Dunedin City Integrated Transport Strategy

2013

dunedin

Contents

Figures, Tables & Appendices

Figures

Tables

Appendices

i Glossary and Abbreviations

50MAX – standard dimension trucks with an additional axle allowing them to be loaded up to 50 tonnes.

ACC – Accident Compensation Corporation.

Accessibility – the time, money, discomfort and risk needed to reach essential services. Low levels of accessibility means that people will generally spend more of their household budget on transport costs. Accessibility is affected by both the quality of the transportation network and by the distribution of land-uses. The Transport Strategy also uses the term 'accessible' and 'accessibility' in relation to the extent that planning and infrastructure provides for the needs of users with mobility impairments.

Active modes – refers to non-motorised forms of transport involving physical activity, such as walking and cycling.

Amenity – The extent to which a place, experience or service is pleasant, attractive or comfortable. Improved features, facilities or services may contribute to increased amenity.

Asset Management – the combination of management, financial, economic, engineering, and other practices applied to physical assets such as roads and drainage to provide the required level of service in the most cost-effective manner. It includes the management of the whole life cycle (design, construction, commissioning, operating, maintaining, repairing, modifying, replacing and decommissioning/disposal) of physical and infrastructure assets.

CARR – Communities at Risk Register.

Centres – Commercial areas that have high levels of social and economic exchange, based on their being the focus for employment, retail and community, arts and cultural activities in the city, as well as areas of significant DCC investment in amenity features.

Communities at Risk Register – The register developed and maintained by the NZTA which ranks all territorial authorities in New Zealand according to their relative levels of road safety risk.

Connecting New Zealand – The central Government's broad policy direction for transport.

Council – means the elected members of the Dunedin City Council.

DCC – Dunedin City Council.

Design speed – the speed used to determine the various geometric features of the roadway. The assumed design speed should be consistent with respect to the topography, anticipated operating speed, the adjacent land use, and the functional classification of the road.

DRUF – Dunedin Road User Forum.

EDS – Economic Development Strategy (DCC).

Freight – The transportation of goods or cargo by truck, rail, aircraft or ship.

Goods – Commodities, or physical, tangible items that satisfy some human want or need, or something that people find useful or desirable and make an effort to acquire. In this Strategy the term 'goods' refers to the commodities themselves, while the term 'freight' refers to the mass transportation of the goods. Goods can also be transported in ways which do not constitute 'freight', for example private transportation of small quantities of goods such as taking groceries home from the supermarket

GPS – Government Policy Statement on land transport funding.

Greenfield – refers to sites that have not been previously developed for urban purposes (e.g. residential, commercial, industrial).

Homogeneous use, Principle of – the principle states that "... where vehicles or road users with great differences in mass have to use the same road space, speeds will have to be so low that, should a crash occur, the most vulnerable road users involved should not sustain fatal injuries. In addition, where traffic is moving at high speeds, road users should be separated physically."

High Productivity Motor Vehicles (HPMVs) – trucks that exceed the weight (44 tonnes) or length of a vehicle that is allowed to use any road as of right. HPMVs can only operate under permit from the Road Controlling Authority (NZTA and/or the Territorial Authority), and only on roads and bridges that are specified on the permit.

HPMV – High Productivity Motor vehicles.

Infrastructure – The fundamental facilities and physical systems which service a city or region, such as railways, roads, bridges or bike lanes.

Inland port – a physical site located away from traditional land, air and coastal borders where shipping containers, or other freight goods, are transferred between ship and road or rail. The goods are collected from their origins or distributed to their ultimate destinations by road or rail with the transfer happening at the inland site.

Intervention hierarchy – a hierarchy of responses to optimise investment in the road network.

Land use planning – Land use planning is the process of making decisions and regulating the use of land to guide future actions. It involves analysis of population and employment and manages development, infrastructure and services.

Liveability – The way a place supports the quality of life and wellbeing of its residents.

Long Term Plan – is the Council's 10-year plan adopted under the Local Government Act 2002. The Long Term Plan describes the Council's activities, community outcomes, financial strategy and accountabilities.

LTMA – Land Transport Management Act 2003.

LTP – Long Term Plan (DCC).

Mode – The type of vehicle or method used for a trip, for example bus, car, motorbike, bicycle or walking.

Network Operating Plan – a plan that prioritises transport modes across the road network according to route and time of day in order to address the demands and conflicts of multiple users within limited road space.

NLTF – National Land Transport Fund.

NLTP – National Land Transport Programme.

NOP – Network Operating Plan.

NZTA – New Zealand Transport Authority.

Older drivers/road users – refers to drivers/road users aged over 65 years.

One-way system – refers to State Highway 1 between Great King Street and Andersons Bay Road.

Over-dimension routes – designated routes for vehicles that exceed the standard regulations for width, length and/or height, as they are unable to access all parts of the network.

ORC – Otago Regional Council.

Place based planning – integrated planning of Council activities and programmes for a centre or precinct, in collaboration with the community.

Precinct – A geographical area with boundaries determined by land use, for example, the Tertiary Precinct and the Warehouse Precinct.

RCA – Road Controlling Authority.

Resilience – means the ability to recover quickly from disturbances or setbacks and react to potential crises.

RLTS – Regional Land Transport Strategy (ORC).

Road capacity – the ability of a road to accommodate traffic volume, usually expressed in vehicles per hour or vehicles per day.

Road user hierarchy – refers to a hierarchy that is used to plan and design the transport network to ensure the needs of the most vulnerable road users are considered early in the design phase.

RoNS – Roads of National Significance.

Safer Journeys – The central Government's road safety strategy 2010-20.

Safe System Approach – aims to address risk and improve road safety through a mixture of engineering, education and enforcement measures across the 'four pillars' of the Safe System (namely Safe Use, Safe Speeds, Safe Roads and Roadsides, and Safe Vehicles).

SCN – Strategic Cycle Network.

Second Generation District Plan – is the second district plan to be produced under the Resource Management Act 1991. The current Dunedin City District Plan (2006) is the first generation plan.

SH – State Highway

Single-occupant vehicle – privately operated vehicle whose only occupant is the driver.

Social exclusion – Social exclusion is the process of being shut out from the social, economic, political and cultural systems which contribute to the integration of a person into the community

Spatial Plan – sets the strategic direction for Dunedin's growth and development. It outlines a broad set of principles, strategic directions, policies, and actions and visually illustrates how the city may develop in the future. It will be used to guide land-use planning in the city as well as influencing how future infrastructure and services may be provided or limited.

Streetscape – the visual elements of a street, including the road, adjoining buildings, street furniture, trees and open spaces that combine to form the street's character.

STSG – School Traffic Safety Group.

Sustainable – Designed to meet present needs while also taking into account future costs, including costs to the environment and depletion of resources.

Sustainable transport – refers to any means of transport with low impact on the environment, and includes walking, cycling and public transport, and can also be extended to include car pooling, car sharing and use of electric or other 'clean fuel' vehicles.

SWS – Social Wellbeing Strategy (DCC).

TA – Territorial Authority.

Territorial Authority – A generic term for all New Zealand's City and District councils.

Tertiary Precinct – the area encompassing the University of Otago and Otago Polytechnic, as defined in Dunedin's Spatial Plan.

Townships – are the outlying residential settlements that have a centre and a range of community facilities and services. Townships include Mosgiel, Waikouaiti, Port Chalmers, Waitati, Middlemarch, Outram, Brighton, and Portobello.

Traffic calming – is the use of mainly physical measures fto slow down or reduce motor-vehicle traffic, to improve the safety for pedestrians and cyclists as well as the living conditions for residents living along the road.

Transport equity – Where access to transport is equally distributed, and low income earners, the elderly and the unemployed have equal opportunities for employment, recreational and social activities.

Transport optimisation – maximising the performance and capacity of the existing network to make it more cost-effective and potentially minimise the need for major investment in new infrastructure.

Unitary Authority – A territorial authority (district or city) which also performs the functions of a regional council, such as Auckland Council, Nelson City and Tasman District.

Urban sprawl – refers to the expansion of car dependent, low-density residential development.

Vulnerable road users – are those who do not have a protective 'shell' around them and are more likely to experience serious injury or death in a crash. This includes pedestrians, cyclists and motorcyclists of all ages.

Warehouse Precinct – the area bounded by Rattray Street, Cumberland Street, Police Street and Bond Street.

Wheeled pedestrians – include people using wheelchairs, mobility scooters and skateboards.

YCOF – Your City, Our Future

Young drivers – refers to drivers aged 15–24 years.

Your City, Our Future – Community consultation conducted in 2010-11.

ii Foreword

Developing, maintaining and operating any transport system requires investment, and investment requires decision-making about what to invest in, how much to invest and when that investment should be made. Such decisions need to be informed by an understanding of the key issues and opportunities to be addressed, a clear vision of what is to be achieved, and a clear set of priorities that will move toward that vision. In times of financial constraint when funding is tight the need to clearly identify the right priorities becomes even more important. The DCC have adopted a 10 Year Financial Strategy (2012 – 2022) which aims to help steer a course between the competing tensions of affordability, keeping up and investing for the future. This Financial Strategy states the limits to rates and borrowing that the Council has set, and any investment in transportation infrastructure must be managed with regard to the Financial Strategy.

The purpose of an Integrated Transport Strategy is to enable the DCC, and other agencies, who together invest a substantial amount of money in Dunedin's transport system, to review whether investment priorities of the past are still relevant and whether they are achieving the type of transport system that will best support the City, its people and the wider region. As the social, environmental and economic context in which transport operates is constantly evolving, priorities may need to be recast to address new challenges, changing values or a new long-term vision.

This Strategy identifies some of Dunedin's key transport challenges, including road safety, fuel price volatility, high dependence on motor vehicles and the importance of improving provision for travel modes other than cars, and the future complexities of prioritising, protecting and maintaining critical infrastructure in light of a changing climate. To address these challenges, and a number of others (Section 2), this Strategy has identified a vision (Section 4) and five 'Areas of Focus' (Section 8) that the DCC will prioritise through this Strategy. These areas of focus are:

- ***Safety:*** Improving Dunedin's road safety record
- ***Travel Choices:*** Providing safe, viable travel options in addition to the car
- ***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.

A number of priority actions have arisen from these 'Areas of Focus', and these are included in an indicative 10-year action plan in the final section of this Strategy. Many of these priorities still require more detailed investigations before any commitment to invest will be made, but they represent the most important investment priorities for Dunedin over the next 10 years. In addition to these specific projects, the DCC will adopt the direction and priorities of this Strategy as overarching guidance for all transport work undertaken by the DCC.

This is a 30-year strategy, and many of the goals and objectives will only be fully realised over the full lifetime of this strategy. Because Dunedin's challenges and priorities will continue to evolve over the next 30 years, the DCC will review the Integrated Transport Strategy every five years.

iii Introduction

Transport is integral to life. Roads, rail, footpaths, cycleways, and the public transport system all enable Dunedin's residents and visitors to access the goods and services they depend upon, as well as the recreational, cultural and social opportunities that make Dunedin a great place to live. Transport connections to the wider Otago region, the rest of New Zealand and the world, are also critical to the exporting and importing that supports the economic wellbeing of the city and life in general.

It is important to remember however, that the transport system is not an end in itself. Rather it exists solely to support the movement of people and goods in order that people can enjoy the way of life and the wellbeing that they value. The identification of these values, and how to best provide for them, is at the heart of developing a strategy to guide transport priorities and investment.

Developing this Integrated Transport Strategy for Dunedin has involved a three-fold process:

1. Identifying the key challenges facing, and associated with, transport in Dunedin
2. Agreeing on a vision and objectives for the kind of transport system that is desired for Dunedin in the long-term
3. Identifying the necessary range of priorities, actions and timeframes that will move Dunedin's transport system toward achieving the vision.

This has required background research to properly understand the current challenges associated with transport in Dunedin and challenges expected to grow in the future. It has also drawn on the wider vision and priorities for Dunedin that the DCC has already adopted through documents such as the Spatial Plan, Economic Development Strategy and Social Wellbeing Strategy. 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.

Most importantly, the process has involved a conversation with the community. This has been a conversation to understand the things people value in a transport system, the sort of city that people want Dunedin to be and the sort of lifestyle people value (or want to achieve) within that. This then enables the identification of the sort of transport system that will best support those community aspirations.

The Integrated Transport Strategy is presented in the following sections:

SECTION 1

Section 1 gives an overview of the strategic policy context which guides the direction of this Strategy

SECTION 2

Section 2 provides an analysis of the most significant transport challenges facing, or likely to face, Dunedin over the 30-year term of this Strategy

SECTION 3

Section 3 summarises the previous work that has informed the development of the Strategy

SECTIONS 4–8

Sections 4 to 8 present the Council's vision for the type of transport system this Strategy is intended to deliver, as well as the key 'Areas of Focus' the DCC will prioritise in order to achieve that vision

SECTION 9

Section 9 outlines how the Strategy will be implemented, including a range of strategic approaches and possible projects identified as high priorities in order for this Strategy to be successful, as well as an indicative 10-year plan of when these projects might be progressed.

1. The strategic context for Dunedin's transport system

Several national strategies and policy documents set the broader strategic context for Dunedin transport. There is also a Regional Land Transport Strategy and a range of DCC strategies which provide the main policy context for the Dunedin Integrated Transport Strategy. The most important of these are outlined here.

Where appropriate, the DCC priorities set out in this Strategy will align with central Government direction, but this Strategy will express the DCC's priorities for Dunedin even if they differ from those of central Government.

1.1 National context

1.1.1 Legislation

The Land Transport Management Act 2003 (LTMA) is the overarching legislation which governs land transport in New Zealand. The aim of the LTMA is to "achieve an affordable, integrated, safe, responsive and sustainable land transport system". The Government seeks to achieve this aim through the way it invests in the transport sector. Funding for transport is allocated by central Government from the National Land Transport Fund (NLTF) through the National Land Transport Programme (NLTP). Prioritisation for this funding is defined in the Government Policy Statement on Land Transport Funding (section 1.1.3).

1.1.2 Central Government Direction

Connecting New Zealand sets out the Government's three strategic priority areas for transport – economic growth and productivity, value for money and road safety[1]. *Connecting New Zealand* is not a transport strategy, rather it summarises the Government's broad policy direction for transport for the next 10 years.

Safer Journeys is the Government's strategy for reducing the number of people killed and seriously injured on New Zealand roads through guiding improvements in road safety over the period 2010–2020[2]. *Safer Journeys'* long-term vision for road safety is "A safe road system increasingly free of death and serious injury".

Safer Journeys adopts a 'safe system' approach to road safety which focuses on four 'pillars' of a safe transport system: safe roads and roadsides, safe speeds, safe road users and safe vehicles. This whole-system approach acknowledges that humans make mistakes, human bodies can only withstand a certain amount of force, and the transport system needs to account for this so that a human error does not result in a serious injury or fatality. The 'safe system' approach also affirms that everybody is jointly responsible for road safety thereby moving away from traditional 'blame the driver' approaches.

1.1.3 Government Funding Priorities

The Government Policy Statement on Land Transport Funding 2012/13 – 2021/22 (GPS)

The GPS sets out the Government's outcomes and priorities for its investment in the land transport sector. It is a key method for achieving the strategic goals set out in *Connecting New Zealand* and *Safer Journeys*. The GPS reaffirms the Government's strong focus on removing key bottlenecks in the land transport network, encouraging economic growth and productivity, obtaining value for money and improving road safety.

Every activity proposed for the NLTP is assessed using criteria under these three factors to form a complete assessment profile. The NZTA then uses this to prioritise activities for programming.

NZTA Statement of Intent 2012 – 2015

The Statement of Intent sets out the five priority areas that the NZTA will focus on over the next three years to achieve the

1 Connecting New Zealand (2011) p.3. See: www.transport.govt.nz/ourwork/KeyStrategiesandPlans/Documents/Connecting%20NZ_online_version_9_September.pdf
2 Safer Journeys: www.saferjourneys.govt.nz/

Government's strategic goals as set out in *Connecting New Zealand* and the GPS. These five areas are:

1. Improving customer service while reducing compliance costs
2. Embedding the safe system approach
3. Improving freight movement efficiency
4. Delivering the Roads of National Significance
5. Improving public transport effectiveness

Each of these priorities also includes a particular focus on achieving value for money from all investment, supporting Canterbury's economic recovery and growing a high quality transport system for Auckland[3].

1.2 Inter-regional context

There are no statutory inter-regional strategies or plans. However, the NZTA is developing a South Island Freight Plan, which will entail a degree of strategic alignment and co-operation between central Government, territorial and regional local authorities and the private sector.

1.3 Regional context

The Otago Regional Land Transport Strategy (RLTS) sets the strategic direction for transport for the whole Otago region for the next 30 years (2011 – 2041). The RLTS guides the three-yearly production of the regional land transport programme for Otago as well as the long-term plans of the Otago Regional Council (ORC) and each of Otago's territorial local authorities, including Dunedin. The RLTS covers both road and rail but excludes shipping and air transport.

The goal of the RLTS is "A safe 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".

The RLTS identifies two transport outcomes as important in reaching this goal:

1. Sustainable, demographically appropriate transport infrastructure and services that serve and link resilient communities
2. The ability of individuals, families, households and businesses to undertake necessary travel and carriage of freight in safe, healthy, convenient and affordable ways, with travel constrained only by the choices that people make (i.e. the realities of residential and business locations)[4].

1.4 Local context

There are several DCC strategies with implications for transport and this Integrated Transport Strategy seeks to give effect to these.

1.4.1 The Financial Strategy

The Council's Financial Strategy aims to help steer a course between the competing tensions of affordability, keeping up and investing for the future. It states the limits to rates and borrowing that the Council has set. For the duration of the Council's Long Term Plan 2012/13 – 2021/22, the limits on the total percentage rate increases per annum from 2015/16 onwards is 3%.

Some of the projects included in the indicative implementation plan are already included in the Council's LTP. However some are new projects. Following consultation, the Council will need to review expenditure and make decisions on whether these new projects should be included in the LTP, whether changes should be made to projects already included in the LTP, or whether projects should be delayed or excluded from the LTP altogether.

1.4.2 The Economic Development Strategy (EDS)

The EDS emphasises that the ability of Dunedin businesses to create and capture value in international markets is critical to Dunedin's economic performance. The Integrated Transport Strategy has a key role to play in supporting the EDS goal of fostering regional linkages, air linkages, and strengthening Dunedin as an urban destination with high amenity, quality design, recreational opportunities and improved walking and cycling infrastructure, all of which have been highlighted as crucial aspects for liveability.

The EDS highlights that the development of a city-wide Energy Plan will help Dunedin reduce its energy needs and find sustainable and local solutions to energy challenges. It also notes that the decarbonisation of the local economy will also open up commercial opportunities for local business. As our transport system is currently highly dependent on imported fossil fuels, it will need to be managed pro-actively and adaptively to ensure the goals of the EDS are realised.

3 NZTA Statement of Intent 2012 – 2015, pp.16 – 33.
4 Otago Regional Land Transport Strategy 2011

1.4.3 The Social Wellbeing Strategy (SWS)

The SWS presents five strategic directions:

1. Connected people
2. Vibrant and cohesive communities
3. Healthy and safe people
4. A reasonable standard of living for all
5. Affordable and healthy homes

Under each strategic direction, the SWS presents a list of key priorities. Transport has a role to play in supporting many of these priorities. The Integrated Transport Strategy most directly supports the 'Connected People' strategic direction, which includes the priority that "Dunedin people are connected to the places they need to go by safe, affordable and user friendly transport options". However, the Integrated Transport Strategy also has a key role to play in achieving other priorities in the SWS, such as:

- Dunedin communities are resilient and have good access to information and resources
- all people have good access to health services
- there are high levels of participation in recreation and leisure activities
- people feel safe and are safe in their homes, neighbourhoods and public places
- Dunedin people can afford to exercise genuine choices

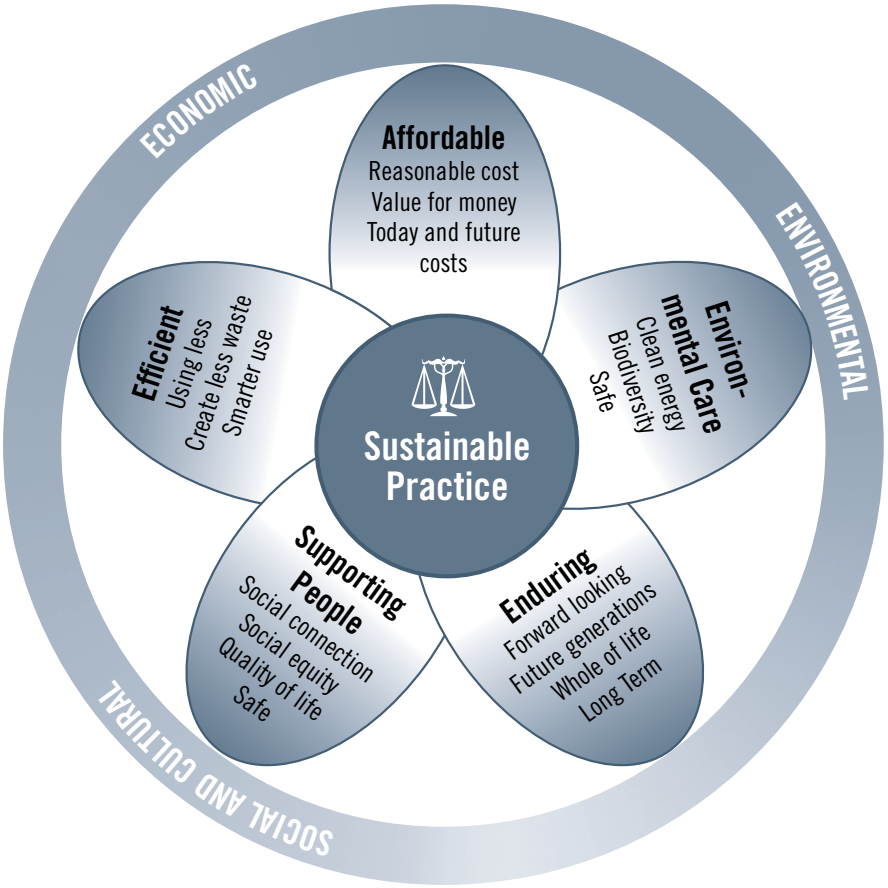
Safety, accessibility, affordability, connectivity and genuine options are all important aspects of any transport system if it is to effectively support the wellbeing of the community it serves.

1.4.4 The Spatial Plan

The Spatial Plan sets out six strategic directions and a vision for 'what kind of city we want' and what we need to do to ensure "Dunedin is one of the world's great small cities".

1. A liveable city
2. An environmentally sustainable and resilient city
3. A city that enables a prosperous and diverse economy

FIGURE 1. DCC Sustainable Practice Model.



4. A memorable and distinctive city
5. A vibrant and exciting city
6. An accessible and connected city

It sets the strategic direction for Dunedin's growth and development for the next 30+ years, with an overall urban form objective of a 'Compact City with Resilient Townships'. This will be achieved by promoting urban consolidation through intensification of residential development – particularly in areas with high levels of accessibility to larger centres and well-serviced public transport routes – as well as encouraging living in the central city and suburban centres, and maximising use of existing infrastructure to avoid unplanned expansion.

The Spatial Plan sets out a hierarchy of centres, with the central city at the top, which are social and economic hubs for the community with an emphasis upon pedestrian amenity and safety and quality design, both in developments and the public realm.

The Integrated Transport Strategy has a significant role to play in supporting the vision and strategic directions of the Spatial Plan through the integration of land use and transportation planning to achieve an accessible and connected city.

1.4.5 The Long Term Plan

The DCC's Long Term Plan 2012/13 – 2021/22 sets out 10 community outcomes, identified with the community through the Your City, Our Future consultation in 2011, and adopted by the Council[5]. These are:

1. A thriving and diverse economy
2. A connected community
3. A safe and healthy city
4. A distinctive built environment
5. A valued and protected natural environment
6. A sustainable and resilient city
7. A supportive community
8. A vibrant and creative city
9. A city of learning
10. An active city

The community outcomes create a vision of what Dunedin people want for their future economic, environmental, social and cultural wellbeing. The outcomes are defined as "the Council's contribution to wellbeing" and the DCC has a responsibility to work actively towards achieving them. The DCC has committed to working in key partnerships with other agencies and groups to achieve the outcomes. Transport plays a key role in many aspects of life in Dunedin, including sustainability, safety, the economy, health, and the quality of the city environment. For this reason, the Integrated Transport Strategy contributes in some way to achieving all of the community outcomes, but most directly to the outcome 'A connected community'. This outcome emphasises the need for Dunedin's communities to be connected by safe, effective transportation and communications, and linked locally, nationally and internationally.

1.4.6 Sustainability Framework

The DCC has also established a set of five sustainable development principles. These work together to guide decision making, ensuring that Dunedin becomes increasingly sustainable. These principles are shown in the DCC's Sustainable Practice model (FIGURE 1) above left[6].

The Integrated Transport Strategy reflects the DCC's commitment to sustainable development, and sets a basis for a transport system that supports the environmental, social, cultural and economic sustainability of Dunedin.

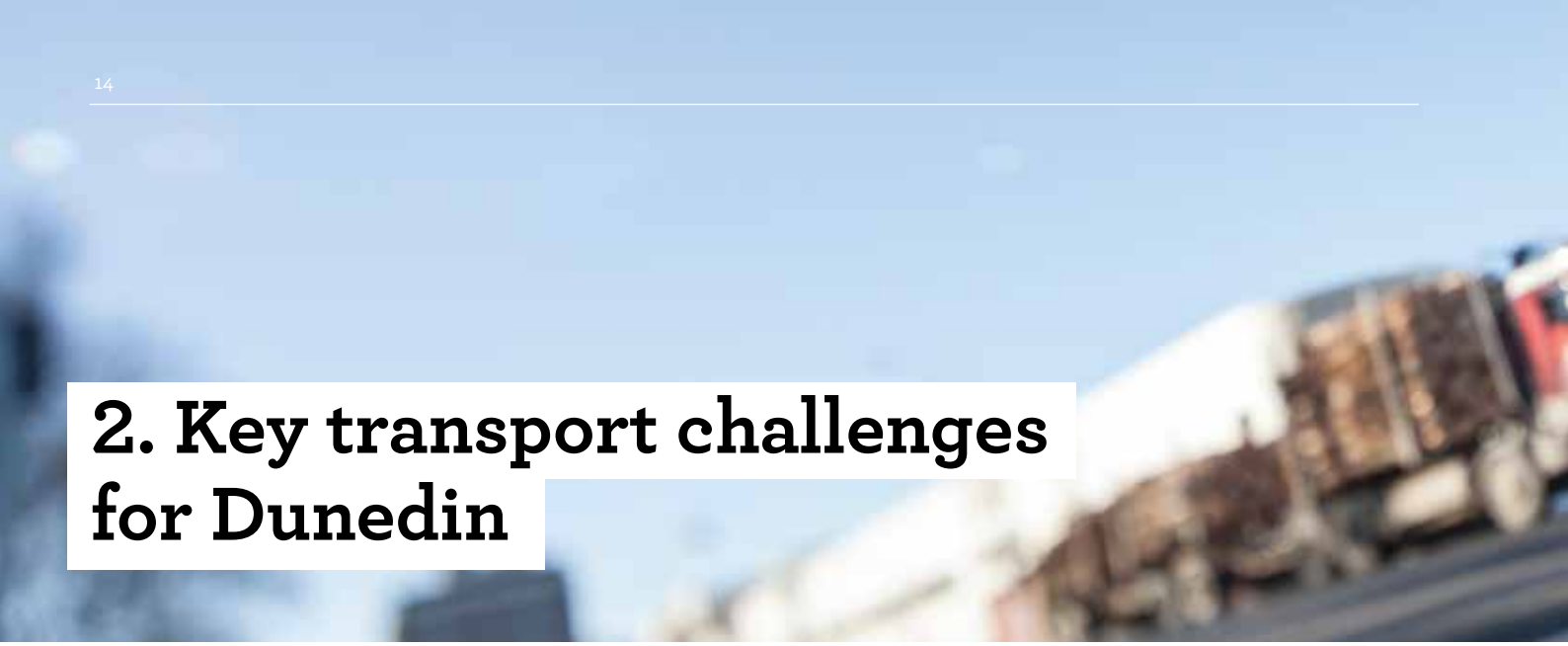
1.4.7 Other Strategies

The DCC has developed a strategic framework which incorporates a vision, eight high-level strategies, including the Integrated Transport Strategy, and action plans and activity plans at a lower level. The Integrated Transport Strategy will form connections with many of the other high level strategies, and help achieve goals in other strategies. This framework is shown in FIGURE 2.

FIGURE 2. The DCC's Strategic Framework incorporates several high-level strategies, including the Transport Strategy. Those strategies that have already been completed are shown in plain text, while those in italics are currently under development.

5 For a full description of the DCC's Community Outcomes, see the Dunedin City Council Long Term Plan 2012/13–2021/22, pp.21-34. http://www.dunedin.govt.nz/annual-plan

6 For more information about the DCC's commitment to sustainable development and the sustainability framework see the Dunedin City Council Long Term Plan 2012/13–2021/22, pp.35–38 www.dunedin.govt.nz/annual-plan



2. Key transport challenges for Dunedin

It is clear there are a number of challenges that will affect Dunedin's transport network, and how people and businesses will choose to travel and to move goods. Some of these challenges are national or global and many cities around the country and the rest of the world are faced with the same, or similar, challenges. Others are more specific to Dunedin due to factors including our geography, socio-economic conditions and the nature of our existing transport network.

The following challenges drive the direction of this Strategy

2.1 Road safety

Dunedin's risk ranking

Road safety is a major challenge for Dunedin. Table 1 shows the areas and user groups in which Dunedin has particularly high risk when compared to other territorial authorities (TAs) across the country, as identified in the NZTA's Communities at Risk Register (CARR). The CARR has been developed by the NZTA to identify communities that are over-represented in terms of road safety risk. The CARR is based on the key areas of concern outlined in Safer Journeys and should be the focus of safety investment decisions.

For overall road safety risk, the CARR ranks Dunedin as having seventh highest risk out of New Zealand's 67 TAs and unitary authorities in 2013. This is a slight improvement from a ranking of third highest in 2011. Dunedin's overall risk level is the highest of all the major urban centres in New Zealand, with only a few low-income rural North Island TAs ranked as having higher overall risk.

TABLE 1. Dunedin's risk ranking for each Safer Journeys areas of concern, relative to the rest of New Zealand.

Communities at Risk Register[7]. Dunedin's national risk ranking in 2013	
Safer Journeys area of concern	*Dunedin's risk ranking out of the 67 TAs and unitary councils in New Zealand*
Intersections	Highest risk
Young drivers	2nd highest risk
Older road users	3rd highest risk
Motorcyclists	3rd highest risk
Pedestrians	3rd highest risk
Cyclists	5th highest risk
Overall Risk Ranking	7th highest of 67

As shown in TABLE 1, the CARR highlights that areas of particular safety concern in Dunedin are intersections (particularly urban intersections), young drivers, older road users, motorcyclists, pedestrians and cyclists. These are the key areas of high risk in which Dunedin is under-performing relative to other similar cities.

7 Data taken from NZTA 'Communities at Risk Register', www.nzta.govt.nz/resources/communities-at-risk-register/

The cost of poor road safety in Dunedin

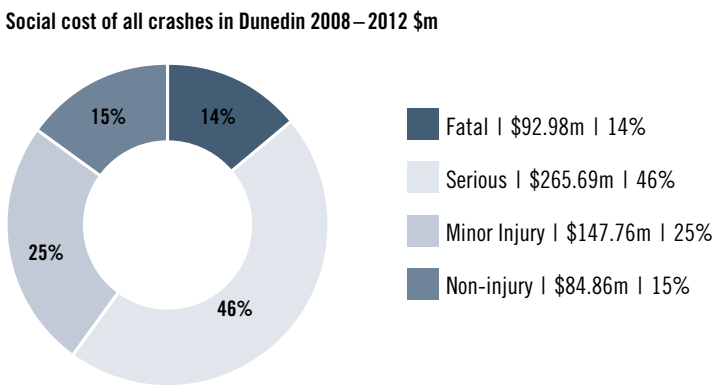
The CARR is based on fatal and serious injury crash data and investment is increasingly targeted at reducing these types of crashes, because they incur the highest social cost. 'Social cost' means the total cost of road crashes to the nation, including loss of life and life quality, loss of productivity, medical costs, legal costs, and vehicle and property damage costs[8]. The Ministry of Transport estimates the average social cost per crash to be (in June 2012 prices):

- $4,445,600 per fatal crash
- $772,000 per serious injury crash
- $85,000 per minor injury crash.

FIGURE 3 shows that road crashes in Dunedin over the five years from 2008 to 2012 had a total social cost of $581 million[9].

In Dunedin, fatal and serious injury crashes make up approximately 60% ($348 million) of the total social cost, even though they only account for approximately 7% of the total number of crashes. This is because the social cost of deaths and serious injuries is much higher than for minor or non-injury crashes. In the 12 months to May 2013, Dunedin's fatal and serious injury crashes cost approximately $75 million. For many serious injury crashes, the costs are on-going as they result in long-term healthcare needs. This cost is higher still when the casualty is a young person who may need on-going support and health care for the rest of their lives.

FIGURE 3. Social cost of all crashes in Dunedin from 2008 – 2012.



Schools

Research has identified that the traffic environment around schools is one of the most complex road transport environments, and is the most complex traffic environment normally encountered by children[10]. Schools are unique among traffic generators in that they create a large spike in vehicle movements in concentrated areas twice a day, for a short period of time. This vehicle movement corresponds with a peak in vulnerable road user activity, with high numbers of children and parents walking, cycling or scooting in the school area. This creates a major challenge for children who struggle to read this complex traffic environment, including unpredictable vehicle movements as a large number of cars travel at erratic speeds and pull in and out of parking spaces.

The research highlights that the transitory nature of traffic around schools has tended to hide the risks this situation presents to all users, but especially to children. Environments around schools, first and foremost, need to be safe for children.

More generally, children and young people have different transport needs and different behaviours to those of adults. Adequately and safely providing for this, particularly around schools, is important. Overcoming these challenges and ensuring on-going safety for children and all road users around schools is likely to require creativity, new thinking and a co-operative approach between schools, parents, pupils, the Police and the DCC.

8 Ministry of Transport (2012) Social Cost of Road Crashes and Injuries. June 2012 update. www.transport.govt.nz.
9 NZTA: www.nzta.govt.nz/resources/crash-analysis-reports/statistical-statements.html
10 Paine, M.; Henderson K. and Faulks, I. (2007) Improving the safety of kiss and drop zones at schools: The Stay Safe Rangers at Balgowlah Heights Public School. ACRS Conference: Infants, Children and Young People and Road Safety 2007.

2.2 Volatile fuel prices

Fuel prices have been volatile for several years (as illustrated below in FIGURE 4[11]) and are expected to continue to be so in the future. Fuel price volatility is likely to lead to changes in travel behaviour and people's choice of mode, but also land use and population movements and the cost of maintaining, renewing and developing transport infrastructure. The New Zealand government's policy direction for transport, *Connecting New Zealand*, identifies that "fuel prices are expected to rise with continued volatility, and this will impact on demand for transport and for new fuel technologies."[12]

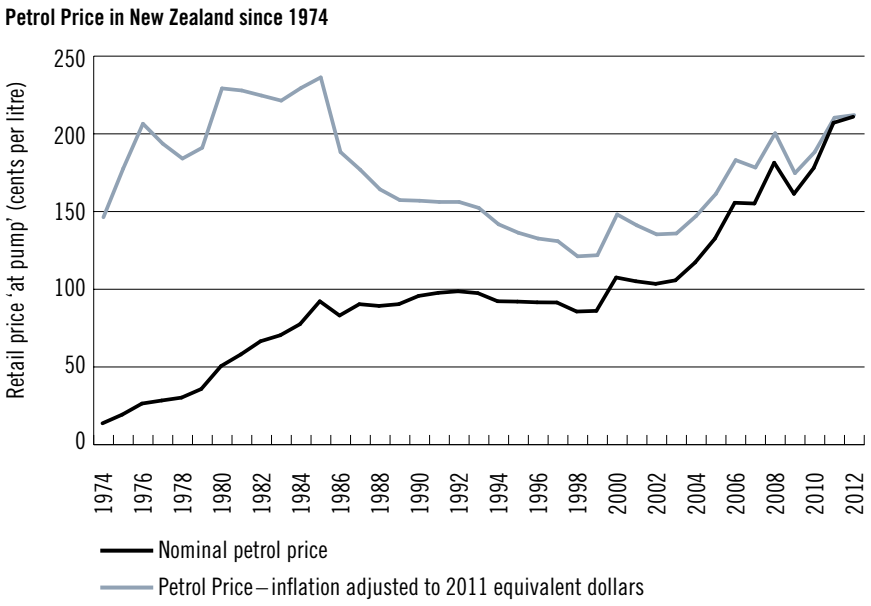
A 2010 report from the New Zealand Parliamentary Library identified that "Low-cost reserves of oil are being rapidly exhausted, forcing oil companies to turn to more expensive sources of oil. This replacement of low-cost sources of oil with higher costs sources is driving the price of oil higher"[13]. The report highlights that this shift from low-cost to high-cost oil has been a key factor driving price increases over the past decade. The report suggested that world oil production capacity will remain relatively stable till 2015 but demand will continue to rise, leading to supply crunches and oil price spikes, with the International Energy Agency and the US military having identified that more supply crunches are likely to occur due to rising demand and insufficient production capacity. It also points out that "New Zealand is heavily dependent on oil imports and will remain so for the foreseeable future".

In this global context, New Zealand will be exposed to the effect of these supply crunches and price fluctuations. Despite the rising fuel prices New Zealand has experienced over the past decade, researchers point out that the New Zealand public has not felt the full effect of rising global oil prices due to a corresponding increase in the value of the New Zealand dollar. If the value of the New Zealand dollar was to drop the price of petrol 'at the pump' would increase further[14].

In New Zealand, the transport sector is responsible for 86% of total oil consumption, with road transport using 87% of that total. In addition to the oil-based fuel used in motor vehicles, our roads themselves are also oil-dependent. Bitumen, the binding agent used in asphalt road surfaces, is an oil-based product which also increases in expense as oil prices rise. This means, in the absence of more cost-effective alternatives, the cost of maintenance and renewal of existing asphalt roads will increase, as will the cost of building new roads.

In 2010, the DCC commissioned a 'Peak Oil Vulnerability Assessment for Dunedin'[15]. This report identified that personal car travel consumes nearly 75% of the fuel in Dunedin. The report also highlighted that, because non-car travel options are available for at least 60% of these trips it is likely that in the long-term "...non-productive and non-critical uses of oil...", that is those uses for which alternatives are available, "...will come under the most pressure to change" in the event of future fuel price or supply challenges. In the short term, continual fluctuations in fuel prices may cause residents to make moderate changes to their travel behaviour (making fewer trips, less often and for shorter distances), and/or to their transport modes by choosing lower energy options such as walking, cycling (either conventional or electric), car-pooling or using public transport. The report also highlighted that Dunedin

FIGURE 4. The price of petrol in New Zealand has been increasing for several decades, and most dramatically since 2000.



11 Ministry of Economic Development (2012) New Zealand Energy Data File. Prepared by Energy Information and Modelling Group of the Ministry of Economic Development: http://www.med.govt.nz/sectors-industries/energy/pdf-docs-library/energy-datra-and-modelling/publications/energy-data-file/energydatafile-2011.pdf

12 Connecting New Zealand (2011) Online: www.transport.govt.nz/ourwork/KeyStrategiesandPlans/ConnectingNewZealand/

13 Smith, C. (2010) The Next Oil Shock? Parliamentary Library Research Paper.

14 Krumdieck, S. (2010) Peak Oil Vulnerability Assessment for Dunedin, EAST Research. Prepared for Dunedin City Council, p.9.

15 Krumdieck (2010)

can expect moderate growth in the use of alternative fuels (such as electric vehicles and bio-fuels) as well as lower cost transport modes such as mopeds, electric bikes and motorbikes.

A challenge for Dunedin is to be adaptable and responsive to the demands and requirements of these new technologies, as disussed in the following section.

Dunedin also has a large rural area with remote rural communities. Many of these communities rely heavily on private motor vehicle transport to connect with their local centre, central Dunedin and the various goods, services and social and economic opportunities on which they depend. Fuel price volatility is therefore likely to have a major effect on Dunedin's rural communities. For many of these more remote communities, a high degree of self-reliance and community self-help will be necessary to retain access to goods and services in the event that fuel costs increase[16].

2.3 Technological development

There have been significant technological improvements over recent years leading to improved fuel efficiency and improved options for non-fossil fuel based travel. A study undertaken for the NZTA in 2008 identified that "Improvements in vehicle technology may be expected to mitigate the impacts of rising fuel prices by reducing the sensitivity of travel demands to increasing fuel prices[17]. This report highlighted that improvements in vehicle technology generally fall into one of two key categories: improvements in fuel economy and alternatives to oil. Examples of technologies that improve fuel economy are widely available on the New Zealand market and include common rail diesel vehicles, hybrid diesel electric vehicles and 'High Efficiency Vehicles' (HEVs) (such as the Honda Jazz and Toyota Yaris). Examples of technologies based on alternatives to

FIGURE 5. New Zealand has one of the highest levels of car ownership per capita in the developed world

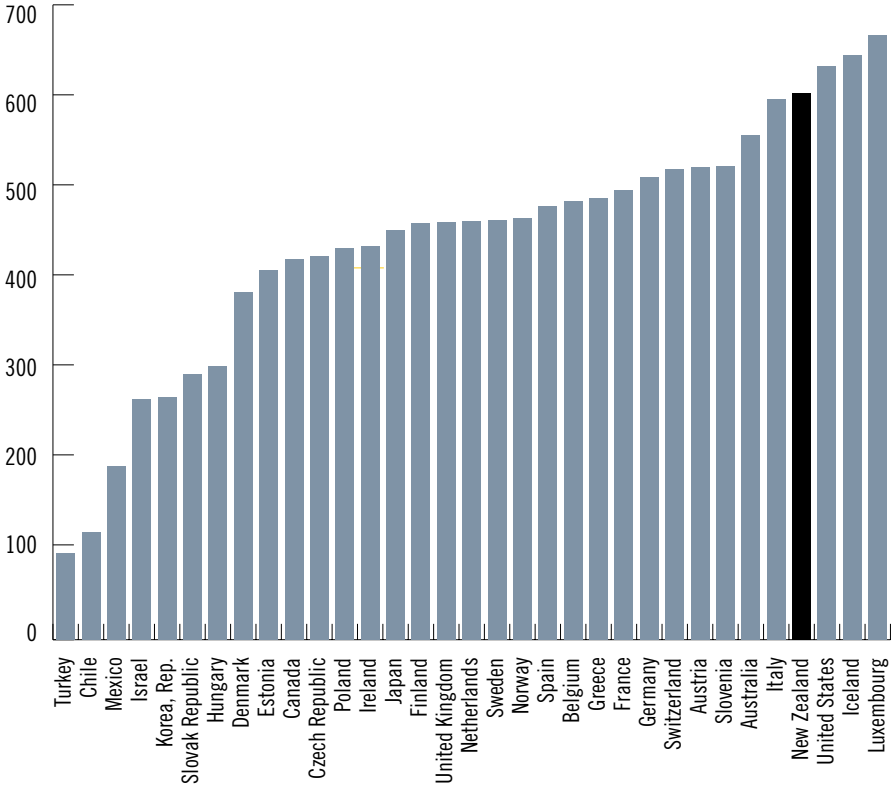
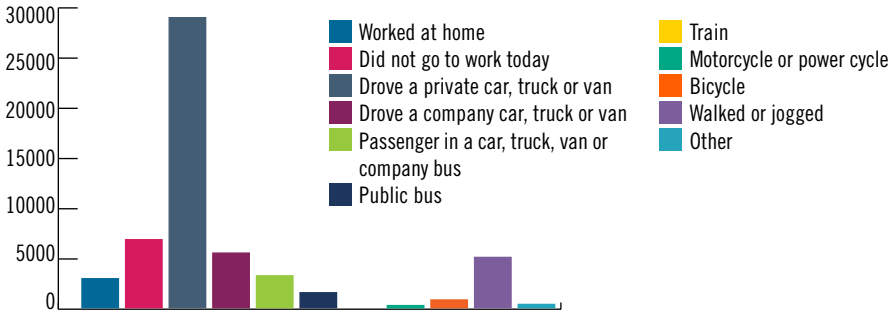


FIGURE 6. Most Dunedin residents travel to work in a private vehicle.



16 Otago Regional Land Transport Strategy 2011: i

17 Donovan, S. et al (2008) Managing transport challenges when oil prices rise. NZTA Research Report 357 – August 2008.

oil that are currently available include Battery Electric Vehicles (BEVs) and electric powered two-wheelers (generally scooters and bicycles). The 2010 report 'Peak Oil Vulnerability Assessment for Dunedin' identified that HEVs are likely to make up a greater proportion of Dunedin's vehicle fleet in the medium to long term. As of November 2012, there were approximately 60 BEVs registered in New Zealand[18], however models such as the Mitsubishi i-MiEV, Holden Volt and Nissan Leaf, are all available on the market and costs are decreasing all the time. It is generally accepted that the number of such vehicles, as well as electric powered two-wheelers, will continue to increase.

In addition to new vehicle technology, a range of computerised applications, broadly termed 'Intelligent Transport Systems' (ITS), are also playing an increasing role in improving safety and efficiency and mitigating the effect of recent fuel price increases and future price volatility around the globe. According to the European Union, ITS are "advanced applications which... enable various users to be better informed and make safer, more coordinated and 'smarter' use of transport networks"[19]. ITS "...integrate telecommunications, electronics and information technologies with transport engineering in order to plan, design, operate, maintain and manage transport systems" and are capable of making a "significant contribution to improving environmental performance, efficiency, including energy efficiency, safety and security of road transport"[20]. New Zealand already has some examples of ITS in place, for example helping aircraft into airports, and telling public transport users when their bus or train will arrive[21]. Though ITS does not currently play a significant role in Dunedin's transport system, according to the Ministry of Transport ITS technologies are on the threshold of much wider application and the Ministry is currently consulting on their future application in New Zealand. At the time of writing, the Ministry of Transport is also trialling an application of ITS in partnership with a private provider to assess benefits for more efficient freight movement. The findings of this trial will contribute to a greater understanding of the role ITS might play in the future of transport in New Zealand and Dunedin.

The extent to which such technologies might mitigate the impacts of fuel price fluctuations or increases is

FIGURE 7. Household access to cars in Dunedin as identified in the 1996, 2001 and 2006 censuses.

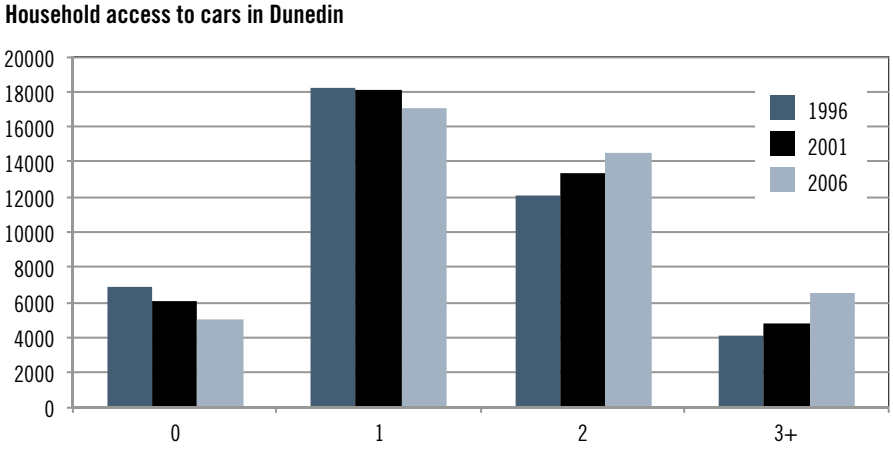
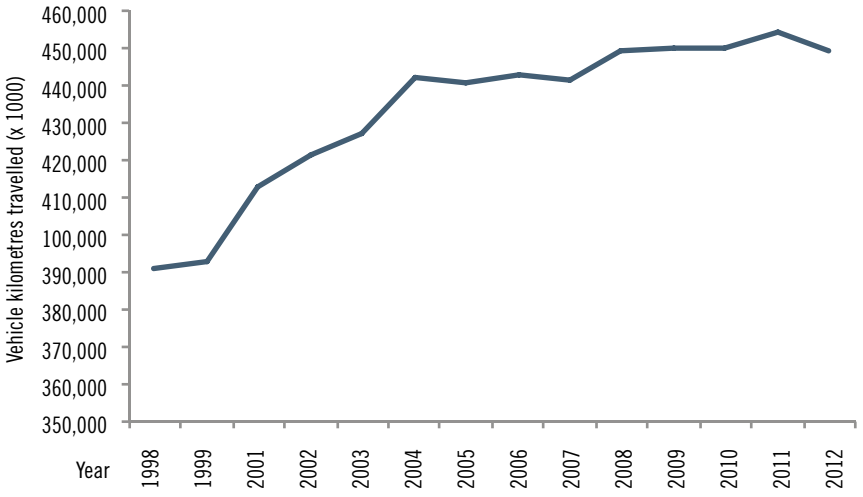


FIGURE 8. Vehicle kilometres travelled in Dunedin per annum rose sharply from the late 1990s to the early 2000s, but have been levelling off since 2004.



18 Jackman, A. (2012) Alternative energy expo comes to Wellington. The Hutt News, 21 November 2012

19 Official Journal of the European Union (2010) Directive 2010/40/EU Of The European Parliament And Of The Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport. Online: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:207:0001:0013:EN:PDF.

20 Official Journal of the European Union (2010)

21 Ministry of Transport (2013) Online: www.transport.govt.nz/ourwork/intelligenttransportsystems/

difficult to quantify for several reasons. New Zealand's vehicle fleet is ageing compared to other developed countries. A Massey University study has shown that "The average age of vehicle fleet in New Zealand has increased from 12 years in 2008 to 13 years in 2012. Between 2002 and 2012, the average age of vehicles in New Zealand was approximately 12 years, compared to about 10 years in Australia and the USA, and eight years in Canada"[22]. This has an impact on the extent to which technological advances in efficiency permeate into the New Zealand fleet. Additionally, while vehicles have been becoming more efficient, New Zealand households have, until recently, had increasing rates of car ownership and have driven increasing numbers of kilometres, also countering the positive effects of greater efficiency on fuel spend. It has also been identified that many of the fuel efficiency gains over the past decade have been balanced by increased ownership of larger vehicles, such as Sport Utility Vehicles (SUVs)[23]. Over time, the New Zealand light vehicle fleet will become increasingly fuel efficient, on a per kilometre basis, as older, less efficient, vehicles exit the fleet. However it is not clear what the overall effect of this will be given that it will be affected by other factors such as the rate at which older vehicles exit the fleet, the type and size of newer vehicles entering the fleet, the amount of vehicle travel being undertaken, the cost of fuel and changes in household income. Due to this uncertainty, the impacts of fuel price volatility are considered to be a challenge even in light of improvements in fuel efficiency and new technologies.

It appears that such technological progress is likely to play an increasingly important role in Dunedin's transport system in future therefore a key challenge for the DCC will be to keep in touch with rapid developments and maintain a close dialogue with the transport sector regarding new technology. Remaining flexible and responsive will be critical in the event that changes or improvements to our transport system become more viable, or necessary, as a result of improving technology.

2.4 Private motor vehicle dependence

New Zealand is one of the most car-dependent countries in the world. As shown in FIGURE 5, car ownership levels in New Zealand are particularly high compared to most other developed countries. Consistent with this, Dunedin is dependent on cars, with relatively low rates of public transport or active mode (walking and cycling) use. This is shown in FIGURE 6, which outlines the main means of travel used by Dunedin residents to get to work, taken from the 2006 census.

Not only does Dunedin have a high rate of car use but Dunedin households have increasingly had access to more cars over the past 15 years (as illustrated in FIGURE 7). Over the ten years from 1996 to 2006, the number of households that did not have access to a car decreased from 6897 to 5007. Similarly, the number of households with only one car decreased over this decade as more households acquired two or three (or more) cars.

This increasing car ownership has also correlated to an increasing amount of vehicle travel. FIGURE 8 shows the sharp rise in vehicle kilometres travelled in Dunedin from the mid-1990s to the mid-2000s.

Since the 1950s, transport planning has generally made a priority of providing for private motor vehicles. This was driven by new social and economic opportunities arising out of the post-war economic boom, the availability of cheap fuel, and the increasing availability and affordability of cars (particularly with the rise of cheap imported vehicles since the 1970s).

Much of Dunedin's transport network has been developed in this context of increasing vehicle use and private travel, and in anticipation of a degree of city growth which, largely, has not occurred. This has insulated Dunedin from many of the transport problems that bigger cities face, especially in regard to urban sprawl, congestion, pollution and car parking. This has benefitted private vehicle use and helped make Dunedin very accessible by car. Well maintained roads, generally ample parking (though there are localised parking issues in areas such as the tertiary and medical precincts), low traffic volumes and free-flowing urban street environments with no significant congestion all contribute to Dunedin's relatively short vehicle travel times.

While there are many benefits associated with motor vehicle transport for those who have access to a car (and wish to use one) this has also, unfortunately, contributed to some transport problems, as follows.

Car prioritisation and Dunedin's transport network

Research identifies that where vehicles speeds are higher, and where little provision is made for active modes, road safety is generally compromised[24]. In keeping with this, partly due to wide, high-speed urban street environments (such as the one-way system, Andersons Bay Road, Princes Street, and Hillside Road) and poor provision for other modes (such as buses, walking and cycling), road safety has suffered in Dunedin. Dunedin's poor road safety record is discussed in detail above in Section 2.1. 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.

In some areas, such as the Warehouse Precinct south of Queens Gardens, or

22 Masters, H. (2013) Average Age of vehicles in New Zealand. Environmental Health Indicators New Zealand, Issues 10 & 11, June 2013. Massey University.
23 Donovan, S. et al (2008) Managing transport challenges when oil prices rise. NZTA Research Report 357 – August 2008.
24 Litman, T. and Fitzroy, S. (2009) Safe Travels – Evaluating Mobility Management Traffic Safety Impacts. Injury Prevention, Vol 15, Issue 6. Online: www.vtpi.org/safetrav.pdf.

around the University campus, provision for private motor vehicles has also meant amenity, pedestrian connectivity and, in some instances, surrounding land use value has suffered. In addition people are increasingly requesting provision being made for other modes (specifically walking, cycling and public transport) rather than a continuation of the previous focus on providing primarily for cars.

Car dependence and parking

A recent study of the impacts of DCC's 2009 Parking Strategy identified that "Two statements that appeared repeatedly in the interviews was the desire by people in Dunedin to park right outside where they are going", and that "...Dunedin people expect parking to be free. Many of the responses in the CBD survey show a tendency to lump these two together – convenient and free is the desired parking state"[25]. This parking demand increases the volume of traffic in destination areas as well as the amount of traffic circulation and distraction as people drive around looking for a convenient on-street parking space. This all has a negative effect on road safety (particularly for vulnerable users in the central city) and urban amenity. Demand for free and convenient on- and off-street parking in the Central City and some centres is difficult to cater for with the existing levels of car use in Dunedin. It also conflicts with other priorities and objectives, such as providing pedestrian and cycling infrastructure and improving the safety and amenity of the urban environment.

Car dependence and schools

Dunedin's culture of car dependence also contributes to issues around schools as many parents choose to drop off and pick up their children by car and attempt to do so as close to the school gate as possible. This is a result of the priority that has been given to car transport and the common concern among parents and caregivers about the safety of their children walking and cycling. The car traffic around schools can be a safety hazard for children and creates a barrier to them using active travel modes, despite the fact that many children would prefer to cycle, scooter or walk to school, as evidenced by DCC school travel surveys (as discussed above in Section 2.1).

Car dependence and rural communities

Car dependence is also a challenge for Dunedin's rural communities. Many of Dunedin's rural communities are not served by public transport and distances are often too great for walking and cycling to play a significant role in connecting these communities to the social and economic opportunities provided in centres or wider Dunedin. These rural areas generate much of Dunedin's produce for export, which is largely dependent on road-based motor vehicle freight movement, namely trucks.

These factors have all contributed to a culture (widespread in countries such as New Zealand, Australia and the United States) in which private car and truck use has come to be seen as the social norm, and use of long-standing modes such as public transport, walking, cycling and rail have come to be seen as 'alternative' modes[26]. Any change to this culture would involve a change in people's perceptions of social norms.

Additionally, despite Dunedin's high level of car ownership, the proportion of Dunedin residents that do not have access to a car is also higher than the national average and, in a city that has prioritised the demand for car travel, the travel needs of these residents have not traditionally been well provided for. This issue is discussed in more depth in Section 2.8 'Social Exclusion'.

Car dependence in a future of volatile fuel prices

Despite the prevalence of car use in Dunedin there is a clear correlation between the popularity of private car travel and the cost of fuel. As outlined earlier in Section 2.2, it appears the cost of transport fuel will continue to be volatile for the foreseeable future. This is already having an effect on how much people are choosing to drive.

As FIGURE 8 illustrated, the amount of vehicle travel in Dunedin is no longer increasing at anywhere near the rate it had been prior to 2004. In some years (such as 2004, 2006 and 2012) there have even been decreases in vehicle kilometres travelled. This change is consistent with trends seen across New Zealand as a whole. The Ministry of Transport has identified that total annual travel in New Zealand was steadily increasing until 2006 (up 13% from 2001 to 2006), but in the period since then high oil prices and economic recession have led to a decrease in travel (down 1% from 2007 to 2011)[27].

On a nationwide basis, car ownership also steadily increased until 2006 and has since plateaued and slightly declined, and, while cars still make up the vast majority of New Zealand's vehicle fleet, the biggest increase in recent years has been in the proportion of buses and motorcycles/mopeds in the fleet. This increase in the number of buses and motorcycles/mopeds has been matched by a corresponding increase in the amount of travel being made by buses and motorcycles/mopeds, and a decrease in the amount of travel being made by private cars[28]. All these trends correlate to the increased cost of fuel and economic downturn experienced since 2006, which highlights the need to plan for alternatives

25 Arron, N. (2011) Dunedin City Council 2009 Central Business District Parking Strategy and its Effects on the Retail Sector. Unpublished thesis. Master of Science: International Planning and Development, University of Wales: Cardiff.

26 Maat, K.; van Wee, B. and Stead, D. (2005) Land use and travel behaviour: expected effects from the perspective of utility theory and activity-based theories. Environment and Planning B: Planning and Design 2005, Volume 32, pp.33-46.

27 Ministry of Transport (2013) The New Zealand Vehicle Fleet: Annual Fleet Statistics 2012. www.transport.govt.nz/research/Documents/The-NZ-Vehicle-Fleet-2012.pdf

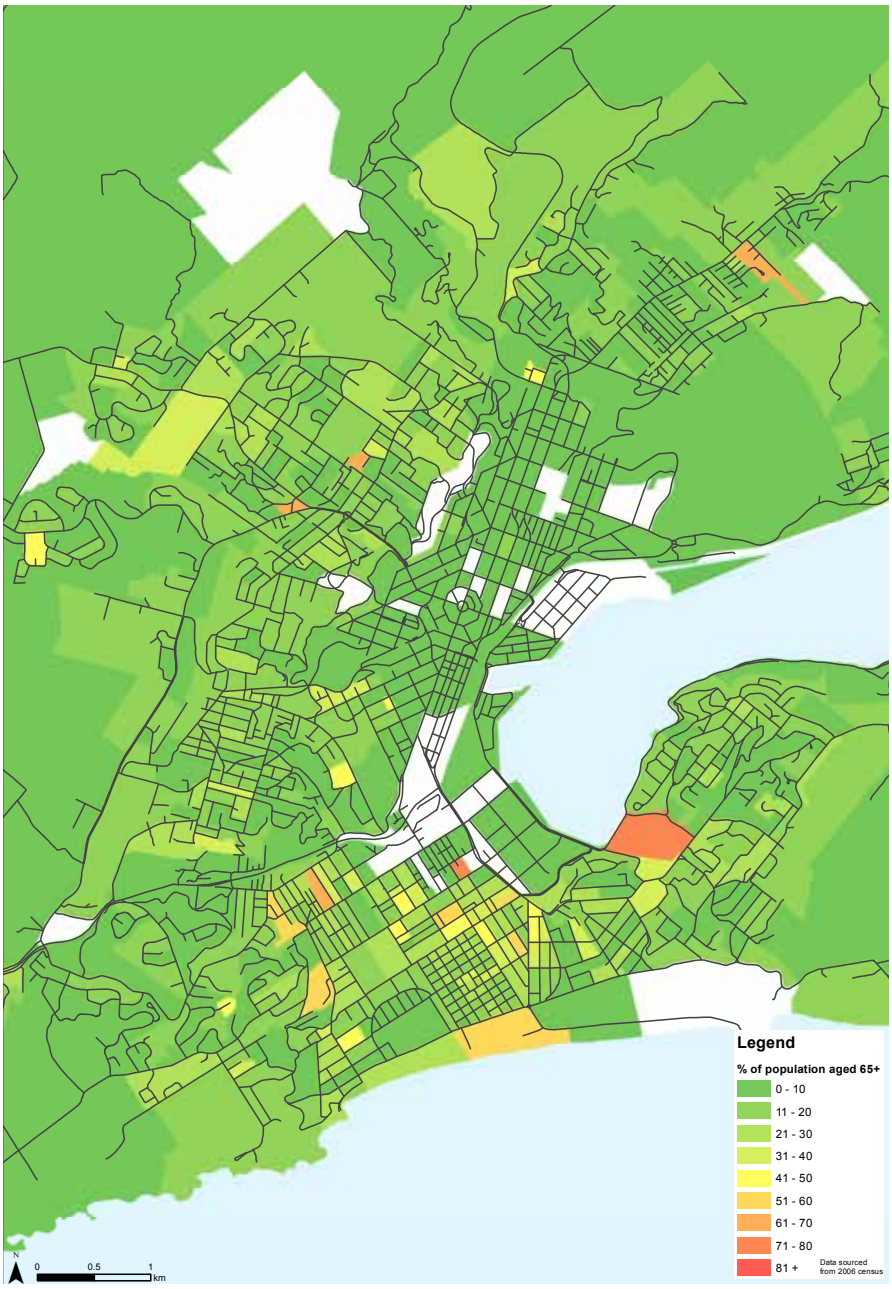
when price volatility is predicted to continue and possibly increase.

How these trends unfold in the future will confirm whether this change is a short-term interruption in an otherwise general increase in car ownership and kilometres travelled, or alternatively, if it represents a more permanent departure from the pattern of increasing car dominance that has occurred over recent decades. Whatever the case, the indication is that while private car travel has long been dominant and provision has been made to accommodate this demand, in a prolonged period of increasing fuel cost, active modes and public transport are likely to become increasingly desirable.

The importance of improving Dunedin's safety record, and ensuring Dunedin's on-going accessibility, in light of economic, fuel price, and population-related challenges, will require reducing dependence on fossil-fuel powered motor-vehicles and increasing travel choices. Achieving this may entail changes to the way in which we allocate space to different modes on the transport network, including on-street parking, and may require increased priority being given to non-car transport modes. It may be difficult to obtain funding subsidies for some of these changes if they do not align with central Government investment priorities. There may also be resistance from some road users as the city adapts to new approaches.

The private motor vehicle will continue to play an important role in Dunedin's transport system for the foreseeable future, and will continue to be the preferred mode for most residents and businesses for some time to come. Therefore, provision for cars and trucks will remain a central part of Dunedin's transport network. However, increasing interest in cycling and strong feedback from the Dunedin community about the need to improve public transport and increase the use of rail for freight

FIGURE 9. The areas of central urban Dunedin with the highest proportion of residents aged 65 and over.



28 Ministry of Transport (2013) The New Zealand Vehicle Fleet: Annual Fleet Statistics 2012. www.transport.govt.nz/research/Documents/The-NZ-Vehicle-Fleet-2012.pdf

suggest that the social norms regarding private vehicle use may be shifting as the benefits of other options become clear and these modes grow in popularity.

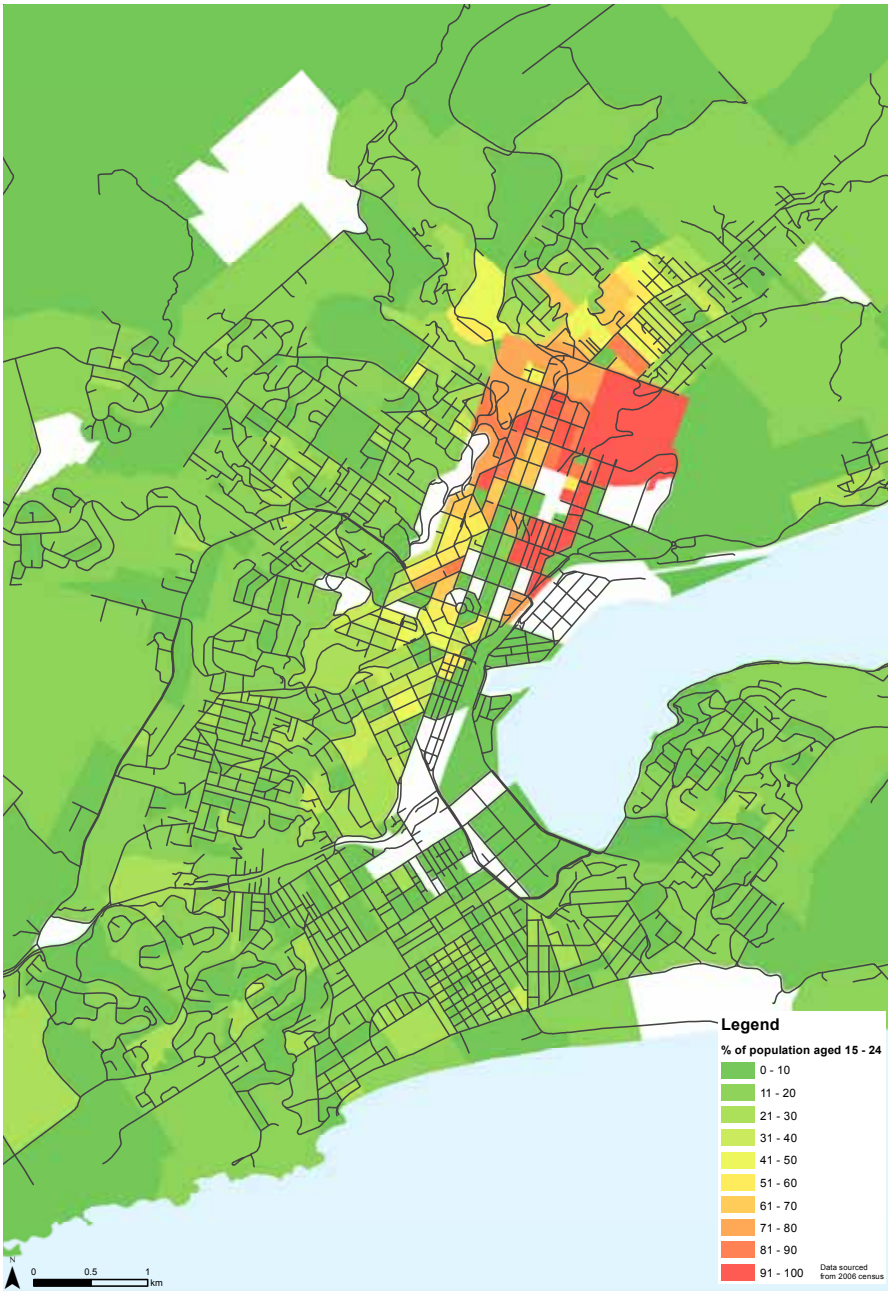
2.5 Population trends

In keeping with the national trend, Dunedin's population is ageing, with a high and growing proportion of people aged over 65 years, while the population of the key working age group (15–39 year olds) is predicted to remain static. The 65-plus group is projected to increase by 54% over the next 20 years, increasing from 13.2% to approximately 20% of Dunedin's population. Dunedin's ageing population will affect demand for modes of transport and drive changes in travel patterns as older people tend to make greater use of shared transport, public transport and mobility scooters. There will also be increased demand for greater accessibility to healthcare services and community facilities.

Better pedestrian environments that cater for those with mobility impairments, using wheel chairs and mobility scooters will also be important to ensure accessibility for an ageing population. FIGURE 9 demonstrates where the highest concentrations of older people live in Dunedin.

Dunedin also has a high proportion of 15–24 year olds (21.8% in Dunedin compared to 14.6% nationally). This is because Dunedin is home to about 28,000 tertiary students of whom about 80% (22,400) are from outside Dunedin. This presents an on-going transport challenge in regard to providing for this group's transport needs and choices, and because young people are over-represented in Dunedin's crash statistics. The areas in which high concentrations of young people live in Dunedin are shown in FIGURE 10.

FIGURE 10. The areas of central urban Dunedin with the highest proportion of residents aged between 15 and 24 years.



2.6 Multi-agency responsibilities for transport

Several organisations are responsible for both the provision and funding of different components of Dunedin's transport network. The DCC is responsible for most of the Dunedin transport system, including local roads and the infrastructure associated with them (such as footpaths, cycleways, bridges, etc), provision of parking and bus stops, road safety planning and engineering, traffic signals, and land use planning.

The Otago Regional Council is responsible for the provision of public transport services, the Regional Land Transport Programme and also owns Port Otago, while the NZTA manages the state highway network and associated infrastructure such as state highway intersections and cycleways. The statutory corporation KiwiRail, and Dunedin's Taieri Gorge Railway, own and operate the rail system through Dunedin. Road policing is core business for the New Zealand Police and the Police play a key role in maintaining public safety and reducing road trauma, through the road policing programme and enforcement of land transport law.

A range of community organisations, volunteer interest groups, institutions and private landowners also influence the nature of Dunedin's transport network. Such stakeholders have a variety of different mandates, objectives and priorities, which can be complimentary to, or in conflict with, the priorities of the DCC, other organisations or the wider community.

Achieving a fully integrated system can be difficult in this multi-agency environment. Despite this challenge, the DCC continues to work in constructive partnerships with these agencies and organisations toward delivering an integrated safe and efficient transport network that supports an accessible and connected city.

2.7 Public health issues

There is a range of adverse health effects from transport, stemming from vehicle emissions, contaminants, noise and crashes. These can affect people's physical and mental wellbeing.

Studies commissioned by the Ministry of Transport highlight that approximately 400 people per year die prematurely as a result of vehicle emissions nationally. Vehicle emissions are estimated to have a social cost of approximately $1 billion per annum, a figure that puts the invisible toll of deaths related to vehicles emissions at a similar level to the much more widely recognised road toll. The studies identify that Dunedin incurs an annual social cost of $35 million from vehicle emissions[29].

In New Zealand in recent decades, there has been a rise in obesity[30]. While it is difficult to determine the extent to which transport choices contribute to obesity, evidence of a link between transport and health has been established showing that active transport plays a significant role in improving health. It is also recognised that many of the health benefits associated with being physically active are more pronounced in those who engage in active transport when compared with those who participate only in leisure-time physical activity.

Urban sprawl and planning that favours car travel over active transport (such as walking and cycling) are increasingly recognised as important contributors to the obesity epidemic in developed countries[31]. As described above, Dunedin's transport environment supports efficient car travel very well. This presents an obstacle to uptake of active modes, limiting their ability to help reduce increasing health problems.

2.8 Social exclusion

Transport enables people to access work, recreation, education and social opportunities. Having reliable, affordable access to a variety of transport options is important if people are to make the most of Dunedin's economic and social opportunities. Lack of access can cut people off from these opportunities, contributing to social and economic deprivation and decline in those areas or communities most affected. This process is often called transport exclusion or transport poverty and tends to be more of a problem in bigger cities with expansive suburban areas and few transport options outside of private car use.

Dunedin is fortunate to have retained a relatively compact urban form with generally short travel times for cars, and public transport services to most of its urban and suburban areas. However, the short car travel times in urban Dunedin do not benefit everyone and many Dunedin residents face some level of transport exclusion. This can be due to a variety of factors, such as mobility impairments, age-related limitations (for the very young and their carers, as well as older people), low incomes and low car ownership. Despite Dunedin's high car ownership and usage, approximately 5000 households in Dunedin (12% of the population) do not have access to a car and thus rely entirely on other transport options such as walking and cycling, public transport, ride-sharing and use of wheelchairs, mobility scooters and mobility taxis. FIGURE 11 shows the parts of Dunedin in which a significant proportion of residents do not have access to a car.

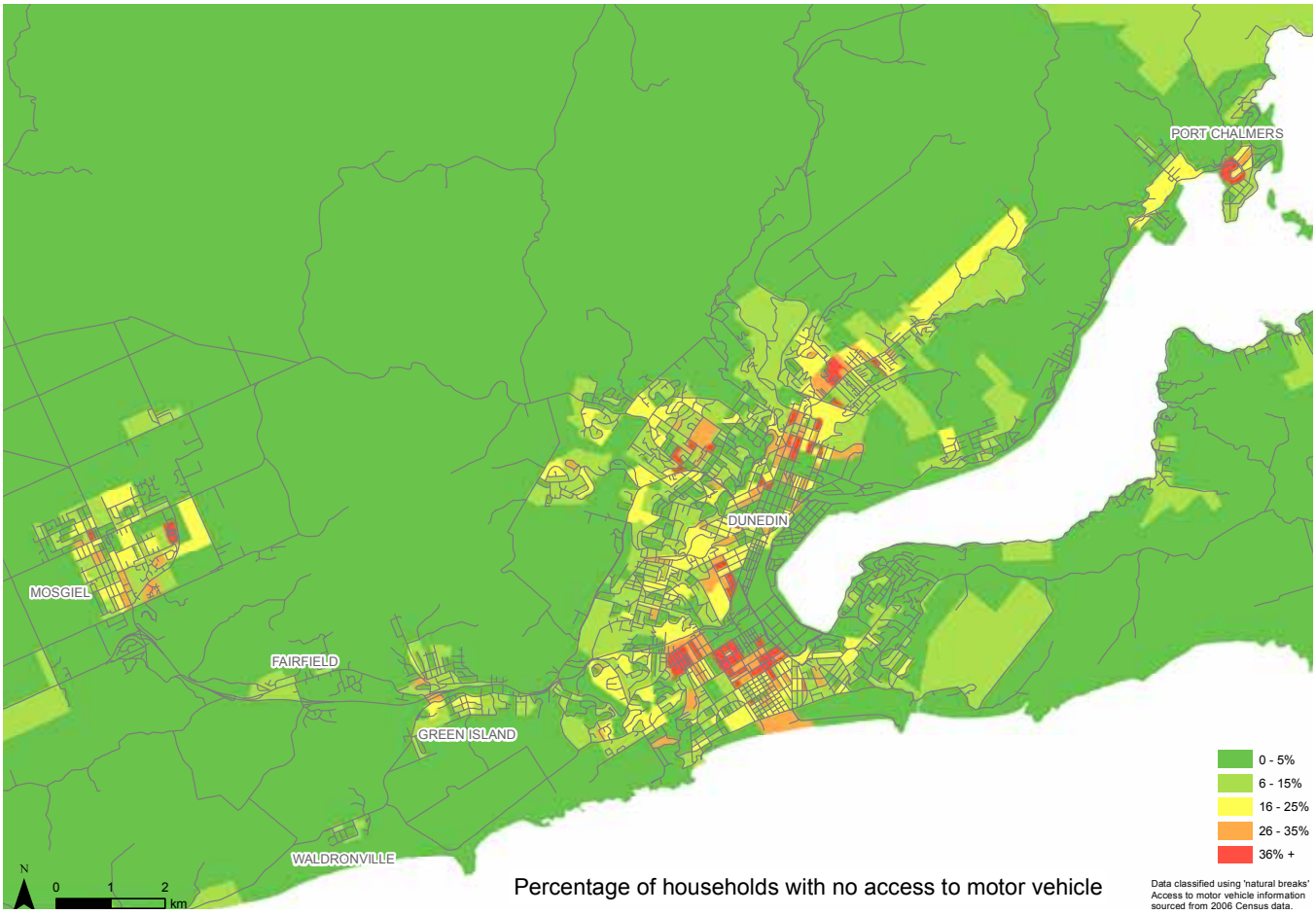
The layout and attitudes of Dunedin's communities, our transport infrastructure, the cost of transport options, and people's travel behaviours can all become impediments to mobility. The number of

29 Fisher, G.W. et al (2002) Health effects due to motor vehicle air pollution in New Zealand. Report to the Ministry of Transport; and Kuschel, G. et al (2012) Updated Health and Air Pollution in New Zealand Study. Prepared for Health Research Council of New Zealand, Ministry of Transport, Ministry for the Environment and NZTA.

30 Ministry of Health (2008) A Portrait of Health. Key Results of the 2006/07 New Zealand Health Survey. Wellington: Ministry of Health.

31 Mackie, H. (2009) I want to ride my bike: overcoming barriers to cycling to intermediate schools. August 2009, NZTA Research Report 380.

FIGURE 11. Percentage of households with no access to a motor vehicle (fuller maps available at www.dunedin.govt.nz/transport).



cars and trucks on the road, the speeds at which people drive, and the noise and emissions that driving creates can all disrupt access and limit people's ability to make the most of these transport options. This also affects some of Dunedin's rural communities where public transport provision is minimal or non-existent and dependence on increasingly expensive private motor vehicle use is high.

As discussed in Section 2.4, Dunedin has high car ownership and car travel is well catered for, while other modes have traditionally been neglected. This means Dunedin residents who do not have access to a car, or are otherwise limited in their ability to travel, are not well provided for by the current transport network. Perhaps most importantly, transport options need to be affordable, safe, reliable, and accessible to ensure Dunedin residents have equitable access to the economic, social, educational and recreational opportunities the city offers. In achieving this, Dunedin faces challenges, including local and central Government funding priorities and established transport behaviours and attitudes.

2.9 Infrastructure threats and constraints

There are a number of external threats and constraints which may have an effect on Dunedin's transport infrastructure in the future, as well as various constraints that currently exist in the present network. This section provides an overview of some of the key threats and constraints facing Dunedin's transport infrastructure that are presenting challenges to how the DCC might protect, maintain and develop transport infrastructure in the future.

Climate change

Rising sea levels and changing weather patterns as a result of climate change are expected to have an impact on Dunedin's transportation network during the timeframe of this Strategy. An investigation by Professor Blair Fitzharris into the effects of climate change on Dunedin identified that low lying densely

populated urban areas (especially South Dunedin), coastal areas and major transport infrastructure (including harbour roads, the railway, and Dunedin International Airport) are likely to be affected by rising sea levels[32].

The Fitzharris report also identified that climate change is likely to lead to higher rainfall and more frequent, more severe, storm events. This has implications for Dunedin's transport infrastructure and asset management. Such changes may lead to more frequent and larger slips, more flooding and wetter ground conditions, which could result in closures on key transport routes and increased risk of asset failures. The life expectancy of assets may also be reduced under these conditions. All of this is likely to mean rising maintenance, repair and renewal costs. The DCC and partner agencies, will need to plan ahead to appropriately meet these challenges.

The transport system also contributes carbon emissions which are a major cause of climate change. Industry, energy generation and transport in New Zealand produce more than 35 million tonnes of carbon dioxide (one of the major contributors to global warming) per year with about 40% of this coming from transport (mostly private cars). Reducing the use of fossil-fuel motor vehicles, particularly private car use, would help reduce the amount of greenhouse gas generated in Dunedin.

Transport lifelines

The Dunedin City Lifelines Project for civil defence identified that some of Dunedin's key transport infrastructure lifelines are potentially vulnerable to uncontrollable events, such as natural disasters. The railway, Port Otago, Dunedin International Airport and the state highway network, as well as many of our local roads, are all key transport links on which Dunedin depends. All of these key facilities face some level of risk from events such as flood, storm surge, sea-level rise, earthquakes, slips and slumps or heavy snow. As mentioned above, climate change is likely to increase the frequency and severity of these events (barring earthquakes). In such situations, some or all of these links may be cut off for a period.

The Railway system

The railway lines through Dunedin, particularly to Port Chalmers, contribute significantly to a more accessible and connected Dunedin, by enabling the movement of large volumes of freight off the road network. Rail also plays an important, and growing, role in freight movement for the regional and national economies.

Unfortunately, the railway's current capacity is restricted due to limitations in signal phasing and a lack of passing bays on the line between Dunedin and Port Otago. This affects the ability of trains to use the line simultaneously in opposite directions, reducing the potential freight capacity of the rail line to the Port. South of Dunedin, a single rail line also operates between Dunedin and the North Taieri industrial area. This also limits the railway's capacity for serving this regionally important industrial hub. A rail siding has been partially developed at the North Taieri industrial area enabling the transfer of some bulk goods, such as milk powder, from road to rail. However this facility has not been fully developed as an inland port thereby its role as a freight hub is also limited. In addition to the constraints listed above, the lack of a fully functional inland port is also a challenge to greater use of the rail network. Rail has the potential to carry more of Dunedin's (and the lower South Island's) freight load but these constraints currently limit this potential.

Urban severance

Severance refers to parts of the city being cut off from other parts by infrastructure that creates a barrier to access. Severance can affect all modes but is most pronounced where it creates barriers for pedestrians and cyclists, who are often poorly provided for. The railway, the Strathallan Street – Wharf Street – Thomas Burns Street heavy traffic bypass and the one-way system all combine to create severance throughout central Dunedin. This is most pronounced where the one-way system runs through the University campus, reducing connectivity between the tertiary area and the central city, as well as between the central city and the Harbour, and the Warehouse Precinct south of Queens Gardens[33]. This severance not only reduces connectivity but also affects safety and usability for vulnerable road users such as pedestrians, cyclists, children and those using wheelchairs and mobility scooters.

Severance also reduces amenity as these areas become traffic dominated, with high traffic volumes, speeds and noise. However, these roads and the railway are essential for the movement of goods through Dunedin and a key challenge is maintaining an efficient network while improving connectivity and safety, particularly for vulnerable modes.

Dunedin faces a particular challenge in that the topography of the city plays a key role in how this severance has come about. The location of Port Chalmers, the harbour and the hills surrounding the city have historically dictated where key transport corridors, such as the State Highways and the railway have been located. This means some freight traffic (and trains) have always needed, and will always need, to pass through the central city. This situation could only be avoided at great expense through the use of tunnels or bypasses. Such large-scale infrastructure is unlikely to ever be financially viable and may not even be technically feasible. However, while some freight traffic and the railway will therefore always be present in the central

32 Fitzharris, B. (2010) Climate Change Impacts on Dunedin. Prepared for the Dunedin City Council.

33 For more information on the Warehouse Precinct see the Dunedin Central City Plan and Warehouse Precinct Revitalisation Plan, www.dunedin.govt.nz/central-city-plan

city, the way in which this is provided for, and how other modes are provided for in relation to it, is the key determinant of the level of severance it causes and its negative impact on other priorities for the city.

Limited space on many roads makes it difficult to accommodate all transport demands

Due to the narrow width of many Dunedin roads, it is not always possible to fully and safely accommodate all modes. This is a particular concern where there is insufficient space to safely provide for vulnerable road users, such as pedestrians and cyclists, and traffic on the same section of road. In such situations, it may be necessary to 'pick a winner', with modes that are not given priority properly provided for elsewhere. For example, SH88 to Port Chalmers has been identified as of critical importance for heavy freight vehicles accessing the Port. As there is insufficient space to safely provide for pedestrians and cyclists on this road, a fully separated shared path is being developed in the rail corridor. Such alternative options are not always readily available, so allocating safe space to provide for different modes can be a physical, financial and political challenge. Greater use of rail for freight could also form part of any solution to the problem of lack of space on the network, if the constraints identified in the paragraphs above can be addressed.

Protecting freight routes from inappropriate development

New development along key freight routes can also have a negative effect on economic productivity and safety by generating new pedestrian and traffic movements and parking demands that do not mix well with heavy freight vehicles. Such development can reduce the ability to move freight efficiently and safely to market. Ensuring key freight routes remain efficient and safe is a challenge and may require protecting such routes against inappropriate development.

The global economic situation

Since 2008, a global economic recession has led to a decline in discretionary income for many individuals, families, businesses and agencies. In the period since 2008, the trend of increasing vehicle kilometres travelled has flattened when compared to the more prosperous years of the previous decade. This is due to a combination of higher comparative fuel prices and people having less money to spend on transport. This has resulted in less fuel excise tax being generated and, therefore, less money available to invest in the transport system (increases in fuel efficiency may also contribute to this reduction).

However, due to greater prosperity in the past, communities have become accustomed to a certain level of service on the transport network. To maintain this expected level of service, transport controlling authorities throughout the country continue to draw heavily on the limited transport funding and the National Land Transport Fund is over-subscribed. This means the transport funding environment is more competitive and investment is increasingly targeted to central Government priorities. There is limited potential for new transport projects and declining levels of service may affect some aspects of transportation. This trend is expected to continue for some time.

This economic scenario also means that people's spending is placed under increasing pressure in all aspects of life, not just transport. The decisions that the DCC makes in terms of investment in the transport network have an effect on the community that part-funds such investment through rates.

Central Government investment priorities

The bulk of Government transport investment is targeted toward highways, including the Roads of National Significance (RoNS). The RoNS are major highway projects aimed at reducing severe congestion and improving travel times in and around major cities. As an indicative figure, the RoNS are provisionally allocated approximately 39% of the total committed spend in the 2012–2015 NLTP (as at September 2012). Other than the Christchurch motorway projects, there are no RoNS in the South Island. More generally, central Government priorities are also focussed around the 'golden triangle' of Auckland, Hamilton and Tauranga.

The NZTA's *Statement of Intent 2012–2015* affirms that funding for improvements to public transport is being prioritised toward improving existing transport capacity and easing congestion in big cities, namely Auckland, Wellington and Christchurch. This indicates that funding for public transport improvements in Dunedin may be limited as it does not experience significant congestion. This congestion-targeted approach fails to recognise that better public transport also contributes to other outcomes, such as improved safety, especially if high risk road user groups (such as younger drivers and older road users) are targeted to increase their bus use.

The extent to which changes can be made to the rail network and state highways in Dunedin is directly driven by the Government's priorities. The long-term maintenance and improvement of the local road network is also strongly affected by how central Government wishes to invest. The current Government Policy Statement (GPS) funding allocation for local road maintenance (see section 1.1) has not increased in line with inflation. This means that, in real terms, local authorities like Dunedin have diminishing funding for maintaining local roads, requiring increased prioritisation of network maintenance, a rise in rates or a reduction in service levels. Over time, this may even necessitate the managed downgrading of some lower priority infrastructure to allow for more critical upkeep of high priority infrastructure. As this eventuates it will be both a financial and political challenge. These priorities and challenges are likely to change as

governments change over the lifetime of this Strategy.

One Government priority area in which Dunedin does feature highly is safety. The 'safe system' approach which the Government has adopted through the *Safer Journeys* strategy intends to make New Zealand's roads increasingly free of serious injury and death. With Dunedin's poor safety record, this focus on investing to improve safety is a very positive direction. However, the GPS does not specifically allocate funding to safety improvements, rather safety components are expected to be included in other highway or local road expenditure. In addition, the current GPS shows a reduction in funding for a number of activity classes (such as walking and cycling) in comparison to the previous (2009) GPS, placing more pressure on a need for local responses.

3. What has been done before?

This Strategy is based on community feedback on Dunedin's transport priorities. In particular the *Your City, Our Future* (YCOF) consultation, carried out in 2010–2011, provided a picture of how the transport system operates in Dunedin now and what residents want the transport system to be like in the future. As well as the community-wide YCOF consultation, the DCC also worked with a series of leadership groups across the different community outcome areas which were brought together from different areas of the community to represent various stakeholder groups.

As a result of the YCOF process, the DCC's community outcome for Accessible City was revised to read 'Connected communities – served by responsive transport and communications systems'. In this statement, 'communities' refers to both residential and business communities, and 'responsive' refers to transport and communications systems which are flexible in terms of travel mode, affordability, reliability, convenience, safety and environmental effect.

The Integrated Transport Strategy also builds on earlier DCC work. Unlike the previous Transportation Strategy, this Strategy takes an integrated approach, absorbing a number of older strategies into one Integrated Transport Strategy. This Strategy draws on, and replaces:

- Cycling Strategy (2004)
- Pedestrian Strategy (2003)
- Transportation Strategy (2006) and Addendum (2009)
- Parking Strategy (2008)

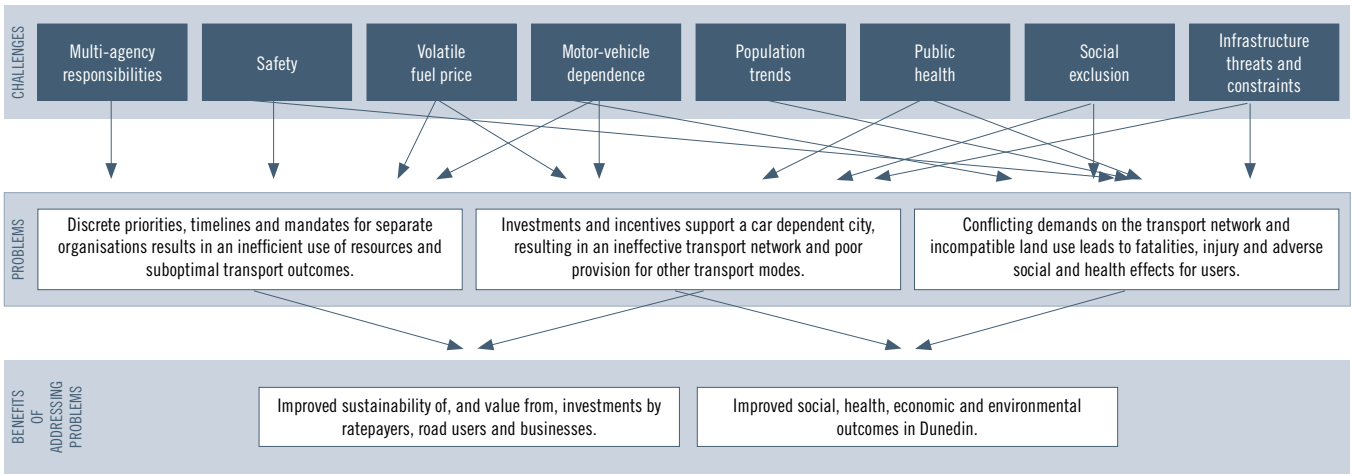
This Strategy also introduces an integrated approach with land use planning through links with the Spatial Plan. The DCC has a range of other lower-level strategies, policies, and plans that relate in numerous ways to the Integrated Transport Strategy (e.g. the Tracks Policy and Strategy and the Young Persons' Strategy). The DCC is developing a small number of high-level strategies (see Section 1.4), including this Integrated Transport Strategy, which will absorb and replace the large number of existing low-level strategies.

Investment Logic Mapping

Investment Logic Mapping (ILM) is a collaborative method for gaining an understanding of transport problems, opportunities and benefits. It is being endorsed by the NZTA[34] as a technique to ensure that discussion and thinking is done up-front, before solutions are identified and before any investment decision is made. It is a technique to test and confirm that the rationale for a proposed investment is evidence-based and sufficiently compelling to conince decision makers to invest in further investigation and planning. ILM is a series of structured workshops that bring together key stakeholders to establish early agreement on problems, outcomes and benefits before any investment decisions are made or a specific solution is identified. ILM workshops aim to establish a clear understanding of the problem (or opportunity), the consequence of the problem and the desired benefits – before moving into identifying solutions. The output of an ILM is usually a one-page investment story that sets out the problems and benefits in straightforward language that all stakeholders can understand.

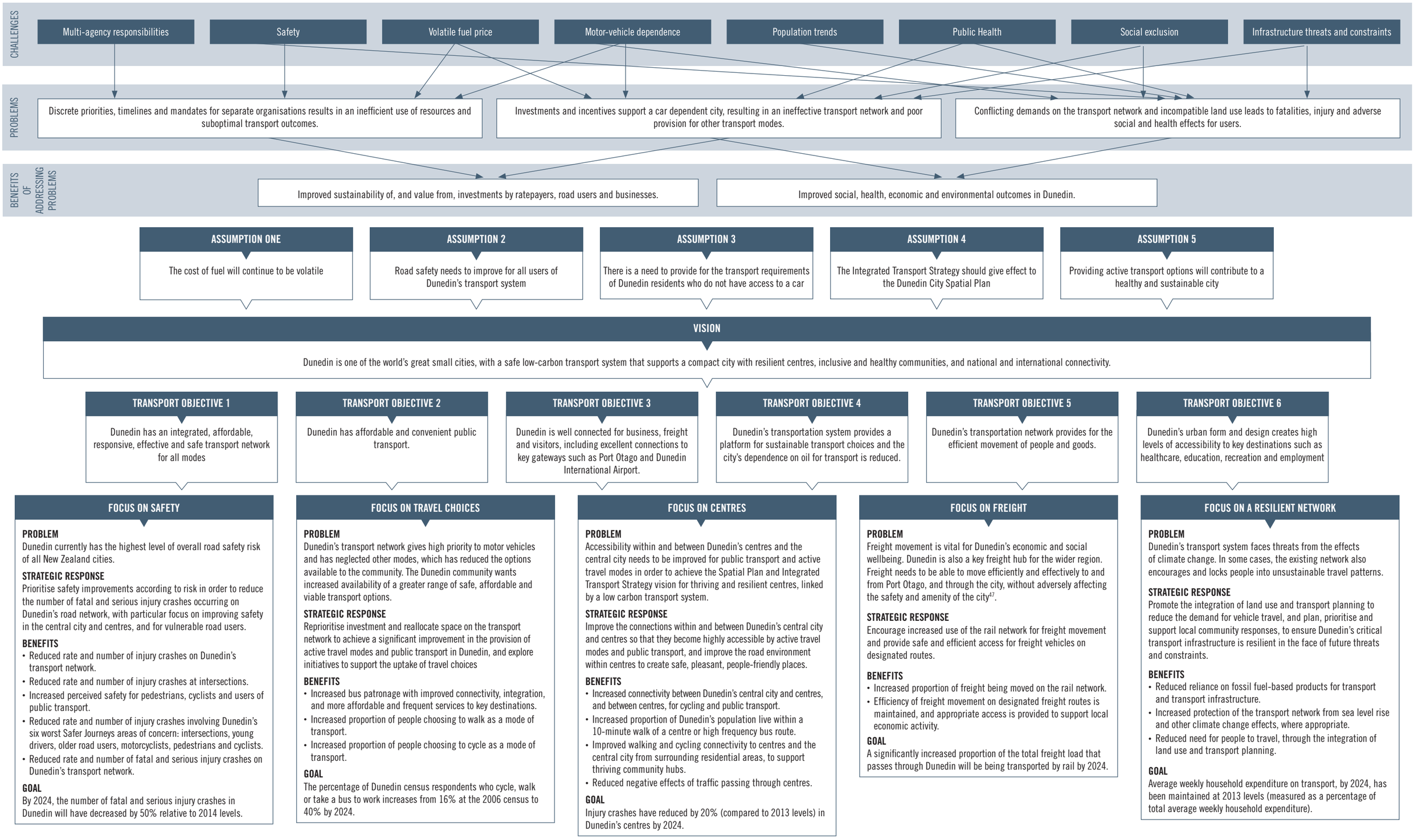
As part of the development of the Integrated Transport Strategy an ILM exercise was carried out for Dunedin, including the DCC, NZTA and ORC as key investment partners in Dunedin's transport system. The process generated three high-level problem statements which broadly encapsulate many of the more specific key transport challenges outlined earlier in Section 2. The ILM also identified two broad benefits of addressing those problems. FIGURE 12 presents the problems statements and benefits identified through the ILM, as well as the connections between the problem statements and the key transport challenges identified in Section 2. The following sections of the Integrated Transport Strategy present the DCC's approach to addressing these problems and delivering these benefits. A summary overview of this strategic approach is provided in Section 4, on the following page.

FIGURE 12. Dunedin's transport problems and benefits identified through Investment Logic Mapping, and their links to the transport challenges.



34 NZTA (2013) Online: http://hip.nzta.govt.nz/faq/investment-logic-mapping-ilm

4. Strategic Approach – Overview



5. Vision

A vision for transport in Dunedin is set out in Dunedin's Spatial Plan. In summary:

Dunedin is a liveable city, with a strong network of accessible and connected communities designed to promote psychological and physical wellbeing, safe and pleasant public spaces, and enhanced Harbour access. Sustainable transport plays a key role in making Dunedin a sustainable and resilient city, and the transport system supports a prosperous and diverse economy through connecting people and businesses to local and export markets, clients, and employment, as well as enabling people to connect in person for business collaboration.

The transport network, particularly city streets, is part of a network of high-quality and high-amenity public spaces that help ensure Dunedin is memorable and distinctive. In the central city and other centres, a high-quality pedestrian experience is part of the vitality and excitement Dunedin offers. Strong and attractive pedestrian and cycle routes connecting the centres, the tertiary area, shopping areas, entertainment, visitor accommodation, arts and culture experiences, recreational opportunities and the harbour all contribute to Dunedin's vibrancy and excitement.

Safe, pleasant walking and cycling routes linking residential areas to centres, and centres to the central city, make Dunedin an accessible and connected city. Traffic is slowed within centres to improve safety and amenity. An affordable, accessible, reliable, pleasant and well utilised public transport system also connects people to these centres and other important facilities. Dunedin has also maintained its compact urban form and avoids unnecessary expansion by maximising our existing infrastructure capacity.

Dunedin is an important hub in an efficient freight network based around Port Otago and Dunedin International Airport, with strong air and rail links to the rest of the country. A large proportion of the freight through Dunedin is transported by rail. Key freight routes are maintained to an appropriate standard both for efficiency and safety.

The Social Wellbeing Strategy includes the Strategic Direction "Connected People", under which sits the priority that:

"Dunedin people are connected to the places they need to go by safe, affordable and user-friendly transport options: Physical connectivity is a key element of social connectedness. People need good access to essential services such as education, healthcare, workplaces and retail outlets such as supermarkets. This access can be enhanced through ensuring a range of affordable and safe transport options are available to all residents."

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 vision for Dunedin's transport system will mean:

- Safe and socially inclusive access to services, employment, education and recreational opportunities is available to all residents and visitors.
- Public transport and active modes are popular, well-utilised and safe.
- Centres and the streets within them are vibrant and healthy social spaces, designed as people-friendly places.
- Goods and people move in an effective and sustainable way that supports the safety, amenity and prosperity of the city and the wider Otago region.
- The challenges of volatile fuel costs and climate change are addressed proactively, boldly and creatively, securing Dunedin as a resilient and attractive place to live, visit and do business.

6. Assumptions

It is largely unknown how transport will operate in Dunedin in the longer term, and so it is necessary to make certain assumptions in order to develop this Strategy. The effect of volatile fuel prices and the affordability, uptake and effect of new fuel technologies are important considerations, surrounded by much speculation but little certainty.

This Strategy takes a flexible approach that recognises and provides for the possibility of significant changes in the nature of transport in the future. Under this approach, planning will be based on the evidence currently available, while retaining a level of adaptability in the event that trends unfold differently.

However, despite this flexible approach there are some key assumptions on which the strategic direction adopted in this Strategy is based.

ASSUMPTION 1

The cost of fuel will continue to be volatile

Transport fuel costs have been volatile for several decades (as outlined in Section 2.2). New fuel sources (such as bio-fuels and liquid from solid fuels), and electricity, are becoming more cost competitive. There is, however, no clear indication that a significant proportion of Dunedin's population may be able to afford or access these fuels, and/or associated vehicles and infrastructure, before the first scheduled review of this Strategy.

Due to demand for fuel from developed countries, increasing demand from rapidly developing economies (such as India, China, South East Asia and South America), and the high cost and environmental effects of extracting or developing emerging fuel types, the trend of increasing fuel cost experienced over the past decade could continue for some time into the future, characterised by price spikes and supply crunches. The full effect of this price volatility, the future affordability and uptake of alternatives and the influence these factors will have on the way people choose to travel or where they choose to live, or when these potential effects may become prevalent, is unknown.

ASSUMPTION 2

Road safety needs to improve for all users of Dunedin's transport system

Although Dunedin's road safety statistics have been improving over recent years, Dunedin's overall crash risk is still significantly worse than other comparable urban councils around the country. The need to address Dunedin's under-performance in road safety is a key assumption driving the direction of this Strategy.

ASSUMPTION 3

There is a need to provide for the transport requirements of Dunedin residents who do not have access to a car

Many Dunedin households do not have access to a car (as outlined in Section 2.8). To support an acceptable quality of life, these residents need access to essential goods and services. Therefore, viable, safe transport options other than cars need to be available.

ASSUMPTION 4

The Integrated Transport Strategy should give effect to the Dunedin City Spatial Plan

To ensure resilience in the event of future challenges, the DCC has adopted the Spatial Plan which sets out a vision that Dunedin will be a compact city with resilient townships, as well as having a high level of liveability and connectedness. It also identifies the importance of integration of transport and land-use. The vision and strategic direction set by the Spatial Plan was developed and adopted through a process of extensive consultation with the Dunedin community. The Integrated Transport Strategy should therefore give effect to the direction set by the Spatial Plan.

ASSUMPTION 5

Providing active transport options will contribute to a healthy and sustainable city

A large body of research highlights the health benefits of active transport modes. Mode shift from vehicular modes to active modes will also lead to a reduction in greenhouse gas emissions. This Strategy assumes that making active transport options safer and more accessible to the Dunedin community would mean that active modes would be used more and thereby have a positive effect on the sustainability and health of Dunedin and its residents.

7. Transport objectives

The following objectives are derived from the Spatial Plan, but have been revised for this Integrated Transport Strategy through a process of consultation with the community.

1. Dunedin has an integrated, affordable, responsive, effective and safe transport network for all modes
2. Dunedin has affordable and convenient public transport
3. Dunedin is well connected for business, freight and visitors, including excellent connections to key gateways such as Port Otago and Dunedin International Airport
4. Dunedin's transportation system provides a platform for sustainable transport choices and the city's dependence on oil for transport is reduced
5. Dunedin's transportation network provides for the efficient movement of people and goods
6. Dunedin's urban form and design creates high levels of accessibility to key destinations such as healthcare, education, recreation and employment.[35]

35 These objectives are derived and adapted from those set out in the Spatial Plan strategic direction 'Accessible and Connected City'. The Transport Strategy also contributes to many other Spatial Plan strategic directions, objectives and policies, for a full description of these see 'Dunedin Towards 2050 – a Spatial Plan for Dunedin', www.dunedin.govt.nz/spatial-plan.

8. Core principles

The DCC will deliver the Integrated Transport Strategy by following the high level principles described below.

Principle 1: **Responsible, effective investment**

The DCC will adopt a Business Case approach for transport investment, in keeping with the NZTA direction, in order to ensure robust, evidence-based investment decisions. Consistent with this, the DCC will make transport planning and investment decisions based on a hierarchy of interventions (FIGURE 13). The aim is to use this intervention hierarchy to prevent congestion, safety problems or accessibility problems from occurring in the first place, and thereby minimising the need for costly infrastructure investment later. The hierarchy of interventions is shown overleaf in FIGURE 13. Where a major change or significant investment is being considered the DCC will use temporary trials where practicable and appropriate, to ensure the effects of the proposal are properly understood. Where new transport infrastructure is being designed, or existing infrastructure re-designed, the needs of all road users and modes will be considered.

Principle 2: **One network approach**

In keeping with the NZTA's national direction, the DCC will take a 'one network' approach to managing the Dunedin transport system. This means that DCC will work collaboratively with the other organisations responsible for delivering the transport system to ensure seamless, logical and integrated delivery of the transport network and to ensure that the separation of control over different parts of the network does not affect the user's experience and the coherence of the network.

Principle 3: **A safe system approach**

The DCC will take a safe system approach to managing the transport system. This means DCC commits to creating a forgiving road system based on four principles:

- People make mistakes: We need to recognise that people make mistakes and some crashes are inevitable.
- People are vulnerable: Our bodies have a limited ability to withstand crash forces without being seriously injured or killed.
- We need to share responsibility: System designers and people who use the roads must all share responsibility for creating a road system where crash forces do not result in death or serious injury.
- We need to strengthen all parts of the system: We need to improve the safety of all parts of the system – roads and roadside, speeds, vehicles and road use so that if one part fails, the other parts will still protect the people involved.

Principle 4: **Partnership**

The DCC will take a partnership approach to delivering Dunedin's transport system through:

- Collaboration and liaison with key transport delivering organisations such as NZTA, ORC, NZ Police and KiwiRail.
- Working with the Road Safety Partners including NZTA, NZ Police, ORC, ACC, and other stakeholders as required.
- Partnering and collaborating with tertiary institutions, emergency services, the health sector, business organisations and transport-focussed advocacy and stakeholder groups where possible.
- Engaging and assisting neighbourhood and community groups where possible.

Principle 5: **Sustainability**

The DCC will take a sustainable development approach to delivering Dunedin's transport system. This includes taking into account the social, economic, and cultural interests of Dunedin's people and communities, maintaining and enhancing the quality of the environment, and taking into account the needs of future generations.

Principle 6: **Leadership**

The DCC will take a leadership role in delivering, facilitating and advocating for a safe, sustainable, socially inclusive, and efficient transport system that supports Dunedin's environmental social, cultural and economic interests of Dunedin. The DCC will show leadership across all the areas of focus identified in this Strategy to improve the resilience of the DCC's own transport and travel activities. Examples of how this might be progressed include methods such as work place travel planning and investigating ways of maximising the fuel efficiency of the DCC vehicle fleet.

Principle 7: **Treaty of Waitangi**

The DCC will fulfil its obligations under the Treaty, including consulting and engaging with Māori.

Principle 8: **Affordability**

The DCC will implement the strategy in a cost-effective and fiscally responsible manner.

Implementation will adhere to the balancing process set out in the Financial Strategy (2012 – 2022).

FIGURE 13. Hierarchy of Interventions to optimise transport investment.

INTEGRATED LAND USE AND TRANSPORT PLANNING

In order to reduce the need to travel by single-occupant vehicle, minimise safety risks and maximise appropriate accessibility by all transport modes to destinations.

TRAVEL DEMAND MANAGEMENT

Identifying opportunities to manage traffic growth and reduce demand for single-occupant vehicle trips, to utilise the network more efficiently and provide safe non-car travel mode options.

OPERATIONAL IMPROVEMENTS

In order to improve the safety, performance and capacity of the network where this is possible.

NEW INFRASTRUCTURE

When all of the above options have been considered and implemented and problems still persist, the construction of a new infrastructure will be used where appropriate and cost effective.

9. The strategic approach

This Strategy identifies five key 'Areas of Focus' which encapsulate many of the key transport challenges identified in Section 2, the vision for Dunedin's transport outlined in Section 4, and the transport objectives listed in Section 6. A range of priorities and approaches are proposed under each of the 'Areas of Focus' that will guide the DCC, and its partner organisations, in working towards achieving this Strategy's objectives and vision.

The areas of focus are:

- Focus on safety
- Focus on travel choices
- Focus on centres
- Focus on freight
- Focus on resilience

Each Area of Focus contributes to at least three strategic objectives. TABLE 2 at right indicates the strategic objectives to which each area of focus contributes.

TABLE 2. Each Area of Focus contributes to several transport objectives.

		Transport objective*						
		1	**2**	**3**	**4**	**5**	**6**	
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.
								Challenges addressed by Area of Focus

***Transport objectives**

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

9.1 FOCUS ON:

Safety

PROBLEM

Dunedin currently has the highest level of overall road safety risk of all New Zealand cities.

STRATEGIC RESPONSE

Prioritise safety improvements according to risk in order to reduce the number of fatal and serious injury crashes occurring on Dunedin's road network, with particular focus on improving safety in the central city and centres, and for vulnerable road users.

BENEFITS

- Reduced rate and number of injury crashes on Dunedin's transport network.
- Reduced rate and number of injury crashes at intersections.
- Increased perceived safety for pedestrians, cyclists and users of public transport.
- Reduced rate and number of injury crashes involving Dunedin's six worst Safer Journeys areas of concern: intersections, young drivers, older road users, motorcyclists, pedestrians and cyclists.
- Reduced rate and number of fatal and serious injury crashes on Dunedin's transport network.

GOAL

By 2024, the number of fatal and serious injury crashes in Dunedin will have decreased by 50% relative to 2014 levels.

Strategic approach

Ensuring Dunedin is a safe city is important to the DCC. Safety in all aspects of life, including the transport network, is prioritised in the Social Wellbeing Strategy, Spatial Plan and Long Term Plan (outlined in Section 1.4). The Integrated Transport Strategy plays a key role in achieving the vision for a safe Dunedin set out in all these documents.

The national road safety strategy, *Safer Journeys* (see Section 1.1.2) highlights several key areas of concern for road safety that the Government has prioritised as needing attention. The Communities at Risk Register (summarised in Section 2.1), highlights that Dunedin has a high level of risk in several of the Safer Journeys areas of concern compared to other New Zealand councils. Currently Dunedin has the highest level of overall road safety risk of all New Zealand cities.

The DCC and partner agencies, such as the NZTA, the NZ Police and ACC, have been working to improve many of these issues. Overall, Dunedin road safety is improving and the level of risk has been trending down for the past five years, but there is still more work to be done.

Safety is an overarching emphasis of this Strategy and accordingly, all the areas of focus contribute in some way to safety. For instance, improving safety for cyclists and pedestrians is at the heart of the focus on providing travel choices (as discussed in Section 8.2), while creating vibrant thriving centres (Section 8.3) entails making these areas, and the access to them, safe for people. The strategic approach to achieving a safe transport system will be as follows.

Road Safety Action Planning

Under a Safe System approach, everybody is responsible for road safety. This includes road controlling authorities, partner agencies and the community working together to achieve a safe road system. A key method of achieving this is the Road Safety Action Planning process. Road Safety Action Planning is a collaborative approach recommended as best practise by the NZTA. Its purpose is to ensure all partner organisations understand their district's road safety issues, share responsibility, are accountable, and develop innovative and best-practise approaches across all aspects of the Safe System.

The key Road Safety Partners who work together to deliver road safety action planning in Dunedin include the DCC,

FIGURE 14. Central city high risk area identified through predictive modelling trial. There are some other high risk sections of road in other parts of the city not illustrated here, but the majority are within the area shown.

ORC, NZTA, ACC and the NZ Police. Other key road safety partnerships include working with Community Boards, emergency services, schools, private companies and stakeholder groups (such as freight, older persons and youth representatives, disability groups, taxi, bus and cycling groups). Many of these transport stakeholder groups participate in the Dunedin Road User Forum (DRUF) which provides feedback and input to the Road Safety Partners group.

The Road Safety Partners group may draw on sector-specific expertise from the DRUF as and when required to better inform the Road Safety Action Planning process. For example, when the Road Safety Partners are planning interventions regarding cycle safety, they may invite cycle advocacy groups to participate in the process to provide a better understanding of cycling issues.

Under the Safe System approach the Road Safety Partners will address risk and improve safety through a mixture of engineering, education and enforcement measures across the 'four pillars' of the Safe System (namely Safe Use, Safe Speeds, Safe Roads and Roadsides, and Safe Vehicles).

Targeting risk

Analysis completed in June 2013 highlighted that approximately 50% of all reported road injury crashes occur on 3.5% of the Dunedin transport network (by length).

The DCC and the NZTA will continue to prioritise interventions, resources and investment focussing on risk with a particular emphasis on targeting this 3.5% of the network. This is likely to have a significant impact on reducing death and serious injuries from road crashes in the City. An integrated approach will be taken and may involve several Council departments working collaboratively with the NZTA and road safety partners (see below). Typically these interventions will be the more costly and complex, such as upgrades of signalised intersections, construction of roundabouts, and so on.

Where safety issues arise on the balance of the network these will be investigated and low cost interventions implemented taking into account available investment funds. Such interventions may include speed limit reviews, improved signage, and safer footpaths and crossing points.

Dunedin's highest risk area is the central city and some centres surrounding it (as shown in FIGURE 14).

Vulnerable road users

Vulnerable road users are those who do not have a protective 'shell' around them and thus are more likely to experience serious injury or death in a crash. This includes pedestrians, cyclists and motorcyclists of all ages (although within this broad category, the elderly are the most vulnerable)[36]. Those using wheelchairs, mobility scooters and skateboards are often referred to as 'wheeled pedestrians' and are generally considered pedestrians in crash statistics and when talking about vulnerable users.

The risk facing vulnerable users can put people off using active travel modes, such as riding a bike or walking, as some people perceive being in a car to be safer. This is a common reason many parents choose to drive their children to school even when they live within walking or cycling distance. Many adults also indicate they would like to travel by active modes but cite perceived lack of safety as their reason for driving instead.

This creates a self-fulfilling paradigm in which there are more cars and fewer active mode users on the network, which increases the risk level, and perceived risk, for vulnerable users. Due to an ageing population Dunedin is also experiencing an increase in the number of people using mobility scooters and wheelchairs. This highlights the need to create a safe and attractive transport environment for these vulnerable users in which they are not disadvantaged or endangered by the dominance of motor vehicles.

Safety within centres

Most vulnerable user activity occurs in and around centres, with the vast majority concentrated in the central city. The DCC will focus on increasing safety and accessibility for vulnerable users by targeting and prioritising these highest risk areas. Within centres, the DCC will focus on reducing traffic volumes where possible, reducing traffic speeds, and reducing conflicts between all road users. This will include improving pedestrian safety and accessibility at key crossing points, and providing a more pedestrian and cycle friendly environment in general. The overall approach to centres is discussed in more detail under the 'Focus on Centres' (Section 8.3).

Safe speeds

Speed limits will be set according to the 'principle of homogenous use'. This principle states that:

... where vehicles or road users with great differences in mass have to use the same road space, speeds will have to be so low that, should a crash occur, the most vulnerable road users involved should not sustain fatal injuries. In addition, where traffic is moving at high speeds, road users should be separated physically[37].

The effect of speed on vulnerable users is shown in FIGURE 15[38]. This illustrates that as speeds increase, the risk of serious injury or death in event of a crash also increases. Research has shown that a pedestrian (or other vulnerable road user) hit at 30 km/h has a 5% chance of dying, whereas this increases to a 40% chance of death when a vulnerable user is hit at 50km/h. If a vulnerable user is hit by a vehicle travelling above 60km/h there is very little chance that person will survive. This clearly suggests that an urban speed limit of 50km/h is too fast in areas with high vulnerable user activity and can no longer be considered acceptable.

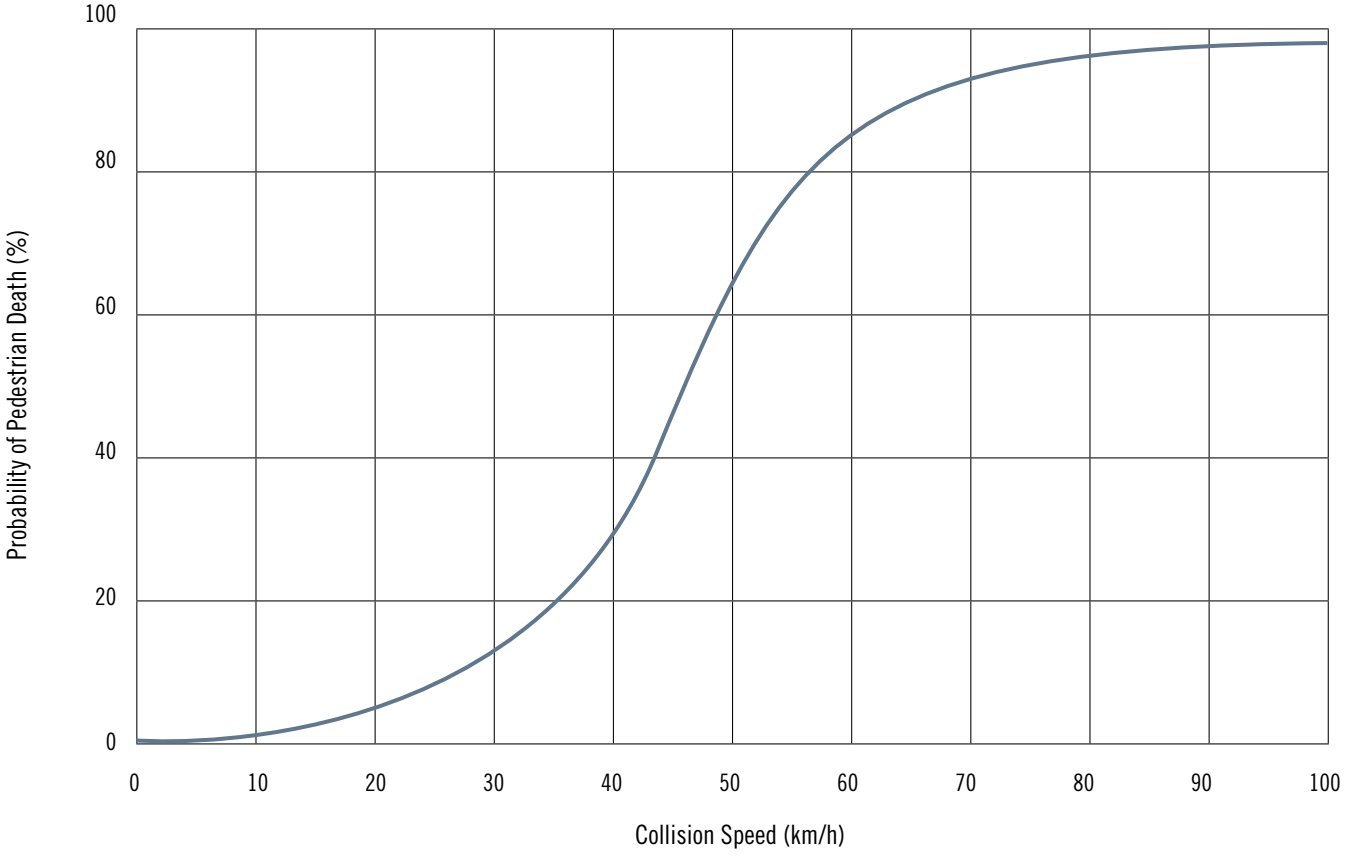
The Safer Journeys strategy has also acknowledged the problem of speed under New Zealand's current speed limit standards, and has made a national priority of reviewing this to achieve more appropriate speeds across the country.

Based on these facts, in Dunedin's centres (where there is the highest concentration of vulnerable user activity, and generally the highest risk) the DCC will work toward achieving lower speeds. This will be implemented through the Centres Programme discussed in Section 8.3. The DCC will also conduct speed limit reviews in other parts of the city where there is a need. Where reviews are required in multiple areas, these will be prioritised according to the level of risk.

In order to achieve safe, predictable and coherent speeds that users can easily understand, it will generally be most appropriate that the DCC takes an area-wide approach to reviewing and implementing speed limits. In most cases this area-wide approach is preferable to one-off spot treatments on specific sections of road, as spot treatments can result in a fragmented speed limit that is indecipherable to users. Small-scale speed limit reviews (such as on a specific section of road) may be appropriate in

36 SWOV (2012) Fact sheet: Vulnerable road users. SWOV Institute for Road Safety Research. Leidschendam, the Netherlands, July 2012.
37 Wegman, F. and Aarts, L. (eds) (2005) Advancing Sustainable Safety: National Road Safety Outlook for 2005–2020. SWOV Institute for Road Safety Research.
38 NZTA (2009) Pedestrian Planning and Design Guide. NZ Transport Agency, October 2009. Ch.3.8.

FIGURE 15. The influence of collision speed on the probability of pedestrian death.



particularly dangerous areas, and again, these will be addressed case-by-case according to the level of risk.

It is important to recognise that a speed limit is simply one tool in the road safety toolkit and it will not usually achieve the desired reduction in traffic speed by itself. The road environment itself needs to be self-explanatory to the motorist, so that the posted speed limit is consistent with what the driver subconsciously interprets to be an appropriate speed for that area. This is called the 'design speed'. A section of road with a higher design speed (for example one that has wide and/or multiple traffic lanes, poor pedestrian facilities, narrow footpaths, little streetscape or amenity value, and high traffic priority at intersections) will signal to the motorist that it is appropriate to drive faster. Conversely, where the design speed of the road is lower, the driver will tend to drive slower. This will tend to be the case regardless of the posted speed limit. To achieve a desired speed, it is important that design speed and speed limit are consistent with each other[39].

Schools

Schools are another key area of vulnerable user activity. As discussed in Section 2.1, the traffic environment around schools is highly complex and requires a special approach given the interaction between vehicles and children, and the very specific times at which those activity peaks occur. Dunedin has approximately 80 schools, plus kindergartens and early childhood centres, each of which has a unique set of issues and different levels of risk. To achieve the best use of limited resources, it is critical to develop a robust system for prioritising work around schools. In keeping with the overall strategic approach for road safety, the DCC will continue to take a risk-based approach to prioritising work around schools. There are two primary avenues by which road safety will be addressed around schools, the DCC risk ranking system and the School Traffic Safety Group, as follows.

39 ACC and LTSA (2000) Down with Speed: A Review of the Literature, and the Impact of Speed on New Zealanders. Accident Compensation Corporation & Land Transport Safety Authority, 2000. p.38.

1. Risk ranking system for schools

The DCC has established a two-tier ranking system to guide work with schools:

- Top 12 Partnerships: the 12 schools with the highest risk have been identified. The DCC will approach these schools with the aim of reducing road safety risk around the school, (e.g. through measures such as early warning signs, active warning signs, traffic calming, reduced speed limits, improved crossing provision, or parking changes). This approach will enable highest risk schools to work in partnership with the DCC to reduce risk by supporting and promoting complimentary initiatives such as better parking, drop-off and pick-up behaviour, walking school buses, active travel.
- The Top 12 list will be reviewed every six months. As improvements are made to these schools, their risk profile may improve to the extent that they will be removed from the list and replaced by other schools with poorer risk profiles.
- Lower risk schools: these are being addressed on a reactive basis as issues are identified and requests are brought to DCC. These issues and requests will be prioritised based on the level of risk, as will the level and timing of intervention.

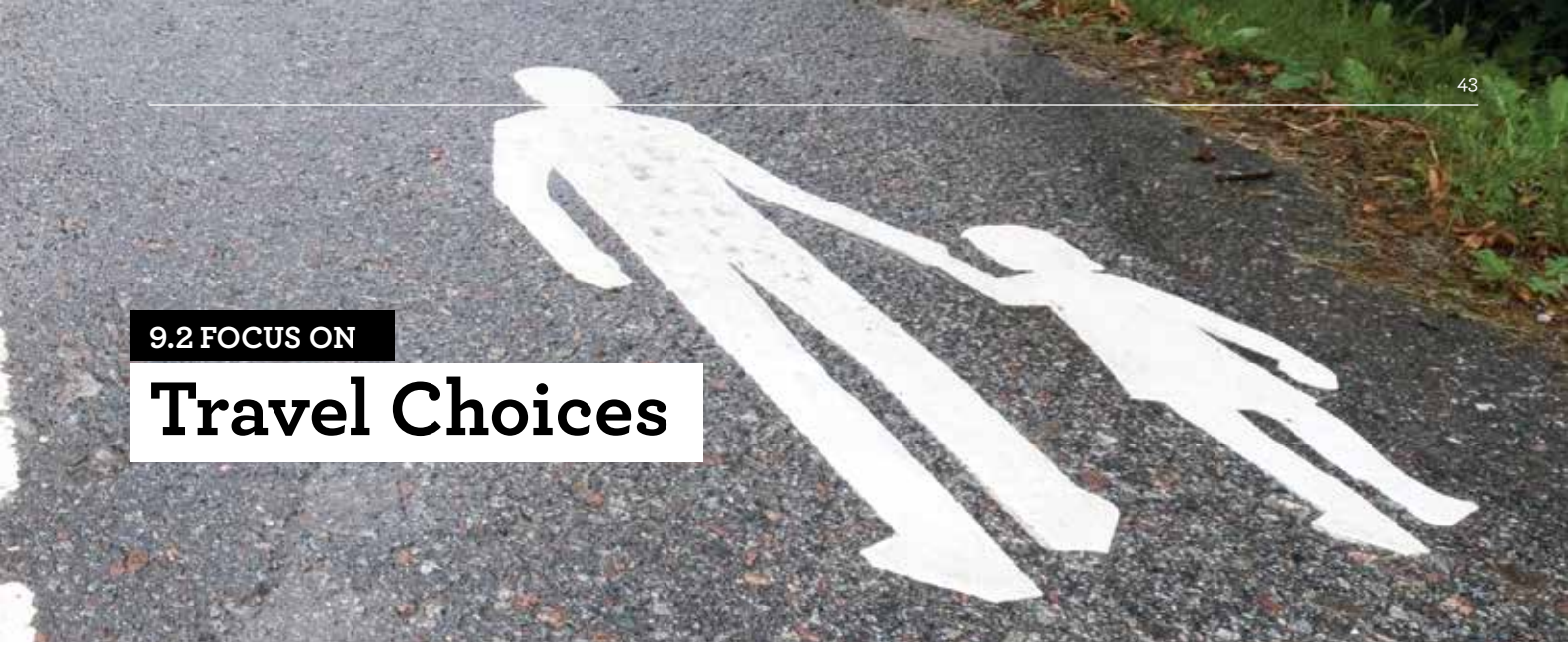
School Traffic Safety Group

A collaborative partnership called the School Traffic Safety Group (STSG) has been established to identify ways of working together to improve school road safety. The STSG partnership includes the DCC, NZTA, ACC, Students Against Drunk Driving (SADD), Dunedin Kindergarten Association, Otago Primary Principals Association and Dunedin Secondary Schools Association.

The STSG exists to enable more effective communication and collaboration between the organisations working in road safety for Dunedin's kindergarten, primary and secondary schools. The group seeks to develop awareness of local work in relevant programmes, align goals, and to increase opportunities for collaboration between the agencies to identify, understand and address road safety issues around schools.

Road Safety Education

Road safety education is an important and ongoing part of the work of the Road Safety Partners. Campaigns to raise awareness of specific issues, highlight appropriate behaviours and so on are critical to encouraging safe behaviour on the roads.



9.2 FOCUS ON

Travel Choices

PROBLEM

Dunedin's transport network gives high priority to motor vehicles and has neglected other modes, which has reduced the options available to the community. The Dunedin community wants increased availability of a greater range of safe, affordable and viable transport options.

STRATEGIC RESPONSE

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

BENEFITS

- Increased bus patronage with improved connectivity, integration, and more affordable and frequent services to key destinations.
- Increased proportion of people choosing to walk as a mode of transport.
- Increased proportion of people choosing to cycle as a mode of transport.

GOAL

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.

Strategic approach

Dunedin is already well served by connections for motor vehicles and provision of parking (see Section 2.4). Key vehicle links will continue to be maintained. However the focus of this Strategy is to achieve a more even balance and greater integration between different travel modes, which will result in improved provision on the network for cycling, walking and public transport, alongside cars.

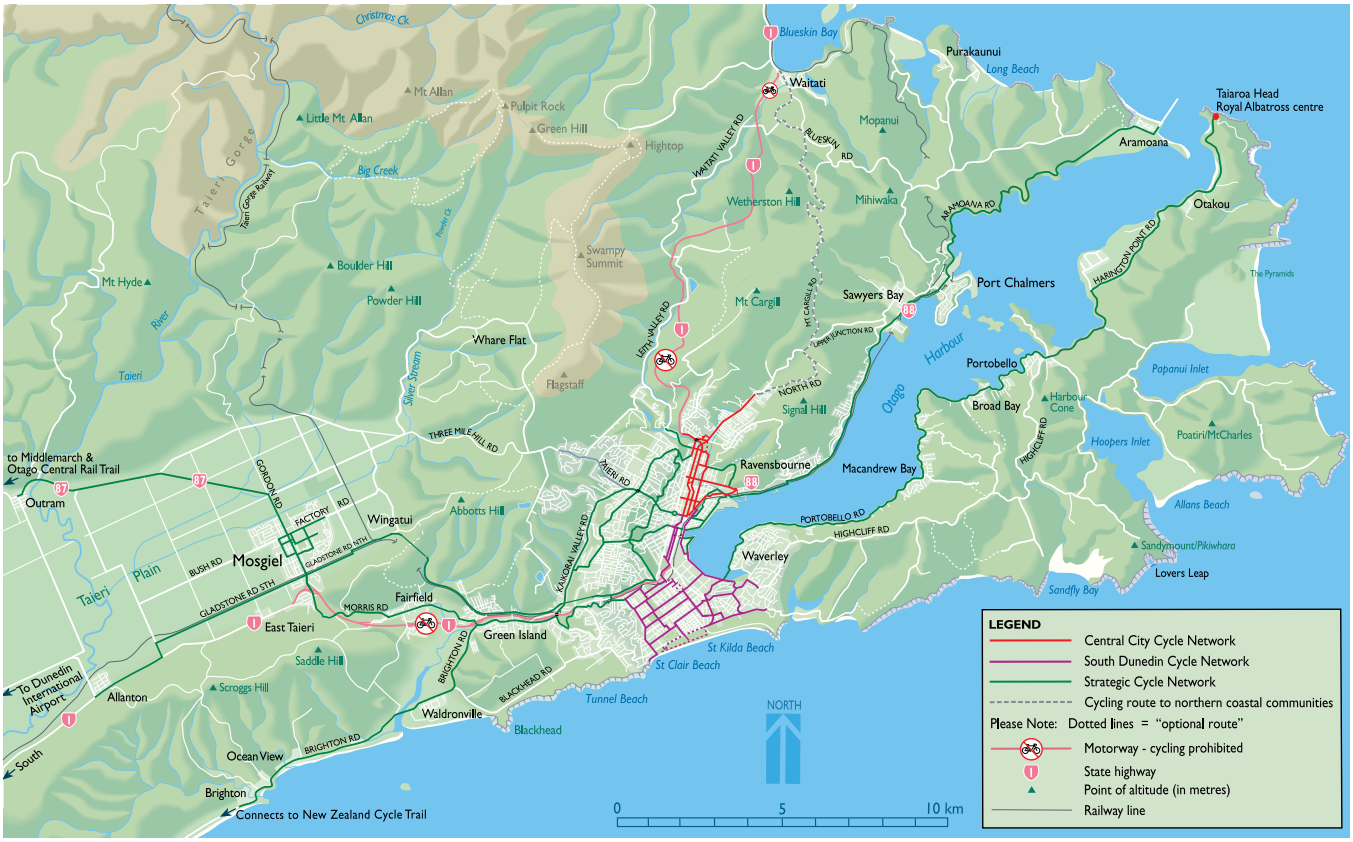
Dunedin's crash record and feedback the DCC has received from the community over several years show that the current state of travel mode choice in Dunedin is inadequate. This Strategy does not take a prescriptive approach, telling road users which mode of travel they should choose, rather it redresses the historical imbalance in which modes other than the private car have suffered from under-investment. The strategic approach to achieve greater travel choices for Dunedin road users will be as follows.

Strategic Cycle Network

In 2011, the Council adopted a Strategic Cycle Network (SCN) for Dunedin Citywide (see FIGURE 16). The SCN sets out the priority routes for cycling and the key links between destinations for users, identified through consultation and engineering assessments and will guide the DCC in selecting routes for cycle facilities[40]. Through the SCN the DCC aims to create safe, user-friendly cycling links between centres, and from centres to the central city.

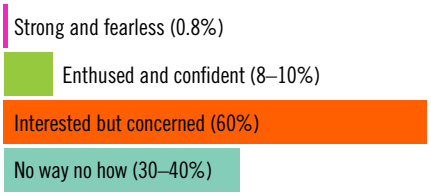
40 For more information, see the DCC Strategic Cycle Network Implementation report.

FIGURE 16. Dunedin Strategic Cycle Network



It is important to identify the target audience for any given route, as the level of provision should meet the needs of its target audience over its length. Dunedin City Council has adopted the approach developed by the City of Portland, Oregon, which identifies four types of cyclists, as represented in FIGURE 17 below

FIGURE 17. Target audiences for provision of cycling infrastructure



The four groups shown in FIGURE 17 can be explained as follows:

Strong & Fearless: A group of people who will travel by bike regardless of the conditions. The cities that provide the most hostile cycling environments still see around 0.8% of all trips made by bicycle.

Enthused & Confident: These people require some space on the road to ride (such as a cycle lane or wide kerbside lanes) and are prepared to mix with motorised traffic to some extent. Where a bicycle network is aimed at the enthused & confident, it is likely the maximum uptake of cycling may result in a cycling mode share of 8% to 10%.

Interested but Concerned: These people require physical separation from motorised traffic before they are prepared to travel by bike, or allow their children to go by bike. People in this group may only be prepared to mix with motorised traffic where both volumes and speeds are low. Where a bicycle network caters for the interested but concerned, around two thirds of the population may be prepared to travel by bicycle, at least some of the time.

No way, No how: The remainder of the population would not use a bicycle under any circumstances.

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. While the SCN will guide cycle route planning, when detailed planning of a part of the network occurs, alternative route options may arise in preference to those identified on the SCN. Decisions about specific routes and facility types will be guided by the principle that the primary objective is to achieve a cycle network on which 'interested but concerned' (and those

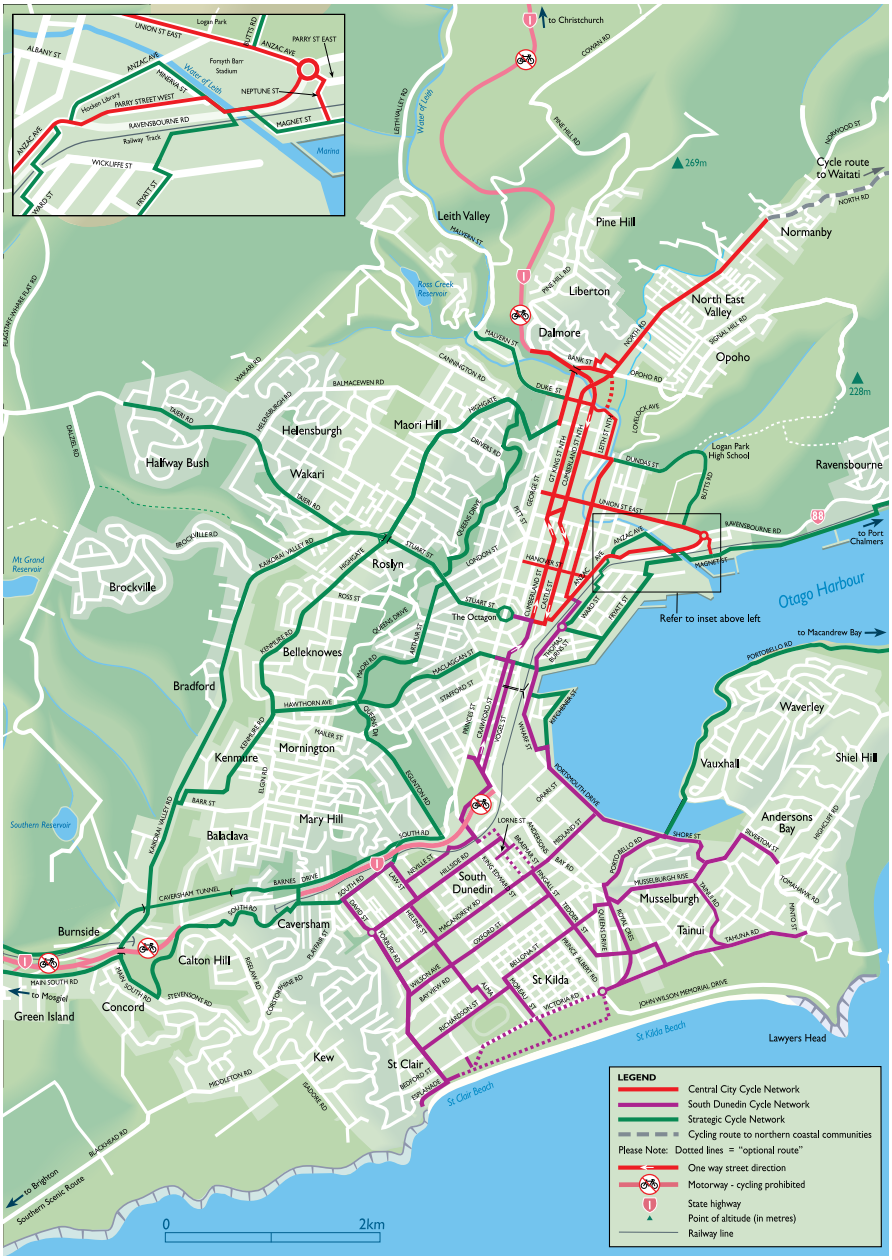
more confident) people feel safe enough to ride a bike, as this group represents the largest number of users or potential users.

The benchmark the DCC has adopted to define the 'interested but concerned' user is the 10 year old child, as 10 years is the age at which children are generally considered old enough to cycle on the transport network unsupervised given appropriate infrastructure. Directness of route is also a high priority for cyclists. To achieve safe and direct cycle routes that will cater for the 'interested but concerned' user group will typically require some separation from traffic and the DCC will aim to deliver this sort of cycle network where practicable. The community has also highlighted the importance of high quality road surfacing, road marking and way-finding, as well as thorough maintenance and careful siting of utilities (such as storm water grates and manhole covers) in ensuring cycle infrastructure is safe. These considerations will be taken into account in the design, construction and maintenance of the SCN.

The SCN will be implemented in stages. The first stage, being constructed from 2013 to 2015, is the South Dunedin Cycle Network, which includes routes that link the key residential areas and destinations (such as schools and shopping centres) of the wider South Dunedin area with the central city. The next phase, to be implemented from 2015 to 2018, will be the Central and North Dunedin Cycle Network, which will provide facilities in the central city and also link North East Valley and wider North Dunedin to the central city and the South Dunedin Cycle Network. Both these networks will also connect to the Harbour Cycleway. The remainder of the Strategic Cycle Network will be rolled out in stages.

FIGURE 16 shows the extent of the Strategic Cycle Network. FIGURE 18 shows the detailed routes being proposed through the South Dunedin and Central Dunedin Cycle Networks.

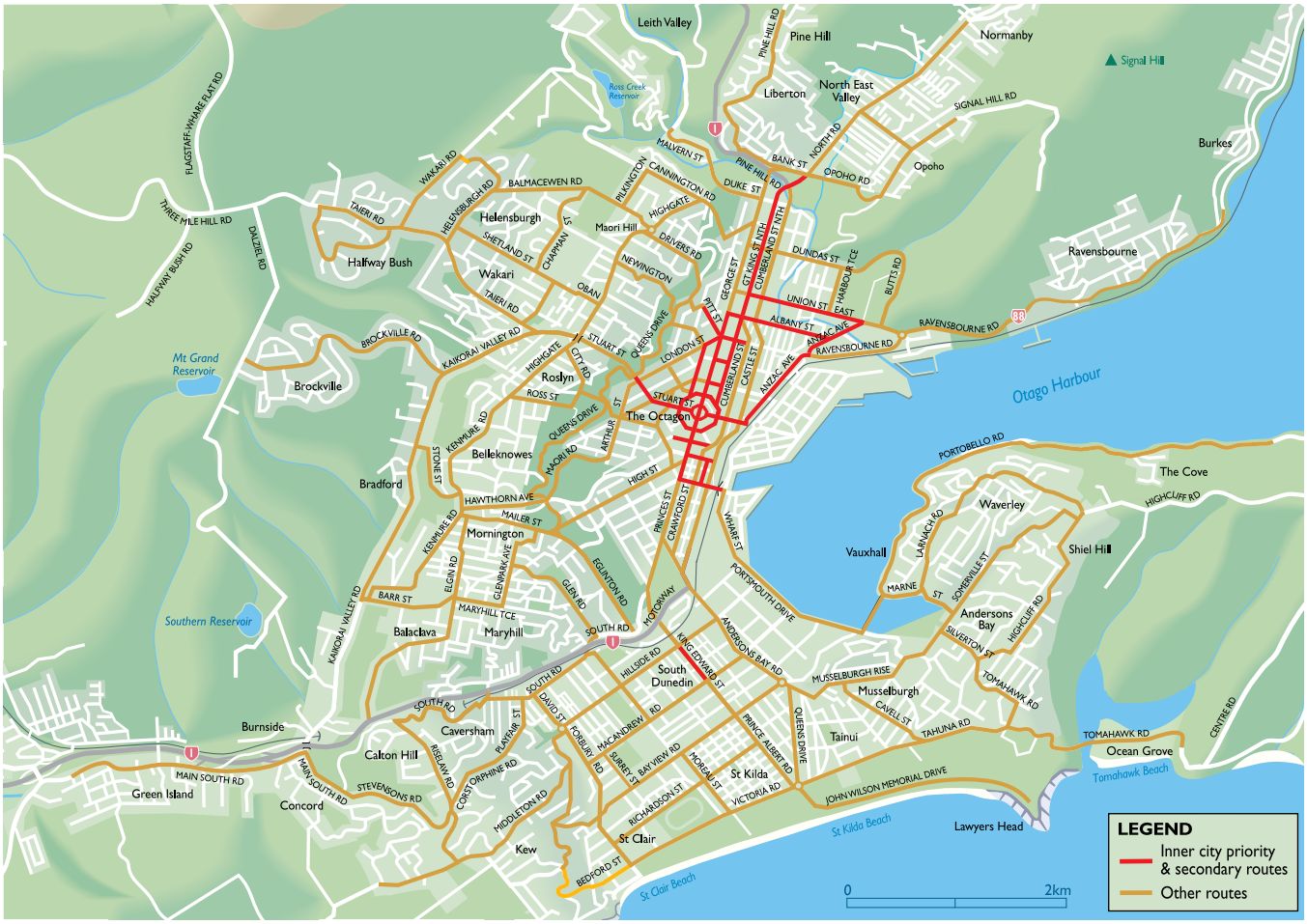
FIGURE 18. SCN, South Dunedin Cycle Network and Central and North Dunedin Cycle Network



The development of a user-friendly, safe and attractive cycle network will also have economic benefits for the city in terms of tourism. The New Zealand Cycle Trail[41] follows a route down the Brighton coast to link Dunedin to Lawrence. This overlaps with part of the SCN, as shown in FIGURE 15. This will provide an opportunity for tourists riding the Otago Central Rail Trail and other New Zealand

41 New Zealand Cycle Trail: www.nzcycletrail.com

FIGURE 19. Strategic Pedestrian Network



Cycle Trail rides in and around Otago to spend time exploring Dunedin by bike, including the Harbour Cycleway.

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.

Strategic Pedestrian Network

The key pedestrian routes into and around the central city are shown in FIGURE 19. These are the most important routes in Dunedin for people moving around on foot or as 'wheeled pedestrians' (such as people using wheelchairs and mobility scooters).

Along these key pedestrian routes, greater priority will be given to walking. The DCC will prioritise wider footpaths, and better facilities to enhance the pedestrian experience. This may include safety improvements, enhanced crossing points, pedestrian refuges, seating, lighting, greater pedestrian priority at intersections and signals, and general amenity improvements such as paving and planting.

Access for the mobility-impaired is also very important and will become increasingly so as Dunedin's population gets older. While drop kerb ramps will be installed on all footpaths around the city over time as part of routine kerb replacement, these facilities will be addressed on the Strategic Pedestrian routes as a matter of priority. Requests for pedestrian improvements on strategic pedestrian routes will be given higher priority than requests on routes that have not been identified as strategic pedestrian routes. The Strategic Pedestrian Network will be implemented in a way which considers the need for integration with the Strategic Cycle Network and bus network, supporting a safe and effective multi-modal transport system. In addition to the map illustrated

in FIGURE 19 (which focusses on the urban Dunedin area), the Strategic Pedestrian Network will also be expanded to cover all of Dunedin's centres as part of the implementation of this Strategy. Maps of this wider pedestrian network will be made available on the DCC website.

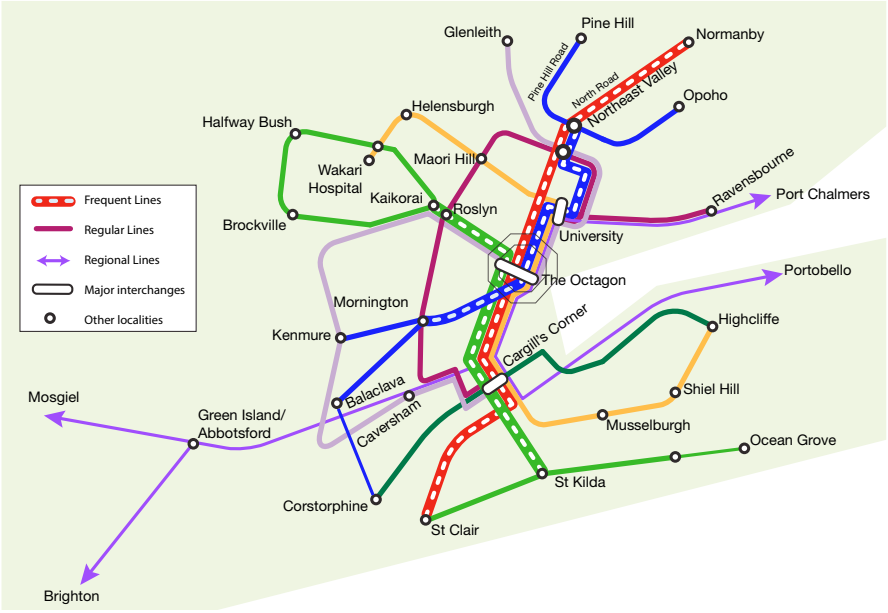
Public transport

The Dunedin community sees improvement of public transport services as being the top priority for transport in Dunedin[42]. To achieve the community outcome of 'A connected community', the DCC Long Term Plan sets the vision that public transport will "meet the community's needs". A public transport system that meets the needs of the community is also integral to achieving the objectives identified in the Spatial Plan and Social Wellbeing Strategy.

Public transport plays a key role in enabling Dunedin to be a resilient and thriving city in the face of volatile fuel prices. It is also important for connecting Dunedin's communities, especially given that approximately 5000 Dunedin households do not have access to a private car. An effective and well utilised bus service also contributes to a safer and more efficient transport system by reducing the number of cars on the road and the need for new infrastructure and parking.

However, the DCC is not responsible for public transport in Dunedin. Public transport is administered by the Otago Regional Council (ORC). The DCC is responsible for allocating space on the road network for buses to operate, and for some of the physical infrastructure supporting the bus service, such as signs and markings for bus stops and bus shelters. This split of functions between the two councils presents a challenge to delivering an integrated transport system for the city. Due to these challenges the question of which Council is best placed to deliver public transport services in Dunedin in the future is currently under investigation. Neither the DCC nor the ORC has, at the time of the adoption of the Integrated Transport Strategy, made any decisions as to the future governance of the public transport system. The DCC and the ORC aim to work collaboratively to identify the best way forward for public transport governance in Dunedin. In the absence of any changes in this area the DCC will continue to advocate for better public transport in Dunedin. The community has expressed its desire that both councils work together to improve Dunedin's public transport system[43].

FIGURE 20. Schematic example of a possible bus network



The following strategic approaches are the DCC's priorities for public transport in Dunedin, which the DCC will advocate for and work collaboratively with the ORC to achieve.

Design of the bus system

In order to assess the effectiveness of the current bus system, the DCC commissioned a study in 2012 which made the following recommendations[44]:

- Develop a new frequent network (15 minute frequency or better).
- Develop a new secondary network (30 minute frequency or better).
- Develop a new regional network (120 minute frequency or better).
- Use distinctive branding on buses and routes on the frequent network to make it easy to understand.

A schematic example of such a network is shown in FIGURE 20. The schematic highlights how the colours used on the route map could correspond to coloured branding used on the buses, making the routes and their destinations instantly recognisable to users. Other key recommendations from the report were:

- Improve passenger information systems (e.g. timetable booklets) and bus stops on frequent routes.
- Rationalise the zone system

42 Your City, Our Future consultation 2011
43 Your City, Our Future consultation 2011
44 MRCagney Pty Ltd (2013) Public Transport Business Case. Report prepared for Dunedin City Council, 26 April 2013.

(condensing zones 1–4 into a single zone, and renaming zones '5, 6 & 7' zones '2, 3 & 4').
- Rationalise the fare structure (a single fare for zone 1, going up in $1 increments per zone).
- Introduce a universal off-peak weekday discount.
- Introduce free transfers within zone.

The report identified that the improved public transport network proposed in the study (or similar) could replace the existing system at no extra cost. The report also pointed out that to achieve this cost-neutrality some coverage may be lost in favour of increased patronage. However, it was also highlighted that it may be more cost-effective to cater for the transport needs of those in areas where coverage is reduced, by providing types of services other than fixed bus routes.

Through this strategy, the DCC proposes to advocate for the ORC to adopt this approach.

Improving priority measures for public transport, such as bus lanes and signal priority, would help to ensure shorter and more reliable journey times. The DCC will work with the ORC to investigate the options available and, if appropriate, where and how they should be implemented.

Public transport connections to Dunedin International Airport

The lack of a bus service to Dunedin International Airport has been identified as a concern to the community. The DCC supports the provision of improved public transport connections to the airport in principle and will work with the ORC and the Dunedin International Airport Limited toward finding a sustainable solution that will best support connectivity between the City and the airport.

Reducing the fossil fuel dependence of the bus system

The Peak Oil Vulnerability Assessment for Dunedin[45] recommended that Dunedin develops an electric trolley bus network, based on the original cable car network that served the city, in order to remain sustainable and well-connected in the face of volatile fuel prices and potential disruptions to supply. The cost of developing the recommended 50km of trolley bus infrastructure has been estimated at approximately $90 million (as at 2011)[46].

In addition to an electric trolley network, other new technologies offer opportunities for increasing the sustainability of the bus network. These include electric buses or hybrid diesel-electric buses. Fully electric buses are available but very expensive due to the lithium battery technology required. Hybrid diesel-electric buses run on an electric motor that is powered by an on-board diesel generator. They are generally up to 30% more fuel efficient than traditional diesel buses, and cheaper than fully electric buses[47]. Hybrid diesel-electric buses are readily available on the market and may be a more economically viable opportunity medium-term stepping stone toward full electrification (whether by battery electric buses or trolley buses) of the bus network. The DCC will continue to advocate for adoption of these technologies in Dunedin.

Protecting future travel choices

The DCC also controls infrastructure, or access to infrastructure, which may not currently perform a critical transport function but may have done in the past and may again in the future. Examples include jetties in the Otago Harbour, the railway station or railway siding infrastructure at various places throughout the Dunedin district. This Strategy acknowledges the value of protecting and maintaining such infrastructure and connections in order to ensure they remain accessible to the community in the event that transport modes such as passenger rail and harbour ferry services become a part of Dunedin's multi-modal transport system again in the future.

Support for travel choices

In addition to the infrastructure-based provision for travel choices outlined above, it is important to provide a range of other support mechanisms to ensure those who wish to change their preferred travel mode, or who wish to use more than one travel mode, are able to do so safely. The DCC will provide this support, either directly or through supportive partnerships with other organisations, in a number of ways. Examples may include:
- Cycle-skills training
- Bike libraries
- Work-place and school travel planning
- Walk and Wheel days
- Travel Smart programmes
- Road user workshops
- Bike Wise
- Walk to Work
- Dunedin City Cycle Maps
- Provision of information and resources, such as travel planning tools and ride-sharing websites.

45 Krumdieck, S. (2010) Peak Oil Vulnerability Assessment for Dunedin. Prepared for Dunedin City Council. EAST Research: Christchurch.
46 Mein Consulting Ltd (2011) Dunedin Trolley Bus Benefit Cost Assessment. Prepared for Dunedin City Council.
47 MRCagney (2012) Powering Public Transport in New Zealand: Opportunities for alternative technologies. Report to EECA. www.eeca.govt.nz/resource/powering-public-transport-new-zealand

9.3 FOCUS ON

Centres

PROBLEM

Accessibility within and between Dunedin's centres and the central city needs to be improved for public transport and active travel modes in order to achieve the Spatial Plan and Integrated Transport Strategy vision for thriving and resilient centres, linked by a low carbon transport system.

STRATEGIC RESPONSE

Improve the connections within and between Dunedin's central city and centres so that they become highly accessible by active travel modes and public transport, and improve the road environment within centres to create safe, pleasant, people-friendly places.

BENEFITS

- Increased connectivity between Dunedin's central city and centres, and between centres, for cycling and public transport.
- Increased proportion of Dunedin's population live within a 10-minute walk of a centre or high frequency bus route.
- Improved walking and cycling connectivity to centres and the central city from surrounding residential areas, to support thriving community hubs.
- Reduced negative effects of traffic passing through centres.

GOAL

Injury crashes have reduced by 20% (compared to 2013 levels) in Dunedin's centres by 2024.

Strategic approach

The Spatial Plan defines centres as commercial areas that have high levels of social and economic exchange, based on their being the focus for employment, retail and community, arts and cultural activities in the city, as well as areas of significant DCC investment in amenity features. This includes all those centres listed in the Spatial Plan's centres hierarchy, defined as principal, suburban, neighbourhood and rural centres[48]. The Spatial Plan identifies that some of these centres are within Dunedin's urban area (such as Mornington or Caversham), while others are in outlying residential settlements called 'townships' (such as Waikouaiti or Middlemarch).

The Integrated Transport Strategy is primarily concerned with the role these centres and townships perform as key transportation hubs. For this reason the Strategy uses the term 'centre' more broadly than the Spatial Plan to include all those centres and townships identified in the Spatial Plan (and parts of the wider transport network surrounding them), as well as some other major areas of transport activity that also operate as transport hubs, such as Moana Pool, some schools and the Tertiary Campus.

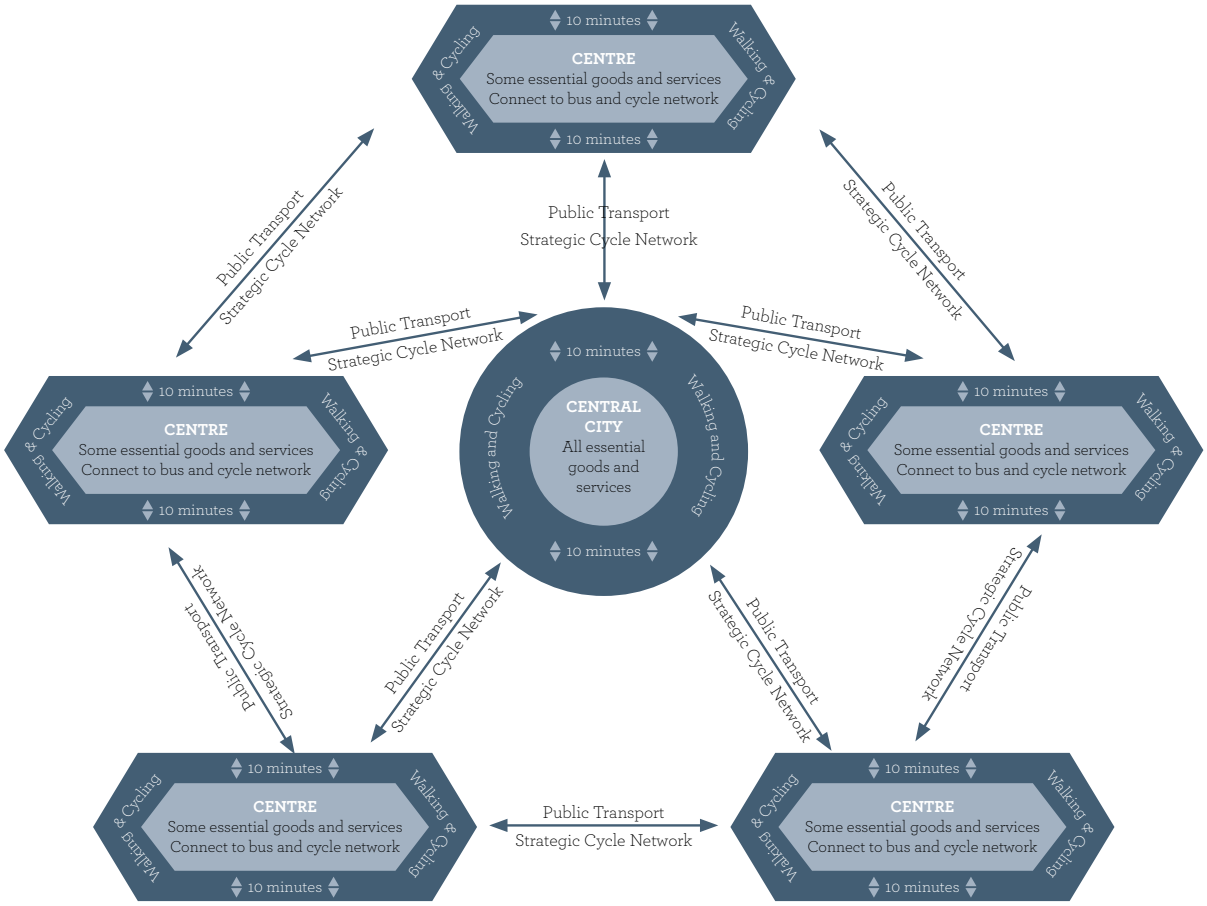
The Social Wellbeing Strategy recognises the importance of people being connected to the places they need to go by safe, affordable and user friendly transport options, whilst the Spatial Plan commits Dunedin to developing as a compact city, organised around an integrated network of hubs based around centres. In terms of transport links, this can be illustrated schematically as shown in FIGURE 21.

The DCC's vision broadly sees centres and the central city linked by a public transport network, and sees most residential development occurring within a 10-minute walk of an existing centre or high frequency bus route. This means that most people would live close enough to their local centre to be able to walk or cycle to it, and that from there, they could either join the Strategic Cycle Network and cycle to other centres or the city centre, or they could access the public transport network, which again would link them to key destinations.

This Strategy focusses on how transport, particularly active modes and public transport, can better support thriving centres. This approach will enable people

48 DCC Spatial Plan, pp.100-101.

FIGURE 21. Schematic illustration of compact city with integrated network of hubs based around centres, connected by walking, cycling and public transport. In addition to centres this may also inlude other key areas of activity, such as recreational or educational facilities. Illustration assumes underlying road connections maintained for vehicular use.



to choose modes of travel other than the private car, with benefits for health, amenity, community, the environment and increasing resilience to volatile fuel prices. Undertaking journeys by private car is still expected to be desirable for the foreseeable future, and the transport network's ability to support car travel will continue to be maintained. The strategic approach will be as follows.

Integrating land use and transport planning – supporting the Spatial Plan's vision

The Spatial Plan seeks to maintain a vibrant central city supported by a hierarchy of suburban and rural centres that are social and economic hubs for local communities with quality built form and a high quality public realm. Ensuring high pedestrian amenity and safety in centres requires management of public car parking and activities that generate high levels of vehicle movements.

The Spatial Plan promotes more mixed-use residential development in the central city and suburban centres and residential intensification particularly in areas with high levels of accessibility to larger centres and well-serviced public transport routes. The key method for achieving this is the Dunedin City District Plan, which establishes objectives, policies and rules guiding the type of land use activity that can occur in different parts of the city. The District Plan (under review as at 2013) will be reviewed to give effect to the Spatial Plan's aim of more medium-density housing and residential infill. This will help support local services and mean that more people live within an easy walking distance of a centre and other key destinations. Provision of local services (such as shops and health centres) close to where people live reduces the need to travel long distances, benefiting the local economy and increasing people's disposable income, as less is spent on travel. In 2011, 39% of the residential units in Dunedin's residential zones were within 400m of the central city or local activity zones (approximately

a five to 10-minute walk) and 68% were within 800m (approximately a 10 to 20 minute walk)[49].

Central City

Through this Strategy the DCC proposes to undertake a major upgrade of the transport system in the central city area,with a focus on safety and accessibility. A concept will be developed that draws on previous work, such as the DCC's Central City Plan, as well as analysis of crash data and accessibility problems. The aim would be to significantly improve the pedestrian priority within the central city, to support a thriving city centre where people want to spend time, socialise, shop and do business. Examples of possible treatments, requiring further investigation, could include Barnes Dance crossings at key intersections, more pedestrian refuges or full pedestrianisation of areas.

In order for this to work it will be necessary to reduce the amount of through traffic in some parts of the central city and support better access to the central city as a destination for all users. Reducing the amount of through traffic in the central city will only work if adequate alternative routes are provided. To achieve this it would be necessary to include enhancement of existing bypass corridors to the east and west of the central city, to provide for freight and arterial traffic. This approach will not only improve the vitality and safety of the central city, but also benefit motorists who will experience fewer delays. Any provision for pedestrian safety and accessibility would also take into account the needs of cyclists. Any proposals will be consulted on with the community and stakeholders.

Centres Programme

The Spatial Plan intends that centres become thriving hubs of activity, supporting the provision of goods and services. To support this goal, and at the same time improve safety in centres, a Centres Programme will be developed. The aim of the Centres Programme is to ensure Dunedin's centres are great places for people, in terms of traffic safety, accessibility and amenity, particularly by giving pedestrians increased priority within each centre.

To achieve this, each centre has been assessed for safety and accessibility, to help identify those centres with the most serious problems that need to be prioritised for early action. The centres have been split into two categories – major upgrade and minor upgrade. Funding for these centre upgrades will be obtained from existing operational budgets where possible. However, the magnitude of improvements in some larger centres exceeds the scope of existing budgets, and separate funding will need to be secured. As illustrated previously in FIGURE 14, the central city area has by far the most serious safety problems, and this is prioritised as the first area requiring a major upgrade.

Centres upgrades will also include improvements to key designated strategic walking routes within a 10-minute walking distance of each centre. Requests for improvements to footpaths will be prioritised according to whether they are on designated walking routes and their level of risk. Where possible, these improvements will be made as part of existing programmes. Providing for the needs of cyclists will be incorporated into any centre upgrade.

Major centre upgrades

Mosgiel

A major safety and accessibility upgrade is proposed for the Mosgiel town centre. As with the central city, the aim of the Mosgiel Town Centre upgrade will be to improve safety and accessibility, particularly for vulnerable users, to ensure the vitality and prosperity of the Mosgiel shopping area. Providing for vulnerable users is particularly important in Mosgiel as there is a high proportion of elderly residents and young people, who are especially dependent on good pedestrian and cycling facilities and high levels of mobility access.

The key areas to be addressed in Mosgiel will be identified through consultation with the community, but are likely to focus on Gordon Road, Factory Road and the Gordon Road – Factory Road intersection. There is an opportunity to significantly improve the heart of Mosgiel for residents and businesses, and create a thriving social and economic hub. Gordon Road is State Highway 87, and is administered by the NZTA. Any project to upgrade the Mosgiel town centre will therefore involve a collaborative approach.

As mentioned above, several of Dunedin's other centres have also been identified as in need of major safety and accessibility upgrades. These include (in no particular order):

- Gardens (North East Valley)
- Caversham
- Mornington
- Green Island
- North Dunedin
- South Dunedin (where some major work has already been undertaken).

Concepts will be developed for each of these centres in consultation with the community as they come up on the Centres Programme. Where other non-transport works are also planned for a centre (such as urban streetscape and amenity upgrades, or sub-surface utility maintenance), the DCC will co-ordinate with other agencies and the community to ensure opportunities for integrated delivery are maximised. Those remaining centres not requiring a major upgrade will be improved over time through minor targeted improvements carried out through existing budgets and work programmes.

49 As at 2011

The tertiary and medical precinct

As outlined above, the tertiary area is also treated as a centre in this Integrated Transport Strategy because it functions as key transport hub and has unique transportation issues. The wider tertiary area and the adjacent medical precinct (which includes the Medical School and Dunedin Public Hospital) have a high level of vulnerable road user activity and area-specific transport challenges. Some of the streets and intersections in the area are high-risk sites that need attention. The tertiary institutions have signalled a desire to see greater priority given to pedestrians and bicycle users in and around the campus area.

To assess and provide for this a safety and accessibility upgrade is also being proposed for the tertiary precinct, with a view to increasing pedestrian safety and connectivity, providing safe access for cyclists and addressing existing parking challenges. A range of approaches are proposed to address these challenges and the provision of viable travel choices can play an important role in alleviating parking pressure and addressing challenges of safety and accessibility, by enabling people to opt for active modes or public transport, whether as a preferred mode or as occasional options, and thereby reducing vehicle movements and demand for car parking space.

Any investigation and subsequent proposals will be conducted in consultation with tertiary students and staff, the tertiary institutions, other key stakeholders and the wider community. Parking issues in the tertiary area and medical precinct will also be addressed through the Second Generation District Plan which, at the time of writing, is currently under development.

Safe speed in centres – integrating design speed and speed limit

As discussed in the Focus on Safety (Section 8.1), the highest concentration of vulnerable user activity occurs in centres and traffic speed needs to be managed in a manner appropriate for the mix of uses and activities that take place in those centres. Accordingly, the DCC has recognised that 50km/h traffic speed is too fast for most centres. This has been recognised at a national level, through the Safer Journeys strategy and a review is currently underway to establish new national policy on appropriate speeds. The DCC will work toward a top traffic speed of 30km/h in centres while remaining flexible as new national guidance takes shape. The DCC will review the appropriate desired speed for centres in Dunedin as part of any review of this Integrated Transport Strategy.

To achieve lower speeds in centres, it will generally be necessary to implement a lower speed limit in conjunction with redesign of the road environment (based on the consideration of 'design speed' (discussed in Section 8.1)[50]. When lower speed limits are implemented, lower design speeds will typically need to be achieved through traffic calming measures, urban design and amenity features and improved provision for pedestrians, cyclists and mobility impaired users.

Reduction in speeds within centres will have the added benefit of making centres more accessible, pleasant places where people will want to spend time, which will have economic benefits for businesses. The DCC will achieve lower speeds in centres through the implementation of the Centres Programme, described above.

Car parking

Car parking has both positive and negative effects. Provision of parking in the central city and other centres is an important way of providing access and supporting the economic activities occurring in the centre. As the private car is by far the most common mode of travel for Dunedin residents at the moment, it is important to provide the appropriate level and type of parking to support car access to these areas. However, provision of parking in centres is primarily on-street, which often conflicts with other activities in the centre, such as pedestrian movement, public transport and general streetscape and amenity. The traffic movement generated by parking also has negative effects in terms of pollution and safety problems. This tension has been described as "a real dilemma between the individual's desire to own and park a car and the collective desire to enjoy a safe and attractive street"[51]. The availability and cost of parking is also a key consideration in whether people prefer to drive or use other travel modes[52].

All of Dunedin's on-street parking is controlled by the DCC, while off-street parking is provided by DCC and private operators (in surface level car parks and parking buildings). Aside from public casual parking, there are also District Plan requirements for businesses in certain zones to provide staff and customer parking, and in some residential zones, owners are required to supply a ratio of car parks per bedroom. The requirement for, and provision of, parking needs to be carefully managed in an integrated way to ensure appropriate access to goods and services is provided, urban amenity is maintained, unproductive use of real estate is minimised, road safety is improved and non-car travel modes can be adequately and safely provided for. Achieving an appropriate balance between these considerations is complex and in Dunedin, disproportionate priority has traditionally been given to low-cost on-street car parking. Under this Strategy, the DCC's approach will be to increasingly redress this imbalance.

The DCC will develop a Parking Management Policy that will sit under this Strategy and give effect to the vision

50 Roslyn is currently Dunedin's only local centre with a design speed close to 30km/h.
51 English Partnerships (2006) Car Parking: What works where? English Partnerships National Regeneration Agency. p.4.
52 Shoup, D. (2011) The High Cost of Free Parking. American Planning Association. Chicago.

and objectives of this Strategy. The development of this policy will include consultation with the community.

Parking in the central city and centres

The DCC carries out a central city parking survey every five years, to monitor and review the provision of parking in the central city. This survey, last carried out by an independent consultant in 2012, found:

- Overall parking in Central Dunedin is well managed.
- Parking restrictions radiate out from the Core Central City in a logical manner from Paid P30 along George Street to commuter parking provided in the Outer Central City.
- Paid P60 parking in the Central City was inconsistent with the demand in the areas it is provided and therefore it may be appropriate to change Paid P60 parking to Paid P120 parking.
- There is also scope to alter how Paid P240 parking is distributed in the Central City.
- Even at peak times 20% of the parking spaces in the central city area are vacant.

The current paid parking area is shown in FIGURE 22.

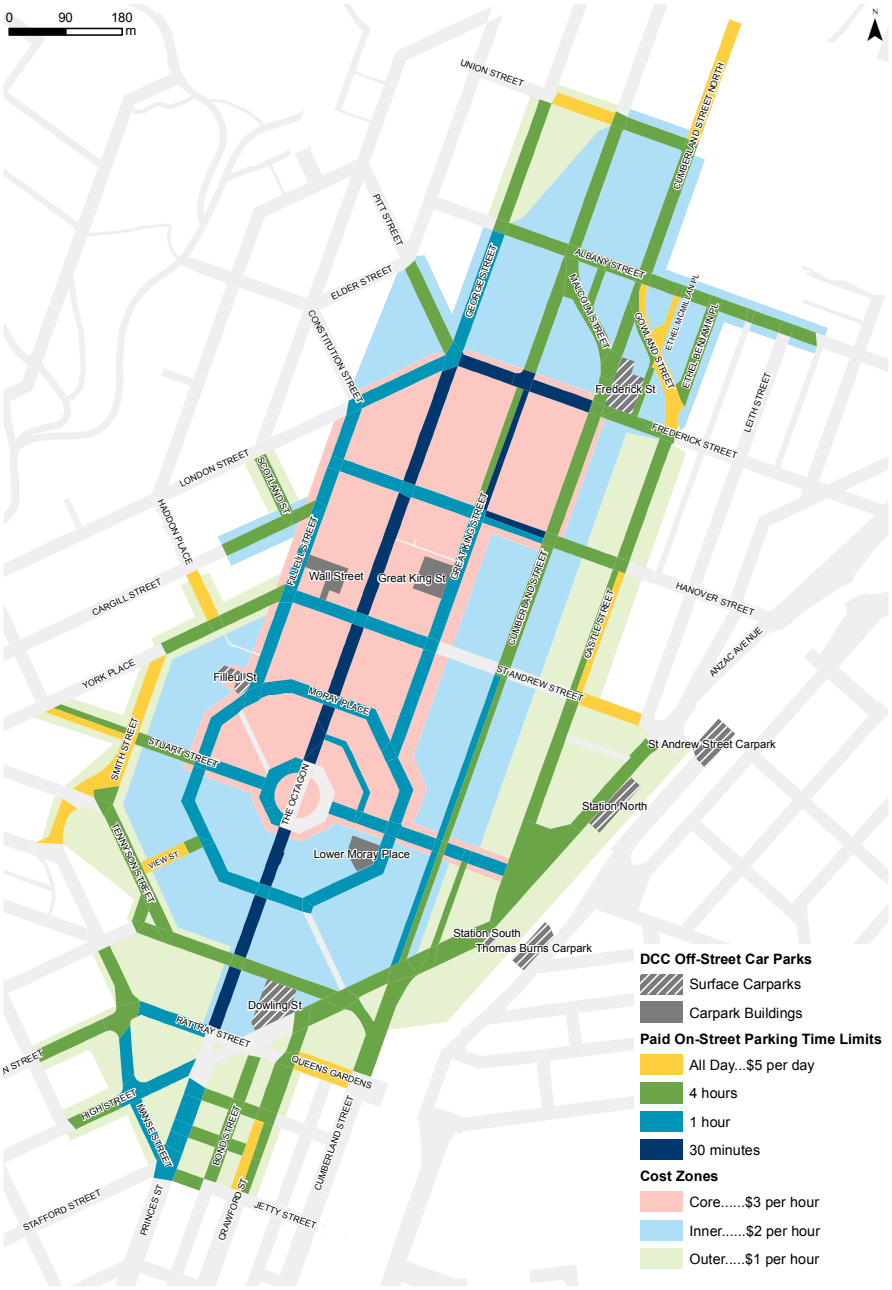
In some centres parking is in high demand. In these centres parking will be managed by taking an area-based approach to provision of parking. To support the Spatial Plan vision, and this Strategy's aim of increased safety, travel choice and more vibrant centres, DCC will move towards providing parking more on the peripheries of the centre, with less on-street parking overall and a shift toward a higher proportion of parking provided in DCC off-street car parks.

Until the Parking Management Policy is adopted by the Council, the DCC's 2009 Parking Strategy will remain operative.

Bylaws and policies

The DCC has a number of bylaws and policies which relate to, or have implications for, transport and transport infrastructure. Examples include the Commercial Use of Footpaths Policy, Control of Skateboarding Bylaw, Speed Limits Bylaw, Roading Bylaw, Older Persons Policy and the Traffic and Parking Bylaw (among others). When these policies and bylaws are reviewed, or new ones proposed, they will be developed, revised and amended so as to give effect to the Integrated Transport Strategy.

FIGURE 22. Central City Paid Parking Area



9.4 FOCUS ON
Freight

PROBLEM

Freight movement is vital for Dunedin's economic and social wellbeing. Dunedin is also a key freight hub for the wider region. Freight needs to be able to move efficiently and effectively to and from Port Otago, and through the city, without adversely affecting the safety and amenity of the city[53].

STRATEGIC RESPONSE

Encourage increased use of the rail network for freight movement and provide safe and efficient access for freight vehicles on designated routes.

BENEFITS

- Increased proportion of freight being moved on the rail network.
- Efficiency of freight movement on designated freight routes is maintained, and appropriate access is provided to support local economic activity.

GOAL

A significantly increased proportion of the total freight load that passes through Dunedin will be being transported by rail by 2024.

Strategic approach

The DCC has expressed its commitment to ensuring Dunedin is an economically productive and sustainable city in the Economic Development Strategy (outlined in Section 1.4.2) and the Community Outcome 'A thriving and diverse economy', set out in the Long Term Plan. The EDS emphasises the need for a transport system that provides access to export opportunities. Freight movement is central to exporting; it is also the way we bring the various goods we rely on into the city. The safe and efficient movement of freight is a key part of this.

The Dunedin community has expressed a wish to see better connections in and out of Dunedin, including improved rail services in Dunedin and more use of rail for freight movement[54]. The RLTS also asserts the important role rail plays in regional freight movement up and down the East Coast and to Port Otago[55].

While this Strategy focusses on increasing the role of rail, it is important to acknowledge that trucks will continue to be an integral and important component of Dunedin's transport system for the foreseeable future. Even as more emphasis is placed on increasing the use of rail for freight, there will continue to be a need for trucks to transport freight around the region. Trucks will be required to move freight from its origin (such as transporting logs from forests, or agricultural produce from farms) to where it can be transferred to rail. Trucks (of varying sizes) are also critical for the distribution of goods within urban areas and to communities that cannot be served by rail. The current central Government direction is also promoting an increase in the number of High Productivity Motor vehicles (HPMVs), which are essentially large trucks carrying heavier freight loads. The stated aim of the government's push for HPMVs is to see "more freight carried on fewer trucks"[56].

Providing appropriate support for freight movement by both road and rail is important. The strategic approach for achieving this will be as follows.

Freight and road safety

Under the 'principle of homogenous use' (explained under 'Focus on Safety', Section 9.1), large heavy vehicles, such as trucks used for moving freight, cannot mix safely with vulnerable road users. The DCC acknowledges the need for efficient freight movement, but if Dunedin is to become one of the world's great small cities, this cannot be achieved at the expense of safety. Ensuring efficient and safe movement of

53 In this Strategy, the term freight is used generically to include all freight, forestry, agricultural produce and all other bulk goods, see glossary.
54 Your City, Our Future consultation 2011
55 RLTS, Output 3.3, p.32.
56 NZTA (2013) Vehicle Dimensions and Mass: Moving more freight on fewer trucks – the NZTA's new priority. Newsletter, June 2013.

freight will require prioritising certain routes for freight where appropriate, separating freight traffic from vulnerable users, and controlling vehicle speeds where separation cannot be achieved and mixing is inevitable. It can also mean removing freight from the road network and onto other modes such as rail and coastal shipping.

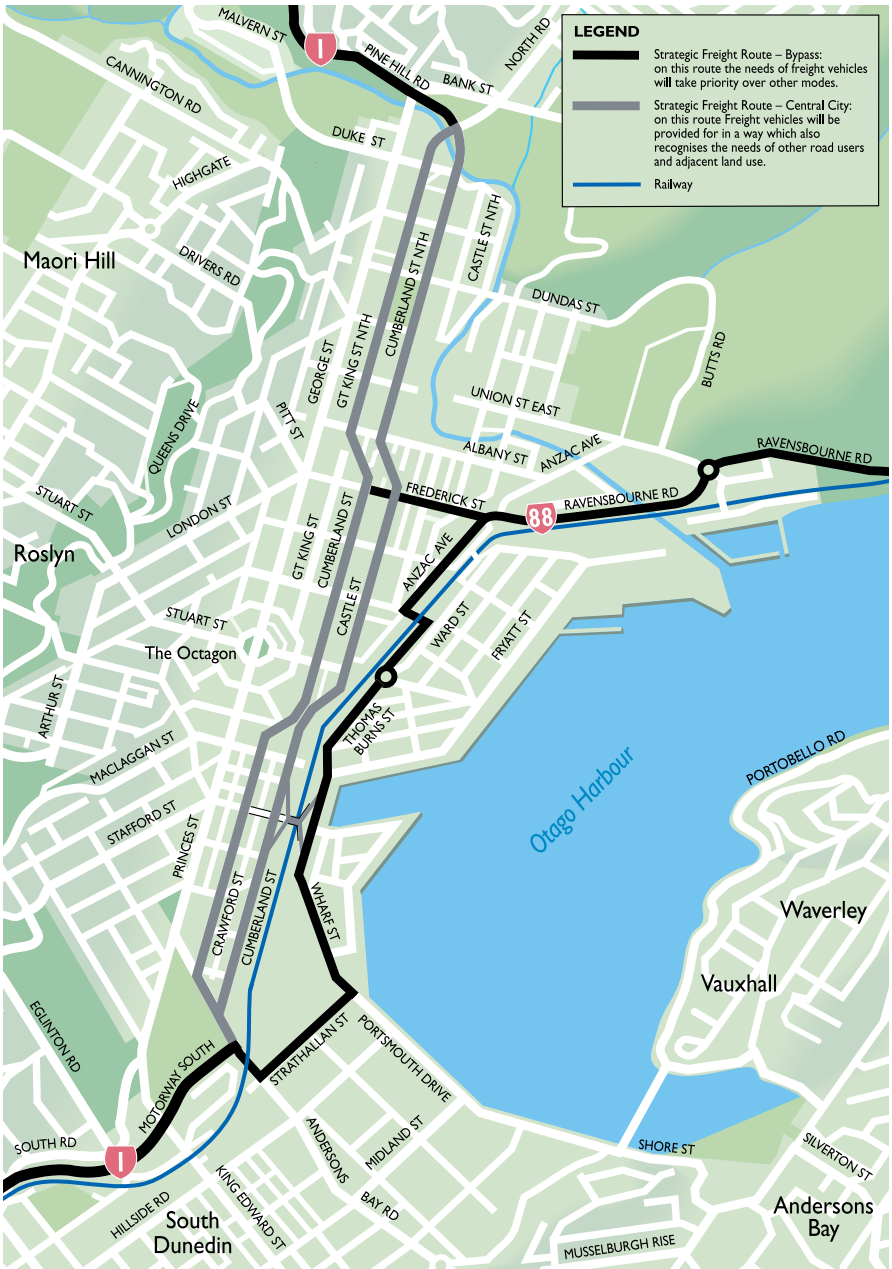
Increased use of rail for freight

The Dunedin community has a strong desire to see a greater proportion of the city's freight being transported by rail. This was a strong theme that came through the Your City, Our Future consultation in 2011[57]. The DCC will work collaboratively with KiwiRail, Taieri Gorge Railway, the freight sector, primary production companies and other exporters, as well as with the ORC and NZTA, to encourage greater use of rail. This will support the local and regional export economy while also improving safety by reducing the proportion of heavy freight vehicles travelling through the central city and interacting with high proportion of vulnerable road users. Supporting greater use of rail is also consistent with the RLTS[58].

Strategic freight routes and by-passes

Where freight needs to travel by road, the DCC will promote and provide for the separation of heavy freight vehicles and vulnerable users through designated heavy freight corridors and bypasses. The strategic freight routes are shown in FIGURE 23 at right. On the Strategic Freight Bypass, the DCC will prioritise safe and efficient freight movement over other transport modes. On the Strategic Freight Route – Central City (the 1-way

FIGURE 23. Freight routes



57 Your City, Our Future 2011
58 RLTS, Output 3.3, p. 32

FIGURE 24A. Indicative High Productivity Motor Vehicle and over-dimension routes – Southern and Taieri

pair) it may not be safe or desirable to give freight vehicles full priority over other modes, however, due to a lack of other options, it is still important to provide for safe and efficient freight movement on this corridor. Therefore, on the Central City Strategic Freight Route, safe and efficient freight movement will be provided for in a manner that recognises the importance of other modes and land-uses along the corridor. Possible means of achieving this could include giving freight higher priority at times of day when there is less likely to be conflict with other priority users of those routes, speed management, parking management and limiting access along the corridor.

High Productivity Motor Vehicles and over-dimension vehicles

High Productivity Motor Vehicles (HPMV) are trucks that exceed the weight (44 tonnes) or length of a vehicle that is allowed to use any road as of right. HPMVs can only operate under permit from the Road Controlling Authority (RCA) (i.e. NZTA and/or the relevant council), and only on roads and bridges that are specified on the permit as being able to accommodate the weight and length of the HPMV[59]. HPMVs were made possible by changes to transport regulations in 2010[60].

Recent rises in fuel costs, increasing pressure for greater efficiencies across the transport sector and a central Government focus on economic growth and productivity have all been key drivers of the move to provide for these larger vehicles and the NZTA is supporting this direction through its 'more freight on fewer trucks' approach[61]. Dunedin can

59 HPMVs are no higher or wider than standard trucks. See: NZTA Vehicle Dimensions and Mass Newsletter, Issue 12, June 2013. www.nzta.govt.nz/resources/vdam-rule-implementation
60 Land Transport Rule: Dimensions and Mass
61 NZTA Vehicle Dimensions and Mass Newsletter, Issue 12, June 2013. www.nzta.govt.nz/resources/vdam-rule-implementation

FIGURE 24B. Indicative High Productivity Motor Vehicle and over-dimension routes – Central and Port

expect to see an increase in the number of HPMVs using the road network in the coming years.

Because heavier vehicles have a greater effect on roading infrastructure, and longer vehicles have different cornering space requirements, it is not economically feasible to provide for all types of HPMV everywhere on the network. Under the 'principle of homogenous use' discussed in Section 9.1, there are also safety implications with larger and heavier vehicles in areas with high vulnerable user activity. Therefore, it is necessary to take a strategic approach to providing for HPMV in order to maximise the benefits they bring and to minimise the costs or safety effects.

There are two broad categories of HPMV: 50MAX (standard dimension trucks with an additional axle allowing them to be loaded up to 50 tonnes), and all other HPMVs. These will each be provided for through the following approaches.

50MAX: NZTA will be responsible for granting permits for 50MAX vehicles across the entire road network (local roads and state highways). Under a 50MAX permit, vehicles will have access to all areas on the network, unless expressly stated on the permit (or sign posted on a route by the road controlling authority). NZTA will work in partnership with the DCC in allocating 50MAX permits and the DCC may request that NZTA exclude certain structures or sites from 50MAX permits where infrastructure is deemed inadequate to bear the total weight of a 50MAX vehicle.

Other HPMV: The DCC will grant permits for all non-50MAX HPMVs on a case-by-case basis. The DCC has assessed and identified certain routes as indicative HPMV routes and maintains these routes to a higher standard to accommodate such vehicles, as shown in FIGURE 24a and FIGURE 24b.

The DCC has also designated a number of routes for over-dimension traffic. Over-dimension vehicles are those which exceed the standard regulations for width, length and/or height and therefore cannot access all parts of the network. The current over-dimension routes are

Table 3: Level of Service for vehicles on the road network.

Level	Flow	Intersection Delay
A	Free Flow	0 – 12 seconds
B	Stable Flow	0 – 12 seconds
C	Stable Flow	13 – 19 seconds
D	High Density but Stable Flow	19 – 25 seconds
E	Unstable Flow Nearing Capacity	25 – 50 seconds
F	Forced Flow with Queues	50 seconds+

also shown in FIGUREs 24a and 24b. The need to maintain sufficient space on over-dimension routes imposes limits on the type of development, streetscape works, and traffic calming measures that can be done on that route. For example, plantings over a certain height will not be possible as they would prevent the through movement of wide vehicles, and poles may need to have hinged bases. This has an effect on amenity and safety where over-dimension routes pass through busy areas or centres.

It is also important that there are alternative routes available for over-dimension vehicles in the event that a key route inaccessible. It is therefore vital that the appropriate routes are designated for over-dimension vehicles and protected from inappropriate development as any one obstruction may affect the entire route. The DCC will review the over-dimension routes, in consultation with the community and heavy haulage industry, to identify whether improvements can be made to meet the needs of the heavy haulage industry while allowing for safety and amenity improvements to centres.

Identifying indicative preferred HPMV routes and rationalising over-dimension routes will allow the DCC to prioritise investment toward upkeep of key infrastructure on these strategic routes and to protect them from inappropriate development.

Freight and congestion

As shown in FIGURE 25, there are very few parts of Dunedin's transport network that suffer from serious congestion. Modelling projections to 2041 also show that Dunedin is not predicted to suffer from serious congestion within the life of this Strategy. Congestion can have a safety benefit in that it generally leads to speed reductions, and can also encourage people to move away from single-occupant car use toward other modes of transport.

However, where congestion causes inefficient freight movement it hinders economic productivity and affects access to export opportunities. Building new roads or adding lanes to increase road capacity is costly and often results in increased traffic volumes, in turn requiring more investment to increase road capacity and creating a costly cycle of on-going expenditure. This cycle also reduces amenity and can have a negative effect on surrounding land use as larger roads with more traffic begin to dominate some areas.

The DCC will accept congestion up to Level of Service E at peak and off-peak times (see Table 3 for definitions). but will prioritise measures to improve efficiency for freight vehicles on designated freight routes. When and where congestion does need to be addressed on freight routes, the DCC will do so according to the Transport Investment Hierarchy (outlined in Principle 1, Section 8).

Inland Port

One way of integrating road freight and the rail network is to provide for the transfer of goods from between road and rail through an 'inland port'. Some development of an inland port has taken place at the Taieri Industrial Estate (North Taieri), where Fonterra has developed rail sidings to enable transfer of dairy products between truck and train. There may be potential to develop this as a more fully functional inland port, supporting a range of freight to and from the wider Otago and Southland regions. Freight coming by truck from the hinterland could be transferred to rail for the final stage of its journey to the port, or to continue its journey north or south, while freight entering Otago through Port Otago or from the main trunk railway could be taken by rail to this inland port to be transferred to truck for local and regional distribution.

There may also be merit in investigating future development of inland port facilities to the north of Dunedin. In the event that a greater proportion of the freight load from the mid-South Island (such as from the Canterbury area and further afield) begins to pass through Port Otago the case for an inland port north of Dunedin would increase. The DCC supports the concept of an inland port as an effective means of providing for freight while reducing the negative effects of heavy vehicles on road safety and urban amenity. The DCC will work collaboratively with KiwiRail, ORC, NZTA, primary production industries and other importers and exporters, toward investigating the feasibility and merit of further developing an inland port at North Taieri and the possible benefits of developing a facility north of Dunedin at some point in the future. In keeping with the RLTS, the DCC will also support this through appropriate provisions in the District Plan.

FIGURE 25. Projected levels of service (areas of congestion) on Dunedin's network in 2041.

Urban freight delivery

While Dunedin does not currently experience major problems associated with urban freight delivery, it is possible that this may become a challenge over the lifetime of this Strategy. As traffic volumes increase, urban freight delivery becomes both a contributor to and victim of the growing congestion in urban areas that exposes the population to noise, pollution and nuisance. Many solutions to these issues have been developed in larger cities around the world[62].

The DCC will monitor the urban freight delivery situation in the central city and other centres, and work with the community and stakeholders to develop appropriate solutions as issues arise. Future possibilities include developing urban distribution centres and implementing time restrictions on goods deliveries in critical areas. A distribution centre operates similarly to an inland port, but is a depot where goods originating from or destined for urban areas (such as consumer goods for shops), can be transferred from larger long-haul trucks or rail, to smaller vehicles more suited to interacting with the range of users in urban areas.

62 European Commission (2008) Freight Intelligent Delivery of Goods in European Urban Spaces.

9.5 FOCUS ON

Resilience

PROBLEM

Dunedin's transport system faces threats from the effects of climate change. In some cases, the existing network also encourages and locks people into unsustainable travel patterns.

STRATEGIC RESPONSE

Promote the integration of land use and transport planning to reduce the demand for vehicle travel, and plan, prioritise and support local community responses, to ensure Dunedin's critical transport infrastructure is resilient in the face of future threats and constraints.

BENEFITS

- Reduced reliance on fossil fuel-based products for transport and transport infrastructure.
- Increased protection of the transport network from sea level rise and other climate change effects, where appropriate.
- Reduced need for people to travel, through the integration of land use and transport planning.

GOAL

Average weekly household expenditure on transport by 2024 has been maintained at or below 2013 levels, as a percentage of total average weekly household expenditure.

Strategic approach

Dunedin has 1800km of roads plus other transport related assets such as 1000km of kerb and channel, 1000km of footpaths, retaining walls, bridges and culverts, signs and markers, seawalls, drains and traffic signals. In total, these assets are worth $1.3 billion[63]. They require on-going maintenance to ensure their value is maintained and they continue to provide for the needs of the community and the wider region. It is essential that these assets are utilised as efficiently as possible to maximise the benefits from the investment and their on-going maintenance. The strategic approach will be as follows.

Supporting the Spatial Plan – increased residential density and the transport system

It is more efficient and cost effective to locate new residential development where there is sufficient existing road capacity, in preference to 'greenfield' locations which require construction and on-going maintenance of new infrastructure. This aligns with the strategic direction of the Spatial Plan to provide for more medium-density residential development, around centres and public transport routes where optimal use of the existing transport system and other infrastructure can be made.

As this development takes place over time, it will support greater network resilience, less need for new infrastructure and decreased dependence on fossil fuels. This approach is also consistent with central Government direction of maximising efficiency and value for money, by 'sweating the existing asset' in preference to constructing new infrastructure. How this will be achieved and supported is discussed in more detail earlier in Section 9.3, the 'Focus on Centres'.

This focus on increasing residential density also highlights the importance of the centres upgrades outlined in Section 9.3. With increasing numbers of people living in and close to the central city it will become increasingly important to provide high quality public spaces, designed for people to socialise and interact in these areas. Some examples of such spaces could include pedestrian streets and inner-city gardens, both of which would be consistent with the strategic direction set out in the Focus on Centres of making better provision for pedestrians.

63 DCC official roading asset evaluation 2012.

Supporting the Spatial Plan – resilience in rural areas

The retention of important services in rural areas is a key issue of resilience for rural communities. As identified in Section 2.4, those living in rural communities are highly dependent on motor-vehicles due to the long travel distances in such areas. It is unlikely this vehicle dependence can be significantly mitigated through active modes or public transport provision. This highlights the need for the retention of key goods and services provision (such as healthcare, schools and grocery stores) in rural communities to minimise the need for rural residents to travel even longer distances to access goods and services in major urban centres.

It is intended that the Energy Plan (currently under development), will deliver on aspects of the Integrated Transport Strategy in relation to rural resilience. The Energy Plan will explore the possibility of developing local alternative transport fuel sources, and other ways of providing travel choices and increased transport resilience, for rural communities to provide for their transport needs in a future of fuel price volatility.

The DCC will explore possible funding mechanisms to support local place-based approaches and community initiatives for ensuring transport resilience.

The Dunedin Digital Strategy

Improved broadband networks that enable people to work from home or attend meetings via teleconferencing also have the potential to help reduce people's need to travel. The Dunedin Digital Strategy aims for high-speed broadband and WiFi to be extended to most of Dunedin's residents, in both urban and rural areas, by 2016[64]. This improved access to the internet can benefit everyone, but may be of particular benefit to those without access to a motor vehicle. This is approximately 10% of Dunedin households on average, but this figure is higher in some areas (see FIGURE 11 in Section 2.8). This is also likely to benefit rural communities for whom travel distances tend to be long and transport costs high.

New Zealand's emission reduction targets

The New Zealand government has set a medium-term target of reducing greenhouse gas emissions to 5% below 1990 levels by 2020, in addition to a long term goal of 50% below 1990 levels by 2050. It is likely that achieving these targets will not only require action at the national level but also local efforts to reduce greenhouse gas emissions, approximately 40% of which come from transport, as discussed in Section 2.9. The development of an Environment Strategy for Dunedin (intended to commence late 2013) will explore how Dunedin might contribute to meeting this target and establish the monitoring necessary to measure progress. The Integrated Transport Strategy's goal of 40% of census respondents using active modes or public transport as their primary mode of travel to work by 2024 (see 'Focus on Travel Choices', Section 9.2) will also make a key contribution to achieving this greenhouse gas reduction target.

Explore developing an Economic Network Model

Government funding for maintenance of local roads is decreasing over time, and councils are being asked to look at making efficiencies in this area (see 2.9). One possibility is to explore a model of prioritisation based on economic value or social value (or a combination of factors), where roads that are of higher value are maintained to a higher level of service, and those of lower value may receive a lower level of service or may even be downgraded or, in extreme cases, abandoned over time. This approach (called an Economic Network Model) is being explored by several other councils around the country and the DCC will also explore the value of this option over the short to medium term to see whether this approach would yield benefits for Dunedin.

Explore alternatives to bitumen and the potential to recycle roading waste

Maintenance costs are increasing over time as a result of volatile fuel and bitumen prices. This presents a challenge when coupled with constrained funding for local road maintenance. Alternatives to bitumen, such as synthetic or biomass-based agents exist but are not readily available on the New Zealand market and are generally cost-prohibitive in comparison to bitumen. There is also a variety of environmental problems associated with production of biomass-based agents, and bitumen is a by-product of the oil refining process.

Recycling of waste product from road infrastructure maintenance may also provide an opportunity for increased resilience in the future. Old concrete from kerb and channel renewal and asphalt millings left over after re-surfacing of sealed roads are examples of products that may be recycled back into the

64 Dunedin Digital Strategy www.digitaloffice.co.nz/documents/Dunedin_Digital_Strategy_Section_One.pdf

transport network. However, the roading industry in New Zealand is not yet equipped to recycle these materials, or to do so in a way that achieves a standard equal to new product.

The DCC will stay informed of developments in these areas and will encourage contractors to adopt sustainable practices over time, as environmentally friendly alternatives to bitumen and recycling capability become available and viable. One method of supporting uptake in this area may be through the DCC's Waste Levy Fund. In the Waste Minimisation Plan, the DCC has committed to make funds available for the purpose of promoting or achieving waste minimisation in accordance with the Plan[65]. Roading contractors seeking to invest in waste minimisation methods may be eligible to apply for grants from the Waste Levy Fund.

Develop a Preventative Maintenance Strategy

It is anticipated that sea level rise and other hazards could affect some of the city's transportation infrastructure within the life of this Strategy. The DCC will explore developing a preventative maintenance strategy to identify and develop approaches to ensure Dunedin's transport infrastructure is appropriately resilient in the event of these effects.

65 A waste levy is collected by central Government at the landfill gate, and a portion of that is returned to the DCC for use in promoting or achieving waste minimisation. The DCC has made some of this money available in the form of a grant scheme. For more information, see the DCC Waste Minimisation Plan.

10. Implementation

This chapter summarises the direction for possible future transport investment to deliver the outcomes and support the transport vision for Dunedin. This includes an indicative 10-year programme which sets out provisional timings and cost estimates of a number of key projects that will be taken through a Programme Business Case in order to identify those which will deliver the greatest benefits toward achieving the strategic objectives, outcomes and transport vision.

The DCC is also already undertaking a number of actions that give effect to this Integrated Transport Strategy as part of normal operations. There are also actions being taken forward under other plans and strategies (such as the Social Wellbeing Strategy and the Energy Plan) which play a role in delivering the Integrated Transport Strategy Vision. Many of these actions are being carried out from within existing operational budgets. A list of the most significant of these areas of work is included in APPENDIX 1.

10.1 The NZTA's Business Case approach

The NZTA is transitioning to a Business Case approach for transport planning and activity development. The Business Case approach is being promoted by the New Zealand Treasury to achieve good investment decisions and provide confidence to decision makers that investing in a proposed programme or project is justified because:

- There is a compelling case for change (Strategic case)
- The way forward optimises value for money (Economic case)
- The potential deal with the market is commercially viable (Commercial case)
- The proposal is affordable (Financial case)
- The proposal can be delivered successfully (Management case)[66].

The Business Case approach ensures early collaboration between stakeholders and progressive development of a robust, evidence based investment case. It progressively builds an investment case by:

- Identifying the key problems or opportunities
- Identifying the consequences of not addressing or realising these
- Identifying the benefits to be gained by investing in their solution or realisation.

To deliver on the strategic direction detailed in this Strategy the possible projects listed in this section will be further investigated by the DCC, in collaboration with partners and key stakeholders, through a Programme Business Case. Projects that are found to have merit, and warrant being taken forward for further investigation or implementation will be put forward for consideration and wider community consultation through the Long Term Plan process. It is envisaged this process will be iterative and the Long Term Plan may also feed back into further Business Case investigation.

10.2 Developing Network Operating Plans

Prior to developing project options and concepts, initial Network Operating Plans (NOPs) are being developed to better enable the prioritisation of transport modes across Dunedin's state highway and local road network. The process of developing the NOPs will include key stakeholders (DCC, NZTA, and ORC, followed by consultation with other key stakeholders and the community) discussing and agreeing the key network routes for each mode of transport. The development of the NOPs will enable an early assessment of potential conflicts where multiple demands exist on sections of the network with limited capacity.

The NOPs will be developed to reflect strategic priorities for Dunedin, including:

66 New Zealand Treasury National Infrastructure Unit (2013) Online: www.infrastructure.govt.nz/publications/betterbusinesscases

- Moving people and goods safely
- Moving people and connecting the population to centres including the city centre
- Ensuring all modes are adequately considered and provided for
- Moving freight to and from the port and airport, and through Dunedin, and supporting Dunedin's role as a regional hub
- Providing accessibility to employment, businesses, education, healthcare and others key services
- Catering for visitor and recreational demands.

Based on the analysis of existing and future demands on the transport network, the NOP is being developed and agreed between the DCC and its key partners prioritising specific routes for the preferred:

- Pedestrian network
- Cycle network
- Public transport network
- Freight network
- General traffic network.

NOPs are being developed initially for the central city area and Mosgiel. These are two key parts of Dunedin's network where there is greatest need for prioritisation in order to address the demands of multiple users within limited road space.

What does a Network Operating Plan mean in practice?

The identification of a priority route for a particular transport mode does not mean other modes will not be able to use that route. It does mean however that the priority mode will take precedence over other modes either on particular routes or at particular times of day, and the design and operation of those routes will reflect this. For example, where a route is identified as a priority public transport route, general traffic will usually still be able to use that route, but priority will be given to public transport, meaning the level of service for general traffic may be reduced (either at all times or at certain times of day when public transport needs a higher level of service). Conversely, public transport will also operate on routes that are not identified on the NOPs as priority public transport routes. Where this occurs on routes that have been identified as a priority for other modes the level of service for public transport may be lower.

Some routes are likely to be identified as priority routes for multiple modes. In some cases these routes may have insufficient road space to safely accommodate, and provide a high level of service for, all the priority modes. The NOPs will enable these conflicts to be identified and provides a basis for detailed analysis to take place (as well as discussions between the DCC, NZTA, ORC, stakeholders and the community) to establish the level of priority that should be allocated to each competing mode. Some secondary routes may also be identified where required, indicating where a route is of high importance for a mode but not necessarily a top priority.

Initial Draft NOPs have been used in the development of this Strategy to help evaluate various issues and options on the network, and to inform where certain interventions, and the type of interventions, are required. These Draft NOPs will be further refined and made available to the public for input and consultation.

Further work to agree and finalise the NOPs with stakeholders and the community is required before the plan is formally adopted. When finalised, the NOPs will be considered companion documents to the Integrated Transport Strategy to guide implementation. The NOPs will not be part of the Strategy in order that they can remain flexible and responsive as operational documents.

10.3 The District Plan Transport Hierarchy

The District Plan is the primary tool for controlling where different land-use activities occur and ensuring integration between land-use and the transport system. The existing Dunedin City District Plan contains a road hierarchy with rules to manage the 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. At the time of writing, the existing road hierarchy is under review as part of the development of the Second Generation District Plan, which is likely to become operative within two to three years of the adoption of the Integrated Transport Strategy. To give effect to the Spatial Plan and Integrated Transport Strategy it is intended to replace the existing Road Hierarchy with a more comprehensive 'Transport Hierarchy' that will encompass the full range of transport modes and be used to better integrate land-use and transport. Examples of this integration include managing where high traffic generating activities might occur or where they will have effects upon the efficiency of the network. Freight corridors are likely to either be included in the Transport Hierarchy or identified separately. The development of the Network Operating Plan, and the freight and HPMV routes identified in the Integrated Transport Strategy, will feed into the development of the new Transport Hierarchy. It is also envisaged the new hierarchy will inform DCC's design and operation of the transport network.

10.4 Integrated Transport Strategy Monitoring Plan

This Integrated Transport Strategy sets five high level goals for the next decade, one under each area of focus. Where possible these goals are designed to be SMART goals, that is: Specific, Measurable, Achievable, Relevant and Time-bound. The intention is that the attainment of each of these goals is not an end in itself but rather a step toward achieving the vision. As this Strategy is reviewed on a five-yearly basis, or as the goals are achieved, it is likely it will become appropriate to revise these goals or set new ones.

It is therefore critical that rigorous and transparent accountability measures are established to enable the DCC to measure progress towards these goals and report this to the community. Some of the goals may become more clearly defined as the nature of the strategic direction becomes better understood over time, such as the goal of moving more freight to rail. Others will require a range of specific measures and sub-goals in order to achieve the overall goal. For example the overall mode shift goal under 'Focus on Travel Choices' will require sub-goals to be set specifically to measure walking, cycling and public transport modal share.

To enable this detailed and rigorous monitoring a separate Integrated Transport Strategy Monitoring Plan (TSMP) will be established. The TSMP will specify the targets and measures required to deliver the high-level goals, and will also identify what data will need to be collected to do so. The TSMP will be developed in consultation with the community. The existing measures and indicators in the DCC's Transportation Activity Management Plan, which feed into the Annual Plan, will be reviewed to ensure consistency with the Integrated Transport Strategy.

10.5 Courses of action and possible projects

The DCC carries out, or supports, a number activities and approaches that contribute to achieving the Vision of this Strategy as part of normal operational business. Many of these are on-going or regular activities which are implemented out of existing budgets. As well as existing operational activities, this Strategy has (under each Area of Focus) also set out a number of Strategic Approaches that will be implemented through DCC operational work programmes in future. These existing and future approaches and activities, and the Areas of Focus they contribute to, are summarised in Appendix 1.

In addition to the on-going operational activities that will deliver on the Vision, it will, in some cases also be necessary to address major issues and opportunities through specific capital projects. Appendix 1 also identifies a number of possible projects that might achieve the Goals, Objectives and Vision (under each Area of Focus). The following sections provide an overview of these possible projects and their implementation.

Developing the list of possible projects to be put through a Programme Business Case

To address the Challenges outlined in Section 2, give effect to the Transport Objectives and move toward the Vision, a number of indicative key projects have been identified. These projects, as with the rest of the Integrated Transport Strategy, have been identified out of a process of discussion with, and feedback from, the community and analysis of the key issues on Dunedin's network.

The primary engagement with the community occurred in 2011 through the 'Your City Our Future' (YCOF) consultation process. As part of YCOF there was an Accessible City Leadership Team that focussed on transport, and several of the other YCOF leadership teams also identified priorities or actions that related to transport. The YCOF process also included a community survey on the DCC's spending priorities. The feedback received through the YCOF process has been integral to understanding the community's views on transport (see Section 3).

In addition to this conversation with the community, the DCC has carried out a detailed analysis of the key problems on the network – particularly the issues and areas driving Dunedin's main safety and accessibility issues. Many of the issues and projects considered and assessed were identified in the previous DCC Transportation Strategy (2006) and particularly consideration was given to which of those previous priorities are still relevant and important and where they sit in relation to the new priorities adopted in this Strategy. This process also examined and analysed a number of previous studies carried out by, or for, the DCC in the past regarding numerous project concepts and strategic proposals.

Throughout the process the DCC engaged in a series of meetings with stakeholders to ensure the Strategy identified and addressed all the key issues on the network. Input from consultants was also drawn on to provide a fresh perspective on local issues and priorities and analyse possible projects and schemes according to best practice.

Out of the above process the following key projects have been identified as high priority strategic responses. They have been evaluated against their contribution to each area of focus, and those that make a significant contribution to one or more areas of focus have been prioritised accordingly.

Some of the projects are wholly or partly on state highways that are controlled by the NZTA. Where this is the case, DCC will either work in partnership with the NZTA, or advocate for the NZTA to take the project forward. The approach taken will depend on which is the most appropriate in each case.

An indicative plan for how these projects might be investigated and implemented for the period 2015 – 24 is outlined in Appendix 2. The indicative plan has split the projects up according to the three-year National Land Transport Programme (NLTP) funding cycles. Including projects in the NLTP is the route to securing NZTA subsidies for works. The costs attributed in the plan are broad estimates, also in need of further refining. This is not a confirmed implementation plan, nor does its inclusion in this Strategy constitute a commitment by the DCC to invest in and deliver these projects. Rather, this list of projects are concepts that high-level investigations have indicated may be effective means of addressing Dunedin's key transport problems and achieving the Vision of this Strategy.

The inclusion of any of these projects in the DCC's Long Term Plan is the point at which the Council makes a commitment to fund and deliver a project. Therefore this indicative list of projects may be subject to change according to the DCC's financial situation, further investigation, and community and stakeholder consultation. To this end the DCC intends to test these project concepts through a Programme Business Case, in collaboration with the NZTA. However, despite this proviso, this plan (Appendix 2) should be read as the most important transport investment priorities for Dunedin over the period 2015 – 2024. A description of each of these projects is included in Section 9.5, below.

10.6 Priority Projects for a Programme Business Case investigation (Coded for cross-referencing with Appendix 2)

CC. Central City and North Dunedin safety and accessibility upgrade

The central city is the key area where most of Dunedin's commercial activity occurs. It has the highest concentration of vulnerable user activity and the highest levels of conflict between different modes. The current design of the central city transport network revolves around traffic movement and vehicle speeds are higher than desirable for an area of high pedestrian activity. Consequently, most of Dunedin's crashes occur in the central city and it is the highest risk area of the city. No major work to address issues in the central city has been carried out on an area-wide basis for some years.

There is potential for the central city to function significantly better than it does currently. Safety and accessibility could be substantially improved to create an even more vibrant, thriving central city environment. Due to the existing safety problems a project to carry out a major upgrade of the central city transport environment is considered the top priority (refer to Section 8.3 for more information).

EB. Eastern Bypass Freight Route upgrade

The 'Eastern Bypass' freight route consists of Strathallan Street – Portsmouth Drive – Wharf Street – Thomas Burns Street – St Andrew Street to Anzac Avenue. A project to improve this strategic freight corridor is also considered a high priority. There are two key drivers for this. Firstly, designating a priority freight route with minimal conflict with vulnerable road users enables a higher level of service to be provided for freight movement, supporting efficiency and economic wellbeing. Secondly, this also supports the central city upgrade mentioned above, as making this route more attractive for freight vehicles will reduce the number of freight vehicles using the one-way system in the central city.

This project may include:

- Changes to signal phasing to better support movement to and from Port Otago.
- Redesign of key intersections, particularly St Andrew Street – Anzac Avenue to better support movement to and from Port Otago. This could also include creating a cul de sac at the Castle Street end of Anzac Avenue to redirect freight and allow for a reallocation and redesign of space at the Railway Station Precinct (refer to p.43 for more information).
- Other options and approaches will also be considered as part of any investigation including improved access management along the corridor and consideration of whether the location of the existing level crossing at St Andrew Street is the best site or whether a better, viable alternative exists.

PH. Portobello/Harington Point Road Improvements

Completing the sea wall replacement and the associated shared cycleway/walkway along Portobello Road is also a high priority for the DCC and the community. The benefits of this project for Otago Peninsula residents and the whole Dunedin community in terms of improved safety and accessibility of a key transport and recreational corridor, as well as the potential for economic development through cycle tourism, mean that the continuation and completion of this project is a high priority.

SH. State Highway 1 (one-way pair) safety and accessibility investigation

The need for improved safety on and around State Highway 1 through the central city has also come up as a high priority. This is an important piece of work that needs to be undertaken because of the safety issues along State Highway 1, and also because of the severance created by the one-way pair in the central city area, and particularly between the central city, the tertiary area and the harbour. It is anticipated that this investigation will be a joint piece of work undertaken by the DCC and NZTA working in partnership.

MC. Mosgiel centre safety and accessibility upgrade

The need to significantly improve the safety and accessibility of the Mosgiel town centre has also ranked as a high priority for this Strategy. The key challenge in Mosgiel is to manage traffic and freight demands in a way that enables improvement of the amenity and safety within the Mosgiel town centre, particularly for vulnerable users, to ensure the vitality of the centre. Providing for vulnerable users is particularly important in Mosgiel as there is a high proportion of elderly residents and young people, who are especially dependent on good pedestrian and cycling facilities and high levels of access for those with mobility-impairments. Existing safety issues in Mosgiel have also led to its identification as a high priority.

TP. Tertiary Precinct safety and accessibility upgrade

There is a strong desire from the tertiary organisations to see an improved pedestrian and cycling environment around the tertiary area. This has come through as a priority for the Tertiary Sector

Steering Group, which is a partnership between the DCC, University of Otago, the Otago Polytechnic and Southern District Health Board. Analysis has also identified a number of safety and accessibility issues in the transport network around the tertiary area and wider North Dunedin area. This includes sections of street and intersections on Albany Street, Clyde Street, Forth Street and Union Street in particular. It is proposed that a similar approach is taken to the tertiary area as is being taken for other centres, where safety and accessibility issues are tackled through the development of an area-wide comprehensive package of interventions. The goal of the package is to increase safety and accessibility for cycling and walking in and around the tertiary precinct.

CH. City to Harbour bridge

The need for an improved connection between the Harbour and the central city has been identified as a high priority for some time. Existing links include the level-crossing at St Andrew Street, the pedestrian overbridge at the Railway Station and the Cumberland Street overbridge at Jetty Street. These existing connections are not fully accessible, in that they only cater for able-bodied pedestrians but not cyclists or mobility impaired users. They also entail a number of safety problems.

The need for a fully accessible city to harbour connection remains a high strategic priority and the project included in this indicative implementation plan includes both a comprehensive investigation of the options (including review of previous studies) and the implementation (construction) of the preferred option. High-level analysis as part of this Strategy has indicated that a fully accessible bridge across State Highway 1, the railway, and the Eastern Bypass Freight Route in the vicinity of the central city would yield the greatest benefit.

CN. Strategic Cycle Network

The Strategic Cycle Network consists of key routes across the city which will be upgraded to provide safe facilities for cyclists – where possible separated from traffic. The development of the Dunedin Strategic Cycle Network is a high priority under four areas of focus: Safety, Travel Choices, Centres and Resilience. The two highest priority sections of the Strategic Cycle Network are currently under development, these are the South Dunedin Cycle Network and the Central City Cycle Network (the Central City Network includes North Dunedin and North East Valley).

The next priority in developing the Strategic Cycle Network will be to create a connection between the Central City and South Dunedin Cycle Networks and the Kaikorai Valley – Concord – Green Island – Abbotsford – Fairfield population catchment, via the Caversham Tunnel. Use of the tunnel rather than an on-road facility would eliminate the substantial obstacle of the Lookout Point hill and would mean a relatively flat uninterrupted cycle network (with minimal conflict with traffic) extending from Fairfield to the southwest, Normanby to the north, St Clair to the south and Portobello (and beyond) and Port Chalmers to the northeast. In future, this would be extended south to Brighton and beyond, and to Mosgiel, and up to the hill suburbs.

SP. State Highway 88 shared path

The completion of the State Highway 88 shared-path, between Dunedin and Port Chalmers is also a key priority for safety and recreation in Dunedin. While the project sits under the broader 'Strategic Cycle Network', it is identified as a distinct project as it is being implemented by the NZTA. It is intended that this project will progress, subject to funding, in parallel with the other SCN priorities being implemented by the DCC. The shared path has been completed from Dunedin to St Leonards, the remaining sections between St Leonards and Port Chalmers are yet to be completed The SH88 Shared Path and Portobello/Harington Point Road Improvements together form the Harbour Circuit component of the Strategic Cycle Network. The NZTA are responsible for developing the SH88 Shared Path.

CU. Major centre upgrades

In addition to the major upgrades identified for the central city and Mosgiel, discussed above, several of Dunedin's other centres have also been identified as having relatively high risk, and also require major safety and accessibility upgrades. A programme of risk-targeted safety and accessibility upgrades for centres, with a particular focus on improving provision for walking, cycling and public transport, contributes strongly to four of the five areas of focus, namely Safety, Travel Choices, Centres and Resilience (see Section 8). These upgrades will be delivered through a Place Based Planning Approach, and integrate with improvements that are planned by other parts of the DCC, for example amenity improvements.

The centres ranked as having highest priority for upgrades are, in no particular order:

- Gardens (North East Valley)
- Caversham
- Mornington
- Green Island
- North Dunedin
- South Dunedin
- Port Chalmers
- Hillside
- Forbury
- Kaikorai South.

As part of these upgrades, a range of interventions may be used, including:

- Safe speed area treatment.
- Redesign of the street environment to reduce through-traffic and achieve a design speed that is safe for all users.
- Safety and accessibility improvements within the centres and on Strategic Pedestrian Routes and Strategic Cycle Routes in the vicinity of the centres.
- Address parking issues.

PM. Preventative Maintenance Strategy

The Strategy has identified that parts of Dunedin's transport network are likely to be adversely affected by rising

sea-levels and other hazards as a result of climate change. It is also likely that the current period of financial constraint will continue for some time. These two factors highlight the need for a strategic approach to prioritising where and how the transport network should be protected and secured in the future. The DCC will develop a Preventative Maintenance Strategy to address this issue.

ED. Road Safety Education

A Safe System approach requires consideration to be given to all the 'pillars' of the transport system (see Section 1.1.2 and Section 7, Principle 3). Infrastructure projects can only address certain aspects of any transport problem or aspiration, and are unlikely to be sufficient to achieve all the safety goals the DCC wants to achieve through the Integrated Transport Strategy. For this reason, road safety education is another high priority project to be delivered through this implementation plan. In conjunction with, and in addition to, transport infrastructure projects DCC will develop complimentary road safety education programmes, including road safety campaigns, driver and cycle skills training, and school travel planning.

PH. Pine Hill Road – Great King Street intersection

The intersection of Pine Hill Road and Great King Street at the northern end of the one-way system beside the Botanical Gardens) is among Dunedin's highest risk intersections. On a national basis it also ranks as one of highest risk intersections on the State Highway network. For this reason a project focussing specifically on improving the safety performance of this intersection is a high priority under this Strategy. This intersection is wholly controlled by the NZTA, and the DCC will advocate for this project to be undertaken by the NZTA as a matter of priority. DCC will also advocate that the need for cyclists and pedestrians to be able to safely access North Road through this area be considered as part of any project.

SS. Safety upgrade of SH1 corridor south of Mosgiel (East Taieri area)

The combination of small local centres on State Highway 1 south of Mosgiel, the use of this road by freight, and safety issues on this road particularly for motorcyclists and cyclists as evidenced by crash data has led to this project being identified as a high priority. The DCC will advocate for this project to be prioritised by the NZTA.

WP. Conversion of the one-way system to two-way south of Queens Gardens

Converting the one-way system to two-way south of the Queens Gardens has also been identified as a high priority project for further investigation. The current one-way configuration creates severance between the central city and the Warehouse Precinct. The current scenario also sees both Crawford Street and Cumberland Street designated as State Highways, prioritising arterial through movement to the detriment of accessibility and amenity in the southern part of the central city. Converting these streets to two-way would enable Cumberland Street to be designated State Highway (with two lanes providing for arterial through traffic in both directions), while Crawford Street could be down-graded to a local road, enabling a greater range of options for pedestrian and cycling provision and improved access to and from the Central City. As with many of the projects included in this list, the conversion of the one-way system to two-way has not yet been committed to by the DCC, and further investigation is required into the feasibility of this project. However early investigations indicate the conversion can be made with no loss of efficiency on the state highway, and a gain in efficiency and safety on the overall network. As part of the Business Case process other options that might achieve the same outcome will also be assessed so that the approach which yields the highest ratio of benefits to cost will be considered.

MR. Mosgiel residential growth transportation projects

Three major residential developments have been approved for the Mosgiel area: Mosgiel East, Mosgiel East C and Mosgiel West. At the time these developments were approved it was identified that the residential growth that Mosgiel East and West would generate would necessitate transportation improvements at some future time, to cater for the increased demand. It was identified as appropriate that funding for the required transportation improvements should be funded, either totally or in part, by development contributions. These transportation network requirements are outlined as follows:

- ***Mosgiel East:*** This area lies between Hagart-Alexander Drive/Centre Street and Wingatui Road. It spans Factory Road, which bisects the area. It has been identified that a range of future improvements will become necessary as a result of this development, including safety provisions at key intersections and facilities for non-motorised road users. These improvements will be focussed on Factory and Wingatui Roads, and Centre Street. The necessary improvements are estimated to cost approximately $2.2 million, 85 – 90% of which will be funded through development contributions, the remaining 10 – 15% by rates. This project is already included in the 2012/13 – 2022/23 LTP.
- ***Mosgiel West:*** This area lies between State Highway 1 (Main South Road), Riccarton Road, Gladstone Road and Cemetery Road. Orchard Grove and Elizabeth Avenue are at the south-western end of the area. Two key transportation improvements have been identified as necessary to provide for the future demands generated by this development, these are:
  - Upgrade Cemetery Road to provide for an increase in vehicles, pedestrians and cyclists
  - Create a road to link Mosgiel West to Riccarton Road East.

The Mosgiel West improvements are not expected to incur any cost to the ratepayer, but as they will be delivered by the DCC they are still included in the LTP.

These projects are both already included in the Council's LTP and are shown in the relevant periods on the 10-year Implementation Plan presented below. The key trigger for implementation will be the level of residential growth in the two development areas and therefore the DCC will monitor the transportation situation around these developments to determine exactly when construction will need to take place.

FR. Freight by Rail Study

This project is to identify and investigate opportunities and barriers to moving freight by rail.

Appendix 1

Courses of action and possible projects

FOCUS ON SAFETY	
COURSES OF ACTION	*STATUS*
Road Safety Action Planning	On-going
Risk targeting	On-going
Focussing on vulnerable users	On-going
Implementing safe speeds	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
Schools:	
Top 12 schools programme.	On-going
School Traffic Safety Group	On-going
Road safety campaigns	On-going
Possible interventions that could address key problems and opportunities under 'Focus on Safety' (to be assessed through a Programme Business Case, see Sections 9.1 and 9.5).	
CC. Central City and North Dunedin safety and accessibility upgrade	Early planning stages underway. No funding allocated in 2012/13 – 2021/22 LTP
PH. Portobello/Harington Point Road Improvements	Underway
SH. State Highway 1 (one-way pair) safety and accessibility investigation	No funding allocated in 2012/13 – 2021/22 LTP
MC. Mosgiel centre safety and accessibility upgrade	No funding allocated in 2012/13 – 2021/22 LTP
TP. Tertiary Precinct safety and accessibility upgrade	Early planning stages underway. No funding allocated in 2012/13 – 2021/22 LTP
CN. Strategic Cycle Network	Network planning underway
CU. Major centre upgrades	No funding allocated in 2012/13 – 2021/22 LTP
ED. Road Safety Education	On-going
PH. Pine Hill Road – Great King Street intersection	NZTA project
SS. Safety upgrade of SH1 corridor south of Mosgiel (East Taieri area)	NZTA project
SP. State Highway 88 shared path	NZTA project

FOCUS ON TRAVEL CHOICES

COURSES OF ACTION	*STATUS*
Strategic Cycle Network:	
South Dunedin Cycle Network (2013 – 2015)	Underway. Funding allocated in 2012/13 – 2021/22 LTP
North and Central Dunedin Cycle Network (2015 – 2018)	Network planning underway. $300,000 per annum in current LTP.
Other SCN routes (2018+)	$300,000 per annum for duration of 2012/13 – 2021/22 LTP
Cycle parking	On-going
Strategic Pedestrian Network	On-going. To be implemented operationally.
Public Transport advocacy:	
Advocating for improved public transport system	On-going
Advocating for airport bus service	To be investigated
Advocating for uptake of low-carbon bus technology	To be investigated
Public transport governance investigation	Underway
Protecting access to transport infrastructure (jetties, railway facilities).	To be investigated
Support for travel choices:	
Cycle-skills training	Underway till 2014/15. No funding allocated beyond 2014/15.
Bike library development	Pilot project underway until June 2015. No funding allocated beyond 2014/15.
Work-place and school travel planning	No funding allocated in 2012/13 – 2021/22 LTP
Walk and wheel days	Sport Otago project, part funded by DCC from existing budgets on an on-going basis
Travel Smart programmes	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
Road user workshops	On-going, from existing budgets
Bike Wise (annual event)	Underway till 2014/15. No funding allocated beyond 2014/15.
Walk to Work Day (annual event)	Underway till 2014/15. No funding allocated beyond 2014/15.
Dunedin Cycle Map publication	On-going, from existing budgets

FOCUS ON TRAVEL CHOICES *CONTINUED*	
COURSES OF ACTION	***STATUS***
Possible interventions that could address key problems and opportunities under 'Focus on Travel Choices' (to be assessed through a Programme Business Case, see Sections 9.1 and 9.5).	
CC. Central City and North Dunedin safety and accessibility upgrade	Early planning stages underway
MC. Mosgiel centre safety and accessibility upgrade	No funding allocated in 2012/13 – 2021/22 LTP
TP. Tertiary Precinct safety and accessibility upgrade	Early planning stages underway. No funding allocated in 2012/13 – 2021/22 LTP
CU. Major centre upgrades	No funding allocated in 2012/13 – 2021/22 LTP
CN. Strategic Cycle Network	Network planning underway
PH. Portobello/Harington Point Road Improvements	Underway
SH. State Highway 1 (one-way pair) safety and accessibility investigation	No funding allocated in 2012/13 – 2021/22 LTP
CH. City to Harbour bridge	No funding allocated in 2012/13 – 2021/22 LTP
WP. Investigation of conversion of the one-way system to two-way south of Queens Gardens	Funding for investigation stage included in operational budgets for 2013/14. No funding for implementation allocated in 2012/13 – 2021/22 LTP
ED. Road Safety Education	On-going
SP. State Highway 88 shared path	NZTA project

FOCUS ON CENTRES

COURSES OF ACTION	*STATUS*
Integrating land use and transport:	
District Plan Review (transport hierarchy and zoning provisions)	Underway
Central city safety and accessibility improvements.	Early planning stages underway. No funding allocated in 2012/13 – 2021/22 LTP
Centres programme:	
Mosgiel centre safety and accessibility improvements	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
Tertiary area safety and accessibility improvements	Early planning stages underway. No funding allocated in 2012/13 – 2021/22 LTP
Other centres improvements	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP. Some improvements to be carried out through operational programmes.
Parking Management Policy	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
Bylaw and policy reviews to align with Integrated Transport Strategy	As and when they come up for review
Possible interventions that could address key problems and opportunities under 'Focus on Centres' (to be assessed through a Programme Business Case, see Sections 9.1 and 9.5).	
CC. Central City and North Dunedin safety and accessibility upgrade	Early planning stages underway. No funding allocated in 2012/13 – 2021/22 LTP
MC. Mosgiel centre safety and accessibility upgrade	No funding allocated in 2012/13 – 2021/22 LTP
TP. Tertiary Precinct safety and accessibility upgrade	Early planning stages underway. No funding allocated in 2012/13 – 2021/22 LTP
CU. Major centre upgrades	Early planning stages underway. No funding allocated in 2012/13 – 2021/22 LTP
CN. Strategic Cycle Network	Network planning underway
MR. Mosgiel residential growth transportation projects	Underway

FOCUS ON FREIGHT

COURSES OF ACTION	*STATUS*
Freight on rail investigation	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
Strategic freight corridor identification:	
Designated freight route upgrades	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
District Plan review (transport hierarchy and zoning provisions)	Underway
Maintenance of critical infrastructure on HPMV routes and protection of over-dimension routes:	
Operational – maintenance and renewals	On-going
District Plan review (transport hierarchy and zoning provisions)	Underway
Freight route congestion management, according to hierarchy of interventions	On-going as required, through operational programmes.
Inland Port investigations and partnerships	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
Possible interventions that could address key problems and opportunities under 'Focus on Freight' (to be assessed through a Programme Business Case, see Sections 9.1 and 9.5).	
EB. Eastern Bypass Freight Route upgrade	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
FR. Freight by Rail study	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
PH. Pine Hill Road – Great King Street intersection	NZTA project
SS. Safety upgrade of SH1 corridor south of Mosgiel (East Taieri area)	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
PM. Preventative Maintenance Strategy	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
ED. Road Safety Education	On-going
SP. State Highway 88 shared path	NZTA project

FOCUS ON A RESILIENCE

COURSES OF ACTION	*STATUS*
Supporting the Spatial Plan – Integrating land use and transport:	
District Plan review – transport hierarchy and zoning provisions	Underway
Provision of high quality people-centred urban public spaces e.g. urban gardens, pedestrian areas.	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP.
Supporting the Spatial Plan – resilience in rural areas:	
District Plan review – transport hierarchy and zoning provisions	Underway
Links to Energy Plan: exploring local alternative fuel development and other ways of strengthening rural transport resilience.	To be investigated through Energy Plan development.
Exploring funding mechanisms for local place-based transport initiatives.	To be investigated through Energy Plan development.
Links to Environment Strategy:	
Emissions reduction targets	To be investigated through Environment Strategy development.
Dunedin Digital Strategy	Underway. Implemented through the Economic Development Strategy.
DCC internal initiatives:	
Explore DCC vehicle fleet fuel efficiency improvements	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP.
Develop DCC work place travel plan	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP.
Investigate Economic Network Model	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP.
Explore and support alternatives to bitumen and recycling of roading waste (including possible links with Waste Minimisation Plan – Waste Levy Fund)	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP.
Possible interventions that could address key problems and opportunities under 'Focus on Resilience' (to be assessed through a Programme Business Case, see Sections 9.1 and 9.5).	
PM. Preventative Maintenance Strategy	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
FR. Freight by Rail study	To be investigated. No funding allocated in 2012/13 – 2021/22 LTP
CN. Strategic Cycle Network	Network planning underway
CC. Central City and North Dunedin safety and accessibility upgrade	Underway, early planning stages. No funding allocated in 2012/13 – 2021/22 LTP
CU. Major centre upgrades	No funding allocated in 2012/13 – 2021/22 LTP

FOCUS ON A RESILIENCE

COURSES OF ACTION	*STATUS*
MC. Mosgiel centre safety and accessibility upgrade	No funding allocated in 2012/13 – 2021/22 LTP
PH. Portobello/Harington Point Road Improvements	Underway
CH. City to Harbour bridge	No funding allocated in 2012/13 – 2021/22 LTP
WP. Investigation of conversion of the one-way system to two-way south of Queens Gardens	No funding allocated in 2012/13 – 2021/22 LTP
SP. State Highway 88 shared path	NZTA project

GENERAL ACTIONS

COURSES OF ACTION	*STATUS*
Integrated Transport Strategy Monitoring Plan:	
Develop Monitoring Plan	To be investigated. Existing budgets.
Review Transportation Activity Management Plan and Annual Plan indicators to align with Integrated Transport Strategy.	To be investigated. Existing budgets.
Network Operating Plan development	Underway. Existing budgets.
Transportation Operations and other DCC departments to review practices to align with Integrated Transport Strategy	On-going once Integrated Transport Strategy is adopted by Council

Appendix 2

DCC Integrated Transport Strategy 2013 list of projects to be assessed through a Programme Business Case (2015 – 24).

Note: The order of projects does not reflect priority.

Project Code	Project Name	Estimated Total Cost of Works	Comments	Lead Agency
National Land Transport Programme 2015 – 18 (including projects in the NLTP is the route to securing NZTA subsidies for works)				
CC	Central City Upgrade**	$2–5m	May be possible to part-fund from existing budgets. E.g. there is a minor improvements budget of $4.765m in the Long Term Plan (LTP) 2015–18, includes assumed NZTA subsidy of 66%.	DCC
EB	Eastern Bypass Freight Route**	$1–2m	May be possible to part-fund from existing budgets. E.g. there is a minor improvements budget of $4.765m in LTP 2015–18, includes assumed NZTA subsidy of 66%.	DCC
PH	Portobello/Harington Point Road Improvements *	$8.18m	$8.18m in LTP 2015–18, includes assumed NZTA subsidy of 66%. If so, the DCC share is $2.78m.	DCC
SH	SH1 Investigation***	$350k	No funding in LTP.	DCC / NZTA
CN	Strategic Cycle Network: Central City Network**	$3–5m	$3.5m in LTP 2015–18, includes assumed NZTA subsidy of 66%. If so, the DCC share is $1.19m.	DCC / NZTA
CN	Strategic Cycle Network: SH88 Shared Path	$5.85m	$5.85 on reserve list in NLTP (will be funded if other cycling projects do not progress). This is 100% NZTA-funded.	NZTA
PM	Preventative Maintenance Strategy*		Existing budgets.	DCC / NZTA
ED	Road Safety Education*		Existing budgets.	DCC
WP	SH1 two-way conversion south of Queens Gardens***	$4–5m	No funding in LTP.	DCC / NZTA
MR	Mosgiel residential growth projects*	$4.051m	$4.051m in LTP 2015–18, includes development contributions.	DCC
National Land Transport Programme 2018 – 21 (including projects in the NLTP is the route to securing NZTA subsidies for works)				
PH	Portobello/Harington Point Road Improvements*	$9.414m	$9.414m in LTP 2018–21, includes assumed NZTA subsidy of 66%. If so, the DCC share is $3.2m.	DCC
MC	Mosgiel Centre Upgrade**	To be agreed	May be possible to part-fund from existing budgets.	DCC / NZTA
TP	Tertiary Precinct safety and accessibility**	To be agreed	Jointly funded by partners, not in LTP. Possible to part-fund DCC share from existing budgets.	DCC University Polytechnic

Project Code	Project Name	Estimated Total Cost of Works	Comments	Lead Agency
CH	City to Harbour Bridge***	To be agreed	Not in LTP.	DCC
CN	Strategic Cycle Network** – City to Fairfield (includes Concord, Green Island, and Abbotsford)	To be agreed	$3.916 in LTP 2018–21, assumes NZTA subsidy of 66%. If so, the DCC share is $1.33m.	DCC
CU	Major Centre Upgrades 1 and 2**	To be agreed	May be possible to part-fund from existing budgets.	DCC / NZTA
ED	Road Safety Education*		Existing budgets	DCC
MR	Mosgiel residential growth transportation projects*	$0.753m	$0.753m in LTP 2018–21, funded through development contributions	DCC
FR	Freight by Rail Study		Existing budgets.	DCC / NZTA
National Land Transport Programme 2021–24 (including projects in the NLTP is the route to securing NZTA subsidies for works)				
PH	Portobello/Harington Point Road Improvements*	$1.882m	$1.882m in LTP 2021/22, assumes NZTA subsidy of 66%. If so, the DCC share is $0.64m.	DCC
CN	Strategic Cycle Network** • Fairfield to Mosgiel • Town Belt and Hills	To be agreed	$1.384m in LTP 2021/22, assumes NZTA subsidy of 66%. If so, the DCC share is $0.47m.	DCC
CU	Major Centre Upgrades 3 and 4**	To be agreed	May be possible to part-fund from existing budgets.	DCC / NZTA
ED	Road Safety Education*		Existing budgets	DCC

* Already included in Dunedin's Long Term Plan (LTP)

** May require extension of existing funding in LTP

*** Would require new funding in LTP.