traffic Routes:

Provides for longer distance travel as a preferred alternative to other routes with land use conflicts.

Traffic Routes:

Provides connectivity between smaller centers and preferred routes.

Local Primary Access Routes:

Provides access between local destinations and local commercial and residential areas.

Local Secondary Access Routes:

Collects and distributes between primary local access routes for localised movement in centres.

Freight – your feedback

Key origins and destinations	• Port and airport • Waterfront • Industrial precincts and inland ports and depots • Local businesses- commercial and retail and wholesale sector • Through traffic
What would a successful network look like?	• Clear and connected freight routes that provide consistent travel time • Ideally freight would go on rail. Freight hubs would be used to transfer loads on to smaller trucks for distribution within the city. Large logging and sheep trucks would not pass through the city, they would be on rail, or on a bypass. • a resilient, energy efficient, reliable network with main freight corridors that are optimized for freight use and minimal conflict with vulnerable road users. • Good roading connections to airport and to and through CBD and industrial areas and port • Freight should move freely, not cause congestion- be sustainable and economic • Freight confined to specific corridor(s) to free up other corridor(s) for light traffic. Increased use of rail and/or shipping • Safety for all road users • minimal conflict points with general traffic and other modes travel within the city, free-flowing, safe, efficient routes to enable efficient transport of freight, mode options considered where they are cost effective and used where the costs and benefits result in positive outcomes such as safer city streets, reduced congestion, reduced emission
What would you change?	• Lots of options/alternatives/descriptions • I would remove the large logging and animal trucks from SH1 routes through the middle of Dunedin. • moving freight through the city on an alternative to the one-way system is a major challenge, any new freight route would be very expensive • Currently, a lot of trucks/freight are using the Kenmure Rd - Hawthorn Ave - Serpentine Ave - Maclaggan St route and am wondering why that is and if there is not a better route for them that involves less climbing of hills (energy use and air/noise pollution) and less going through residential areas. On this route there is mode conflict with cyclists. • See above, plus getting freight more efficiently through Andy Bay Road, Strathallen and Harbour arterial with connection to Frederick Street • Improve the harbour arterial, both LOS and connectivity at each end. Improve safety at Pine Hill/Great King. Increase use of rail and coastal shipping. Ward St overbridge alignment awkward for heavy vehicles with frequent traffic signal strikes. Harbour area not well connected to the city in general. More traffic uses Thomas Burns level crossing than the Jetty St or Ward St overbridges, but it has an inherently lower LOS • More freight using harbour arterial (away from central city) Current St Andrew St/Anzac Ave intersection has issues with trucks straddling rail line Stratallan Street/Andersons Bay/Portsmouth Drive intersection delays Safety concerns Great King/Pine Hill Road intersection • explore mode options and assess viability, where possible segregate freight moving straight through the city from local traffic onto dedicated freight corridors to reduce potential conflicts

Original Freight Strategic Objectives and Principles

Strategic Objective:

A direct and connected network that minimises conflict with general traffic, other modes of travel and areas of high amenity, such as residential neighbourhoods and the city centre, along corridors that provide high levels of service.

Achieved by these Network Principles:

Primary Freight Routes:

Routes that provide direct and reliable access to major freight origins and destinations avoiding high land use areas.

Secondary Freight Routes:

Routes that provide connectivity between primary routes and local, commercial and industrial areas that minimise impact on local high amenity land uses.

Feedback Discussion

- Key origins destinations missing - Waterfront is an industrial precinct, Forestry - origins outside study area to be added

Strategic Objective notes:

- Freight industry broadly agree
- High LOS could be replaced with consistent and reliable journey times?
- LOS would require further explanation later
- High quality direct and connected network
- Suggestion to “stop at end of city centre”? – Broad agreement
- "Future proof" is avoided in wording as it is more of a BC response - sustainability comes into it when thinking about responses too
- Mark Edwards "is it "appropriate" rather than 'high' and 'minimise' is very absolute again is "seek to minimise" better?

Refined Freight Strategic Objectives and Principles

Strategic Objective:

A direct and connected network that minimises conflict with general traffic, other modes of travel and areas of high amenity, such as residential neighbourhoods and the city centre.

Achieved by these Network Principles:

Primary Freight Routes:

Routes that provide direct and reliable access to major freight origins and destinations avoiding high land use areas.

Secondary Freight Routes:

Routes that provide connectivity between primary routes and local, commercial and industrial areas that minimise impact on local high amenity land uses.

Dunedin NOF Strategic Objectives and Principles Summary

	**Provide a connected and continuous network that promotes a thriving city, encouraging walking as a safe, convenient and accessible mode of transport to inspire more sustainable transport behaviours.** Primary pedestrian routes: Provides direct connections and universal access to and between retail areas, education and employment areas, healthcare facilities, transport hubs, attractions and the central city. Secondary pedestrian routes: Provides connections and links to primary routes from connecting links and joins the wider pedestrian network to Primary routes from residential and commercial areas.
	**A safe, functional and connected network encouraging cycling as an everyday mode of transport and recreation that is accessible and enjoyed by people of all ages and abilities inspiring more sustainable transport behaviours.** Primary cycle routes: Connections that are integrated with other modes and provide improved access through and around retail areas, between residential areas and educational and employment centres. Secondary cycle routes: Cycling routes that complement primary routes providing access to recreational trails, off-road networks and attractions.
	**A frequent, reliable and efficient service that provides equitable access and positive user experiences for all customers, encouraging public transport as a viable mode choice inspiring more sustainable transport behaviours.** Primary public transport routes: Direct routes on high demand corridors that enable a connected and accessible city between residential areas to places of work, education centres, healthcare facilities and commercial centres. Secondary public transport routes: Routes that complement primary routes providing local accessibility and access to emerging growth areas, recreational activities, local attractions, residential catchments and the wider transportation network.
	**A general traffic network that is safe, efficient and coherent, and considers the needs of all modes to encourage a balanced and integrated transport system.** Preferred Traffic Route: Provides for longer distance travel as a preferred alternative to other routes with land use conflicts. Traffic Route (Arterial Road): Provides connectivity between smaller centers and preferred routes. Local Primary Access Route: Provides access between local destinations and local commercial and residential areas. Local Secondary Access Route: Collects and distributes between primary local access routes for localised movement in centres.
	**A direct and connected network that minimises conflict with general traffic, other modes of travel and areas of high amenity, such as residential neighbourhoods and the city centre.** Primary freight routes: Routes that provide direct and reliable access to major freight origins and destinations avoiding high land use areas. Secondary freight routes: Routes that provide connectivity between primary routes and local, commercial and industrial areas that minimise impact on local high amenity land uses.

Next Steps

Network Mapping Sessions:

Session 1: General Traffic, Freight and Public Transport
Session 2: Walking and Cycling

Dates to be confirmed.

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Appendix B – Strategic Objectives and Network Principles Development

Policy and Planning documentation	Strategic Objectives and Network Principles
 **Pedestrians** **Draft Government Policy Statement on Land Transport 2018/19-2027/28:** The strategic direction of GPS 2018 is demonstrated through its 2 key strategic priorities, and 2 supporting strategic priorities. Key Strategic Priorities: • Safety • Access Supporting Strategic Priorities: • Value for Money • Environment Themes have been included in the GPS to assist understanding of how to effectively deliver on the priorities. The themes influence how the results should be delivered to ensure the best transport solutions for New Zealand are achieved. The themes for GPS 2018 are: • a mode-neutral approach to transport planning and investment decisions • incorporating technology and innovation into the design and delivery of land transport investment • integrating land use and transport planning and delivery Environment in the GPS 2018 supports a mode shift to lower emission forms of transport, including walking, cycling, public transport and lower emission vehicles (such as electric vehicles). It also recognises the public health benefits of reducing harmful transport emissions and increasing uptake of walking and cycling. Access in the GPS 2018 and the increased focus on urban centres is to ensure that transport and land use planning reduces the need to travel by private motor vehicle by supporting a mode shift for trips in urban centres from single occupant private vehicles to more efficient, low cost modes like walking, cycling and public transport. The Ministry of Transport released the Draft Government Policy Statement on Land Transport 2021 in March 2020 for public feedback. The draft GPS 2021 builds on the strategic direction of GPS 2018 by maintaining the priorities but updating them to align with recent policy work **MoT Statement of Intent 2018-22:** There are two particular areas of focus and guiding principles for the transport sector. Firstly, transport planning and investing should be mode neutral. Secondly, our urban transport systems should be modern and efficient. **Transport Outcomes Framework 2018:** The purpose of the transport system is to improve people's wellbeing, and the liveability of places Outcomes (vision): What we seek to achieve through the transport system • Inclusive access: • Healthy and safe people • Economic prosperity • Environmental sustainability • Resilience and security Mode neutrality (guiding principle): To meet the outcomes, all transport planning, regulating, and investing needs to be done in a mode neutral way. Mode neutrality involves two important aspects: 1. Making sure all modes and options are considered and evaluated to find the best system solution. 2. Making users and decision-makers more aware of the benefits and costs of transport choices, to incentivise robust decision-making and smart travel choices. **NZTA Amended Statement of Intent 2018-2022:** Value Statement: Great journeys to keep New Zealand moving – *"We see transport as a complex, dynamic system of people and communities, businesses, infrastructure and services, vehicles of all types, and data and processes that connect the parts of the system. We want to improve the system and its connections to create seamless, safe and affordable access to social and economic opportunities for people, communities and business."* Focus: Providing one integrated land transport system that helps people get the most out of life and supports business. Strategic Responses: • One connected transport system – Transform land transport system performance by integrating digital technology with physical infrastructure to create a safe, connected system that works for everyone. • People centric approach – Simplify our customers' lives and our partners' work with innovative services and experiences that make it easy for them to do what they need to. • Partnerships for prosperity – Unlock social and economic opportunities for customers, businesses and communities through targeted partnerships.	**Provide a connected and continuous pedestrian* network that promotes a thriving city, encouraging walking as a safe, convenient and accessible mode of transport to inspire more sustainable transport behaviours.** *Primary pedestrian* routes:* Provides direct connections and universal access to and between retail areas, education and employment areas, healthcare facilities, transport hubs, attractions and the central city. *Secondary pedestrian* routes:* Provides connections and links to primary routes from connecting links and joins the wider pedestrian network to Primary routes from residential and commercial areas. **Pedestrian network principles consider all forms of active travel and micro-mobility (i.e. mobility scooter, running, walking) other than cycling that are less than 10km/h.*

Position Statements

- Transport safety – It is unacceptable for anyone to be killed or seriously injured while travelling or working on the land transport system.
- Inclusive access – Everyone should have fair and equitable access to the transport system
- Liveable communities – We will partner to efficiently combine planning and investment for transport and land use and this will result in more vibrant, interactive communities
- Transport technology – we will combine technology and organisational capabilities to enable safer, sustainable and connected journeys
- Resilience – The resilience of the land transport system is increased by managing risks and long-term resilience challenges and helping communities quickly recover from disruptions
- Environment – We will responsibly manage the land transport system's interaction with people, places and the environment
- Regulatory – The transport regulator is that our systems should be intuitive and clear to ensure people, vehicles and commercial and rail operations are safe, people make good transport choices and harmful behaviour is swiftly dealt with
- Transport agency – The Transport Agency is respected by partners, stakeholders and customers for its responsive and engaged people and its timely delivery of sustainable transport solutions.

Road to Zero Strategy 2020-2030: Road to Zero places human wellbeing at the heart of our road transport planning. It outlines a road safety system that supports and expects road users to make good choices, but acknowledges that we can all make mistakes. It values every life and the liveability of our communities, and it upholds the right of all of us to feel safe and arrive safely on our journeys across Aotearoa.
The vision of the Road to Zero Strategy is:
A New Zealand where no one is killed or seriously injured in road crashes. This means that no death or serious injury while travelling on our roads is acceptable.
To achieve this vision, the strategy outlines actions required across five focus areas:

1. Infrastructure improvements and speed management
2. Vehicle safety
3. Work-related road safety
4. Road user choices
5. System management

Seven guiding principles also underpin the vision:

1. We promote good choices but plan for mistakes
2. We design for human vulnerability
3. We strengthen all parts of the road transport system
4. We have a shared responsibility for improving road safety
5. Our actions are grounded in evidence and evaluated
6. Our road safety actions support health, wellbeing and liveable places
7. We make safety a critical decision-making priority.

This strategy will be supported by a series of action plans over the next 10 years that will outline priority actions to deliver on our vision.

Otago Southland Regional Land Transport Plans 2015-2021, updated 2018: The long-term goal set by the Committee for land transport in Otago Southland is to provide accessible transport connections, giving users an appropriate choice of modes, and to gain improved performance from the land transport system, by focusing on: road safety, economic growth and productivity, and value for money.
Walking, delivering on priorities:

- Users being able to access the network, in a manner that is convenient and affordable to users and funders.
- The network is reliable and resilient, helping community resilience.
- The social cost of crashes and accidents is substantially reduced.

Regional Policy Statement Review Consultation Draft 2014: Good quality infrastructure meets community needs. Roads networks support our communities, economy, and health and safety. Integrating infrastructure with urban growth and development is essential to ensure it occurs in a sustainable and efficient manner.

Otago Regional Council Long Term Plan 2018-28: Community outcomes for Transport (public passenger transport and stock effluent disposal) are:

- Service delivery that puts the community first and ensures that operations are customer driven, efficient and fit for purpose
- A region that prioritises sustainability as an economic measure whilst being attractive to industry
- A place where people can enjoy their environment safely, productively and respectfully

Otago Regional Council Strategic Plan 2014: Transport is one of nine areas of focus identified in this plan.
Description:

- While there is a well-developed roading network, travel throughout Otago is vulnerable to disruption because of weather events, natural hazards and crashes.
- Conflict between transport modes and actions of travellers reduces travel safety.

The Opportunity:

- State highways and local roads, cycle-paths and walkways operate as an uninterrupted single network to enable people to travel for work, education, social and recreation reasons; and freight movement for local distribution and export, thereby mobilising the region to a high level of efficiency and supporting the economy.
- Investment in maintenance of natural and physical resources and amenity values of Otago by the implementation of measures that limit unacceptable effects from the transport network providing value for money.
- Continuous access throughout Otago as a result of well-considered expenditure on the transport network.
- Safe individual and community travel using a variety of connected travel modes, within and between centres throughout Otago, and with the rest of New Zealand.

Approach:

- Provide clear definition of valued areas so that they are protected from the effects of use, maintenance and development of the transport network.
- Set standards to address the causes of factors that may have adverse effects on natural and physical resources and amenity values.
- Develop proposals to address safe and efficient transport of people and freight through coordinated transport expenditure achieving a single integrated network.
- Provision for an appropriate variety of transport modes that meet the needs of industry, lifestyle and tourism.

Outcome sought:

- People and communities can safely and efficiently access natural and physical resources for social and economic activities, including land use and development, by appropriate transport modes.

Dunedin City Integrated Transport Strategy 2013: This is a 30-year strategy which is set to be reviewed every five years. It builds upon the Cycling Strategy (2004), Pedestrian Strategy (2003), Transportation Strategy (2006) and Addendum (2009) and the Parking Strategy (2008). The vision for this strategy is *"Dunedin is one of the world's great small cities, with a safe low-carbon transport system that supports a compact city with resilient centres, inclusive and healthy communities, and national and international connectivity"*.

There are five 'Areas of Focus' that have been identified as priorities which are as follows:

1. Safety – Improving Dunedin's road safety record.
2. Travel Choices – Providing safe, viable travel options in addition to cars.
3. Centres – Strengthening connections to within and between Dunedin's centres.
4. Freight – Supporting safe and efficient freight movement.
5. Resilience – Ensuring the on-going resilience of Dunedin's transport system and key infrastructure.

- Safety and accessibility are key focuses for this strategy
- This vision from the Spatial Plan, and Strategic Priority 1.2 from the Social Wellbeing Strategy have been developed into the following vision for the Integrated Transport Strategy: Dunedin is one of the world's great small cities, with a safe low-carbon transport system that supports a compact city with resilient centres, inclusive and healthy communities, and national and international connectivity. This means that PT and active modes will be popular, well-utlisied and safe.
- Dunedin is noted to be very car dependent in mindset and design with notes that the rural communities are not served by Public Transport and that distances are simultaneously too great for walking and cycling.
- Due to the poor provision for other modesw of transport (such as buses, walking and cycling), road safey has suffered in Dunedin. "Poor provision for non-car modes is itself both a cause and a result of the lack of demand for these modes – even extending, historically, to underinvestment in the rail network for freight or passenger movement."
- The Focus on travel choices seeks to "Reprioritise investment and reallocate space on the transport network to achieve a significant improvement in the provision of active travel modes and public transport in Dunedin, and explore initiatives to support the uptake of travel choices". The goal of this is for "The percentage of Dunedin census respondents who cycle, walk or take a bus to work increases from 16% at the 2006 census to 40% by 2024."
- The Focus on Centres seeks to improve Public Transport and active modes to achieve the "Spatial Plan and Integrated Transport Strategy vision for thriving and resilient centres, linked by a low carbon transport system."
- Strategic Pedestrian Network – the key pedestrian routes into the city for people moving on foot or as 'wheeled pedestrians' have been mapped and will give greater priority through wider footpaths and better facilities.

Dunedin City Council Second Generation District Plan 2018:

- Strategic Direction 2.2 Dunedin is Environmentally Sustainable and Resilient – Objective 2.2.2: Energy resilience, Policy 2.2.2.4: Support transport mode choices and reduced car dependency through policies and rule changes that enable both choice and access.
- Strategic Direction 2.7 Dunedin has Affordable and Efficient Public Infrastructure – Objective 2.7.2: Efficient transportation, Policy 2.7.2.2 details ways to encourage cycling as part of a multi-modal land transport network.
- City-wide Activities ; Transportation - Responsible land use planning encourages development patterns that support a variety of travel modes, including walking, cycling, and public transport.
- Objective 6.2.2 – Land use activities are accessible by a range of travel modes – Policy 6.2.2.4 – Only allow activities that are likely to generate a significant number of trips by walking, cycling or Public Transport

Spatial Plan 2012

- 'Dunedin Towards 2050 – a Spatial Plan for Dunedin' (the Spatial Plan), sets the strategic direction for Dunedin's growth and development for the next 30+ years. The Spatial Plan is primarily, but not solely, concerned with Dunedin's urban form and design.
- Dunedin's transport network provides excellent accessibility to goods and services for people travelling by car…. the quality of the transportation network for people who need to or want to travel by other modes is less strong, including the 12% of households who do not own a car.
- *Accessible and connected city*
  "Accessibility is determined by the number of transportation options provided by the network, including walking, cycling, ride-sharing, public transport, taxi, delivery services, mobile services (e.g. Library Book Bus) and telecommunications."
  "In 2050… It is safe to cycle to the local centre, and from the local centre to other local centres and the central city."
  "Within the central city, most people move around on foot, by bicycle or by public transport. These travel modes are well provided for, and many central city streets have been transformed into attractive boulevards and avenues. The State Highway network has been redesigned to provide a high quality amenity experience, with excellent pedestrian connectivity, so it is easy and safe to walk or cycle around the city, and between the central city, the Tertiary-Medical Precinct and the Harbourside area in particular"
  "Accident rates are far lower because there are fewer cars on the roads and more people use active modes and public transport. The transport network supports healthy lifestyles with more people using active modes."
- Our transportation network – "Provision of facilities for pedestrians is inconsistent across the city, with some areas well serviced and others poorly serviced. In the central city, most of the main pedestrian routes have a good to reasonable level of pedestrian amenity. However, this is under continuous threat from poorly designed

developments that result in a loss of active street edges. These developments include buildings with blank walls or car parks replacing demolished buildings. In addition, the ambience and ease of walking within the central city is also negatively affected by the speed and volume of traffic (particularly along State Highway 1), and the design of the roading infrastructure (e.g. pedestrian crossing provisions and road widths)."

Dunedin City Council 10 Year Plan 2018-28

The 10 year plan 2018-28 helps shape our city for the future. The plan outlines the services and activities the DCC will provide, the projects we will carry out and the level of service the community can expect.

- Bridge/city to waterfront connection has been allocated $20 million. This project seeks to provide improved links between the city center and the waterfront with an active mode bridge across the railway line.
- Transport improvements - $20 million. These improvements seek to make the roads and footpaths more accessible. Plans include lowering kerbs at corners and upgrading footpaths to better cater for those with mobility or sight problems.

Dunedin Central City Plan

- Designed to guide city development for the next 10-15 years – supporting the aspirational goal to become "one of the world's great small cities". The key to achieving this aspiration is for the central city to be vibrant, exciting, prosperous and accessible.
- Transport in the past has focused on providing infrastructure for private motor vehicles. "This focus on private motor vehicles has been at the expense of investing in facilities which create safe, convenient and attractive experiences for other transport modes like public transport and cycling…. Today, Dunedin's central city has one of the poorest safety records for pedestrians and cyclists in the country."
- Improving connections is a large challenge to overcome with active mode users experiencing severance due to the car dominant environment and the city center being bisected by the state highway.
- An accessible and connected city – "this strategic objective aims to make moving around the central city's street network more attractive, convenient and safer, particularly for pedestrians and other more vulnerable road users like cyclists. There needs to be a particular focus on the pedestrian environment: a vibrant city centre encourages people to move around on foot to engage with activities and other people."
- Strategic Pedestrian Network - The Strategic Pedestrian Network is a programme for improving pedestrian accessibility and safety on key pedestrian routes in the central city. Changes may include renewed/ improved footpaths, crossing points, lighting, and safety at intersections, through to area-wide speed limit changes, etc.

Social Wellbeing Strategy 2013-2023

- The Strategy sets out pathways for the Dunedin City Council to take a leadership role in improving the social wellbeing of Dunedin residents. The Dunedin City Council cannot progress social wellbeing on its own. It is hoped that this strategy will provide a vehicle for working towards shared responses and solutions with various communities across Dunedin and with other agencies and organisations.
- There are challenges that Dunedin needs to meet to continue to provide a high quality of life. These challenges are:
    1. Aging population
    2. Low income levels
    3. Housing stock
    4. Lifestyle changes
    5. Central Government services and funding
- Healthy and Safe People - All aspects of health (physical, mental, emotional and spiritual) are core contributors to our social wellbeing, as is the need to both feel safe and actually be safe. Encouraging people to utilise healthy active transport options such as walking or cycling will also contribute to this priority.

Cyclists

Draft Government Policy Statement on Land Transport 2018/19-2027/28: The strategic direction of GPS 2018 is demonstrated through its 2 key strategic priorities, and 2 supporting strategic priorities.
Key Strategic Priorities:
- Safety
- Access

Supporting Strategic Priorities:
- Value for Money
- Environment

Themes have been included in the GPS to assist understanding of how to effectively deliver on the priorities. The themes influence how the results should be delivered to ensure the best transport solutions for New Zealand are achieved. The themes for GPS 2018 are:
- a mode-neutral approach to transport planning and investment decisions
- incorporating technology and innovation into the design and delivery of land transport investment
- integrating land use and transport planning and delivery

Environment in the GPS 2018 supports a mode shift to lower emission forms of transport, including walking, cycling, public transport and lower emission vehicles (such as electric vehicles). It also recognises the public health benefits of reducing harmful transport emissions and increasing uptake of walking and cycling.

Access in the GPS 2018 and the increased focus on urban centres is to ensure that transport and land use planning reduces the need to travel by private motor vehicle by supporting a mode shift for trips in urban centres from single occupant private vehicles to more efficient, low cost modes like walking, cycling and public transport.

The Ministry of Transport released the Draft Government Policy Statement on Land Transport 2021 in March 2020 for public feedback. The draft GPS 2021 builds on the strategic direction of GPS 2018 by maintaining the priorities but updating them to align with recent policy work

MoT Statement of Intent 2018-22: There are two particular areas of focus and guiding principles for the transport sector. Firstly, transport planning and investing should be mode neutral. Secondly, our urban transport systems should be modern and efficient.

Transport Outcomes Framework 2018: The purpose of the transport system is to improve people's wellbeing, and the liveability of places
Outcomes (vision): What we seek to achieve through the transport system
- Inclusive access:
- Healthy and safe people
- Economic prosperity
- Environmental sustainability
- Resilience and security

Mode neutrality (guiding principle): To meet the outcomes, all transport planning, regulating, and investing needs to be done in a mode neutral way.
Mode neutrality involves two important aspects:
- Making sure all modes and options are considered and evaluated to find the best system solution.
- Making users and decision-makers more aware of the benefits and costs of transport choices, to incentivise robust decision-making and smart travel choices.

NZTA Amended Statement of Intent 2018-2022:
Value Statement: Great journeys to keep New Zealand moving – *"We see transport as a complex, dynamic system of people and communities, businesses, infrastructure and services, vehicles of all types, and data and processes that connect the parts of the system. We want to improve the system and its connections to create seamless, safe and affordable access to social and economic opportunities for people, communities and business."*

Focus: Providing one integrated land transport system that helps people get the most out of life and supports business.

Strategic Responses:
- One connected transport system – Transform land transport system performance by integrating digital technology with physical infrastructure to create a safe, connected system that works for everyone.
- People centric approach – Simplify our customers' lives and our partners' work with innovative services and experiences that make it easy for them to do what they need to.
- Partnerships for prosperity – Unlock social and economic opportunities for customers, businesses and communities through targeted partnerships.

Position Statements
- Transport safety – It is unacceptable for anyone to be killed or seriously injured while travelling or working on the land transport system.
- Inclusive access – Everyone should have fair and equitable access to the transport system
- Liveable communities – We will partner to efficiently combine planning and investment for transport and land use and this will result in more vibrant, interactive communities
- Transport technology – we will combine technology and organisational capabilities to enable safer, sustainable and connected journeys

A safe, functional and connected network encouraging cycling* as an everyday mode of transport and recreation that is accessible and enjoyed by people of all ages and abilities inspiring more sustainable transport behaviours.

Primary Cycle routes: Connections that are integrated with other modes and provide improved access through and around retail areas, between residential areas and educational and employment centres.

Secondary Cycle routes: Cycling routes that complement primary routes and provide access to recreational trails, off-road networks and attractions.

**Cycling network principles assumes micro-mobility and mobility scooters that travel above 10km/h.*

- Resilience – The resilience of the land transport system is increased by managing risks and long-term resilience challenges and helping communities quickly recover from disruptions
- Environment – We will responsibly manage the land transport system's interaction with people, places and the environment
- Regulatory – The transport regulator is that our systems should be intuitive and clear to ensure people, vehicles and commercial and rail operations are safe, people make good transport choices and harmful behaviour is swiftly dealt with
- Transport agency – The Transport Agency is respected by partners, stakeholders and customers for its responsive and engaged people and its timely delivery of sustainable transport solutions.

Road to Zero Strategy 2020-2030: Road to Zero places human wellbeing at the heart of our road transport planning. It outlines a road safety system that supports and expects road users to make good choices, but acknowledges that we can all make mistakes. It values every life and the liveability of our communities, and it upholds the right of all of us to feel safe and arrive safely on our journeys across Aotearoa.
The vision of the Road to Zero Strategy is:
A New Zealand where no one is killed or seriously injured in road crashes. This means that no death or serious injury while travelling on our roads is acceptable.
To achieve this vision, the strategy outlines actions required across five focus areas:

1. Infrastructure improvements and speed management
2. Vehicle safety
3. Work-related road safety
4. Road user choices
5. System management

Seven guiding principles also underpin the vision:

1. We promote good choices but plan for mistakes
2. We design for human vulnerability
3. We strengthen all parts of the road transport system
4. We have a shared responsibility for improving road safety
5. Our actions are grounded in evidence and evaluated
6. Our road safety actions support health, wellbeing and liveable places
7. We make safety a critical decision-making priority.

This strategy will be supported by a series of action plans over the next 10 years that will outline priority actions to deliver on our vision.

Otago Southland Regional Land Transport Plans 2015-2021, updated 2018: The long-term goal set by the Committee for land transport in Otago Southland is to provide accessible transport connections, giving users an appropriate choice of modes, and to gain improved performance from the land transport system, by focusing on: road safety, economic growth and productivity, and value for money.
Walking, delivering on priorities:
- Users being able to access the network, in a manner that is convenient and affordable to users and funders.
- The network is reliable and resilient, helping community resilience.
- The social cost of crashes and accidents is substantially reduced.

Regional Policy Statement Review Consultation Draft 2014: Good quality infrastructure meets community needs. Roads networks support our communities, economy, and health and safety. Integrating infrastructure with urban growth and development is essential to ensure it occurs in a sustainable and efficient manner.

Otago Regional Council Long Term Plan 2018-28: Community outcomes for Transport (public passenger transport and stock effluent disposal) are:

- Service delivery that puts the community first and ensures that operations are customer driven, efficient and fit for purpose
- A region that prioritises sustainability as an economic measure whilst being attractive to industry
- A place where people can enjoy their environment safely, productively and respectfully

Otago Regional Council Strategic Plan 2014: Transport is one of nine areas of focus identified in this plan.
Description:
- While there is a well-developed roading network, travel throughout Otago is vulnerable to disruption because of weather events, natural hazards and crashes.
- Conflict between transport modes and actions of travellers reduces travel safety.

The Opportunity:
- State highways and local roads, cycle-paths and walkways operate as an uninterrupted single network to enable people to travel for work, education, social and recreation reasons; and freight movement for local distribution and export, thereby mobilising the region to a high level of efficiency and supporting the economy.
- Investment in maintenance of natural and physical resources and amenity values of Otago by the implementation of measures that limit unacceptable effects from the transport network providing value for money.
- Continuous access throughout Otago as a result of well-considered expenditure on the transport network.
- Safe individual and community travel using a variety of connected travel modes, within and between centres throughout Otago, and with the rest of New Zealand.

Approach:
- Provide clear definition of valued areas so that they are protected from the effects of use, maintenance and development of the transport network.
- Set standards to address the causes of factors that may have adverse effects on natural and physical resources and amenity values.
- Develop proposals to address safe and efficient transport of people and freight through coordinated transport expenditure achieving a single integrated network.
- Provision for an appropriate variety of transport modes that meet the needs of industry, lifestyle and tourism.

Outcome sought:

- People and communities can safely and efficiently access natural and physical resources for social and economic activities, including land use and development, by appropriate transport modes.

Dunedin City Integrated Transport Strategy 2013: This is a 30-year strategy which is set to be reviewed every five years. It builds upon the Cycling Strategy (2004), Pedestrian Strategy (2003), Transportation Strategy (2006) and Addendum (2009) and the Parking Strategy (2008). The vision for this strategy is *"Dunedin is one of the world's great small cities, with a safe low-carbon transport system that supports a compact city with resilient centres, inclusive and healthy communities, and national and international connectivity"*.

There are five 'Areas of Focus' that have been identified as priorities which are as follows:

1. Safety – Improving Dunedin's road safety record.
2. Travel Choices – Providing safe, viable travel options in addition to cars.
3. Centres – Strengthening connections to within and between Dunedin's centres.
4. Freight – Supporting safe and efficient freight movement.
5. Resilience – Ensuring the on-going resilience of Dunedin's transport system and key infrastructure.

- Safety and accessibility are key focuses for this strategy
- This vision from the Spatial Plan, and Strategic Priority 1.2 from the Social Wellbeing Strategy have been developed into the following vision for the Integrated Transport Strategy: Dunedin is one of the world's great small cities, with a safe low-carbon transport system that supports a compact city with resilient centres, inclusive and healthy communities, and national and international connectivity. This means that PT and active modes will be popular, well-utlisied and safe.
- Dunedin is noted to be very car dependent in mindset and design with notes that the rural communities are not served by Public Transport and that distances are simultaneously too great for walking and cycling.
- Due to the poor provision for other modesw of transport (such as buses, walking and cycling), road safey has suffered in Dunedin. "Poor provision for non-car modes is itself both a cause and a result of the lack of demand for these modes – even extending, historically, to underinvestment in the rail network for freight or passenger movement."
- The Focus on travel choices seeks to "Reprioritise investment and reallocate space on the transport network to achieve a significant improvement in the provision of active travel modes and public transport in Dunedin, and explore initiatives to support the uptake of travel choices". The goal of this is for "The percentage of Dunedin census respondents who cycle, walk or take a bus to work increases from 16% at the 2006 census to 40% by 2024."
- The Focus on Centres seeks to improve Public Transport and active modes to achieve the "Spatial Plan and Integrated Transport Strategy vision for thriving and resilient centres, linked by a low carbon transport system."
- Strategic Cycle Network
  This was adopted in 2011 and sets out the priority routes for cycling. The purpose of the SCN is to provide a safe and attractive travel option for existing cyclists and people who are interested in cycling but are concerned about safety. "When implementing the SCN, the provision of safe, user-friendly cycle facilities will take precedence over on-street car parking on routes where there is a conflict. Where change is required, consultation will take place with the community. The SCN will also be supported by the provision of cycle parking facilities in centres and at other key destinations on the cycle network"

Dunedin City Council Second Generation District Plan 2018:

- Strategic Direction 2.2 Dunedin is Environmentally Sustainable and Resilient – Objective 2.2.2: Energy resilience, Policy 2.2.2.4: Support transport mode choices and reduced car dependency through policies and rule changes that enable both choice and access.
- Strategic Direction 2.7 Dunedin has Affordable and Efficient Public Infrastructure – Objective 2.7.2: Efficient transportation, Policy 2.7.2.2 details ways to encourage cycling as part of a multi-modal land transport network.
- City-wide Activities ; Transportation - Responsible land use planning encourages development patterns that support a variety of travel modes, including walking, cycling, and public transport.
- Objective 6.2.2 – Land use activities are accessible by a range of travel modes – Policy 6.2.2.4 – Only allow activities that are likely to generate a significant number of trips by walking, cycling or Public Transport

Spatial Plan 2012

- 'Dunedin Towards 2050 – a Spatial Plan for Dunedin' (the Spatial Plan), sets the strategic direction for Dunedin's growth and development for the next 30+ years. The Spatial Plan is primarily, but not solely, concerned with Dunedin's urban form and design.
- Dunedin's transport network provides excellent accessibility to goods and services for people travelling by car…. the quality of the transportation network for people who need to or want to travel by other modes is less strong, including the 12% of households who do not own a car.
- *Accessible and connected city*
  "Accessibility is determined by the number of transportation options provided by the network, including walking, cycling, ride-sharing, public transport, taxi, delivery services, mobile services (e.g. Library Book Bus) and telecommunications."
  "In 2050… It is safe to cycle to the local centre, and from the local centre to other local centres and the central city."
  "Within the central city, most people move around on foot, by bicycle or by public transport. These travel modes are well provided for, and many central city streets have been transformed into attractive boulevards and avenues. The State Highway network has been redesigned to provide a high quality amenity experience, with excellent pedestrian connectivity, so it is easy and safe to walk or cycle around the city, and between the central city, the Tertiary-Medical Precinct and the Harbourside area in particular"
  "Accident rates are far lower because there are fewer cars on the roads and more people use active modes and public transport. The transport network supports healthy lifestyles with more people using active modes."
- Our transportation network – "Cycling is one of the most common issues raised in public consultation, with an increasing number of people advocating for improved cycling facilities. As a result, the provision of on and off road cycle facilities has dramatically increased from 0.6km in 2001 to 25.1km in 2009. However compared to other cities internationally, Dunedin's provision of dedicated cycling facilities is limited (with varying quality and poor connections). Cycling is still perceived as dangerous, particularly at commuter times and along the State Highway network. Dunedin's topography also presents an impediment to cycling, yet the number of people cycling is increasing. The need for infrastructure to support people using mobility scooters has also been raised in recent consultations, as with an ageing population, the number of people using these is likely to increase."

Dunedin City Council 10 Year Plan 2018-28

The 10 year plan 2018-28 helps shape our city for the future. The plan outlines the services and activities the DCC will provide, the projects we will carry out and the level of service the community can expect.

- City Cycleways is a major project for DCC and $23 million has been allocated to building new cycleways

Dunedin Central City Plan

- Designed to guide city development for the next 10-15 years – supporting the aspirational goal to become “one of the world’s great small cities”. The key to achieving this aspiration is for the central city to be vibrant, exciting, prosperous and accessible.
- Transport in the past has focused on providing infrastructure for private motor vehicles. “This focus on private motor vehicles has been at the expense of investing in facilities which create safe, convenient and attractive experiences for other transport modes like public transport and cycling…. Today, Dunedin’s central city has one of the poorest safety records for pedestrians and cyclists in the country.”
- It is noted that the Central city bus hub could be enhanced to provide for other modes with investment from DCC.
- Cycling improvements are noted in each quarter, and as part of the associated projects under the SCN.

Strategic Cycling Network

- The aim of this network is to make the retail centre safer for cyclists and to encourage more cyclists to make the retail centre a destination.
- There are specific street improvements as a focus of this project

Social Wellbeing Strategy 2013-2023

- The Strategy sets out pathways for the Dunedin City Council to take a leadership role in improving the social wellbeing of Dunedin residents. The Dunedin City Council cannot progress social wellbeing on its own. It is hoped that this strategy will provide a vehicle for working towards shared responses and solutions with various communities across Dunedin and with other agencies and organisations.
- There are challenges that Dunedin needs to meet to continue to provide a high quality of life. These challenges are:
    1. Aging population
    2. Low income levels
    3. Housing stock
    4. Lifestyle changes
    5. Central Government services and funding
- Healthy and Safe People - All aspects of health (physical, mental, emotional and spiritual) are core contributors to our social wellbeing, as is the need to both feel safe and actually be safe. Encouraging people to utilise healthy active transport options such as walking or cycling will also contribute to this priority.

Public Transport

Draft Government Policy Statement on Land Transport 2018/19-2027/28: The strategic direction of GPS 2018 is demonstrated through its 2 key strategic priorities, and 2 supporting strategic priorities.
Key Strategic Priorities:
- Safety
- Access

Supporting Strategic Priorities:
- Value for Money
- Environment

Themes have been included in the GPS to assist understanding of how to effectively deliver on the priorities. The themes influence how the results should be delivered to ensure the best transport solutions for New Zealand are achieved. The themes for GPS 2018 are:
- a mode-neutral approach to transport planning and investment decisions
- incorporating technology and innovation into the design and delivery of land transport investment
- integrating land use and transport planning and delivery

Environment in the GPS 2018 supports a mode shift to lower emission forms of transport, including walking, cycling, public transport and lower emission vehicles (such as electric vehicles). It also recognises the public health benefits of reducing harmful transport emissions and increasing uptake of walking and cycling.

Access in the GPS 2018 and the increased focus on urban centres is to ensure that transport and land use planning reduces the need to travel by private motor vehicle by supporting a mode shift for trips in urban centres from single occupant private vehicles to more efficient, low cost modes like walking, cycling and public transport.

The Ministry of Transport released the Draft Government Policy Statement on Land Transport 2021 in March 2020 for public feedback. The draft GPS 2021 builds on the strategic direction of GPS 2018 by maintaining the priorities but updating them to align with recent policy work

The National Infrastructure Plan: A public transport system that is robust and effective and offers a range of user options that will attract a greater percentage of long term users.

MoT Statement of Intent 2018-22: There are two particular areas of focus and guiding principles for the transport sector. Firstly, transport planning and investing should be mode neutral. Secondly, our urban transport systems should be modern and efficient.

Transport Outcomes Framework 2018: The purpose of the transport system is to improve people's wellbeing, and the liveability of places
Outcomes (vision): What we seek to achieve through the transport system
- Inclusive access:
- Healthy and safe people
- Economic prosperity
- Environmental sustainability
- Resilience and security

Mode neutrality (guiding principle): To meet the outcomes, all transport planning, regulating, and investing needs to be done in a mode neutral way.
Mode neutrality involves two important aspects:
- Making sure all modes and options are considered and evaluated to find the best system solution.
- Making users and decision-makers more aware of the benefits and costs of transport choices, to incentivise robust decision-making and smart travel choices.

NZTA Amended Statement of Intent 2018-2022:
Value Statement: Great journeys to keep New Zealand moving – *"We see transport as a complex, dynamic system of people and communities, businesses, infrastructure and services, vehicles of all types, and data and processes that connect the parts of the system. We want to improve the system and its connections to create seamless, safe and affordable access to social and economic opportunities for people, communities and business."*

Focus: Providing one integrated land transport system that helps people get the most out of life and supports business.

Strategic Responses:
- One connected transport system – Transform land transport system performance by integrating digital technology with physical infrastructure to create a safe, connected system that works for everyone.
- People centric approach – Simplify our customers' lives and our partners' work with innovative services and experiences that make it easy for them to do what they need to.
- Partnerships for prosperity – Unlock social and economic opportunities for customers, businesses and communities through targeted partnerships.

Position Statements
- Transport safety – It is unacceptable for anyone to be killed or seriously injured while travelling or working on the land transport system.
- Inclusive access – Everyone should have fair and equitable access to the transport system

A frequent, reliable and efficient service that provides equitable access and positive user experiences for all customers, encouraging public transport as a viable mode choice inspiring more sustainable transport behaviours.

Primary Public Transport routes: Direct routes on high demand corridors that enable a connected and accessible city between residential areas to places of work, education centres, healthcare facilities and commercial centres.

Secondary Public Transport routes: Routes that complement primary routes providing local accessibility and access to emerging growth areas, recreational activities, local attractions, residential catchments and the wider transportation network

- Liveable communities – We will partner to efficiently combine planning and investment for transport and land use and this will result in more vibrant, interactive communities
- Transport technology – we will combine technology and organisational capabilities to enable safer, sustainable and connected journeys
- Resilience – The resilience of the land transport system is increased by managing risks and long-term resilience challenges and helping communities quickly recover from disruptions
- Environment – We will responsibly manage the land transport system's interaction with people, places and the environment
- Regulatory – The transport regulator is that our systems should be intuitive and clear to ensure people, vehicles and commercial and rail operations are safe, people make good transport choices and harmful behaviour is swiftly dealt with
- Transport agency – The Transport Agency is respected by partners, stakeholders and customers for its responsive and engaged people and its timely delivery of sustainable transport solutions.

Road to Zero Strategy 2020-2030: Road to Zero places human wellbeing at the heart of our road transport planning. It outlines a road safety system that supports and expects road users to make good choices, but acknowledges that we can all make mistakes. It values every life and the liveability of our communities, and it upholds the right of all of us to feel safe and arrive safely on our journeys across Aotearoa.
The vision of the Road to Zero Strategy is:
A New Zealand where no one is killed or seriously injured in road crashes. This means that no death or serious injury while travelling on our roads is acceptable.
To achieve this vision, the strategy outlines actions required across five focus areas:

1. Infrastructure improvements and speed management
2. Vehicle safety
3. Work-related road safety
4. Road user choices
5. System management

Seven guiding principles also underpin the vision:

1. We promote good choices but plan for mistakes
2. We design for human vulnerability
3. We strengthen all parts of the road transport system
4. We have a shared responsibility for improving road safety
5. Our actions are grounded in evidence and evaluated
6. Our road safety actions support health, wellbeing and liveable places
7. We make safety a critical decision-making priority.

This strategy will be supported by a series of action plans over the next 10 years that will outline priority actions to deliver on our vision.

Otago Regional Public Transport Plan 2014: Regional Public Transport Plan ('Plan') sets out priorities and needs for public transport services and infrastructure in Otago.
The plan details:
• public transport services available in the region
• policies that apply to those services
• information and infrastructure that supports those services.

The Plan encourages ORC, district/city councils (within regional boundary), and bus operators, to work together to meet the needs of Otago passenger transport customers.
For public transport services in Otago, ORC expect:
• coordinated public transport services
• that good service reliability, frequency, coverage, and integration between services will encourage more users
• that the public transport market will enable operators to compete for services, increasing your confidence in services being priced appropriately
• to incentivise operators to increase patronage and reduce the reliance on government money for public transport services
• planning and procurement of public transport services to be transparent.

Otago Southland Regional Land Transport Plans 2015-2021, updated 2018: The long-term goal set by the Committee for land transport in Otago Southland is to provide accessible transport connections, giving users an appropriate choice of modes, and to gain improved performance from the land transport system, by focusing on: road safety, economic growth and productivity, and value for money.
Public passenger transport (scheduled/unscheduled services, taxis, shuttles, private hire), delivering on priorities:
• Users are able to access the network, in a manner that is convenient and affordable to users and funders.
• The network is reliable and resilient, helping community resilience.
• Value for money.

Regional Policy Statement Review Consultation Draft 2014: Good quality infrastructure meets community needs. Roads networks support our communities, economy, and health and safety. Integrating infrastructure with urban growth and development is essential to ensure it occurs in a sustainable and efficient manner.

Otago Regional Council Long Term Plan 2018-28: Community outcomes for Transport (public passenger transport and stock effluent disposal) are:

- Service delivery that puts the community first and ensures that operations are customer driven, efficient and fit for purpose
- A region that prioritises sustainability as an economic measure whilst being attractive to industry
- A place where people can enjoy their environment safely, productively and respectfully

Otago Regional Council Strategic Plan 2014: Transport is one of nine areas of focus identified in this plan.
Description:

- While there is a well-developed roading network, travel throughout Otago is vulnerable to disruption because of weather events, natural hazards and crashes.
- Conflict between transport modes and actions of travellers reduces travel safety.

The Opportunity:

- State highways and local roads, cycle-paths and walkways operate as an uninterrupted single network to enable people to travel for work, education, social and recreation reasons; and freight movement for local distribution and export, thereby mobilising the region to a high level of efficiency and supporting the economy.
- Investment in maintenance of natural and physical resources and amenity values of Otago by the implementation of measures that limit unacceptable effects from the transport network providing value for money.
- Continuous access throughout Otago as a result of well-considered expenditure on the transport network.
- Safe individual and community travel using a variety of connected travel modes, within and between centres throughout Otago, and with the rest of New Zealand.

Approach:

- Provide clear definition of valued areas so that they are protected from the effects of use, maintenance and development of the transport network.
- Set standards to address the causes of factors that may have adverse effects on natural and physical resources and amenity values.
- Develop proposals to address safe and efficient transport of people and freight through coordinated transport expenditure achieving a single integrated network.
- Provision for an appropriate variety of transport modes that meet the needs of industry, lifestyle and tourism.

Outcome sought:

- People and communities can safely and efficiently access natural and physical resources for social and economic activities, including land use and development, by appropriate transport modes.

Dunedin City Integrated Transport Strategy 2013: This is a 30-year strategy which is set to be reviewed every five years. It builds upon the Cycling Strategy (2004), Pedestrian Strategy (2003), Transportation Strategy (2006) and Addendum (2009) and the Parking Strategy (2008). The vision for this strategy is *"Dunedin is one of the world's great small cities, with a safe low-carbon transport system that supports a compact city with resilient centres, inclusive and healthy communities, and national and international connectivity"*.

There are five 'Areas of Focus' that have been identified as priorities which are as follows:

1. Safety – Improving Dunedin's road safety record.
2. Travel Choices – Providing safe, viable travel options in addition to cars.
3. Centres – Strengthening connections to within and between Dunedin's centres.
4. Freight – Supporting safe and efficient freight movement.
5. Resilience – Ensuring the on-going resilience of Dunedin's transport system and key infrastructure.

- Safety and accessibility are key focuses for this strategy
- Dunedin is noted to be very car dependent in mindset and design with notes that the rural communities are not served by Public Transport and that distances are simultaneously too great for walking and cycling.
- The Focus on travel choices seeks to "Reprioritise investment and reallocate space on the transport network to achieve a significant improvement in the provision of active travel modes and public transport in Dunedin, and explore initiatives to support the uptake of travel choices". The goal of this is for "The percentage of Dunedin census respondents who cycle, walk or take a bus to work increases from 16% at the 2006 census to 40% by 2024."
- The Focus on Centres seeks to improve Public Transport and active modes to achieve the "Spatial Plan and Integrated Transport Strategy vision for thriving and resilient centres, linked by a low carbon transport system."
- A repeated objective is that public transport is affordable and convenient that meets community needs.

Dunedin City Council Second Generation District Plan 2018:

- Strategic Direction 2: Dunedin is Environmentally Sustainable and Resilient – Objective 2.2.2: Energy resilience, Policy 2.2.2.4: Support transport mode choices and reduced car dependency through policies and rule changes that enable both choice and access.

- City-wide Activities ; Transportation - Responsible land use planning encourages development patterns that support a variety of travel modes, including walking, cycling, and public transport.
- Objective 6.2.2 – Land use activities are accessible by a range of travel modes – Policy 6.2.2.4 – Only allow activities that are likely to generate a significant number of trips by walking, cycling or Public Transport

Spatial Plan 2012

- 'Dunedin Towards 2050 – a Spatial Plan for Dunedin' (the Spatial Plan), sets the strategic direction for Dunedin's growth and development for the next 30+ years. The Spatial Plan is primarily, but not solely, concerned with Dunedin's urban form and design.
- Dunedin's transport network provides excellent accessibility to goods and services for people travelling by car…. the quality of the transportation network for people who need to or want to travel by other modes is less strong, including the 12% of households who do not own a car.
- *Accessible and connected city*
- "In 2050…The majority of Dunedin's urban residents live within a ten-minute, safe and pleasant walk of a suburban or town centre that provides for most of their day-to-day shopping needs and a range of community services and facilities. These centres are connected to the central city and each other by a frequent and fast public transport service."
- "The city's public transport service is fully accessible, affordable, reliable, pleasant and well-utilised, with most people in urban Dunedin living on a public transport route. Accident rates are far lower because there are fewer cars on the roads and more people use active modes and public transport. The transport network supports healthy lifestyles with more people using active modes. A high proportion of vehicles are small, lightweight and more efficient."
- "Rural communities are linked to the central city by a mixture of ride-share, local private transport arrangements and a public transportation service, accessible and useable by wheelchair users and mobility impaired people, which connects the towns in the region."

• Our Transportation Network - Having access to good public transportation services across the city is important for citizens, including people with disabilities or on low incomes, or who have no motor vehicle. It will also likely be increasingly important across the population, as the cost of fuel is likely to continue to rise. Currently, the cost of public transport in Dunedin, when compared with relatively cheap private motor vehicle costs (plus ample convenient parking), continues to constrain the uptake of public transport. This affects the frequency, routes and types of services that are provided. **Dunedin Central City Plan** • Designed to guide city development for the next 10-15 years – supporting the aspirational goal to become "one of the world's great small cities". The key to achieving this aspiration is for the central city to be vibrant, exciting, prosperous and accessible. • Transport in the past has focused on providing infrastructure for private motor vehicles. "This focus on private motor vehicles has been at the expense of investing in facilities which create safe, convenient and attractive experiences for other transport modes like public transport and cycling." • It has also been noted that the public transport system is not easy for visitors to the city to use or understand. • It is noted that the Central city bus hub could be enhanced to provide for other modes with investment from DCC. **Dunedin City Council Annual Plan 2019/20** • The council has provided $150,000 to ORC support cheaper bus fares and a free central city bus loop following strong community support in feedback sought.	

Freight

Draft Government Policy Statement on Land Transport 2018/19-2027/28: The strategic direction of GPS 2018 is demonstrated through its 2 key strategic priorities, and 2 supporting strategic priorities.
Key Strategic Priorities:

- Safety
- Access

Supporting Strategic Priorities:

- Value for Money
- Environment

Themes have been included in the GPS to assist understanding of how to effectively deliver on the priorities. The themes influence how the results should be delivered to ensure the best transport solutions for New Zealand are achieved. The themes for GPS 2018 are:

- a mode-neutral approach to transport planning and investment decisions
- incorporating technology and innovation into the design and delivery of land transport investment
- integrating land use and transport planning and delivery

Environment in the GPS 2018 supports a mode shift to lower emission forms of transport, including walking, cycling, public transport and lower emission vehicles (such as electric vehicles). It also recognises the public health benefits of reducing harmful transport emissions and increasing uptake of walking and cycling.

Access in the GPS 2018 and the increased focus on urban centres is to ensure that transport and land use planning reduces the need to travel by private motor vehicle by supporting a mode shift for trips in urban centres from single occupant private vehicles to more efficient, low cost modes like walking, cycling and public transport.

The Ministry of Transport released the Draft Government Policy Statement on Land Transport 2021 in March 2020 for public feedback. The draft GPS 2021 builds on the strategic direction of GPS 2018 by maintaining the priorities but updating them to align with recent policy work

The National Infrastructure Plan

- A network of priority roads that will improve journey time and reliability, and ease severe congestion, boosting the growth potential of key economic areas and improving transport efficiency, road safety and access to markets.
- A rail system that enables the efficient movement of freight and complements other modes of passenger transport and freight movement.
- Sea and air ports that are linked to the overall transport network to support efficient nationwide movement of passengers, domestic goods and exports and imports and are able to respond to technological changes and changing international safety and security standards.

Vision: By 2030 New Zealand's infrastructure is resilient and coordinated and contributes to economic growth and increased quality of life.
MoT Statement of Intent 2018-22: There are two particular areas of focus and guiding principles for the transport sector. Firstly, transport planning and investing should be mode neutral. Secondly, our urban transport systems should be modern and efficient.

Transport Outcomes Framework 2018: The purpose of the transport system is to improve people's wellbeing, and the liveability of places
Outcomes (vision): What we seek to achieve through the transport system

- Inclusive access:
- Healthy and safe people
- Economic prosperity
- Environmental sustainability
- Resilience and security

Mode neutrality (guiding principle): To meet the outcomes, all transport planning, regulating, and investing needs to be done in a mode neutral way.
Mode neutrality involves two important aspects:

- Making sure all modes and options are considered and evaluated to find the best system solution.
- Making users and decision-makers more aware of the benefits and costs of transport choices, to incentivise robust decision-making and smart travel choices.

NZTA Amended Statement of Intent 2018-2022:
Value Statement: Great journeys to keep New Zealand moving – *"We see transport as a complex, dynamic system of people and communities, businesses, infrastructure and services, vehicles of all types, and data and processes that connect the parts of the system. We want to improve the system and its connections to create seamless, safe and affordable access to social and economic opportunities for people, communities and business."*

Focus: Providing one integrated land transport system that helps people get the most out of life and supports business.
Strategic Responses:

- One connected transport system – Transform land transport system performance by integrating digital technology with physical infrastructure to create a safe, connected system that works for everyone.
- People centric approach – Simplify our customers' lives and our partners' work with innovative services and experiences that make it easy for them to do what they need to.
- Partnerships for prosperity – Unlock social and economic opportunities for customers, businesses and communities through targeted partnerships.

Position Statements

- Transport safety – It is unacceptable for anyone to be killed or seriously injured while travelling or working on the land transport system.
- Inclusive access – Everyone should have fair and equitable access to the transport system
- Liveable communities – We will partner to efficiently combine planning and investment for transport and land use and this will result in more vibrant, interactive communities

A direct and connected network that minimises conflict with general traffic, other modes of travel and areas of high amenity, such as residential neighbourhoods and the city centre.

Primary Freight routes: Routes that provide direct and reliable access to major freight origins and destinations avoiding high land use areas.

Secondary Freight routes: Routes that provide connectivity between primary routes and local, commercial and industrial areas that minimise impact on local high amenity land uses.

- Transport technology – we will combine technology and organisational capabilities to enable safer, sustainable and connected journeys
- Resilience – The resilience of the land transport system is increased by managing risks and long-term resilience challenges and helping communities quickly recover from disruptions
- Environment – We will responsibly manage the land transport system's interaction with people, places and the environment
- Regulatory – The transport regulator is that our systems should be intuitive and clear to ensure people, vehicles and commercial and rail operations are safe, people make good transport choices and harmful behaviour is swiftly dealt with
- Transport agency – The Transport Agency is respected by partners, stakeholders and customers for its responsive and engaged people and its timely delivery of sustainable transport solutions.

The Thirty-Year New Zealand Infrastructure Plan 2015: – Transport is important to all New Zealanders. Strong links between road, rail, shipping and aviation are vital for moving people and freight around the country and overseas.

- Opportunities exist to optimise the freight transport network to ensure that it is efficient and to continue achieving productivity gains.
- *"Forward planning to integrate land use and infrastructure is critical to deliver outcomes over the long term, focus on densification around transport hubs and protect freight routes."*

Road to Zero Strategy 2020-2030: Road to Zero places human wellbeing at the heart of our road transport planning. It outlines a road safety system that supports and expects road users to make good choices, but acknowledges that we can all make mistakes. It values every life and the liveability of our communities, and it upholds the right of all of us to feel safe and arrive safely on our journeys across Aotearoa.
The vision of the Road to Zero Strategy is:
A New Zealand where no one is killed or seriously injured in road crashes. This means that no death or serious injury while travelling on our roads is acceptable.
To achieve this vision, the strategy outlines actions required across five focus areas:

1. Infrastructure improvements and speed management
2. Vehicle safety
3. Work-related road safety
4. Road user choices
5. System management

Seven guiding principles also underpin the vision:

1. We promote good choices but plan for mistakes
2. We design for human vulnerability
3. We strengthen all parts of the road transport system
4. We have a shared responsibility for improving road safety
5. Our actions are grounded in evidence and evaluated
6. Our road safety actions support health, wellbeing and liveable places
7. We make safety a critical decision-making priority.

This strategy will be supported by a series of action plans over the next 10 years that will outline priority actions to deliver on our vision.

Otago Southland Regional Land Transport Plans 2015-2021, updated 2018: The long-term goal set by the Committee for land transport in Otago Southland is to provide accessible transport connections, giving users an appropriate choice of modes, and to gain improved performance from the land transport system, by focusing on: road safety, economic growth and productivity, and value for money.
Freight – road, rail, delivering on priorities:

- Transport services and infrastructure support economic activity and growth.
- Tourism is enabled and supported
- Exporting is supported
- The network is reliable and resilient.

Regional Policy Statement Review Consultation Draft 2014: Good quality infrastructure meets community needs. Roads networks support our communities, economy, and health and safety. Integrating infrastructure with urban growth and development is essential to ensure it occurs in a sustainable and efficient manner.

Otago Regional Council Long Term Plan 2018-28: Community outcomes for Transport (public passenger transport and stock effluent disposal) are:

- Service delivery that puts the community first and ensures that operations are customer driven, efficient and fit for purpose
- A region that prioritises sustainability as an economic measure whilst being attractive to industry
- A place where people can enjoy their environment safely, productively and respectfully

Otago Regional Council Strategic Plan 2014: Transport is one of nine areas of focus identified in this plan.
Description:

- While there is a well-developed roading network, travel throughout Otago is vulnerable to disruption because of weather events, natural hazards and crashes.
- Conflict between transport modes and actions of travellers reduces travel safety.

The Opportunity:

- State highways and local roads, cycle-paths and walkways operate as an uninterrupted single network to enable people to travel for work, education, social and recreation reasons; and freight movement for local distribution and export, thereby mobilising the region to a high level of efficiency and supporting the economy.
- Investment in maintenance of natural and physical resources and amenity values of Otago by the implementation of measures that limit unacceptable effects from the transport network providing value for money.
- Continuous access throughout Otago as a result of well-considered expenditure on the transport network.
- Safe individual and community travel using a variety of connected travel modes, within and between centres throughout Otago, and with the rest of New Zealand.

Approach:

- Provide clear definition of valued areas so that they are protected from the effects of use, maintenance and development of the transport network.
- Set standards to address the causes of factors that may have adverse effects on natural and physical resources and amenity values.
- Develop proposals to address safe and efficient transport of people and freight through coordinated transport expenditure achieving a single integrated network.
- Provision for an appropriate variety of transport modes that meet the needs of industry, lifestyle and tourism.

Outcome sought:

- People and communities can safely and efficiently access natural and physical resources for social and economic activities, including land use and development, by appropriate transport modes.

Dunedin City Integrated Transport Strategy 2013: This is a 30-year strategy which is set to be reviewed every five years. It builds upon the Cycling Strategy (2004), Pedestrian Strategy (2003), Transportation Strategy (2006) and Addendum (2009) and the Parking Strategy (2008). The vision for this strategy is *"Dunedin is one of the world's great small cities, with a safe low-carbon transport system that supports a compact city with resilient centres, inclusive and healthy communities, and national and international connectivity"*.

There are five 'Areas of Focus' that have been identified as priorities which are as follows:

- Safety – Improving Dunedin's road safety record.
- Travel Choices – Providing safe, viable travel options in addition to cars.
- Centres – Strengthening connections to within and between Dunedin's centres.
- Freight – Supporting safe and efficient freight movement.
- Resilience – Ensuring the on-going resilience of Dunedin's transport system and key infrastructure.

Safety and accessibility are key focuses for this strategy

The Strategy seeks to respond to increased Freight volumes by increasing the use of the rail network to maintain the amenity and safety within the city. The goal is "A significantly increased proportion of the total freight load that passes through Dunedin will be being transported by rail by 2024." The Strategy also included consideration of the time of day during which freight movements occur, developing inland ports north of the city or in Taieri and the use of distribution centres for local freight.

Dunedin City Council Second Generation District Plan 2018:

"Dunedin International Airport is an integral part of the local and regional transport network, providing a link to national and international destinations for passengers, goods and freight. There has been steady growth in passenger numbers and freight volumes, both domestic and international, and a continuation of this growth is expected."

Spatial Plan 2012

'Dunedin Towards 2050 – a Spatial Plan for Dunedin' (the Spatial Plan), sets the strategic direction for Dunedin's growth and development for the next 30+ years. The Spatial Plan is primarily, but not solely, concerned with Dunedin's urban form and design.

Dunedin is an important hub in an efficient regional and national freight network based around a successful international port and Dunedin International Airport with strong air and rail links to the rest of the country. A large proportion of the freight sent to Port Otago at Port Chalmers is transported by rail. The road links to Dunedin International Airport and to the wider region are to a similar high standard both for efficiency and safety.

Dunedin has good connections for freight via Port Chalmers, the rail network, and State Highway network, with some connections by air. There are opportunities to increase the amount of freight transport by rail and by sea. Port Otago is responding to these opportunities.

Dunedin Central City Plan

Designed to guide city development for the next 10-15 years – supporting the aspirational goal to become "one of the world's great small cities". The key to achieving this aspiration is for the central city to be vibrant, exciting, prosperous and accessible.

Freight routes (rail and a heavy freight route) within Dunedin currently act as barriers to connecting the city center to the waterfront.

The Eastern Freight Bypass upgrade seeks to improve the strategic freight corridor. There are two key drivers – designating a priority route that has minimal conflict with vulnerable road users and removing freight vehicles from the central city.

General traffic

Draft Government Policy Statement on Land Transport 2018/19-2027/28: The strategic direction of GPS 2018 is demonstrated through its 2 key strategic priorities, and 2 supporting strategic priorities.
Key Strategic Priorities:
- Safety
- Access

Supporting Strategic Priorities:
- Value for Money
- Environment

Themes have been included in the GPS to assist understanding of how to effectively deliver on the priorities. The themes influence how the results should be delivered to ensure the best transport solutions for New Zealand are achieved. The themes for GPS 2018 are:
- a mode-neutral approach to transport planning and investment decisions
- incorporating technology and innovation into the design and delivery of land transport investment
- integrating land use and transport planning and delivery

Environment in the GPS 2018 supports a mode shift to lower emission forms of transport, including walking, cycling, public transport and lower emission vehicles (such as electric vehicles). It also recognises the public health benefits of reducing harmful transport emissions and increasing uptake of walking and cycling.

Access in the GPS 2018 and the increased focus on urban centres is to ensure that transport and land use planning reduces the need to travel by private motor vehicle by supporting a mode shift for trips in urban centres from single occupant private vehicles to more efficient, low cost modes like walking, cycling and public transport.

The Ministry of Transport released the Draft Government Policy Statement on Land Transport 2021 in March 2020 for public feedback. The draft GPS 2021 builds on the strategic direction of GPS 2018 by maintaining the priorities but updating them to align with recent policy work

The National Infrastructure Plan A flexible and resilient transport system that offers greater accessibility and can respond to changing patterns in demand by maintaining and developing the capacity of the network. Improved operational management practice and the use of demand management tools especially in urban areas experiencing significant growth.
A network of priority roads that will improve journey time and reliability, and ease severe congestion, boosting the growth potential of key economic areas and improving transport efficiency, road safety and access to markets.
Transport vision: A transport sector that supports economic growth by achieving efficient and safe movement of freight and people.

MoT Statement of Intent 2018-22: There are two particular areas of focus and guiding principles for the transport sector. Firstly, transport planning and investing should be mode neutral. Secondly, our urban transport systems should be modern and efficient.

Transport Outcomes Framework 2018: The purpose of the transport system is to improve people's wellbeing, and the liveability of places
Outcomes (vision): What we seek to achieve through the transport system
- Inclusive access:
- Healthy and safe people
- Economic prosperity
- Environmental sustainability
- Resilience and security

Mode neutrality (guiding principle): To meet the outcomes, all transport planning, regulating, and investing needs to be done in a mode neutral way.
Mode neutrality involves two important aspects:
- Making sure all modes and options are considered and evaluated to find the best system solution.
- Making users and decision-makers more aware of the benefits and costs of transport choices, to incentivise robust decision-making and smart travel choices.

NZTA Amended Statement of Intent 2018-2022:
Value Statement: Great journeys to keep New Zealand moving – *"We see transport as a complex, dynamic system of people and communities, businesses, infrastructure and services, vehicles of all types, and data and processes that connect the parts of the system. We want to improve the system and its connections to create seamless, safe and affordable access to social and economic opportunities for people, communities and business."*

Focus: Providing one integrated land transport system that helps people get the most out of life and supports business.

Strategic Responses:
- One connected transport system – Transform land transport system performance by integrating digital technology with physical infrastructure to create a safe, connected system that works for everyone.
- People centric approach – Simplify our customers' lives and our partners' work with innovative services and experiences that make it easy for them to do what they need to.
- Partnerships for prosperity – Unlock social and economic opportunities for customers, businesses and communities through targeted partnerships.

A general traffic network that is safe, efficient and coherent, and considers the needs of all modes to encourage a balanced and integrated transport system.

Preferred Traffic Route: Provides for longer distance travel as a preferred alternative to other routes with land use conflicts.

Traffic Route: Provides connectivity between smaller centres and preferred routes.

Local Primary Access Route: Provides access between local destinations and local commercial and residential areas.

Local Secondary Access Route: Collects and distributes between primary local access routes for localised movement in centres.

Position Statements

- Transport safety – It is unacceptable for anyone to be killed or seriously injured while travelling or working on the land transport system.
- Inclusive access – Everyone should have fair and equitable access to the transport system
- Liveable communities – We will partner to efficiently combine planning and investment for transport and land use and this will result in more vibrant, interactive communities
- Transport technology – we will combine technology and organisational capabilities to enable safer, sustainable and connected journeys
- Resilience – The resilience of the land transport system is increased by managing risks and long-term resilience challenges and helping communities quickly recover from disruptions
- Environment – We will responsibly manage the land transport system's interaction with people, places and the environment
- Regulatory – The transport regulator is that our systems should be intuitive and clear to ensure people, vehicles and commercial and rail operations are safe, people make good transport choices and harmful behaviour is swiftly dealt with
- Transport agency – The Transport Agency is respected by partners, stakeholders and customers for its responsive and engaged people and its timely delivery of sustainable transport solutions.

The Thirty Year New Zealand Infrastructure Plan 2015: – Vision: "*By 2045 New Zealand's infrastructure is resilient and coordinated and contributes to a strong economy and high living standards."*

Transport is important to all New Zealanders. Strong links between road, rail, shipping and aviation are vital for moving people and freight around the country and overseas.

Road to Zero Strategy 2020-2030: Road to Zero places human wellbeing at the heart of our road transport planning. It outlines a road safety system that supports and expects road users to make good choices, but acknowledges that we can all make mistakes. It values every life and the liveability of our communities, and it upholds the right of all of us to feel safe and arrive safely on our journeys across Aotearoa.
The vision of the Road to Zero Strategy is:
A New Zealand where no one is killed or seriously injured in road crashes. This means that no death or serious injury while travelling on our roads is acceptable.
To achieve this vision, the strategy outlines actions required across five focus areas:

1. Infrastructure improvements and speed management
2. Vehicle safety
3. Work-related road safety
4. Road user choices
5. System management

Seven guiding principles also underpin the vision:

1. We promote good choices but plan for mistakes
2. We design for human vulnerability
3. We strengthen all parts of the road transport system
4. We have a shared responsibility for improving road safety
5. Our actions are grounded in evidence and evaluated
6. Our road safety actions support health, wellbeing and liveable places
7. We make safety a critical decision-making priority.

This strategy will be supported by a series of action plans over the next 10 years that will outline priority actions to deliver on our vision.

Otago Southland Regional Land Transport Plans 2015-2021, updated 2018: The long-term goal set by the Committee for land transport in Otago Southland is to provide accessible transport connections, giving users an appropriate choice of modes, and to gain improved performance from the land transport system, by focusing on: road safety, economic growth and productivity, and value for money.
General traffic, delivering on priorities:

- Transport enables and supports economic activity and growth.
- The transport system adequately meets social needs.
- Transport helps to positively shape the future of Otago and Southland.
- Major externalities are reduced (including road risk and the resultant trauma, and carbon emissions).
- Tourism is enabled and supported
- The network is reliable and resilient.

Regional Policy Statement Review Consultation Draft 2014: Good quality infrastructure meets community needs. Roads networks support our communities, economy, and health and safety. Integrating infrastructure with urban growth and development is essential to ensure it occurs in a sustainable and efficient manner.

Otago Regional Council Long Term Plan 2018-28: Community outcomes for Transport (public passenger transport and stock effluent disposal) are:

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- Centres – Strengthening connections to within and between Dunedin's centres.
- Freight – Supporting safe and efficient freight movement.
- Resilience – Ensuring the on-going resilience of Dunedin's transport system and key infrastructure.

- Safety and accessibility are key focuses for this strategy
- This vision from the Spatial Plan, and Strategic Priority 1.2 from the Social Wellbeing Strategy have been developed into the following vision for the Integrated Transport Strategy: Dunedin is one of the world's great small cities, with a safe low-carbon transport system that supports a compact city with resilient centres, inclusive and healthy communities, and national and international connectivity.
- Dunedin is noted to be very car dependent in mindset and design with notes that the rural communities are not served by Public Transport and that distances are simultaneously too great for walking and cycling.
- Due to the poor provision for other modesw of transport (such as buses, walking and cycling), road safey has suffered in Dunedin. "Poor provision for non-car modes is itself both a cause and a result of the lack of demand for these modes – even extending, historically, to underinvestment in the rail network for freight or passenger movement."
- The Focus on travel choices seeks to "Reprioritise investment and reallocate space on the transport network to achieve a significant improvement in the provision of active travel modes and public transport in Dunedin, and explore initiatives to support the uptake of travel choices". The goal of this is for "The percentage of Dunedin census respondents who cycle, walk or take a bus to work increases from 16% at the 2006 census to 40% by 2024."
- The Focus on Centres seeks to improve Public Transport and active modes to achieve the "Spatial Plan and Integrated Transport Strategy vision for thriving and resilient centres, linked by a low carbon transport system."

Dunedin City Council Second Generation District Plan 2018:

- Strategic Direction 2.2 Dunedin is Environmentally Sustainable and Resilient – Objective 2.2.2: Energy resilience, Policy 2.2.2.4: Support transport mode choices and reduced car dependency through policies and rule changes that enable both choice and access.
- Strategic Direction 2.7 Dunedin has Affordable and Efficient Public Infrastructure – Objective 2.7.2: Efficient transportation, Policy 2.7.2.2 details ways to encourage cycling as part of a multi-modal land transport network.
- City-wide Activities ; Transportation - Responsible land use planning encourages development patterns that support a variety of travel modes, including walking, cycling, and public transport. Provisions are intended to encourage the accessibility of land use activities by a range of travel modes (including car, walking, cycling and public transport), and to ensure that activities are located and designed in a way that facilitates the safe and efficient operation of the transport network. These provisions are linked to performance standards located in management and major facility zone sections, including minimum car parking and minimum vehicle loading requirements, and design standards for parking and loading areas and vehicle access.
- Objective 6.2.2 – Land use activities are accessible by a range of travel modes – Policy 6.2.2.4 – Only allow activities that are likely to generate a significant number of trips by walking, cycling or Public Transport

Spatial Plan 2012

- 'Dunedin Towards 2050 – a Spatial Plan for Dunedin' (the Spatial Plan), sets the strategic direction for Dunedin's growth and development for the next 30+ years. The Spatial Plan is primarily, but not solely, concerned with Dunedin's urban form and design.
- Dunedin's transport network provides excellent accessibility to goods and services for people travelling by car…. the quality of the transportation network for people who need to or want to travel by other modes is less strong, including the 12% of households who do not own a car.
- *Accessible and connected city*
  "Accessibility is determined by the number of transportation options provided by the network, including walking, cycling, ride-sharing, public transport, taxi, delivery services, mobile services (e.g. Library Book Bus) and telecommunications."

"In 2050… Vehicular traffic is slowed in all local centres, many of which operate as shared spaces with a high amenity value.."
"Within the central city, most people move around on foot, by bicycle or by public transport. These travel modes are well provided for, and many central city streets have been transformed into attractive boulevards and avenues. The State Highway network has been redesigned to provide a high quality amenity experience, with excellent pedestrian connectivity, so it is easy and safe to walk or cycle around the city, and between the central city, the Tertiary-Medical Precinct and the Harbourside area in particular"
"Accident rates are far lower because there are fewer cars on the roads and more people use active modes and public transport. The transport network supports healthy lifestyles with more people using active modes."

- Our transportation network – "Dunedin's transport network provides excellent accessibility to goods and services for people travelling by car. There is little congestion and most parts of the city have ample on and off street parking. The State Highway network passes through the centre, which makes travel by car across the city efficient and convenient. On the other hand, the quality of the transportation network for people who need to or want to travel by other modes is less strong, including the 12% of households who do not own a car. The strong emphasis on car-based travel in the city is reflected in the modes of travel to work recorded in the 2006 census. It showed that most people travelled by car (82%), with 3.4% using the bus, 1.9% cycling and 11.1% on foot. These trends are similar across New Zealand, except for foot travel which is high for an urban area. Foot travel is particularly high in the tertiary campus area, with approximately 70-80% of University and Polytechnic students accessing their campuses by walking."
- Distribution of facilities and services and accessibility - Because much of Dunedin was developed prior to World War II and the era of the car, the city's main urban area is compact with a distribution of land-uses that generally supports good accessibility. Most employment and essential services (health and community services, food shopping) are located in the central city or suburban centres, which are along bus routes to facilitate access. In addition, 68.1% of households live within 800 metres and 38.8 % of households live within 400 metres of these centres (Map 34, p.115). These figures demonstrate that there is significant potential for people to walk and cycle to activity centres and primary schools.

Dunedin City Council 10 Year Plan 2018-28

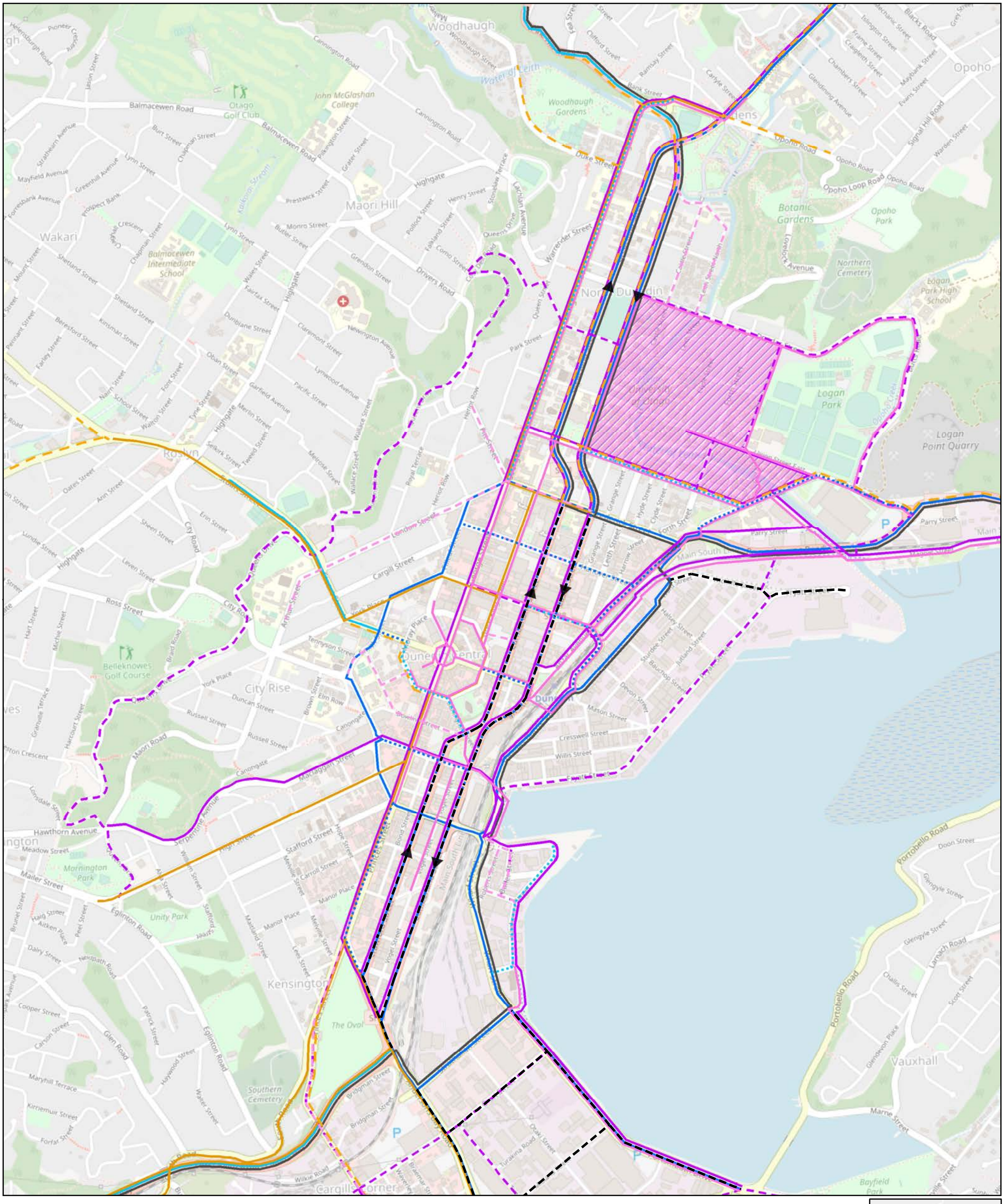
The 10 year plan 2018-28 helps shape our city for the future. The plan outlines the services and activities the DCC will provide, the projects we will carry out and the level of service the community can expect.

- Transport improvements will receive $20 million – This money is spent across the city to make our roads and footpaths safer and more accessible. The improvements include intersection upgrades, work to lower kerbs at corners to make them safer for people with mobility or sight problems, upgrading footpaths and installing signs and road markings.

Dunedin Central City Plan

- Designed to guide city development for the next 10-15 years – supporting the aspirational goal to become "one of the world's great small cities". The key to achieving this aspiration is for the central city to be vibrant, exciting, prosperous and accessible.
- Transport funding decisions in the past have resulted in a car-dominant environment which is outlined on page 11 in section 2.2. "This focus on private motor vehicles has been at the expense of investing in facilities which create safe, convenient and attractive experiences for other transport modes like public transport and cycling…. Today, Dunedin's central city has one of the poorest safety records for pedestrians and cyclists in the country."
- Strategic Direction – An accessible and connected city - Where past investment may have focused on private motor vehicles, this direction recognises that there needs to be a stronger focus on balancing the sometimes competing needs of the range of road users. In future, roads will be better differentiated according to their primary functions, adjacent land use, users, and place in the road hierarchy to ensure they are fit for purpose. Sufficient car parking will be available in the locations it is required, but it will not dominate the amenity of the city or detract from the pedestrian experience.
- Western Bypass – this project seeks to improve the convenience of the route around the central city for those traversing Dunedin rather than travelling through it. Reducing the amount of through traffic not intending to stop in the central city will expand options for improving safety and amenity of vulnerable road users.

Appendix C – Strategic Network Maps



Paper Size A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

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CLIENTS | PEOPLE | PERFORMANCE

NZTA
Network Operating Main Framework, Dunedin

Combined Modal Networks
One-way network

Job Number	12520882
Revision	0
Date	16 Nov 2020

Figure 1

N:\NZ\Wellington\Projects\51\12520882\GIS\Maps\Mxd\20201030_Dunedin_ModalNetworkMaps_RevB\Scenario_one\12520882_Z001_RevB_NOF_CombinedRoutes.mxd

Level 1, Grant Thornton House, 215 Lambton Quay, Wellington 6140 New Zealand T +64 4 472 0799 F +64 4 472 0833 W www.ghd.com

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LEGEND

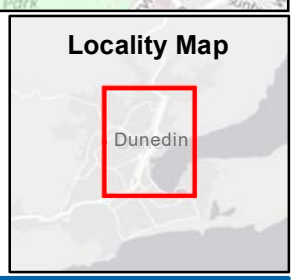
Traffic Routes

- Prefered Traffic Route
- Traffic Route

Access Routes

- Local Primary Access Route
- Local Secondary Access Route

Locality Map



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NZTA
Network Operating Main Framework, Dunedin

Traffic/Access Routes
One-way network

Job Number	12520882
Revision	0
Date	16 Nov 2020

Figure 2

N:\NZ\Wellington\Projects\51\12520882\GIS\Maps\Mxd\20201030_Dunedin_ModalNetworkMaps_RevB\Scenario_one\12520882_Z002_RevB_NOF_TrafficAccessRoutes.mxd

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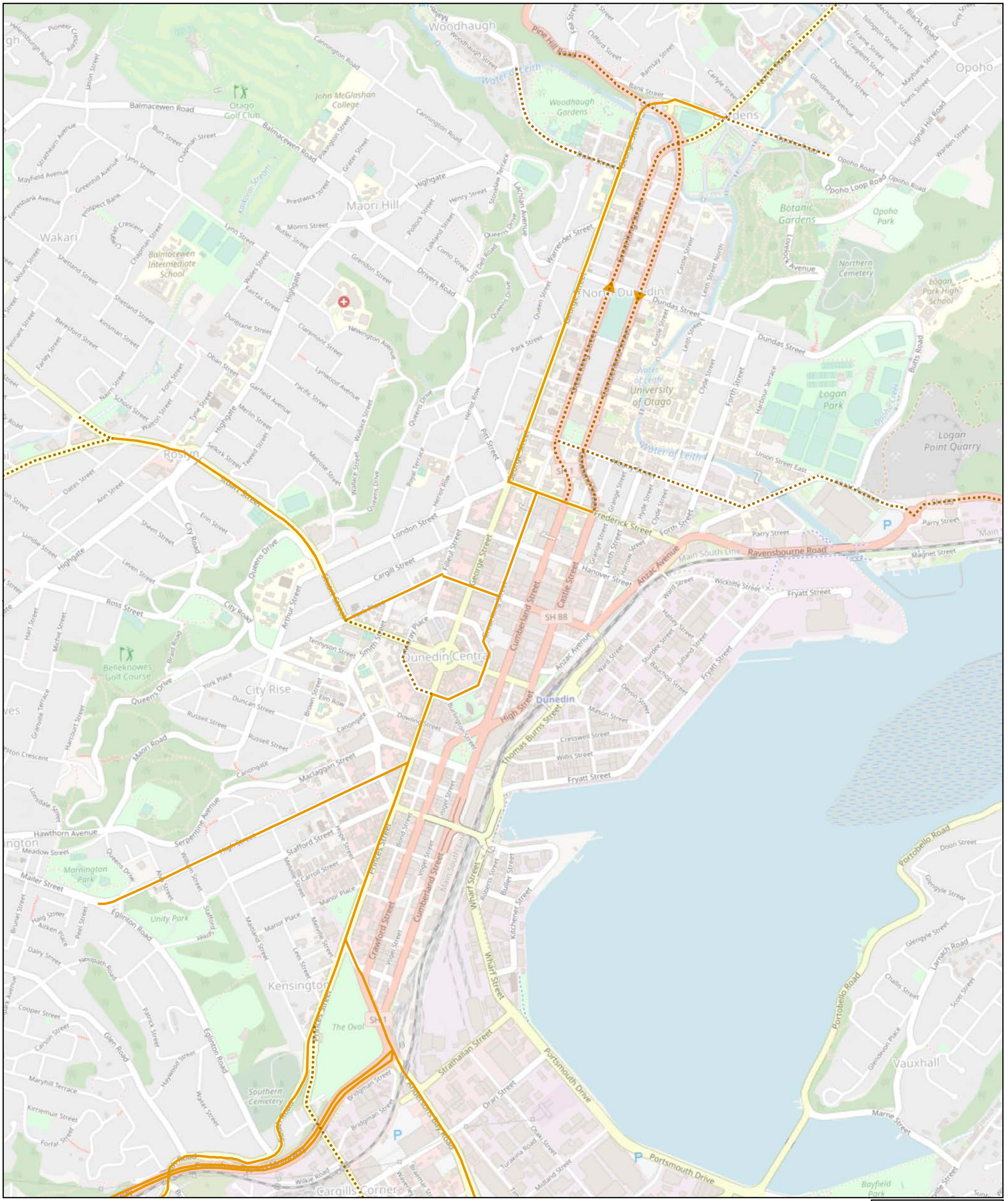


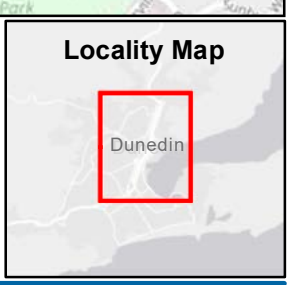
LEGEND

Public Transport Routes

Primary Public Transport Route

Secondary Public Transport Route

Locality Map



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NZTA
Network Operating Main Framework, Dunedin

Public Transport Routes
One-way network

Job Number 12520882
Revision 0
Date 16 Nov 2020

Figure 3

N:\NZ\Wellington\Projects\51\12520882\GIS\Maps\Mxd\20201030_Dunedin_ModalNetworkMaps_RevB\Scenario_one\12520882_Z003_RevB_NOF_PublicTransportRoutes.mxd

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LEGEND

Pedestrain Routes

Primary Pedestrian Route

Secondary Pedestrian Route

Primary Pedestrian Zone

Locality Map

Paper Size A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

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NZTA
Network Operating Main Framework, Dunedin

Pedestrian Routes
One-way network

Job Number 12520882
Revision 0
Date 16 Nov 2020

Figure 4

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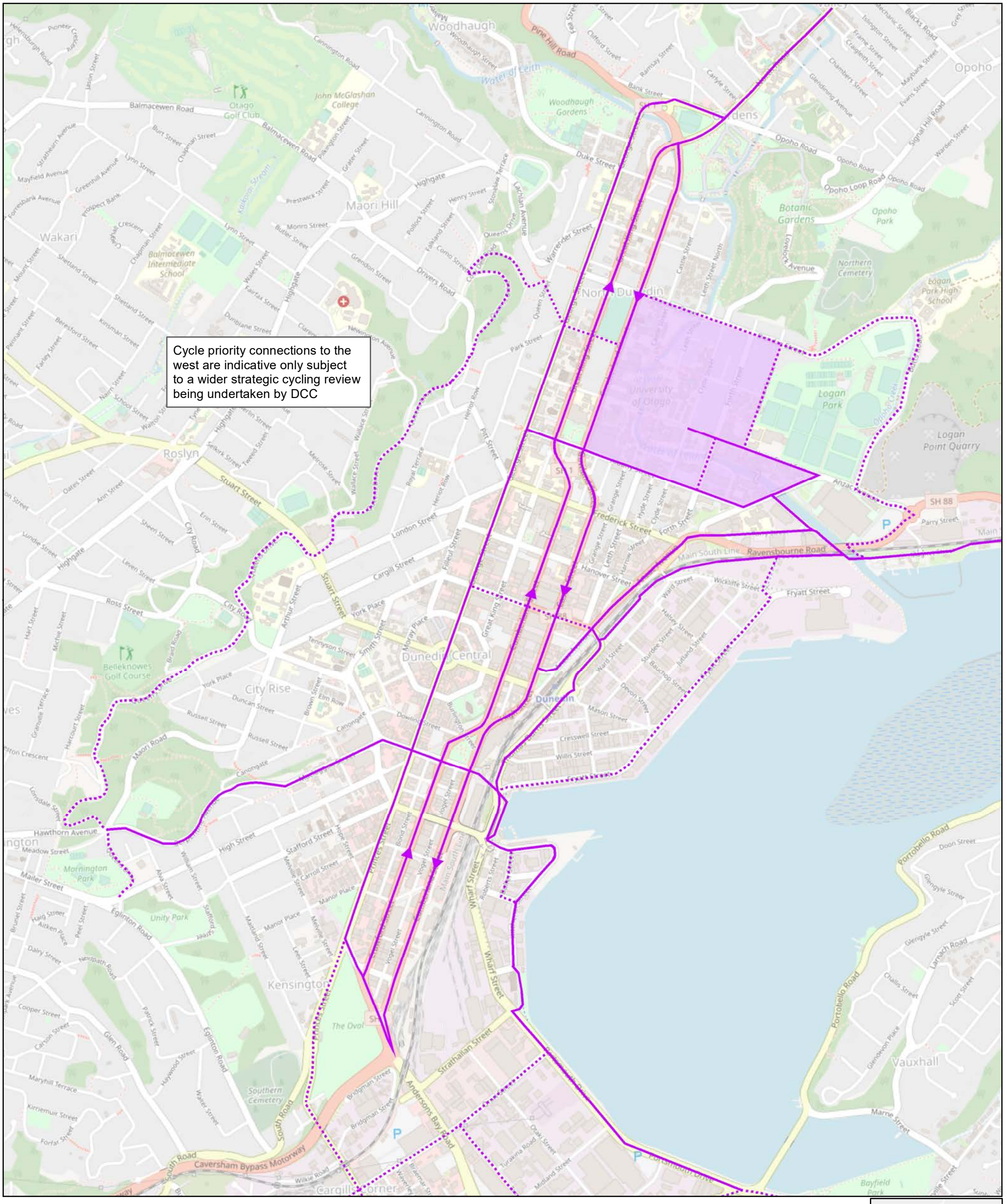


LEGEND

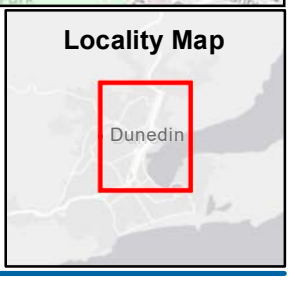
Cycling Routes

Secondary Cycling Zone

Primary Cycle Route

Secondary Cycle Route

Locality Map



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Horizontal Datum: NZGD 2000
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WAKA KOTAHI NZ TRANSPORT AGENCY

NZTA
Network Operating Main Framework, Dunedin

Cycling Routes
One-way network

Job Number	12520882
Revision	0
Date	16 Nov 2020

Figure 5

N:\NZ\Wellington\Projects\51\12520882\GIS\Maps\Mxd\20201030_Dunedin_ModalNetworkMaps_RevB\Scenario_one\12520882_Z005_RevB_NOF_CyclingRoutes.mxd

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LEGEND

Freight Routes

Primary Freight Route

Secondary Freight Route

Locality Map

Paper Size A3

0 150 300 450 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

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CLIENTS | PEOPLE | PERFORMANCE

NZTA
Network Operating Main Framework, Dunedin

Freight Routes
One-way network

Job Number 12520882
Revision 0
Date 16 Nov 2020

Figure 6

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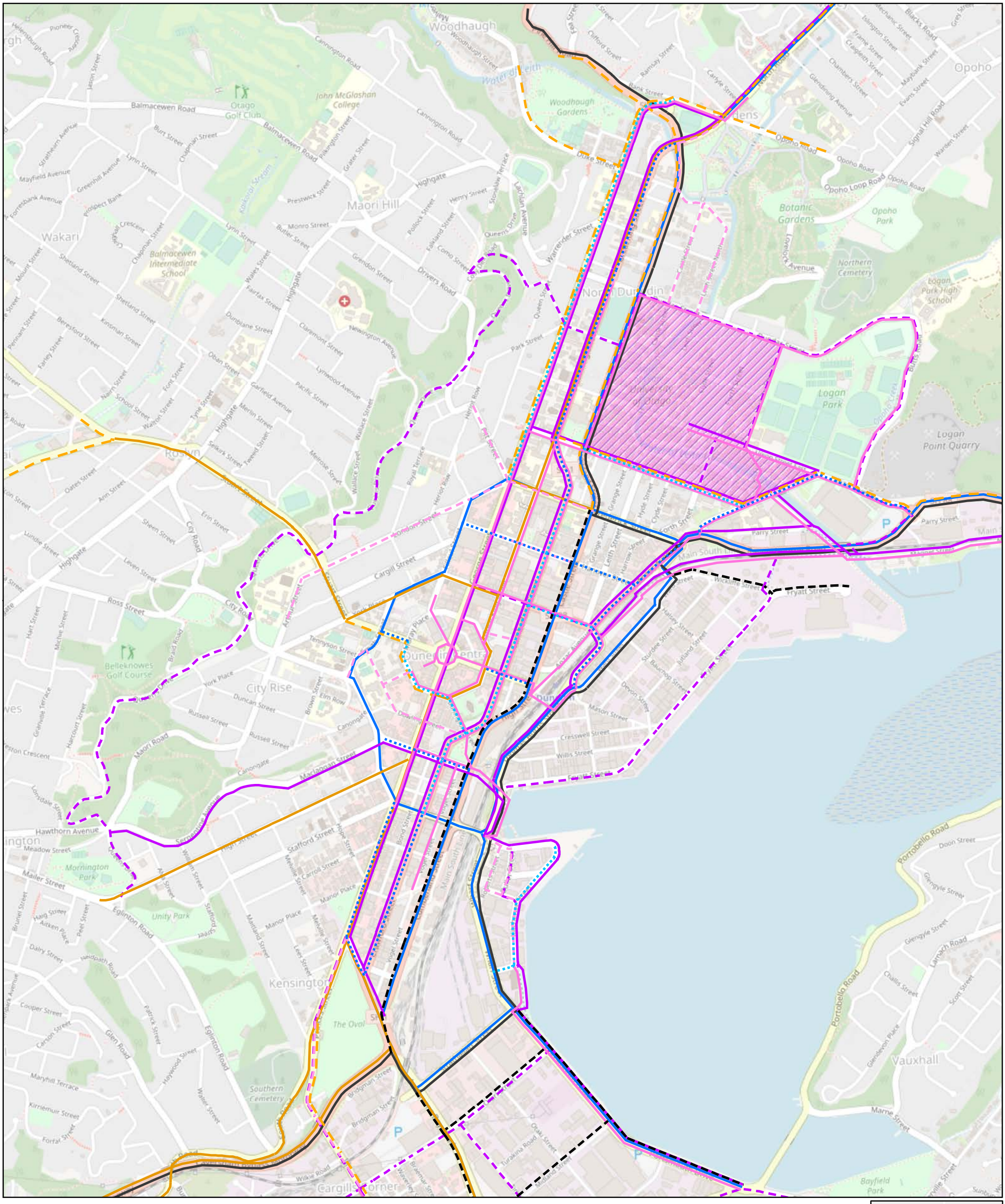

NZTA

Network Operating Main Framework, Dunedin

Combined Modal Networks
Two-way network

Job Number 12520882
Revision 0
Date 16 Nov 2020

Figure 1

N:\NZ\Wellington\Projects\51\12520882\GIS\Maps\Mxd\20201030_Dunedin_ModalNetworkMaps_RevB\Scenario_Two\12520882_Z001_RevB_NOF_Scenario_2_CombinedRoutes.mxd Level 1, Grant Thornton House, 215 Lambton Quay, Wellington 6140 New Zealand T +64 4 472 0799 F +64 4 472 0833 W www.ghd.com

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LEGEND

Traffic Routes

Prefered Traffic Route

Traffic Route

Access Routes

Local Primary Access Route

Local Secondary Access Route

Locality Map

Paper Size A3

0 150 300 450 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

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Network Operating Main Framework, Dunedin

Traffic/Access Routes
Two-way network

Job Number 12520882
Revision 0
Date 16 Nov 2020

Figure 2

N:\NZ\Wellington\Projects\51\12520882\GIS\Maps\Mxd\20201030_Dunedin_ModalNetworkMaps_RevB\Scenario_Two\12520882_Z002_RevB_NOF_Scenario_2_TrafficAccessRoutes.mxd
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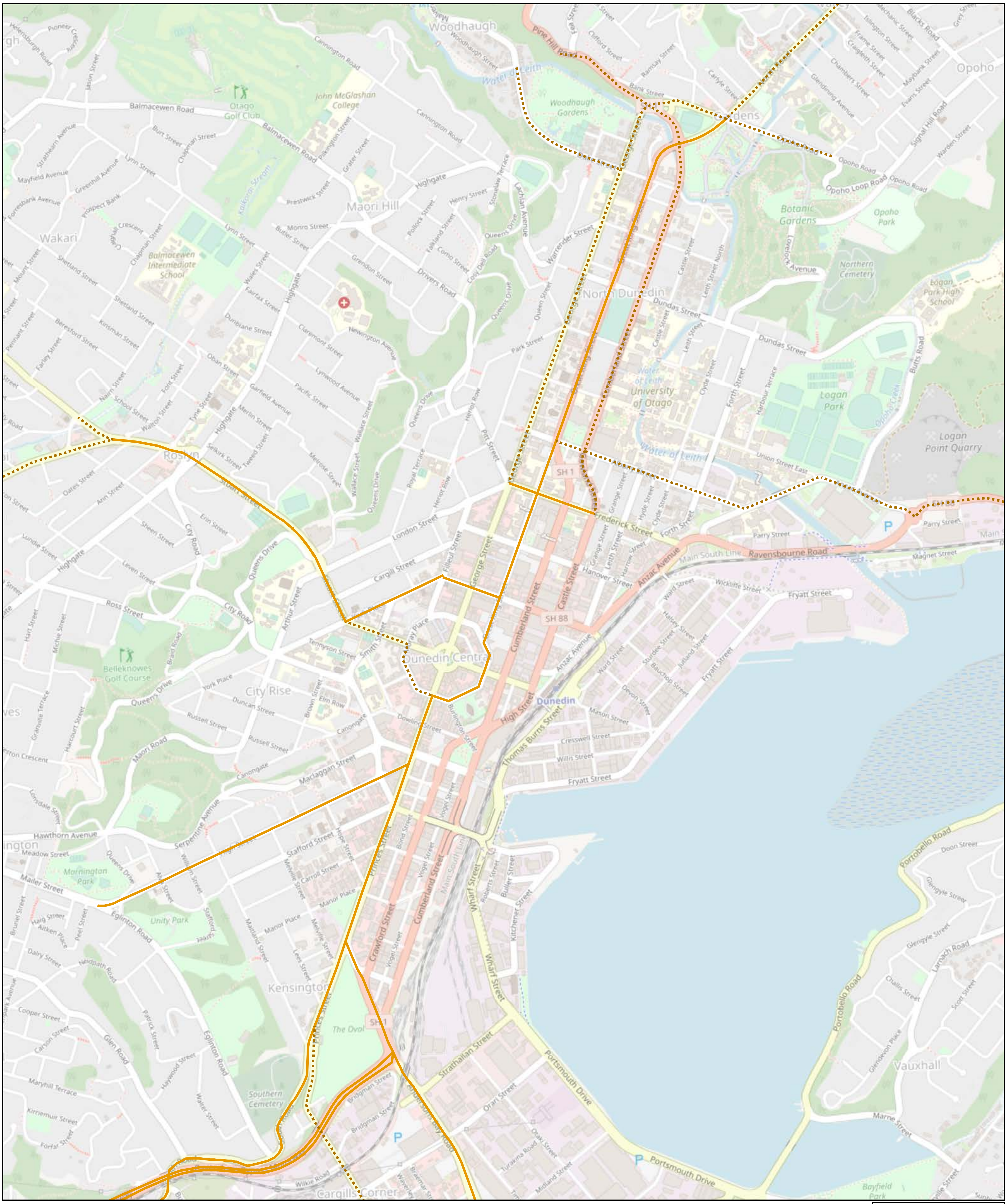

LEGEND

Public Transport Routes

Primary Public Transport Route

Secondary Public Transport Route

Paper Size A3

0 150 300 450 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

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NZTA
Network Operating Main Framework, Dunedin

Public Transport Routes
Two-way network

Job Number	12520882
Revision	0
Date	16 Nov 2020

Figure 3

N:\NZ\Wellington\Projects\51\12520882\GIS\Maps\Mxd\20201030_Dunedin_ModalNetworkMaps_RevB\Scenario_Two\12520882_Z003_RevB_NOF_Scenario_2_PublicTransportRoutes.mxd

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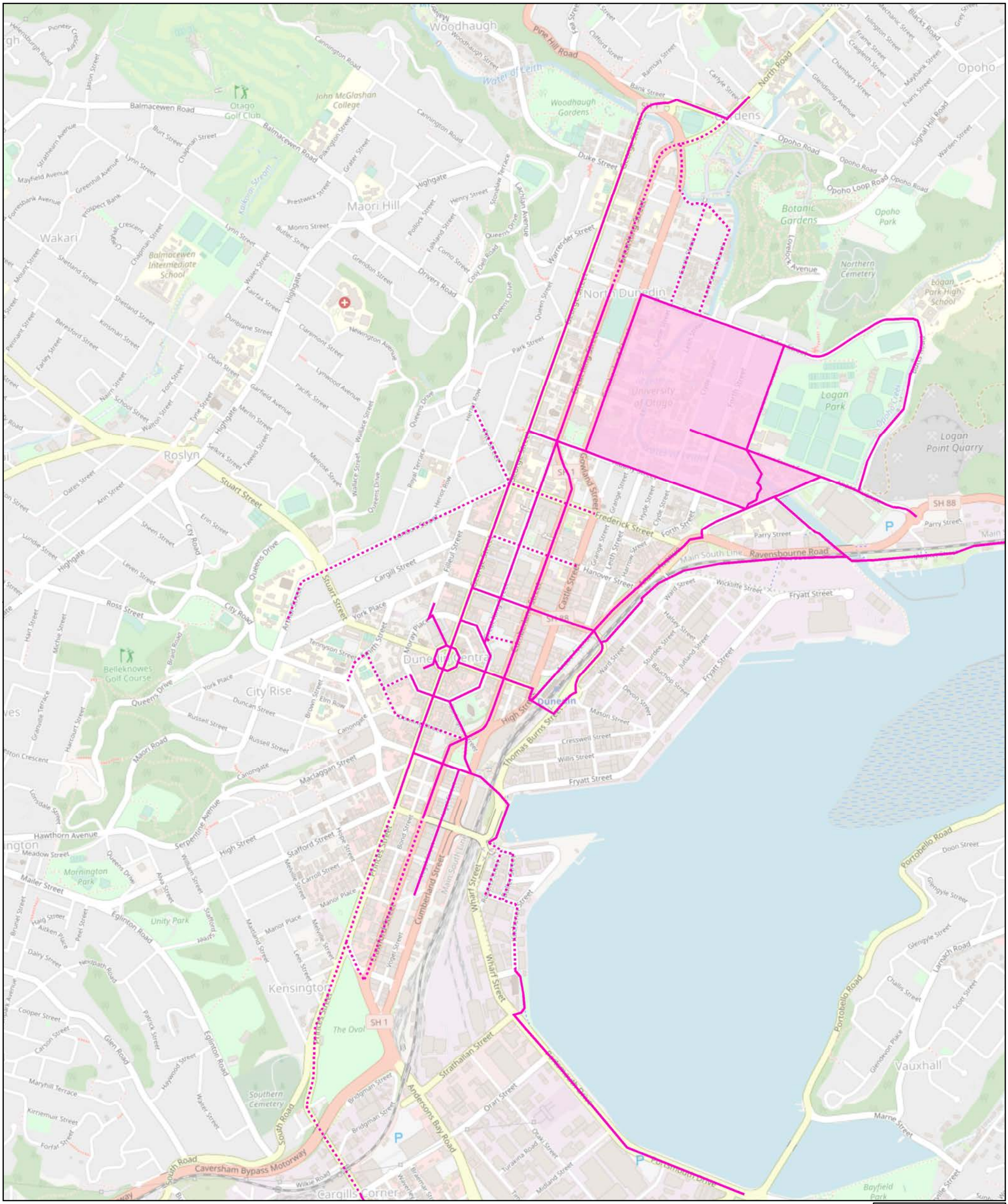


LEGEND

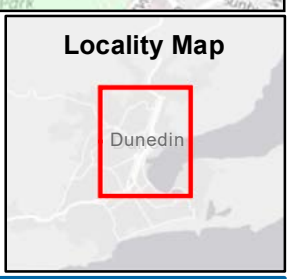
Pedestrain Routes

Primary Pedestrian Route

Secondary Pedestrian Route

Primary Pedestrian Zone

Locality Map



Paper Size A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
Grid: NZGD 2000 New Zealand Transverse Mercator

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Network Operating Main Framework, Dunedin

Pedestrian Routes
Two-way network

Job Number	12520882
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Figure 4

N:\NZ\Wellington\Projects\51\12520882\GIS\Maps\Mxd\20201030_Dunedin_ModalNetworkMaps_RevB\Scenario_Two\12520882_Z004_RevB_NOF_Scenario_2_PedestrianRoutes.mxd Level 1, Grant Thornton House, 215 Lambton Quay, Wellington 6140 New Zealand **T** +64 4 472 0799 **F** +64 4 472 0833 **W** www.ghd.com

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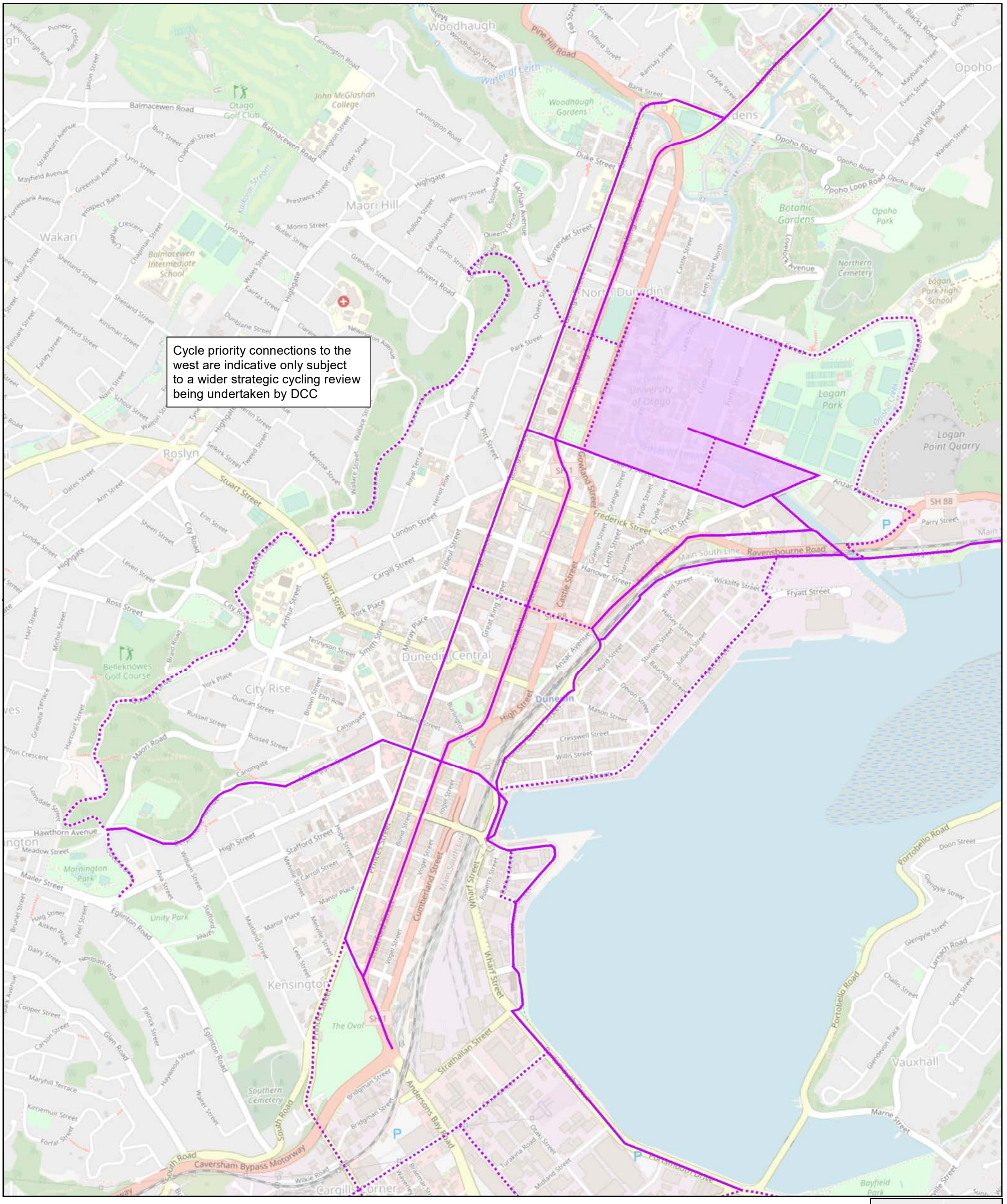


LEGEND

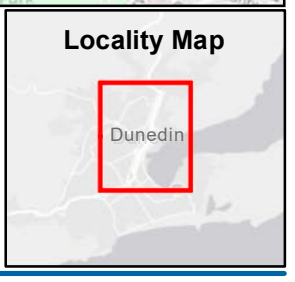
Cycling Routes

Secondary Cycling Zone

Primary Cycle Route

Secondary Cycle Route

Locality Map



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Metres

Map Projection: Transverse Mercator
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Cycling Routes
Two-way network

Job Number	12520882
Revision	0
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Figure 5

N:\NZ\Wellington\Projects\51\12520882\GIS\Maps\Mxd\20201030_Dunedin_ModalNetworkMaps_RevB\Scenario_Two\12520882_Z005_RevB_NOF_Scenario_2_CyclingRoutes.mxd
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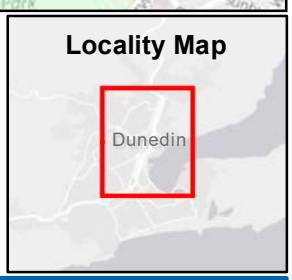
LEGEND

Freight Routes

Primary Freight Route

Secondary Freight Route

Locality Map



Paper Size A3

0 150 300 450 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: NZGD 2000
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NZTA
Network Operating Main Framework, Dunedin

Freight Routes
Two-way network

Job Number 12520882
Revision 0
Date 16 Nov 2020

Figure 6

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https://projectsportal.ghd.com/sites/pp02_05/dunedinnof/ProjectDocs/Dunedin Network Operating Framework report.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
Draft	J Strijbis A Metge					07/08/2020
1.0	J Strijbis	A Metge		T Eldridge		17/08/2020

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