Your City Your Future

Transportation Strategy
July 2006

DUNEDIN CITY COUNCIL
Kaunihera-a-rohe o Otepoti

Your City Your Future

CONTENTS

FOREWORD

Dunedin traces its formal establishment as a city back to 1848. Its current composition resulted from the local government reforms of 1989 and today, it is the largest city by area in New Zealand. The transportation network has also evolved over time, as the city has developed. Periodically, major reviews have resulted in changes to that network, ranging from the development of new roads, footpaths and cycleways, the development of air and sea hubs, to the transition from trams to trolley buses and diesel buses.

Over the past few years, there has been a major change in the direction of transportation in New Zealand with the introduction of the New Zealand Transport Strategy (December 2002) and its ensuing legislation, the Land Transport Management Act 2003. This strategy reflects this change and has been prepared on an holistic basis with regard to changing land-use patterns to meet the future needs of the city.

Dunedin has recently experienced steady growth in both population and economic activity. Construction activity has been at levels unmatched since records were first kept, and there has been a steady growth in traffic over the past few years. While Dunedin's road network generally has the capacity to cope with the increased traffic, there has been a slowly declining level of service, particularly at peak hours.

Dunedin requires a transportation strategy to meet the vision of how our city should function in the face of growth, and to determine the policies and actions necessary to meet the challenges we face. The vision for Dunedin over the next 20 years includes maintaining the vitality and vibrancy of our commercial centres, and ensuring strategic transportation to the international airport and our port is protected and upgraded as necessary. We also need to cater for the needs of all non-motorised users and protect user safety. This must be achieved within a global context of increasing fuel prices, increasing emissions and a desire for alternative forms of transport. This strategy sets out how this vision can be achieved and the likely costs involved.

It is increasingly important to use 'travel demand management' techniques to make better use of the infrastructure we have. Worldwide, the increased use of the car is both congesting networks and causing environmental degradation. Increasingly, we need to work in partnership with the community to look at ways we can reduce overall travel requirements. 'Travel demand management' and 'business travel planning' are terms that may be new to many. These techniques aim to ensure that everyone has adequate travel choices and that unnecessary single-occupancy vehicle trips are reduced. In Dunedin's case, introducing these concepts in partnership with major employers and the community will reduce the potential capital expenditure our city faces and improve our local environment.

This Transportation Strategy is the culmination of an extensive process including consultation on the issues and options. We would like to thank all of those who have put forward their views to assist the Council in its development.

Peter Chin
Mayor

Syd Brown
Chair of DCC
Transportation
Strategy Working Party

Your City Your Future

INTRODUCTION:

TRANSPORTATION IN OUR CITY

Vision

"I am Dunedin – a prosperous, accessible city of well-educated people engaged in creative industries that lead the world; with freedom to celebrate a distinctive blend of cultural heritage, architectural character and lifestyle choice; in a city with a thriving business heart and vibrant suburban communities; and a strong and sustainable connection to a uniquely beautiful harbour, peninsula and hinterland."

Source: "City Vision Statement – Long Term Council Community Plan"

Transportation is a fundamental of life. We all use the roads, footpaths, buses, and taxis and the connection between the transportation network and land use is crucial to accessibility. Any changes we make to our transportation system can have profound effects in many areas.

In 2002, the Government produced the New Zealand Transport Strategy and the legislation to implement it, the Land Transport Management Act (2003), to guide decision-making. This national strategy sets prime objectives for transport. These are:

- Supporting economic development
- Promoting safety and personal security
- Providing access and mobility
- Supporting public health
- Ensuring environmental sustainability.

The Council's Community Plan (LTCCP) reflects these national strategy objectives. Through the Community Plan consultation process, the Council has explored and refined the community's statements about the city into a single encompassing description of where Dunedin sees itself in the future. The community outcome in the plan that transportation chiefly contributes to is an Accessible City, the vision being to achieve a sustainable, efficient, equitable and safe range of transportation and communication options for Dunedin. Accessible City also impacts on the other community outcomes:

- Safe and Healthy People
- A Sustainable City and Environment
- A Wealthy Community
- An Active City.

Transportation will support prosperity by enabling business to locate in appropriately positioned and serviced sites, with competitive links to markets through a national and international system of sea, air and land transportation links.

A responsive and accessible transportation network enables choice by including facilities for a range of transport types (cars, motorcycles, passenger transport, bicycles and pedestrians) in an appropriate, safe and integrated way. The role of streets is very diverse: they must accommodate a range of activities and users, such as shoppers, pedestrians and café seating in activity areas, to heavy vehicles, cars, buses and cyclists. The Council influences safety through improved street lighting and facilities, safety improvements to roads and footpaths, and working with others on enforcement and education initiatives. An accessible, safe and appropriate transportation network supports individual lifestyle choices.

Safeguarding quality, affordable and regular sea, air and land links and services (including telecommunications) will ensure that the city's competitive international and regional connections will continue to contribute to an enhanced economy. Providing quality, affordable local transportation links appropriate to our suburban communities will ensure that they continue to be attractive places to live.

Assumptions of the Strategy

In examining Dunedin's future over the next 20 years, some fundamental assumptions have been made. These include:

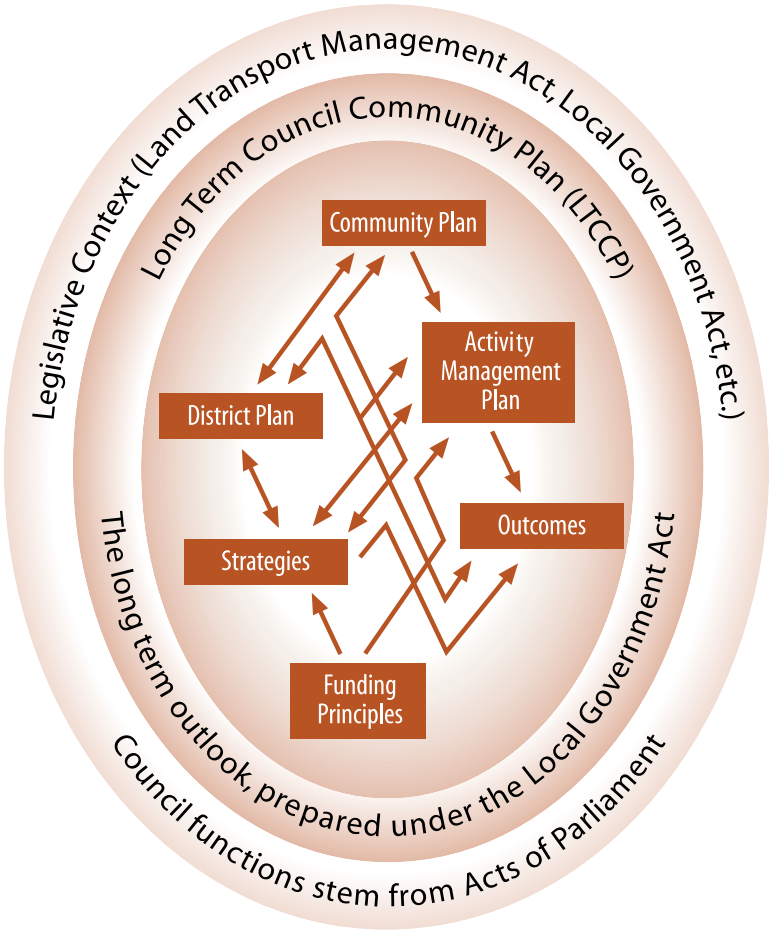
- Residents desire for choice and freedom and the development of alternative non-fossil fuels will ensure the car remains the preferred choice for most land travel
- Policies and measures to encourage a shift away from single occupancy cars in order to manage demand and reduce the energy consumption of transport will be required
- Personal travel alternatives including walking, cycling and passenger transport, and rail for

freight, will need to be made available at a faster rate and to a high standard to cater for those who do not drive and to improve the efficiency and sustainability of the existing transportation network

- That protecting the vibrancy and vitality of the central city and local activity areas is paramount
- That reducing road trauma and crashes is essential
- That Dunedin's population will continue its modest growth and will continue to age
- That Port Otago is recognised as an asset of significance to the national economy and Dunedin International Airport as a regional asset, and accessibility to both must be supported.

In New Zealand transportation uses oil and oil products as their prime energy source. "Peak oil" refers to the time when maximum oil production is reached. Oil production peaking is not the same as running out and there will still be large reserves remaining. There is no agreement on when world oil production will peak and decline. While fossil fuels will decline, the development of alternative technologies is also well advanced. Consequently, personal mobility is unlikely to decline, although the means by which people move around may change.

The New Zealand government generally accepts the International Energy Agency's forecast that foresees enough oil to comfortably meet demand to 2030. In the long term envisioned by this strategy, (20 years), cars are likely to continue to be the most common mode of choice. National policy suggests that making better use of existing road and rail networks by promoting alternatives to vehicle use (thereby reducing traffic growth) will be a key element in minimising the adverse effects of land transportation. As a complement to this strategy, Council will lobby central government for further car efficiency measures and work with the New Zealand Automobile Association and other road user interest groups, to educate residents about the costs and consequences of car use.



STRATEGY

Most of the issues that have arisen during the review of the 1999 Transportation Strategy relate to the potential for improvements to transportation in Dunedin, and these can generally be achieved only if additional resources are provided. This needs to be undertaken within the Council's strategic framework as set out in the Community Plan.

Following consultation the preferred strategic approach is to optimise the existing network by enhancing passenger transport, implementing travel demand management and catering for remaining growth by completing key routes through the city and carrying out congestion mitigation at critical intersections. The policies in this option are:

Safety

- Road safety – carrying out ongoing programmes to reduce crashes and casualties

Alternatives to car

- Accelerated completion of pedestrian, cycling and mobility works, integrated with enhancements to the passenger transport network to provide realistic alternatives to the private car
- Incorporating a long term vision of being able to walk and cycle safely around Otago Harbour from Taiaroa Head to Aramoana
- As a prerequisite to introducing travel demand management, significant investment in and incentives to use passenger transport. Council is a joint service provider of passenger transport facilities with the Regional Council. Passenger transport enhancements are likely to focus on improving service quality, policy changes to integrate buses with city planning, a reasonable increase in expenditure and emphasis on discretionary users. This would require changes to service-quality standards and a policy approach that elevates the profile of public transport to an essential and valued public service. It would include substantial improvements in bus frequency and quality, and may involve priority for public transport over other modes in some areas.
- Supporting the use of rail for freight movements by ensuring that major traffic generating developments carry their share of the capital cost of road upgrading to meet the demand they create, either through contributions or works in kind. Council will consider investing in rail infrastructure on a case-by-case basis, to support rail for freight and achieve the maximum community benefit in terms of safety, amenity, congestion and environmental emissions.

Travel Demand Management

- Implementing travel demand management measures following enhancements to the passenger transport network. These measures might involve the use of travel planning, parking management (restrictions by time or type of user) and parking charges to reduce single-occupancy private car travel.

Access

- Protecting and enhancing the tertiary campus and activity areas by providing accessible and convenient parking facilities, making pedestrians a priority and ensuring effective access by passenger transport
- Protecting and enhancing transport corridors through the upgrading of key routes, particularly State Highway 1 between the airport and the port, and the harbour arterial through the city. Retaining the one-way pair throughout Dunedin. In the southern section of the city, this will be subject to further monitoring of the efficiency of the one-way north along Crawford Street and congestion at the Jetty-Crawford Street intersection following reinstatement of the Rattray Street link
- Upgrading the harbour arterial to the east of the city to provide an efficient alternative route to North Dunedin, and to SH88 from SH1 south of Dunedin
- Congestion-mitigation works at key intersections
- Focussing the seal-extension programme by redistributing resources to bring forward works on rural roads where they will have an identified safety benefit; for example, shape correction and widening that improve forward visibility, as an alternative to sealing, which is likely to increase speeds.

Parking

- Providing casual parking only in areas of high demand. If necessary, investigations into the inventory and occupancy of on-street parking will be carried out. If occupancy rates rise above 80% for most of the relevant time period, and reasonable parking alternatives are not available, the Council will consider the provision and management of parking as follows: on-street time restricted parking, on-street metered parking, off-street parking with priority given to supplying casual parking. These methods are in order of preference
- Council will consider entering into joint ventures for parking development to enhance casual parking opportunities in activity areas, within District Plan provisions.

Evaluation Process

Government objectives and the likely criteria for funding were used to develop a list of indicators to test how well each strategic option met or contributed to each of the objectives. None of the objectives was given greater weight over the others. The performance indicators that each option was evaluated against fell into the following broad categories. Some examples of the types of criteria that each option was evaluated against are also provided.

- Economic Development (reduced journey times, vehicle operating costs, delays and maintenance costs; improved route reliability; contribution to urban renewal)
- Safety (reduced social cost; fewer crashes; improved personal security for non-car trips)
- Environmental Impact (reduced energy consumption; non-car based trips encouraged; improved amenity values; biodiversity protected)
- Accessibility (non-car based modes supported; reduced community severance; land use and transportation network integrated; integration with other modes such as air, sea, rail)
- Public Health (reduced congestion, negative impacts and emissions such as air, noise, water, vibration, active forms of transportation such as walking and cycling supported; reduced dependence on private vehicles).

Impacts in next decade

Assessment Criteria	Strategic approach
Accessible city	
Access and mobility	Works prioritised according to area/route, and integrated with other modes and proposed land-use changes
Rural access	Identification of key routes for regional priority and allocation of funds to prioritise rural safety works
Wealthy city	
Efficiency	Gradual decline in level of service on key routes. Journey time maintained at 2003 levels by a mixture of encouraging mode change and enhancing capacity
Safe and Healthy People	
Safety	Significant reduction in the rate of crashes and casualties through a combination of engineering and restrained use of private vehicles
Sustainable city	
Travel choice	Moderate rate of commuter use of cycling and buses, methods designed to meet community expectations, at a manageable cost and risk
Commuter parking demand	Gradual reduction in demand for unrestricted parking in residential areas. Future consideration of demand management measures as required
Casual parking availability	Increased availability of casual parking in areas of high demand
Overall assessment	Improvement in service in key areas, high cost, but manageable risk

Adverse effects on the environment

Adverse effects on the environment were considered as part of the option-evaluation process. Particular note was taken of:

- Traffic delays and congestion
- Noise
- Vehicle emissions
- Severance
- Pedestrian delay
- Pedestrian-vehicle conflict
- Impacts on urban amenity
- Permeability of key transportation corridors
- Percentage of commuter trips by public transport, cycling and pedestrian modes
- Fuel usage.

OUTCOMES, OBJECTIVES AND METHODS

Note that actions for each outcome area and policy are prioritised as follows:

Short indicates a 1-4 year implementation timeframe

Medium indicates a 5-10 year implementation timeframe

Long indicates a 10+ year implementation timeframe

Maps are colour coded accordingly where relevant.

Service levels on Dunedin roads

The indicator referred to in the table below as 'level of service' (LoS), is a measure of how well a road can meet the demand placed on it. It is a qualitative description of operating conditions and their perception by motorists and passengers. Level of service describes the conditions in terms of things such as speed and travel time, freedom to manoeuvre, interruptions, comfort, convenience and safety. In general, there are six levels of service, "A" through "F", where "A" is the most comfortable operating condition (that is, free flowing) and "F" is the worst (significant congestion and delays verging on gridlock).

The minimum level of service means that it is desirable that roads should not operate at worse than this level; for example, if the minimum acceptable is level of service D, then roads should not be at E or F. If they are, then investigations should be embarked upon. It is accepted that these benchmarks might not be achievable in some circumstances; for example, where the social, environmental or economic cost of improvements means they are not feasible.

Roads are built to provide an adequate level of service and to have sufficient spare capacity to accommodate projected growth. The table below sets out the intended level of service for the city's major roads:

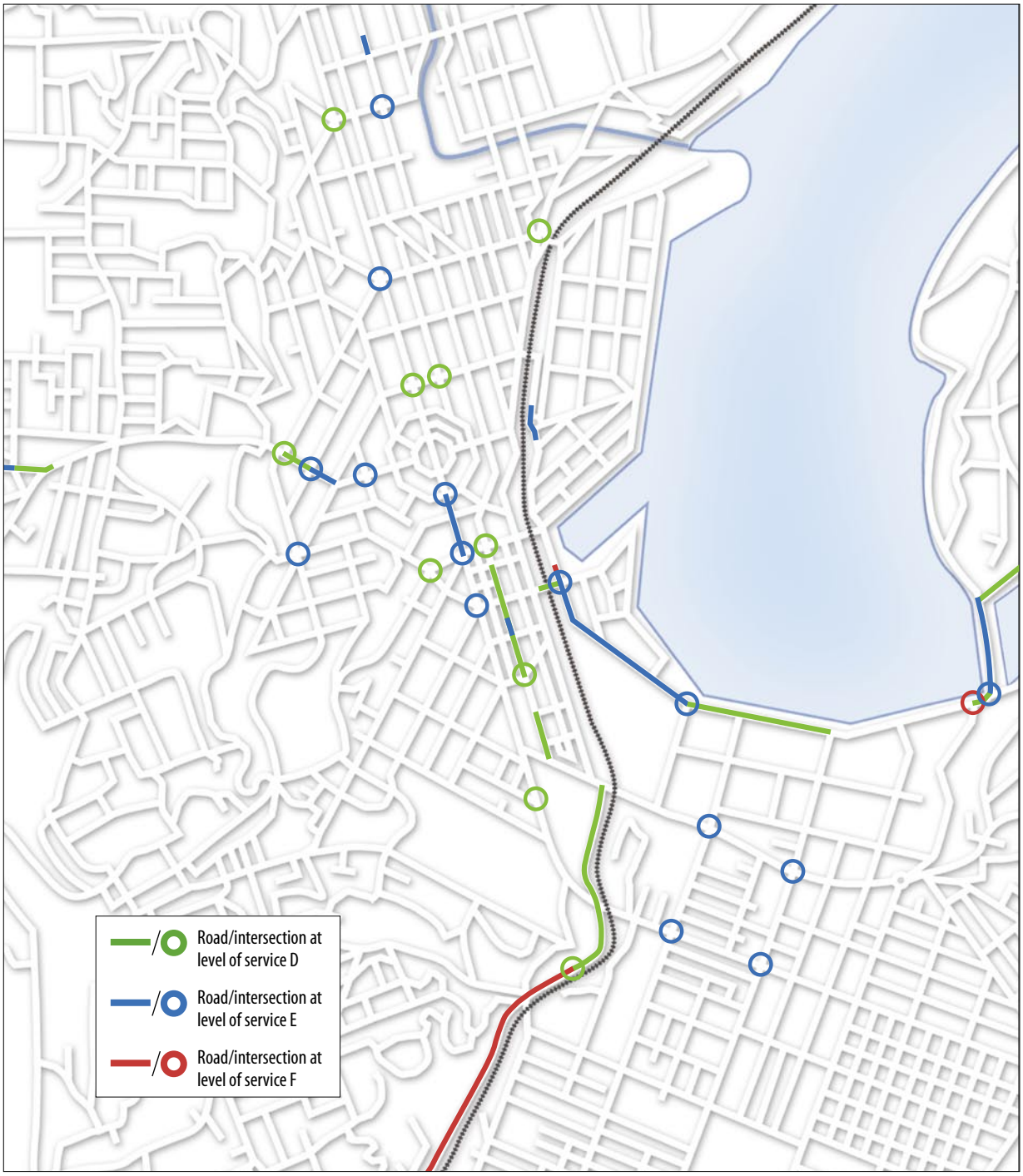
Minimum Levels of Service

(Level of service is discussed in more detail in Appendix 4.)

Road type	Peak times*	Other times
Arterial/collector roads	LoS E or better	LoS D or better

* Peak times are generally between 8-9am and 4-6pm weekdays, but may vary.

Figure 1. 2005 Morning peak levels of service



Indicators – These are cross-referenced from the action tables.

No.	Indicator	Current Value	Objective
1.	The level of service (LoS) on the arterial network in the morning peak	LoS E over 4 lane kms, and LoS F over 1.6 lane kms on the Caversham expressway	Eliminate any LoS F and restrict LoS E to 3 lane kms by 2016
2.	The satisfaction level with the flow of traffic at peak hours as measured by the Residents Opinion Survey (RoS)	24% satisfied or better in 2005	Improve the satisfaction level to 35% by 2016
3.	The satisfaction level with the flow of traffic at off-peak times as measured by the RoS	65% satisfied or better in 2005	Maintain the satisfaction level at 65% or better
4.	The satisfaction level with traffic flow on the network at peak hour as measured by the Council's survey of professional drivers	13% satisfied or better in 2005	Improve the satisfaction level to 35% by 2016
5.	The level of trauma on the city's network as measured on Land Transport New Zealand's crash-analysis system	The assessed social cost of road trauma in Dunedin was $143.6m in 2004	Reduce the social cost to $80.8m by 2010 to meet the national target
6.	The satisfaction of our road safety partners with the Council's performance in road safety work	LTCCP measure with first survey being undertaken in 2006	Improve on the satisfaction level measured in 2006
7.	The dissatisfaction level with the availability of car parking in the central city as measured by the RoS	46% dissatisfied or less in 2005	Reduce the dissatisfaction level to 35% by 2016
8.	Satisfaction with the ease of movement around the city by foot	LTCCP measure with first survey being undertaken in 2006	Improve on the satisfaction level measured in 2006
9.	Satisfaction with the ease of movement around the city by cycle	LTCCP measure with first survey being undertaken in 2006	Improve on the satisfaction level measured in 2006
10.	Residents' satisfaction with the condition of roads in the network	85% satisfied or better in 2005	Maintain satisfaction level at 85% or better
11.	Residents' satisfaction with the condition of footpaths in the network	77% satisfied or better in 2005	Maintain satisfaction level at 81% or better
12.	Residents' satisfaction with the condition of street lighting in the network	93% satisfied or better in 2005	Maintain satisfaction level at 93% or better

Community outcome: Economic Well-Being

Outcome area: Accessible City, Wealthy City

The desired outcome is a city with a transportation network that supports economic development and where people move about easily and safely. Dunedin needs to have efficient regional transport networks, local transport alternatives that meet community needs, and regular, affordable sea, air and land links and services. Priorities identified in the Community Plan are to achieve a transportation and communications network that effectively caters for the efficient export of products and services from the region, and to deal with an expanding tourism sector.

Objective

Provide for the competitive movement of goods, services and people by investing in key routes that improve transportation flows.

Issues

- North–south road, rail, air and sea port linkages
- Traffic volumes (particularly heavy vehicles) passing through the Central Activity Area (along State Highway 1) and campus (along State Highway 1 and State Highway 88)
- Congestion at key points on the network, including:
  - Caversham Valley motorway
  - Crawford Street and Jetty Street, including intersections along it from the harbour arterial to the western bypass
  - Pine Hill Road-Great King Street
  - George Street
  - The road and railway corridor acting as a barrier between the Central Activity Area and the harbour
- Growth and land-use changes in Mosgiel-Taieri
- Slow rate of retro-fitting of the pedestrian network with mobility enhancements
- Lack of integration between walking, cycling, mobility and passenger transport infrastructure works.

Computer generated impression of Pine Hill Road grade separation

Method

- Ensure strong links exist between Dunedin's international gateways, residential communities, rural hinterland and commercial land.

A key focus of this method is strengthening the city's arterial road network, with particular reference to the roles of Port Otago and Dunedin airport as gateways for the transfer of goods, services and people. The future strategic role of rail in Dunedin must also be strengthened, with a potential alternative to roading being developed for freight, and for forestry activities in particular. Relevant operational policies include Council's 'over-dimension route network'. This policy identifies constraints impacting on heavy, high or long loads travelling on the State Highway network, and identifies alternative routes for such traffic.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
State Highway 1			
Investigate detailed design and construction of Caversham Valley motorway	**Transit NZ,** DCC, Otago Regional Council	$25m*	1, 2
Completion of motorway			
Investigate detailed design and construction of East Taieri bypass	Transit NZ, DCC, Otago Regional Council	$15m*	1, 2
Complete East Taieri bypass			
Pine Hill Road grade separation	Transit NZ, DCC, Otago Regional Council	$6.5m*	1, 2, 5

*Subject to review during project investigation

Figure 2. East Taieri bypass

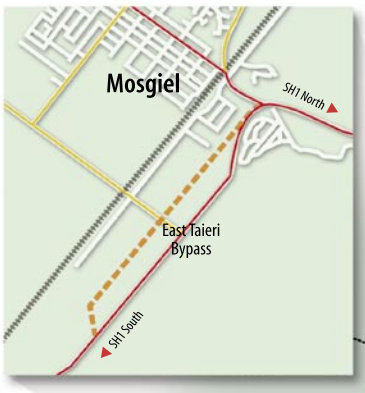


Figure 3. Pine Hill Road Grade Separation

Figure 4. Completion of Southern Motorway

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Harbour Arterial			
Improve intersections at Strathallan Street	DCC	$450,000	4
Construct link and intersection at Rattray Street and Fryatt Streets	DCC	$2.5m*	1, 2
Extend arterial road to north, east of railway line	DCC, Transit NZ, Otago Regional Council	$8.5m*	1, 2
Realign harbour arterial; signalise Mason Street	DCC, Transit NZ, Otago Regional Council	$4.5m*	1, 2

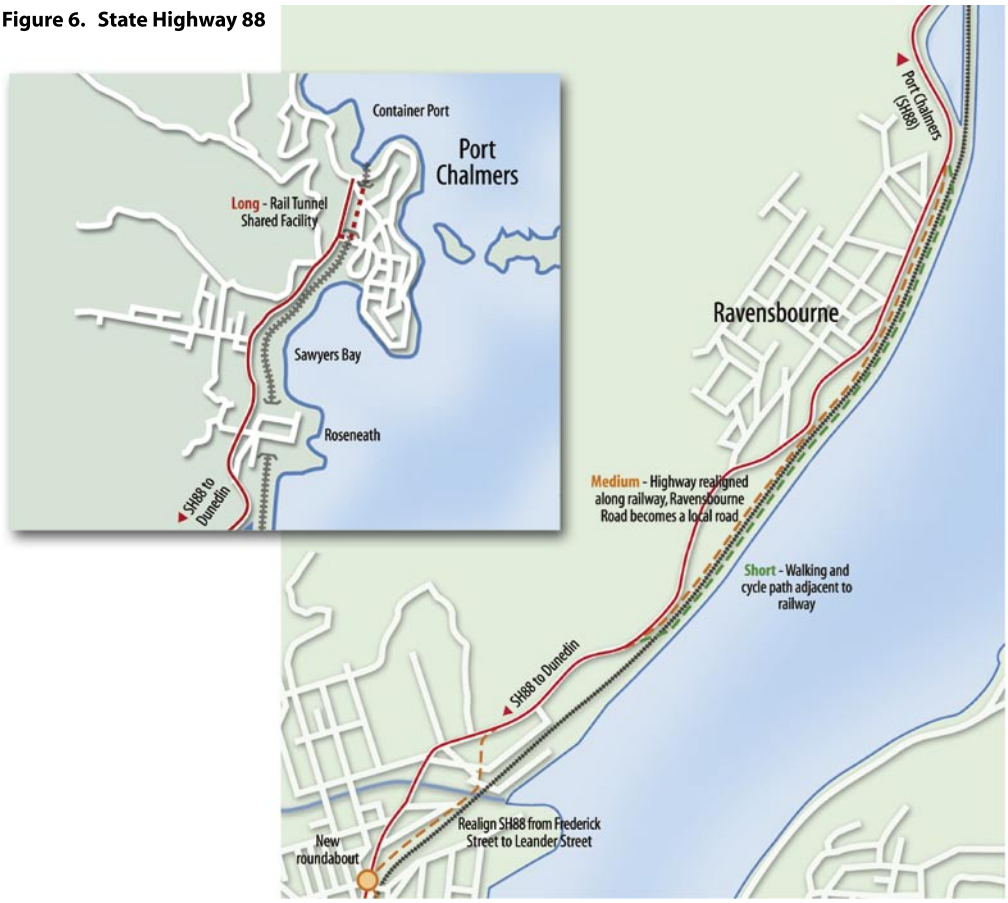
* Subject to review during project investigation

Figure 5. Harbour Arterial

Action	Responsibility (lead agency)	Estimated Cost	Indicators
State Highway 88			
Ravensbourne walking/cycling path	**ORC,** DCC, Land Transport New Zealand, Transit NZ, Port Otago Limited.	$239,279	5
West Harbour walking/cycling path: Ravensbourne to Port Chalmers	**ORC,** DCC, Land Transport New Zealand, Transit NZ, Port Otago Limited.	Within operational budgets	5
Investigate detailed design and construction of SH88 realignment	**DCC, Transit NZ,** Otago Regional Council	$8.8m*	1, 2
Carry out realignment of SH88 between Frederick Street and Leander Street			
Realign highway next to railway; Ravensbourne Road becomes local road	**Transit NZ,** DCC, Otago Regional Council	$12m*	2, 5
Investigate options to reduce heavy vehicle traffic on Port Chalmers main street including a rail/road tunnel option.	OnTrack, Transit NZ, DCC, Otago Regional Council	$8.5m*	2, 3, 4
Implement preferred option to reduce heavy vehicle traffic.			

* Subject to review during project investigation

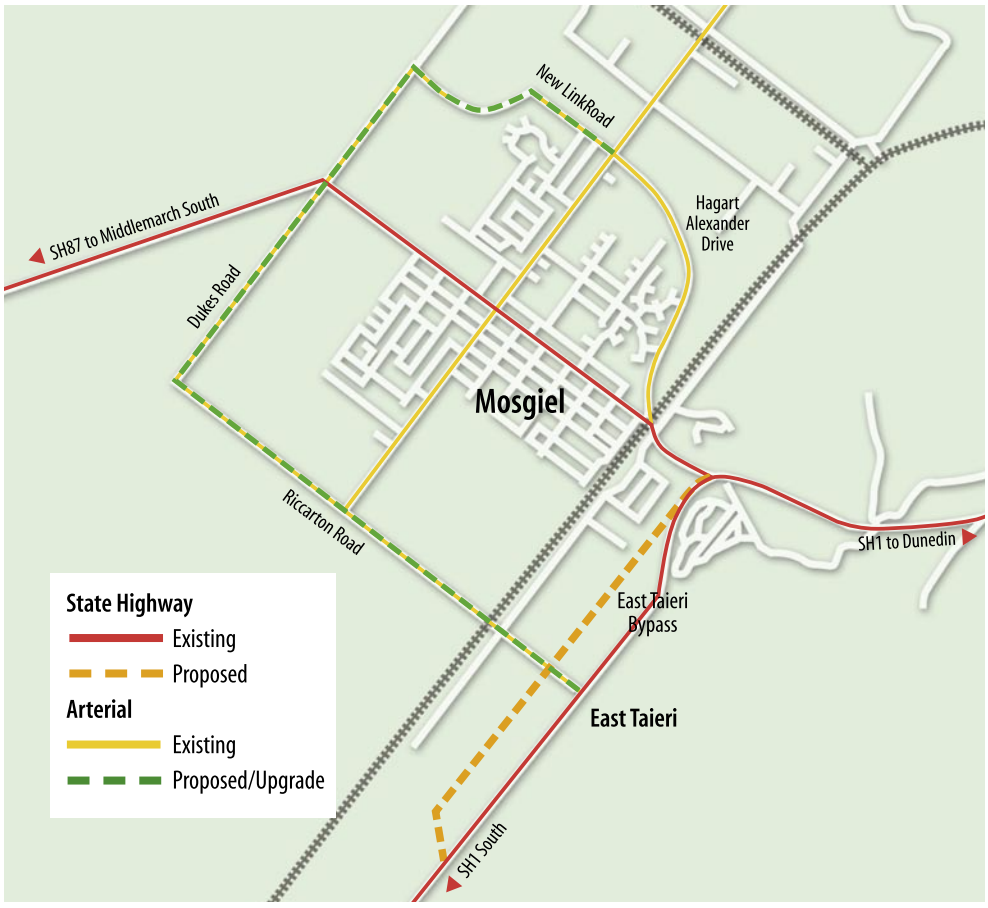
Figure 6. State Highway 88



Action	Responsibility (lead agency)	Estimated Cost	Indicators
Mosgiel Arterial Routes: Complete east and west arterial routes and connections to SH1			
Construct a link between Centre St and Carncross St. Planning this link will involve consultation with the community on the specific location, design and mitigation options	DCC, Otago Regional Council	$2.3m	2
Upgrading of Dukes Road and Riccarton Road (to improve safety for non-motorised users) consistent with the existing (2003) Mosgiel Arterial Routes decision by Council	DCC, Otago Regional Council	$1.6m*	2
Carry out feasablity study for potential use of Dukes Road South and Gladfield Road as an arterial route option to the south.	DCC, Otago Regional Council	$2.5m*	2
Carry out upgrade of Dukes Road South and Gladfield Road as an additional arterial route option to the south, if warranted.			

* Subject to review during project investigation

Figure 7. Mosgiel/Taieri Arterial Routes



Method

- Minimise transportation-related energy consumption through integrated land-use planning, route-alignment improvements, and new links.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Work with others on major projects such as:			
Harbourside	**DCC,** Chalmers Property	Within operational budgets	Project milestones met
Mosgiel-Taieri land-use changes	**DCC**	Within operational budgets	Project milestones met
Undertake feasibility study for relocation of shunting yards.	OnTrack, TollNZ, DCC	Within operational budgets	Project milestones met
Relocate the railway shunting yards to a site outside the city centre and rationalise the railway corridor if feasible.			

Method

- Implement works to improve the efficiency of Dunedin roads in accordance with the above indicators and objectives.

This method includes network development and management to reduce congestion and protect the efficiency of the roading network. The impact of mode-share changes will be factored in, rather than creating additional roading capacity (refer to Appendix 5 – Level of Service).

Jetty/Stafford/Manse/Princes Streets	**DCC**	$265,000*	1, 2
Passenger transport enhancements	**Otago Regional Council,** DCC, Land Transport New Zealand	$5.5m*	1, 2
Traffic management/traffic signals	**DCC**	Within operational budgets	1, 2
Crawford Street: monitor as improvements to the harbour arterial are carried out	**DCC,** Transit NZ	Within operational budgets	1, 2

* Subject to review during project investigation

Method

- Protect the function of the existing transportation network.

This method principally includes District Plan roading hierarchies and provisions, and adequate ongoing investment in maintenance to protect the function and condition of the roading network. The focus is on managing the negative impacts of the transportation network, protecting future strategic routes from reverse sensitivity and providing certainty for business and the community about future key routes.

District Plan changes, designations and regulations	**DCC**	Within operational budgets	1
Maintain the network to agreed maintenance standards	**DCC**	Within operational budgets	10
Maintain the long-term preservation of the road asset through Council's annual renewals programme	**DCC**	Within operational budgets	10

Method

- Maintain rural road access.

Rural areas have a high dependence on motor vehicles for private transportation, while roads allow for the movement of freight to and from agricultural areas. Providing safe and convenient access and good road links to and from rural areas is very important. The extent of the current rural network is considered adequate. In relation to the safety works outlined below in the medium term, the intention is that as the urban seal extension programme concludes, funding will be shifted to rural roads currently listed on the rural seal extension programme, to identify and undertake safety improvements. Priorities will continue to be set in consultation with Community Boards.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Support addition of passing options on SH87 at Lee Stream to regional project priority list	**Transit,** DCC, Otago Regional Council	To be determined	10, 6
Support addition of the sealing of Moonlight Road and Pukerangi Road to regional project priority list	**DCC,** Otago Regional Council, Land Transport New Zealand	Within operational budgets	10, 6
Utilise funding from the seal-extension budget and subsidy to undertake safety improvements on rural roads such as corner widening	**DCC,** Land Transport New Zealand	Within operational budgets	10, 6
Upgrade Mt Cargill and Blueskin Roads to provide safer access from Waitati to Port Chalmers, strengthen community lifelines and provide scenic tourist access	**DCC,** Otago Regional Council, Land Transport New Zealand	To be determined	10, 6

Method

- Improve the accessibility of the existing network for all users, including the elderly and disabled.

Additional funding has been budgeted to enable prioritisation and retrofit of all areas of Dunedin with mobility improvements, and the integration of these works with facilities for passenger transport and land-use changes. The goal is to improve the accessibility of the network, firstly focussing on key areas (for example, the Central Activity Area and South Dunedin) in a linked and integrated way. Council has an operational policy relating to the commercial use of footpaths, which recognises that footpaths are primarily for the use of pedestrians. Priorities for mobility works will be set in consultation with disabled and older persons representatives.

Implement mobility improvement programme	**DCC,** Land Transport New Zealand	$5.026m	11
Prioritise mobility, cycling, pedestrian and passenger transport works along key routes or in specified areas (e.g. South Dunedin Safer Routes Project) to support the accessible journey, and mode choice	**DCC,** Land Transport New Zealand	Within operational budgets	8, 9
Review the impact of the commercial use of footpaths policy on pedestrian flows in consultation with stakeholders, the elderly and disabled.	**DCC,** Land Transport New Zealand	Within operational budgets	8, 11

Community outcome: Environmental Well-Being

Outcome area: Sustainable City, Safe and Healthy People

The Council will support sustainable transportation that minimises engine emissions into the environment, and is an efficient use of our infrastructure. Transportation must support the use of Dunedin's unique assets by reinforcing connections to and through these locations in a way compatible with their particular context. The desired outcome is for Dunedin to make the most of its natural and built environment.

Objective

Support sustainable transportation that minimises energy consumption and engine emissions into the environment, is an efficient use of Dunedin's infrastructure and encourages physical activity.

Issues

- Slow rate of completion of the cycling and pedestrian network as identified in their respective strategies
- Low rate of use of passenger transport, particularly during peak times
- Low level of integration between walking, cycling, mobility and passenger transport infrastructure works with each other, to support the concept of an 'accessible journey'
- The negative impacts of commuter parking on residential areas
- Congestion at key points on the network.

Method – enhancements, incentives and encouragement

Travel demand management is a general term for strategies that result in more efficient use of transportation resources. Travel demand management can:

- Help solve parking and congestion problems
- Provide an holistic approach to transportation issues for businesses and organisations
- Support healthier, more productive staff and students
- Demonstrate a commitment to sustainability
- Deliver economic benefits of less time spent in cars.

It is recognised that not all types of transport will suit people all the time. However, even small shifts in mode choice or behaviour can have a meaningful impact on traffic and parking congestion and chaos at the school gate. The Council proposes to take a staged approach. In the first place, it will pursue enhancements to the passenger transport system with the Otago Regional Council and continue to develop pedestrian and cycling infrastructure as outlined above. This is to ensure there are viable choices for commuters and visitors to the central city.

Incentives and education amongst schools will continue, and business travel planning will be piloted within the Council and promoted amongst the business community.

There are many forms of encouragement, and fuel prices themselves will have an impact on future travel behaviour. Parking is another essential transportation resource and where the demand for parking is high (for example, around the central city), two methods can be used to influence demand: firstly, reducing the supply of parking; and secondly, charging for it. Parking is also related to traffic congestion, as people's choice to drive is influenced by its availability, cost and location. The need for charging will be monitored and, if it is required, it will follow the introduction of enhancements to the passenger transport, pedestrian and cycling networks.

Method – walking and cycling enhancements

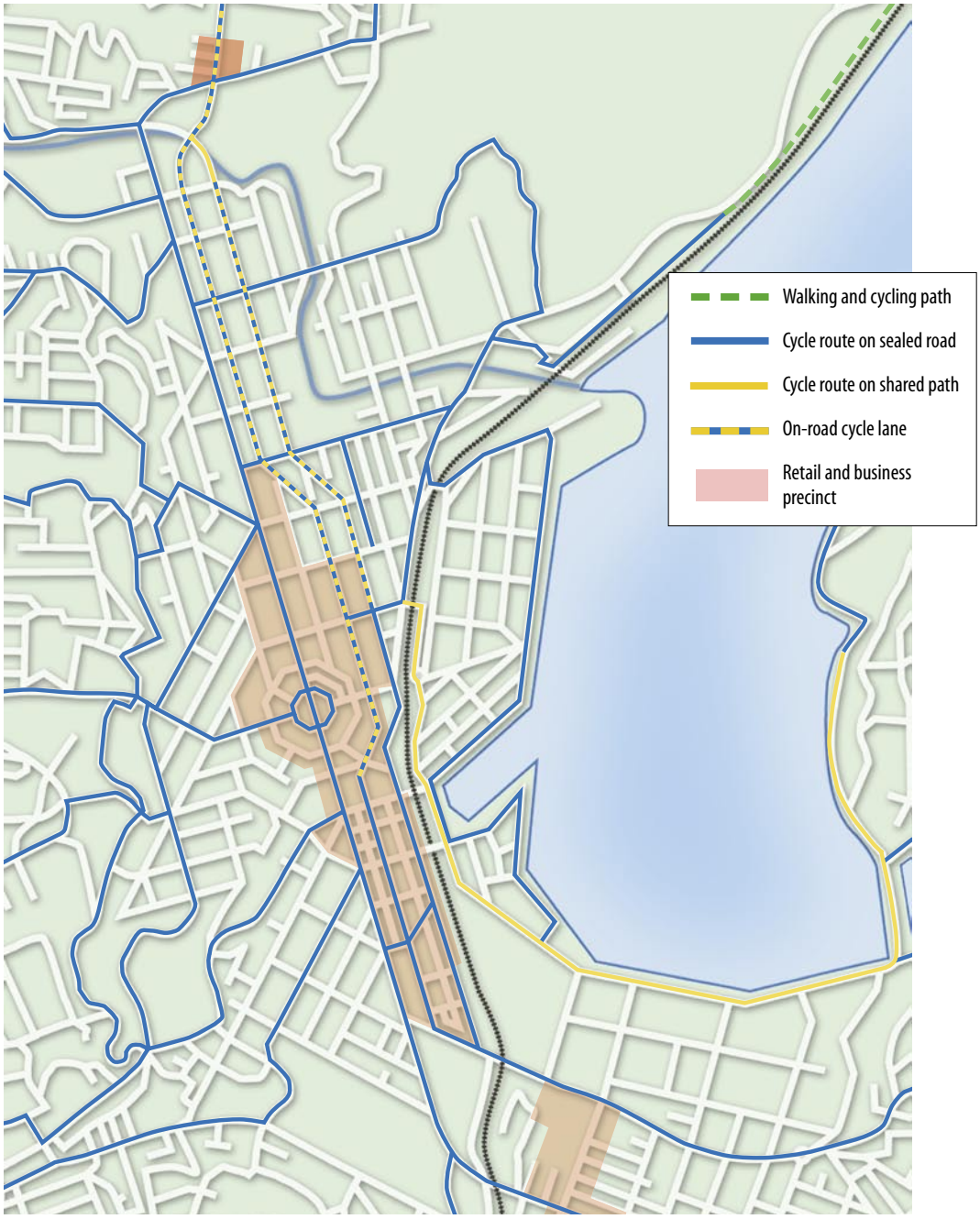
- Increase walking and cycling participation levels.

Additional funding has been budgeted to enable acceleration of projects that achieve the objectives identified in the pedestrian and cycling strategies in a shorter timeframe (10 years for pedestrian works and eight years for cycling works). The goal is to increase the proportion of people who walk or cycle to and from work (or study), and increase the proportion of non-work commuter trips made by walking and cycling (relative to all other modes). Council will consider the provision of separate facilities for alternative modes when arterial routes are being upgraded or constructed, including off-road cycle paths, footpaths and bridle paths, where appropriate.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Walking Implementation Plan	**DCC,** Land Transport New Zealand	$3.853m	8, 11, 12
Cycling Implementation Plan	**DCC,** Land Transport New Zealand	$1.335m	9, 10
Harbour walkway/cycleway:			
Ravensbourne walking/cycling path	**ORC,** DCC, Land Transport New Zealand, Transit, Port Otago Limited.	$239,279	8, 9, 10, 11, 12
West Harbour walking/cycling path: Ravensbourne to Port Chalmers	**ORC,** DCC, Land Transport New Zealand, Transit, Port Otago Limited.	Within operational budgets	8, 9, 10, 11, 12
Peninsula projects completion	**DCC,** Land Transport New Zealand	$7.065m*	8, 9, 10, 11, 12
Harbourside to Taiaroa Head	**DCC,** Land Transport New Zealand	$42m*	8, 9, 10, 11, 12

* Subject to review during project investigation

Figure 8. Cycling Implementation in central Dunedin



Method - passenger transport enhancements

- Increase passenger transport patronage.

The vision of the Otago Regional Council and Dunedin City Council is to support a cohesive and customer-focussed passenger transport network that:

- Attracts a substantial and sustained increase in patronage
- Offers customer convenience
- Provides a smooth flow through the Central Activity Area
- Delivers affordable and accessible services with modern vehicles
- Is easy to use.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Traffic management in activity areas	DCC	Within operational budgets	2, 3
Patronage growth	DCC, Otago Regional Council, Land Transport New Zealand	Within operational budgets	1

Method – Incentives

- Support education and incentive programmes to raise awareness about travel choices.

This method involves surveys, education and awareness raising to identify travel patterns, educate people about the consequences of their transport choices, inform them of the choices available, and support people interested in making more sustainable decisions.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Continue to support school travel planning	DCC	Within operational budgets	2
Instigate a pilot business travel plan within Council, and promote it within the business community	DCC	Within operational budgets	2

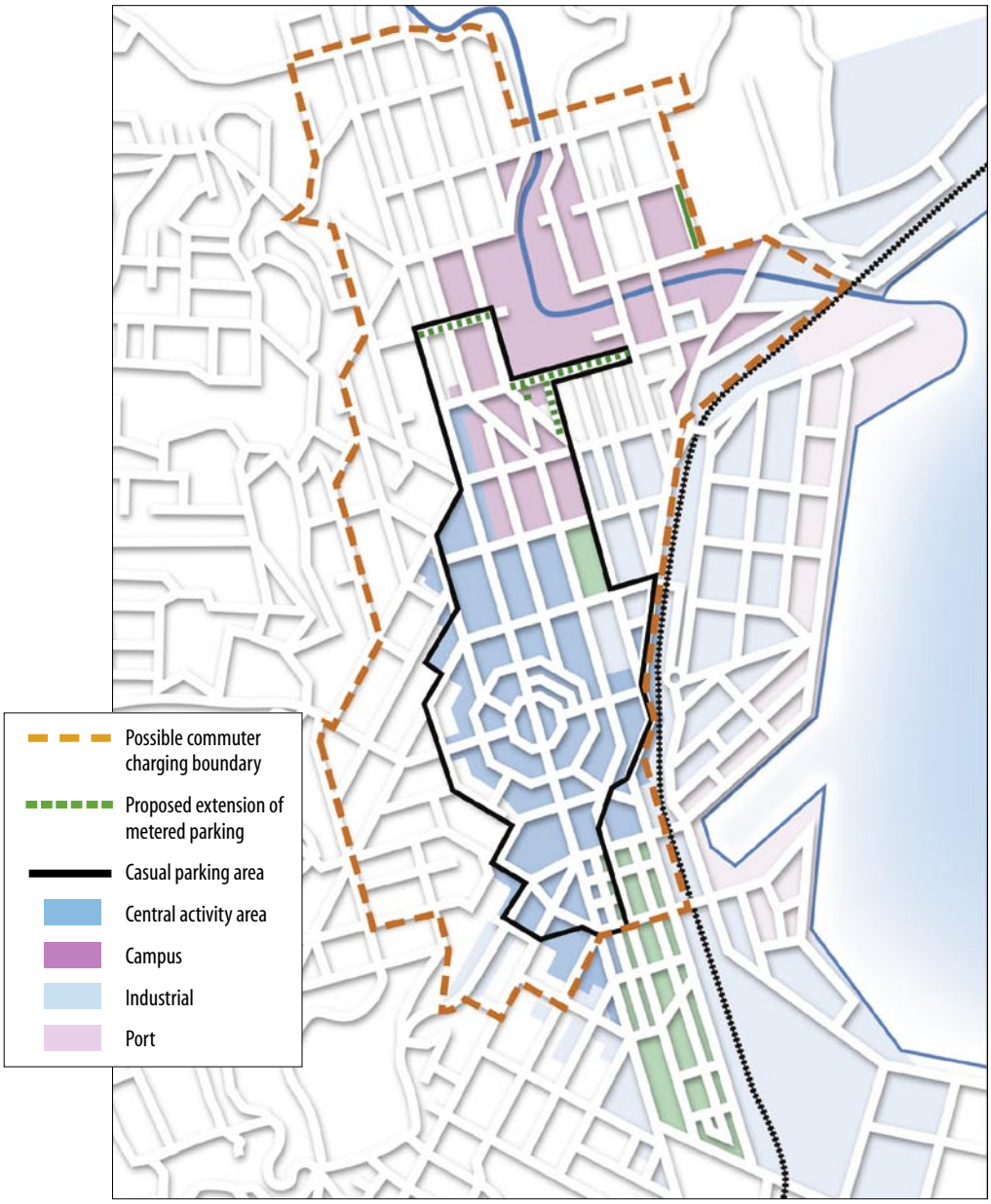
Method – encouragement

- Implement travel demand management.

This method involves discouraging single-occupancy vehicle travel by charging for commuter parking in the areas shown in Figure 9. The suggested charge is $5 per day, which is currently the fee for pay-and-display commuter parking close to the Central Activity Area. A review of the residents' parking scheme is proposed in conjunction with a comprehensive review of Council's parking strategy to protect residents access in areas affected by commuter parking demand. Matters to be addressed in any such review would include the eligibility criteria for residents parking, any available access to off street parking. Fees and charges will also be reviewed, including reasonable cost recovery, and indexation.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Review residents' parking policy as part of a comprehensive review of Council's parking strategy to support the above method.	DCC	Within operational budgets	1
Identify suitable park and ride sites and strategic opportunities in conjunction with the passenger transport review, particularly at Mosgiel, Port Chalmers and the Northern coastal communities.	DCC, ORC	Within operational budgets	1
Commuter parking will be monitored, and charging considered if it is required.	DCC	Within operational budgets	1

Figure 9. Proposed casual and commuter parking



Objectives

Protect and enhance the vibrancy and vitality of Dunedin's central city, campus, suburban and town centres.

Issues

- Demand for additional accessible and convenient parking facilities throughout the central city
- The negative effects of large through-traffic movements on the central city and George Street/Princes Street and its safe, pleasant and convenient use by pedestrians and cyclists
- Protecting access to the Central Activity Area for passenger transport.

Method

- Provide accessible and convenient casual parking facilities throughout the Central Activity Area consistent with this strategy.

The Council will continue to manage on-street parking in activity areas to provide a range of casual parking opportunities to support businesses and activity areas. On-street parking also generates traffic and turning movements as people are attracted to the area searching for parking, and manoeuvre in and out of spaces. This can have an impact on the safety of vulnerable road users; for example, pedestrians and cyclists.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Provide an additional 1,800 off-street casual parking spaces in the CAA in consultation with stakeholders	DCC	$60m*	7
Replace existing 'free' 30 minute parking in George, Princes and Stuart St with premium-priced paid parking and introduce incentives such as "1/2 hour free shopper parking" to encourage use of off street parking facilities	DCC	Within operational budgets	3, 4
Provide a combination of time restricted and metered parking areas in North Dunedin focussed around the University Campus and Museum to support short- to medium-term visitors to businesses and institutions, and in the Tennyson St/View St and Anzac Avenue St Andrew St areas.	DCC	Within operational budgets	7

* Subject to review during project investigation

Method

- Implement traffic management measures in activity areas that will improve traffic flows and recognise pedestrians as priority users.

Traffic management in activity areas is focussed on providing good access, safety and pedestrian amenity. The objective is two-fold: to supporting the operation of passenger transport, and to protect and enhance the pedestrian environment.

Action	Responsibility (lead agency)	Estimated Cost	Indicator
Trial turning movement bans at alternate intersections in George Street between the Octagon and Frederick Street	DCC	Within operational budgets	3, 5, 8
Investigate traffic restrictions through the lower Octagon during times of peak pedestrian flows.	DCC	Within operational budgets	3, 5, 8
Future trials of alternative measures will be carried out if turning bans prove ineffective	DCC	Within operational budgets	3, 5, 8

Figure 10. Main Street Traffic Management Trial

Method

- Ensure effective access to activity areas by passenger transport.

Analysis has indicated that removing all passenger transport services from George Street/Princes Street would be detrimental to the community's perception and patronage of the system. A key feature of this strategy is to maintain and enhance the profile of passenger transport in the city. This includes continued progress on improving vehicle-quality standards and the operation of passenger transport along George Street/Princes Street.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Manage traffic as discussed in the previous method to improve the operation and emissions from passenger transport	DCC	Within operational budgets	4
Progressively require improved vehicle-quality standards for passenger transport	ORC	-	Refer RLTS mode share targets

Community outcome: Social Well-Being

Outcome area: Safe and Healthy People

The Council has influence in this area through initiatives to improve perceptions of central city safety by improved street lighting and other measures, safety improvements to roads and footpaths, and partnering with others to contribute to enforcement and education initiatives. The objective is to contribute to national efforts to reduce road trauma and achieve a continual decline in the rate and severity of crashes and casualties reported, and to improve safety conditions for vulnerable road users.

Objective

Provide a safe transportation network for users (including non-motorised users such as pedestrians and cyclists), workers and operators of the system.

Issues

- The high rate of crashes and casualties in Dunedin
- Port traffic (from the north) passing through the tertiary education campus
- High numbers of pedestrian movements across the one-way pair and between the tertiary area and the Central Activity Area
- Pedestrian and cyclist safety on State Highway 88
- Road safety around schools

Methods

The major tools available to reduce road trauma in Dunedin are:

- Enforcement
- Education
- Engineering works
- Management systems.

All four tools must be used in conjunction to ensure a truly effective safety programme. No one agency or organisation is responsible for delivering, or has resources to deliver, all road safety enhancements. The agencies involved directly in road safety in Dunedin are Land Transport New Zealand, New Zealand Police, the Accident Compensation Corporation, Public Health South, Transit NZ, the Otago Regional Council and the Dunedin City Council.

Addressing road safety issues also involves particular user groups. Those primarily liaised with are the Automobile Association, NZ Road Transport Association, Spokes (which represents some cycling interests) and community groups that have an interest in road safety and may become involved in localised campaigns or initiatives.

Additional funding has been budgeted for the next five years to enable greater emphasis to be placed on road safety in Dunedin, within the following framework.

Method – Enforcement

- Ensure an appropriate road safety enforcement regime operates in Dunedin.

This method is mainly concerned with supporting the police in targeted and effective enforcement. It involves ensuring that sufficient resources are available and that information is shared to enable the effective use of those resources. The police focus on enforcement of the road rules, excessive speeding and areas with high crash rates. The Council also audits traffic-management plans and Council's Parking Services department is involved in enforcement, particularly for clearways, no-stopping restrictions, skips and containers, and targeted enforcement outside schools.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Establish regular liaison with the local office of NZ Police to support enforcement initiatives	**DCC,** NZ Police	Within operational budgets	5, 6
Participate in quarterly Road Safety Partners meetings and Southern Traffic Management Liaison Group	DCC, NZ Police, Land Transport New Zealand, Accident Compensation Corporation, South Island Road Controlling Authorities	Within operational budgets	5, 6
Liaise with DCC Parking Services to support enforcement activities	**DCC**	Within operational budgets	5, 6
Audit temporary traffic management plans at road work sites	**DCC**	Within operational budgets	5, 6

Method – Education

- To foster a safety culture and improved understanding of road safety issues.

This method is concerned with education and capacity building within the community and agencies involved in road safety to raise the profile of road safety issues and improve everyone's understanding of these issues, and of how they can contribute to reducing crashes and casualties.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Support the Dunedin Community Road Safety Advisor, Road Safety Project Officer and NZ Police in education and awareness programmes	DCC, NZ Police, Land Transport New Zealand	Within operational budgets	5, 6
Assist the community to identify priority road safety issues	**DCC,** NZ Police, Land Transport New Zealand	Within operational budgets	5, 6
Maintain and enhance ongoing road safety education programmes	**DCC, NZ Police,** Land Transport New Zealand	Within operational budgets	5, 6

Method – Engineering

- Provide a roading network reflecting 'best practice' engineering treatments.

It is estimated that infrastructure contributes to up to one third of all crashes. This suggests that crash reduction and road safety improvements address about 28% of the total number of crashes. Annual crash reduction studies are carried out to monitor the success of improvements in reducing crash numbers and severity. Engineering methods are relevant to all works occurring on the road. For this reason, in addition to the actions listed, the Council will provide design guidance by undertaking project reviews and safety audits on all capital works, cyclic maintenance and projects eligible for subsidy by Land Transport New Zealand.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Prioritise and implement recommendations of South Dunedin Safer Routes pilot	**DCC,** Land Transport New Zealand	Within operational budgets	5, 8, 9, 11
SH1: Transit is reviewing pedestrian safety issues and pedestrian crossings on Cumberland and Gt King Streets in the campus area. As part of this review, Transit has identified the need to install traffic lights at St David St and Union St to improve pedestrian safety.	**Transit New Zealand,** DCC, Land Transport New Zealand	Within operational budgets	5
SH88: Pedestrian and cyclist track next to railway	**DCC, Otago Regional Council,** Land Transport New Zealand	Within operational budgets	5
Upgrade Three Mile Hill Road	**DCC, Otago Regional Council,** Land Transport New Zealand	$1.25m	5
Prioritise crash clusters when implementing road safety works	**DCC,** Land Transport New Zealand	Within operational budgets	5
Undertake appropriate treatments to reduce the risk of crashes at identified crash clusters	**DCC,** Land Transport New Zealand	$7.63m (over 10 years)	5
Continue the development of cycle routes and hazard reduction on those routes	**DCC,** Land Transport New Zealand	Within operational budgets	5
Develop a pedestrian implementation plan	**DCC,** Land Transport New Zealand	Within operational budgets	5
Identify priority sites around schools on local roads for eligible capital works; e.g. school zones	**DCC,** Land Transport New Zealand	Within operational budgets	5
Continue progress on upgrading pedestrian crossings (started 2001)	**DCC,** Land Transport New Zealand	Within operational budgets	5
Undertake safety inspections to identify hazards and programme remedial works to address these	**DCC,** Land Transport New Zealand	Within operational budgets	5

Method – management systems

- Ensure the transportation network is safely managed.

The objective is to ensure the transportation network is managed in accordance with the principles of safety. The safety management system provides a framework to ensure good safety management on the local road network and identifies opportunities for improvement in the future to result in a decrease in the number of reported crashes and casualties.

Action	Responsibility (lead agency)	Estimated Cost	Indicators
Resource and implement the Safety Management System	DCC, Land Transport New Zealand	Within operational budgets	5, 6
Speed limit reviews (3 years between reviews)	DCC	Within operational budgets	5, 6

ACTIVITY AREAS

Dunedin City's suburban nodes include Mosgiel, Roslyn, Fairfield, Green Island, Brighton, Mornington, Corstorphine, Caversham, Musselburgh, St Kilda and Woodhaugh. Seaside villages include Port Chalmers, Waitati, Waikouaiti, Warrington, Seacliff, Karitane and Portobello. The main rural centres include Middlemarch and Outram. Dunedin's rural villages comprise Hyde, Woodside, Allanton and Berwick.

There were four activity areas in Dunedin that were repeatedly raised during consultation and that need special consideration in relation to traffic management. These are the Central Activity Area between the Exchange and Frederick Street, Mosgiel, South Dunedin and the Campus area (North Dunedin). These are high priorities for the Council.

A number of communities, particularly Waikouaiti Coast and Port Chalmers, to the north of Dunedin, support the encouragement of rail for freight transportation. In conjunction with the designation and upgrading of roads for freight within the central city, this is a strategic priority for the Council.

The northern coastal communities and suburbs to the south of Dunedin, particularly suburbs within the Saddle Hill Community Board area, are concerned about the maintenance of existing passenger transport services and infrastructure (as a minimum). This is being investigated in co-operation with the Otago Regional Council through the Passenger Transport Review. It is anticipated that the Council and the Region will work together to review existing routes (spatial and temporal coverage, headways and operating hours); investigate a possible orbiter route; re-evaluate all routes to incorporate earlier starts and later finishes suitable for shift workers; and increase frequencies for commuter services to better meet user needs. The review will be consulted on separately, and respective policies and actions relevant to each authority prioritised and programmed through this strategy and the Regional Passenger Transport Plan.

Issues and actions in relation to specific areas are shown below. The focus is on matters of strategic importance.

Central Activity Area

Existing plans/controls: **District Plan, Townscape and Heritage Precinct**

The Central Activity Area, which runs from the Exchange to Frederick Street, is the heart of our city. Historically, this area has always had a mixed-use focus. Current planning provisions support mixed uses, excepting industrial uses. The planning provisions relating to the Central Activity Area essentially state that casual parking is not required to be provided with development and that the Council will provide casual parking to serve the area. Encouraging residential development is also a component of this, although issues of noise and air quality need to be balanced between residential and other uses. Over many years, efforts have been made to protect the Central Activity Area's unique character and preserve its vitality and vibrancy. It adjoins the campus area and the hospital at its north end. Its relationship with these institutions is extremely important to the continued vitality of the city.

Issue	Action
Traffic congestion, particularly in the afternoon peak, degrades both the operation of passenger transport and the amenity of the area	Trial turning movement bans at alternate intersections to provide a dedicated through lane for traffic
	Investigate traffic restrictions through the lower Octagon during times of peak pedestrian flows.
	Future trials of alternative measures will be carried out if turning bans prove ineffective
Dunedin's employment is concentrated in and around the central city, with five of the top ten major employers located there. This provides opportunities to reduce single-occupancy car vehicle travel to and from work, and commuter parking congestion in and around the central city	Work with businesses, schools and tertiary education providers to carry out school and workplace travel planning
The presence of free kerbside parking in the Central Activity Area induces additional traffic circulation, compounding traffic congestion	Investigate introduction of paid half-hour parking, in conjunction with incentives to support shopper parking including "first hour free" in casual car parks
	Provide additional (off-street) casual parking in appropriate locations

Mosgiel Taieri

Existing plans/controls: **District Plan, Community Plan**

Mosgiel is approximately 16 kilometres from central Dunedin and home to about 10,500 people. Mosgiel's activity area is centred on State Highway 87 (Gordon Road) with a major crossroads at Factory Road. The flat topography has led to the establishment of many lifestyle villages and townhouses for people who wish to retire there. Mosgiel is a major residential growth area of greater Dunedin and a future residential rezoning is planned, but not yet resolved. To protect the function of State Highway 1 to the south of Dunedin, and utilise existing infrastructure more efficiently, the Council's preferred option to date has been to locate new residential land to the east of Mosgiel. New industrial land has recently been zoned and additional industrial land is planned adjacent to these areas.

The roading network on the Taieri Plain accommodates agricultural traffic, including log movements generated from the many woodlots to the south of Dunedin. It is anticipated that the roading network will be able to accommodate projected wood flows and truck movements with a minimum of upgrading. This is particularly the case if rail is used to move logs from the Mt Allan forests.

State Highway 87 is an important tourist link from Dunedin to Central Otago via Outram and Middlemarch. It carries about 14,000 vehicles per day through the centre of Mosgiel. Transit NZ, the state highway authority, has the objective of running the State Highway network in a way that contributes to an integrated, safe, responsive and sustainable land transport system throughout New Zealand. Its objectives include providing priority for through traffic, which can impact on property access and pedestrian accessibility.

The Council has sought to address these issues and ensure the competitive movement of goods, services and people by investing in the completion and upgrading of arterial routes to the east and west of Mosgiel. These include Gladfield Rd, Riccarton Road West, Centre Street (to Carncross Street) and Dukes Road. Transit is also investigating the options for the form of the intersection at Riccarton Road and State Highway 1.

Issues	Action
Growth in industrial and residential development	Complete arterial network to support proposed industrial and residential zonings
A significant proportion of elderly residents	Provide access for people with disabilities and the elderly through prioritising mobility-enhancement works
Increasing casual parking demand	Monitor and provide for parking needs as required
Protecting and enhancing the vibrancy and vitality of Mosgiel town centre	Manage traffic to support commercial activities and communities and encourage walking and cycling

South Dunedin

Existing plans/controls: **District Plan, Townscape and Heritage Precinct**

The South Dunedin shopping centre is predominantly based around the intersection of King Edward Street with Hillside Road (known as Cargill's Corner), and down King Edward Street. Hillside Road is a major east-west arterial route and traffic volumes on it have increased with the arrival of The Warehouse. King Edward Street also has an arterial function and traffic volumes along it between Macandrew Road and Hillside Road have also increased. The current level of through traffic within the activity area is detracting from access and pedestrian amenity. All transportation proposals will recognise the existing heritage character and built form, including the historic street pattern.

Issues	Action
A significant proportion of elderly residents compared with Dunedin as a whole	Provide access for people with disabilities and the elderly through prioritising mobility-enhancement works
Parking demand in the area	Monitor and provide for on-street parking needs, as required
Safety issues, particularly at Cargill's Corner	Undertake safety works at Cargill's Corner in consultation with the community
Providing access for all modes, including passenger transport	Manage traffic to support commercial activities and communities and encourage pedestrians and cyclists

Campus

Existing plans/controls: **District Plan, Townscape and Heritage Precinct**

The tertiary campuses are a vital part of Dunedin's community and economy. Historically, they have been focussed on the North Dunedin area, with first-year students often living in halls of residence (especially in the case of the university). In latter years, student accommodation has been dispersed around the campus as well as other parts of the city. The state highways bound the campuses and safe access across these is an important issue. The Council and the three tertiary providers are working together to maintain a quality campus environment and create a vibrant tertiary quarter, ensuring Dunedin's place as the education capital of New Zealand.

Issues	Action
Safe pedestrian access across SH1 in the tertiary campus area	SH1: Signalise intersections along Cumberland Street north
High demand for parking in North Dunedin	Provide a combination of time restricted and metered parking areas in North Dunedin focussed around the University Campus and Museum to support short- to medium-term visitors to businesses and institutions.
Enhancing the integration of the tertiary campuses with the city, and providing a variety of safe transportation links and services to the area	Work with all campus stakeholders (through the Tertiary Sector Planning Group) and other planning activities (Passenger Transport Review) to scope options for planning in the area (such as masterplanning, local area traffic management, park and ride, bus services)
Heavy traffic through the campus area on SH88	Realign SH88 between Frederick Street and Leander Street, adjacent to the rail corridor
Limited availability of development sites within the campus zone	Rezone industrial land on the east side of Parry Street for campus uses

Harbourside

Existing plans/controls: **District Plan, Masterplan**

Dunedin's harbourside area is centrally located, near to the Central Business District, the railway, the port and, of course, the harbour. It is flat land, which is in relatively short supply in Dunedin. The area is characterised by industrial buildings, including port warehousing, and currently accommodates mainly industrial and port-related activities, with many low-intensity uses such as storage. Opportunity exists to intensify the use of the area and complement existing amenity improvements. Linkages will be made with the planned improvements at the Chinese Garden and the Otago Settlers Museum, and to increase public access to the harbourside. These concepts are being developed through the Harbourside Master Plan process.

The overall transportation objective to support these proposals is to improve access to the harbourside for all transport modes. This objective needs to be balanced against the needs of the major arterial route linking Dunedin Airport and the southern motorway with the ports of Dunedin and Port Chalmers. All transportation proposals recognise the existing heritage character and built form, including the historic street pattern.

To maximise the linkages between the harbourside and central city, access improvements are required at four locations:

- Rattray Street (vehicle and pedestrian access options)
- Railway Station (relocate arterial road beneath pedestrian overbridge)
- St Andrew Street (vehicle and pedestrian)
- Halsey/Ward Street access to port and industrial area (vehicle and pedestrian).

Vehicular access needs to be provided for both the port and the new activities proposed within the rejuvenated harbourside area. In the long term, it is expected that the port will have a formal secured entrance at Halsey Street to the operational area. Street treatments such as narrow carriageways and angle parking will deter trucks from moving through the area.

Provision for cyclists will be made via the planned public walkway/cycleway from Ravensbourne into the city, which may be extended to connect to the Portsmouth Drive walkway.

To overcome the major barrier between the harbourside and central city formed by the railway corridor, Council will adopt a strategic goal of relocating the rail shunting yards.

Increased public use and utilisation of the harbourside is expected to generate additional vehicular traffic and greater car-parking demand. Convenient vehicle parking will be necessary as the area develops into a destination for locals and tourists, and maximum use will be made of kerbside parking in the area as demand increases. There is scope for the increased use of angle parking on the relatively wide streets in the area. Requiring car parks for new activities where existing buildings impose constraints or where on-site car parking may impact on the character of an area will need to be considered in greater detail.

Issues	Action
Improving connections to central city for pedestrians, cyclists and vehicles, particularly at street level	Create new rail-crossing access to the city centre at Rattray Street and Fryatt Street
Creating a vibrant, pedestrian-focused environment	Change street layout and manage traffic to provide appropriate access to new development and manage traffic circulation within the area
Accommodating the future increase in casual parking demand	Monitor and manage on-street casual parking
Future growth in residential and commercial development provides opportunities for sustainable growth options, including intensive inner-city housing, which can reduce the demand for car travel. An issue is ensuring the provision of sufficient parking within new developments	Ensure District Plan provisions specify that new developments provide sufficient on-site parking. For heritage buildings, parking requirements need to be balanced with the retention of heritage character and built form
Improving connections to the central city for pedestrians, cyclists and vehicles, particularly at street level	Provide access for people with disabilities and the elderly through prioritising mobility-enhancement works

Caversham

Existing plans/controls: **District Plan, Townscape and Heritage Precinct**

Issues	Action
Providing access for all modes, including passenger transport	Manage traffic to support commercial activities and communities and encourage pedestrians and cyclists
	Provide access for people with disabilities and the elderly through prioritising mobility-enhancement works

Gardens and Musselburgh

Existing plans/controls: **District Plan**

Issues	Action
Providing access for all modes, including passenger transport.	Provide access for people with disabilities and the elderly through prioritising mobility-enhancement works
	Manage traffic to support commercial activities and communities and encourage pedestrians and cyclists

Outram

Existing plans/controls: **District Plan**

Issues	Action
Providing access for all modes, including passenger transport	Provide access for people with disabilities and the elderly through prioritising mobility-enhancement works
	Manage traffic to support commercial activities and communities and encourage pedestrians and cyclists

Waikouaiti Coast

Existing plans/controls: **District Plan, Community Plan**

Issues	Action
Advocating for enhanced public transport to the northern coastal communities	Passenger Transport Review
Encouraging use of rail for passengers and freight	Support proposals for alternatives to road for freight
Providing access for all modes, including passenger transport	Provide access for people with disabilities and the elderly through prioritising mobility-enhancement works

Green Island

Existing plans/controls: **District Plan, Community Plan**

Issues	Action
Maintaining the existing public transport service and monitoring future demand	Passenger Transport Review
Ensuring continued maintenance and upgrading of bus infrastructure and new shelters	
Providing access for all modes, including passenger transport.	Provide access for people with disabilities and the elderly through prioritising mobility-enhancement works

Port Chalmers

Existing plans/controls: **District Plan, Townscape and Heritage Precinct, Community Plan**

Issues	Action
Further access to the harbour for recreational activities	Provide walking/cycling route to enable separation of pedestrians and cyclists from SH88
Providing access for all modes, including passenger transport	Provide access for people with disabilities and the elderly through prioritising mobility-enhancement works
Heavy traffic to the port using State Highway 88	Relocate SH88 to location of walking and cycling route along railway line; Dunedin-Port Chalmers road becomes a local road
	Investigate options to reduce heavy vehicle traffic on Port Chalmers main street including a rail/road tunnel option.
	Implement preferred option to reduce heavy vehicle traffic.

Middlemarch

Existing plans/controls: **District Plan, Community Plan**

Issues	Action
Improving safety on George King Memorial Drive and Hindon Road.	Undertake safety works on George King Memorial Drive, in consultation with the community
Providing access for all modes	Provide access for people with disabilities and the elderly through prioritising mobility-enhancement works

Portobello

Existing plans/controls: **District Plan, Community Plan**

Issues	Action
Further access to the harbour for recreational activities	Provide walking/cycling route to enable separation of pedestrians and cyclists from Portobello Road
Installing appropriate tourism signage on the Otago Peninsula	Plan and construct directional signage on the Otago Peninsula. This is priority 2 in the Council's tourism signs budget and will be carried out in 2007/2008
Advocating for appropriate school bus service and bus shelters at Portobello	Passenger Transport Review
Providing access for all modes, including passenger transport	Provide access for people with disabilities and the elderly through prioritising mobility-enhancement works

Roslyn, Mornington and Maori Hill

Existing plans/controls: **District Plan**

Issues	Action
Providing access for all modes, including passenger transport	Provide access for people with disabilities and the elderly through prioritising mobility-enhancement works
	Manage traffic to support commercial activities and communities and encourage pedestrians and cyclists

IMPLEMENTATION PROGRAMME

An indicative implementation programme for infrastructure and each transportation mode is set out below. This contains the projects and activities that the city will choose to invest in over the life of the strategy, It shows indicative budgets, with the source of funding (government, or local funds).

Preliminary budgets will flow through into the Community Plan and will be revised when projects are further developed and the estimated costs are firmed up. The tolerance of these preliminary budgets varies. Well-established estimates for seal extensions, mobility, walking and cycling facilities, Peninsula roads projects, and safety works are forecast. Strategic corridor improvement costs are established according to Land Transport New Zealands requirements at the rough order of cost stage, with an accuracy of between –30 to +50%.

In conjunction with the policies identified, it will support a sustainable, safe and integrated transportation network that serves the communities' needs. The expenditure set out below is based on the preferred strategic framework. It aims to develop transportation networks and links where justified, with scope given to the potential for utilising demand management and encouraging alternative modes to the private car.

Roading New Capital Requirements	Short 2006/07	2007/08	2008/09	2009/10	2010/11	Medium 2011/12	2012/13	2013/14	2014/15	2015/16	Long 2016 on	TOTAL 2006/16	FUNDING SOURCE			
													LTNZ	DCC	TRANSIT	OTHER
a) Strategic Corridor Improvements																
Upgrade Strathallan Intersections	450											450	293	158		
Provide Link from SH1 to Harbour Arterial @ Rattray St								2,500				2,500	1,625	875		
Relocate Arterial Between Willis and St Andrew Sts											4,500	4,500		4,500		
Extend Harbour Arterial From St Andrew to Frederick St's					900	2,000	3,500	2,100				8,500	5,525	2,975		
Upgrade Jetty/Manse Stafford Intersection	265											265	172	93		
Centre St Carncross St connection	106	2,120										2,226	1,447	779		
Riccarton & Dukes Rd upgrade						1,590						1,590	1,034	557		
Three Mile Hill Rd Upgrade	1,250											1,250	813	438		
Sub Total – Strategic Corridor Improvements	2,071	2,120	0	1,590	900	2,000	3,500	4,600	0	0	4,500	21,281	10,908	10,373		
b) State Highway Projects Promoted through strategy																
Relocate SH 88 To Parry St adjacent to rail corridor				600	3,500	3,500	1,200					8,800	5,720	3,080		
Pine Hill Rd Great King St Grade Separation											6,500	6,500			6,500	
Divert SH88 past Ravensbourne							1,200	6,000	4,800			12,000			12,000	
Create shared tunnel in Port Chalmers											8,500	8,500		8,500		
Caversham Motorway		1,000	6,000	8,000	10,000							25,000		1,500*	25,000	
East Taieri Bypass		500	500			6,000	8,000					15,000			15,000	
Sub total - State Highway	0	1,500	6,500	8,600	13,500	9,500	10,400	6,000	4,800	0	15,000	75,800	5,720	11,580	58,500	

* Including Council land purchase.

Roading New Capital Requirements	Short 2006/07	2007/08	2008/09	2009/10	2010/11	Medium 2011/12	2012/13	2013/14	2014/15	2015/16	Long 2016 on	TOTAL 2006/16	FUNDING SOURCE			
													LTNZ	DCC	TRANSIT	OTHER
c) Harbour Walkway/Cycleway stage 1 peninsula projects																
Upgrade Highcliff Rd Seaton - Portobello																
Gain Consents & undertake design	106	212	265									583	379	204		
Widen Harington Point Rd Tidewater – Lewis*	212											212	138	74		
Widen 'Poo' Corner*		212										212	138	74		
Form Harington Point Footpath*		265										265	172	93		
Form Footpath/Cycleway Greenacres - Raynbird*	636	1,643	286									2,565	1,667	898		
Extend Vauxhall Footpath/Cycleway*			721									721	469	252		
Form Footpath/Cycleway Greenacres - Rosehill*			700	779	1,028							2,507	1,630	877		
Complete walkway cycleway from Taiaroa Head to Aramoana*											42,074	42,074	13,674	7,363		21,037
Sub Total – Peninsula Roads Improvements	954	2,332	1,972	779	1,028	0	0	0	0	0	42,074	49,139	18,266	9,836		21,037
d) Walking & Cycling Improvements																
Cycling Network Implementation	180	180	180	180	180	180	180	75				1,335		1,335		
Footpath Construction	382	382	382	382	382	382	382	382	382	415		3,853	2,504	1,349		
Facilities for People with Disabilities	465	465	512	512	512	512	512	512	512	512		5,026	3,267	1,759		
Sub Total – Walking & cycling	1,027	1,027	1,074	1,074	1,074	1,074	1,074	969	894	927		10,214	5,771	4,443		

* Budgets subject to review.

NOTE: Strategic corridor improvement costs are established according to Land Transport New Zealands requirements at the rough order of cost stage, with an accuracy of between -30 to +50%.

Roading New Capital Requirements	Short 2006/07	2007/08	2008/09	2009/10	2010/11	Medium 2011/12	2012/13	2013/14	2014/15	2015/16	Long 2016 on	TOTAL 2006/16	FUNDING SOURCE			
													LTNZ	DCC	TRANSIT	OTHER
e) Road Safety Works																
Works to improve network safety including landscaping	763	763	763	763	763	763	763	763	763	763		7,630	4,960	2,671		
Safety Improvements			100	100	100	100	100	100	100	100		800	520	280		
Sub Total – Road Safety Works	763	763	863	863	863	863	863	863	863	863		8,430	5,480	2,951		
f) 'Other' Roading Works																
Urban Seal Extensions	400	400										800		800		
Rural Seal Extensions	554	554	867	867	867	867	867	867	867	867		8,044		8,044		
North Dunedin Parking	37	37	37	37								148		148		
Street Lighting Improvements	11	11	11	11	11	11	11	11	11	11		110		110		
Subdivision Property Purchases	27	27	27	27	27	27	27	27	27	27		265		265		
Miscellaneous Road Works	102	102	102	102	102	102	102	102	102	102		1,020		1,020		
George St speed limit																
Sub Total – 'Other'	1,131	1,131	1,044	1,044	1,007	1,007	1,007	1,007	1,007	1,007		10,387		10,387		
g) Offstreet Parking																
Provide 1800 Offstreet parking spaces in the Central area		9,540	12,720	**12,720**	12,720	12,190						59,890		59,890		
Sub Total – 'Parking'		9,540	12,720	12,720	12,720	12,190						59,890		59,890		
TOTAL	**5,946**	**18,413**	**24,172**	**26,670**	**31,092**	**26,634**	**16,844**	**13,439**	**7,564**	**2,797**	**61,574**	**235,141**	**46,145**	**109,549**	**58,500**	**21,037**

NOTE: Strategic corridor improvement costs are established according to Land Transport New Zealands requirements at the rough order of cost stage, with an accuracy of between -30 to +50%.

BACKGROUND

Charles Kettle planned Dunedin in 1845. In accordance with his plan, the Octagon was designed as a central city park with major roads laid out to form a north-south grid running along the flat land between what is now the Town Belt and the foreshore. The current transportation network in Dunedin is largely the result of a major transportation study undertaken in 1964 that led to the implementation of the one-way street system and the widening of several major roads. A further review was carried out in 1992, which resulted in an assessment of the demand for transportation in Dunedin, the need for roading designations, the district scheme, and planning strategies and policies. It also developed the strategic transportation model for the city, enabling modelling and projections of transportation demand.

Dunedin's economy

Dunedin's economy is founded on pastoral farming, forestry, manufacturing, tourism and education. The city has an international airport, which attracts domestic and overseas tourists. Port Otago serves the city and region, contributing to the national economy as the third-largest container port in New Zealand by export value. It also attracts cruise ships, which make a significant contribution to the local and regional economy. Most new activity in Dunedin has been focussed on Mosgiel and the tertiary area in North Dunedin, and this has impacted on State Highway 1 between Mosgiel and Dunedin and on inner-city streets, which have experienced increased congestion.

On a typical working day in Dunedin, people travel relatively easily from home to work and school. The proportion of people who travelled to work on census day 2001 by different modes is shown below.

Peak traffic flows vary according to location but roads are generally busiest between 8am and 9am on weekdays, and 11am and 1pm on weekends. Delays due to congestion occur on key links into the city in the morning. In the city, most bus routes travel George Street/ Princes Street for part of their journey. This provides excellent access to the Central Activity Area of the city. A high number of people walk to work in Dunedin compared with the rest of New Zealand. This is due to the city's compact size and employment being concentrated in the city centre. People also park cars on the hills surrounding the city and walk to work. In rural areas, residents rely heavily on cars for transportation.

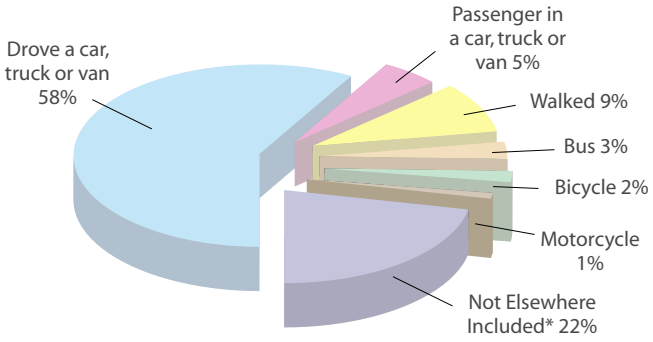
Walking and cycling are popular recreational and leisure activities for Dunedin residents. One of the top tourist activities in Dunedin is sightseeing and walking in the city. It is estimated that approximately 4,000 bicycles per year (about half of which are mountain bikes) are sold in Dunedin. It is difficult to quantify trends in overall cycle use in Dunedin. Anecdotally, it appears that cycle use by school students is declining as more students are driven to school by their parents (or drive themselves), while recreational use appears to be increasing.

Some Dunedin roads may never have special pedestrian or cyclist facilities on them. However, since cyclists and pedestrians generally choose the most direct route, they use almost all roads at one time or another. It is important, therefore, to ensure that the road network is safe and attractive for these users.

Currently, the supply of central-city parking meets commuter demand, but it appears to be at capacity. Free all-day parking spaces in residential areas surrounding the central city are almost fully occupied (more than 80% full) at 11am and are quickly vacated after 5pm. Parking spaces are not evenly distributed in Dunedin. Parking for shops and businesses is particularly in demand at the northern end of Dunedin's Central Activity Area around Frederick Street. During the academic year, demand is very high in North Dunedin as students, staff and visitors compete for parking spaces.

Most tourists travel around Dunedin by road. In addition to one third of tourists using rental cars within Dunedin, a particularly high proportion of tourists use private vehicles.

How people travelled to work



* Not elsewhere included contains "Worked at home", Did Not go to Work Today", "Not Stated", "Other".

Source: Statistics New Zealand, Census 2001

Why the strategy has been developed

The city's first Transportation Strategy (April 1999) set the direction for managing all aspects of transportation in the city and provided a basis for the transportation requirements of the District Plan. The aim of this strategy is to illustrate Council's approach for Dunedin for the next one to four years, and a general overview up to 2021. The review is necessary because:

- The New Zealand Transport Strategy (NZTS) was released in December 2002. The Government's vision is that by 2010, New Zealand will have an affordable, integrated, safe, responsive and sustainable transport system. The city's contribution to the national strategy will require a high degree of co-operation and co-ordination both within the transportation sector and between agencies, the local community and the private sector
- Fundamental changes in the philosophy and funding of land transport management as a result of new legislation (Land Transport Management Act 2003)
- The need to accommodate growth and changes in settlement patterns in Dunedin, including:
  - Sustained population growth
  - Land-use changes and growth associated with educational institutions
  - A rise in logging traffic to the port, peaking at a sustainable level at about 2011
  - Growth in value-added, containerised, export products in general (including dairy products, forestry products, manufacturing and so on)
- To fulfil the community's social, economic and environmental goals, including:
  - A desire to improve amenity in parts of the central city street network
  - An identified need for additional parking in the Central Activity Area and for commercial activities
  - Redevelopment of the harbourside area and, related to this, the ability of traffic to cross the railway corridor more easily
  - Safety aspects, in general and specifically, of State Highway 88 to Port Chalmers
  - Putting some emphasis on public transport to reduce the need for more expensive infrastructure investment aimed at reducing congestion, such as building new roads or widening existing ones.

Regional Land Transport Strategy (RLTS)

The Land Transport Management Act 2003 sets out the requirement for Regional Councils to prepare a Regional Land Transport Strategy. The strategy must reflect the National Transport Strategy and be consistent with any Regional Policy Statement (under the Resource Management Act), and annual monitoring reports must be prepared.

The regional strategy's prime purpose is to reconcile the operational roles of Land Transport New Zealand and City and District Councils. It is the only instrument required by statute that links national and local policy documents together. It is also where the Government (through Land Transport New Zealand) has policy contact with the regions that set regional transportation priorities through the Regional Land Transport Committee.

Strategy requirements

This strategy addresses the issues required for preparing a land transport programme under the Land Transport Management Act. It shows how the city's transportation activities contribute to the five national objectives. It should be noted that when considering the approaches suggested, no one of the objectives was given greater weight over the others. Each

individual situation, priorities and issues was considered on its merits. It considers the New Zealand Transport Strategy, the Regional Land Transport Strategy for Otago and the National Energy Efficiency and Conservation Strategy as required by the Land Transport Management Act, as well as:

- The land transport funding likely to be available
- The views of affected communities
- The views of land transport network providers
- The need to give full and early consideration to options and alternatives
- The need to provide people and organisations listed in Part 2 of the Land Transport Management Act 2003 Clause 15 with full and early opportunities to contribute to the development of strategies as outlined in the special consultative procedures.

Process and consultation

Given the significance of transportation and its impact on many of the community outcomes in the Community Plan, the development and adoption of a new transportation strategy for the city involved significant decisions for the Dunedin City Council.

The strategy review commenced with data gathering, research and policies including:

- Parking Data Report, Gabites Porter (NZ) and TrafficPlan Ltd, February 2002
- Dunedin Pedestrian Strategy, January 2003
- Dunedin Cycling Strategy, January 2003
- Strategic Corridors Study, MWH July 2004
- Road Safety Report: Dunedin City 1999 to 2003, Land Transport New Zealand, June 2004 and Land Transport New Zealand's Crash Analysis System.

Population projections and economic analysis carried out by the Council have also been used to support this research.

The consultation programme included workshops, liaison meetings, correspondence and public consultation with:

- Members of the Regional Land Transport Committee
- Members of the Regional Land Transport Strategy review working party
- Key stakeholders, including adjoining territorial authorities, Otago Regional Council, Land Transport New Zealand, New Zealand Police, Otago District Health Board, Port Otago Ltd, Transit NZ, OnTrack, TollNZ, Department of Conservation, Ministry of Agriculture and Forestry, New Zealand Historic Places Trust and tertiary institutions located in the city
- Other stakeholders, including land transport providers, community groups and businesses, particularly the Otago Chamber of Commerce, the regional office of the Road Transport Association, Heavy Haulage Association, Disabled Persons Assembly, Public Health South Dunedin, Aged Concern,
- Maori
- Residents of Dunedin.

A key component of this included consultation and submissions on an issues and options discussion paper during February 2005. The object of the discussion paper was to stimulate debate and test responses to a range of options being considered. This generated 370 submissions and formed the basis for the working party's consideration of the preferred strategic approach and options.

The draft strategy, including the preferred approach was consulted on during March and April 2006. Hearings were held in May 2006, and the Working Party considered all the submissions. Changes were recommended to the strategy prior to its reporting to Committee and Council for endorsement.

FUTURE TRENDS AND TRANSPORT NEEDS

The road network in Dunedin was laid out at the time of European settlement. It has evolved over time in response to the needs of the community and opportunities for development. The current network is largely the result of a major transportation study undertaken in 1964, which led to the implementation of the one-way street system and the widening of several major roads.

Significant growth in vehicle ownership and a continuing trend towards commuters driving their own vehicles to work has placed increasing pressure on the network. Increased traffic flows have led to congestion pressure points and high demand for parking in certain parts of the city. Pedestrians and cyclists have been identified as a major road safety issue for Dunedin. Recent changes in the management of rail freight operations will have a major impact on alternatives to roading for freight movement.

The Dunedin City Council directly controls structural and operational matters such as local roads, parking and access. The District Plan provides a major tool for influencing the transportation network through its management of land-use activities and density, and parking provision. The location of new development such as residential subdivision, industry or large-scale retail is conditional both on its impact on the transportation network and the environmental effects that any new traffic generation may cause.

The city also works in partnership with the Otago Regional Council, which has responsibility for the Regional Land Transport Strategy and with respect to the management and provision of passenger transport. Transit New Zealand has responsibility for providing and managing national roads, a number of which pass through Dunedin and link it to other cities, settlements and activity centres such as Port Otago.

Current statistics outlining the existing transportation environment in Dunedin are tabulated below, with trends and projections for each of the elements.

DEMOGRAPHIC CHARACTERISTICS		
	TODAY	**2021**
Population	122,400 [1] (June 2005)	127,900 [2]
% of NZ population	3%	3% [3]
Size of city	3,350 sq km or 1.3% of New Zealand's land area	
Communities	City Council with 14 councillors, representing seven wards. Six Community Boards: Chalmers, Mosgiel Taieri, Otago Peninsula, Saddle Hill, Strath Taieri and Waikouaiti Coast.	
Net migration	Annual population growth of 865 since 2001; two thirds of regional growth.	Average annual population growth of 340.
Age profile	• 18% 14 years or younger (23% nationally) • 69% 15-64 years (66% nationally) • 13% 65 years and older (12% nationally). (Census 2001)	• 14% 14 years or younger (18% nationally) • 68% 15-64 years (65% nationally) • 18% 65 years and older (17% nationally). Household numbers are expected to increase, consistent with national trends for smaller household sizes.
Labour force [4]	97,800 people of working age 56,900 people in labour force 52,000 people employed (2001) These figures equate to a participation rate for the city's working-age population of 58%. By comparison, the nationwide labour force participation rate was 66% in June 2003.	110,200 people of working age 69,400 people in labour force 65,100 people employed Although the relationship between working age population, labour force and employment is cyclic and subject to a fair degree of uncertainty, this provides an overall indication of Dunedin's potential to expand employment in the long term.
Median personal income [5]	$14,541 Regional: $15,700 National: $18,500 (2001)	$25,487

[1] Statistics New Zealand, Subnational Population Estimates

[2] Dunedin City Council medium series population projections

[3] Statistics New Zealand, National Population projections: 2001 (base) - 2051, Based on Series 4: medium fertility, medium mortality and annual net migration of 5,000

[4] "Economic And Population Scenarios For Dunedin City", BERL, April 2004. These figures are based on medium series projections. The labour force is made up of employed and unemployed people

[5] "Economic And Population Scenarios For Dunedin City", BERL, April 2004. Projections indicate that a median personal income could increase in real terms by an average of 1.1% per annum.

TRANSPORTATION NETWORK		
	TODAY	**2021**
Air	Dunedin International Airport is 30 minutes drive from the city and handles over 689,000 passengers per annum (to Dec 2004). In the last two years (following shocks to the tourism industry after September 11, 2001) passenger numbers have grown by an average of 19% per annum. Airport operations contribute 421 full-time equivalent positions, generate a gross output of $62m per annum, and create $28m per annum value added to the economy.	Freight services provided on adjacent, appropriately zoned land. The terminal has been upgraded. The continuation of historic growth in tourist and passenger numbers support the contribution of the airport to the city and regional economy.
Sea	Port Otago provides deep-water access 30 minutes from the city centre and has a throughput of 1.1m tonnes of exports with a value of $NZ 2,939m (2004). It services anywhere in the world every 14 days. Ports in New Zealand have international sea connections, many operated by large shipping companies, including Maersk Line (formed following the merger of P&O Nedlloyd and Maersk Sealand). Maersk Lines' choice of Port Chalmers as its preferred South Island port ensures a new round-the-world service will call at Tauranga and Port Chalmers on a weekly basis. The service begins in February 2006 and will pass through the Panama on a 77-day voyage. International vessels carry coastal cargo when making multiple stops at New Zealand ports.	Freight volumes are generally forecast to increase. However, this is unlikely to translate to a proportional growth in road freight volumes to Port Otago. • Frozen meat products from the north can readily be shipped by rail • Generally, manufacturing and industrial areas are located to the south of Dunedin, and most road freight to Port Otago comes from the south • Diversion of sawn logs from Otago to Southland, and a move away from bulkier unprocessed logs to more heavily processed and lower-volume products, is likely to reduce overall forestry volumes to Port Otago • Greater value adding results in increased containerisation of products, which also favours rail transport. Overall, this suggests that growth in forest-related road movements to Port Otago would lag behind the annual increase in wood flows, projected to be about 2-3% to 2020.

TRANSPORTATION NETWORK		
	TODAY	**2021**
Rail	The main trunk railway line runs through Dunedin for 83km connecting to the north and south along the east coast. It carries mainly freight. Main branch lines in use: • Link Sawyers Bay to Port Otago, 1.7km • Otago Central Railway linking Dunedin to Pukerangi and Middlemarch, along 60km of track branching from the main South Island Trunk line at Wingatui. Used by Taieri Gorge Railway Limited for tourist passenger train services.	Rail services are principally rail freight accessing Port Otago from the north and south. Taieri Gorge Rail Limited offers tourist passenger rail services between Dunedin and Middlemarch or Pukerangi and, via coach transfers, to Queenstown and Central Otago.
Road	Dunedin's roading network forms nearly 2% of the national total, and 17% of the regional road network: • State highway network: 206kms • Local roads: 1745kms • 42% of local roads unsealed (mainly rural roads).	Despite increases in traffic volumes, most of the network will operate within capacity. Key issues are: • Continuing to work towards reducing crashes and casualties, including vulnerable road users (pedestrians and cyclists) • Improving the efficiency of access from airport to port complementary to adjacent land uses • Managing/mitigating congestion where it occurs • Supporting convenient, affordable and accessible alternatives to the car, including passenger transport, walking and cycling • Managing traffic and parking facilities in activity areas to ensure vibrancy and vitality • Ensuring safe and reliable access to rural areas.
Travel patterns	440 million vehicle kms travelled annually.	600 million vehicle kms travelled (at present growth rates).

TRANSPORTATION NETWORK		
	TODAY	**2021**
Private vehicles	86% of households have access to at least one car. 65% of labour force travel to work in a car. 65,000 cars and motorbikes licensed in Dunedin 2004 (average growth of 2% per annum since 1999)	Macroeconomic factors are partly responsible for the high growth in vehicle ownership. Projecting historic trends would involve a great deal of uncertainty. However, car ownership is expected to grow.
Traffic management	Levels of service are generally good across the whole network, with localised pressure points where congestion is occurring in the morning and/or evening peak.	Congestion has been contained to target levels with only small, localised pressure points in the morning or evening peak.
Road safety	Social cost $ million: $143.6 [6]	Social cost $ million: $80.8 (by 2010) [7]

ECONOMY Dunedin City Gross Domestic Product $3.074 billion [8]		
	TODAY	**2021**
Business activity	Dunedin's biggest contributors to the city's gross domestic product are, in order of value contributed: • Services sector, including significant contributions from property services, education and health, and community services • Distributive sector wholesale and retail activities incorporating major outputs from retailing • Secondary sector manufacturing activities: food, beverage and tobacco product manufacturing, machinery and equipment manufacturing, construction and associated trades • Primary sector, including agriculture, forestry, fishing and mining. Agriculture contributes much more than its share of GDP in the form of export earnings for New Zealand. Port Otago processes 5% of New Zealand's exports by weight, and 12% of the country's exports earnings.	Tourism: The tourism sector accounted for 3.8% of total Dunedin GDP in 2004. Visitor nights are expected to grow by about 2.5% per annum to 2011. Like the education sector, this sector supports services and retailing opportunities for the local community by attracting customers in the form of students and tourists. Education: The sizeable education sector in Dunedin is undertaking some reorganisation as a result of the merger of the College of Education and University. The University is positioning itself to attract more postgraduate students, building on its research credentials and the investment it has already made in attracting undergraduate students. Primary production and exports: Further value added (for example, in the forestry industry) will support export earnings by increasing the value of the region's exports.

TRANSPORTATION NETWORK		
	TODAY	**2021**
Land uses [9]	• Commercial and retail activities are generally focussed in and around activity areas • North Dunedin is nearing its current developable capacity • Opportunities for brownfields redevelopment in areas to the east of the railway are being investigated • Industrial uses are concentrated around the Harbour Basin, South Dunedin, Kaikorai Valley, Green Island and Mosgiel (north) • The city is surrounded by a large, productive agricultural hinterland • City Forests Ltd recently commissioned a dry mill processing complex on its site near Milton (south of Dunedin City in Clutha District).	• Brownfields redevelopment: light industrial areas adjacent to the Harbour Basin will be the first area where residential/mixed uses will develop, controlled by District Plan variations. Residential uses will slowly move into surrounding zones • Some industrial uses likely to relocate to Portsmouth Drive area and Mosgiel aerodrome site • Large-scale retail/industrial zones to the south of the Octagon will be developed for high density/apartment residential uses • Residential uses in Mosgiel will develop to the east and then to the west, controlled by variations to the District Plan • Additional industrial jobs in Mosgiel will be located on the aerodrome site initially and then spread to adjacent sites to the west. Fisher and Paykel will encourage suppliers to cluster around its site • Dairy conversions in rural areas will continue, and dairy companies will influence these. At minimum, improvements in productivity will result in an increase in milk tanker movements • Similar productivity gains in sheep farming will result in increased stock movements to and from processing facilities (for example, PPCS on the Taieri).

[6] Land Transport New Zealand, Dunedin City Road Safety Report 2005

[7] National Road Safety to 2010 Strategy, projected according to DCC's medium population projections

[8] BERL estimate 2005. GDP refers to the total market value of all the goods and services produced within Dunedin during a specified period

[9] The future land use charges are not complete and are subject to public statutory processes under the Resource Management Act 1991

Implications for strategy development

Smaller household sizes and modest population growth will drive an increase in households, particularly around Mosgiel and the harbourside areas. Together with the sustained economic growth discussed below, this will contribute to growth in traffic volumes. Wider economic factors such as fuel prices and national fuel and transport taxes will impact on these trends, although the extent of these impacts is difficult to pinpoint.

Dunedin has the opportunity to benefit from significant economic growth in agricultural exports and tertiary education, sustained tourism activity and a modest expansion in its population. Research to date suggests that the transportation network will not constrain economic growth. This conclusion has led to the suggested approach, which is to address congestion pressure points through infrastructure works, manage traffic flows through a combination of demand restraint and supporting and promoting alternatives to the car, and support the vitality of the city's activity areas and suburban centres by ensuring adequate casual parking is available for businesses and visitors. The transportation network must continue to support the central city's economic vitality.

Dunedin's population and economic structure mean that movements are very centralised, focussed on the city's Central Activity Area, tertiary campus and South Dunedin area, with particularly large volumes of traffic generated from areas to the south and west of Dunedin in an arc between the Peninsula and Mosgiel.

Congestion has emerged as an issue in the last five years, and this has been identified as a specific problem at key intersections on the one-way pair, between the harbour arterial and the western bypass, and in the afternoon peak on George Street (particularly for efficient running of passenger transport). Even as viable alternatives to the private car and demand management will contribute to reductions in traffic volumes, mitigation works at these intersections will be necessary in the future.

Roading corridors need to be protected and enhanced to accommodate future traffic needs, integrate the function of the central activity, tertiary and harbourside areas, and ensure freight traffic has an identified route. State highways must be able to be managed in harmony with adjacent land uses and their urban/rural context. As a precursor to realising the potential of the Council's Harbourside Vision, permeability of the rail-road corridor must be improved.

Industrial development at Mosgiel can be supported with an adequate arterial network on the Taieri, support for an inland port proposal in a suitable location and completion of the motorway into Dunedin.

Growth in student numbers will reach sustainable levels and is likely to plateau in the medium term. Continued concentration of accommodation around the tertiary campus is envisaged, with older students spreading to the north and south of the campus in Opoho, Woodhaugh, North East Valley, and central city areas down to the Oval and along bus routes. The provision of a safe pedestrian environment between the campus and central city and good alternative transportation linkages (pedestrian, cycle and bus routes) to the wider areas noted are vital.

A balance between infrastructure provision (roads and parking) and demand restraint may need to be investigated in the future to minimise the impacts of traffic volumes and associated parking, particularly at peak commuter times.

ROLES OF THE DIFFERENT MODES

The strategy sets out the series of actions that the Council will undertake to continue to develop the transportation system in Dunedin to meet the vision and outcomes identified. In the following section, the future role of each mode is described.

Freight traffic – road and rail

Freight is moved throughout Dunedin by both road and rail. The region's economy is dependent on the efficient movement of freight. Rail has a significant freight transportation role to and from Port Otago, which will continue to grow.

Logs and other forestry products are transported inter- and intra-regionally.Projections are that Otago-Southland wood flows will increase by as much as 2-3% per year to 2020, but this will translate to a lesser growth in related road movements. Trucks and other commercial vehicles use local roads, state highways and private roads. As a result, they are affected by congestion and experience delays. This is most evident within the central city. While the roading network is not expected to constrain economic growth and will cope with the expected growth in log movements, its smooth and efficient functioning impacts on the competitiveness and attractiveness of the city for business and investment.

Issues arise as to the impact of freight traffic on the amenity of local areas. Higher volumes of freight traffic, particularly moving through urban and residential areas, can have undesirable impacts such as vibration, noise, pollution, reduced road safety, and road damage. To try to alleviate some of these problems, the strategy supports proposals for alternatives to road for freight and investigating alternative routes or bypass routes, particularly in Dunedin and Port Chalmers, where freight traffic is focussed travelling to and from the port.

Given the importance of the agricultural, horticultural, fishing and forestry industries to the region and the significance of Port Otago, freight traffic plays an important role in terms of land transportation within the region. This strategy sets out a direction of:

- Working with TollNZ and OnTrack to ensure that rail continues to perform a significant freight transport role to and from Port Otago
- Working with those involved in the rail industry in an attempt to identify potential strategic sites that will support the efficient operation of freight rail in Dunedin and relocation of rail operations outside the central city, perhaps to an inland port-style facility
- Recognising that a significant mode shift from road freight to rail freight may take some time, and that there will still be necessary improvements that need to be made to the road network
- Recognising the need to look at the efficiency of road and rail transport links for freight transportation in an integrated manner.

Public passenger transport

The use of public passenger transport in Dunedin is low at the present time. Public transport is unlikely to replace the private car as the dominant mode of travel to and from rural areas, given the difficulties in covering large areas with low populations. However, a higher proportion of public transport trips within and between urban areas are envisaged by this strategy.

Dunedin's population is currently too low and widespread to justify the investment required in rail-based passenger transport, or to provide a service that would be meaningful. While the rail line is central to Dunedin, Mosgiel and Port Chalmers, it does not service many other areas of the city. With respect to long-distance rail passenger transport, the passenger service was withdrawn in 2002 because it was not commercially viable. Taieri Gorge Limited runs a tourist train between Dunedin railway station in the central city and Middlemarch/ Pukerangi. It is envisaged that this will continue to provide an attractive day-trip option for cruise ship passengers and other tourists, and linkages between Dunedin, Central Otago and Queenstown.

Bus networks can provide flexible and convenient services tailored to local needs, offering a reliable way to travel to and from jobs, schools, shops and other services. This is crucial for people who do not have access to a

car and provides genuine choice for those who do. Buses allow more people to make the same journey whilst reducing traffic numbers, and are a powerful tool in tackling the problems caused by congestion. Buses can be deployed quickly in response to changing demand. Unlike rail or tram systems, buses do not require substantial infrastructure and so can rapidly boost the supply of public transport.

The role of bus-based public passenger transport in Dunedin is to improve access and mobility, provide another transportation option (including for commuter travel and travel to and from the airport), contribute to sustainability and manage demand. As a result of the level of public submissions to the issues and options discussion paper, the joint Dunedin City Council-Otago Regional Council Passenger Transport Review and changes to policy, the level of service for bus-based public transport will improve. This includes the improvement of accessibility, service and safety provisions for elderly and disabled passengers. The current services, which predominantly cater for off-peak travel, will achieve a higher level of service catering for commuters. Overall, the joint Working Party's vision is to deliver a bus system that is admired and patronised for its cohesion and its focus on meeting the community's needs.

It needs to be recognised that these additional changes, which will involve additional expenditure above existing costs, including ongoing government subsidy to help reduce the financial impact on ratepayers, will not happen overnight. It will take some time to grow the passenger transport mode to the point envisaged by the Dunedin City Council and Otago Regional Council.

The development of the passenger transport network will also need to be underpinned by robust analysis. There is a current Regional Passenger Transport Plan (2003) that sets out the passenger transport services that the Otago Regional Council will support. In order to promote the effective use of public passenger transport it is envisaged that the Councils continue to work together to contribute to a review of the Passenger Transport Plan before the Regional Land Transport Strategy review in 2008. This will assist in further defining and agreeing on the role of public transport, setting targets for service delivery, and implementing costs and funding mechanisms. The provision of public transport infrastructure (seats, shelters and so on) will also be investigated as a part of this process.

The future scenario for passenger transport in Dunedin is one where the public transport system is lifted to the level of an essential and valued public service that:

- Attracts a substantial and sustained increase in patronage
- Offers customer convenience
- Flows smoothly through the Central Activity Area
- Delivers affordable and accessible services with modern vehicles
- Is easy to use.

This will require changes to service-quality standards, traffic management on George Street/Princes Street, and policy. It will entail substantial improvements in bus frequency, reliability, quality and facilities. Methods may include priority for public transport over other modes.

Cycling

Cycling is mainly an urban travel mode for shorter trips and commuting, as well as for social and recreational reasons. It is a popular and growing tourism activity in the city and region, with activity focussed on the Otago Central Rail Trail, the Peninsula, Mt Cargill and Port Chalmers. Many athletes train on the Taieri Plain and around Three Mile Hill. There are numerous mountain bike trails around Dunedin. There is potential for increasing cycling in Dunedin, for instance amongst the large student population, since it offers a convenient, healthy and cheap form of transport.

Cycling is an equitable form of transport, as it is low cost and available to almost everyone. Even at low levels, cycling improves mental and physical health and fitness. It can reduce the number of trips made by cars, thereby reducing traffic congestion car exhaust emissions, and noise. Cycling can also reduce costs for the construction and maintenance of roads and parking facilities and can be readily combined with passenger transport, making both cycling and public transport more accessible.

In the future, cycling will play a role in an increasing number of work and education-related trips, and gain a higher profile amongst tourists to the city and region that wish to explore Dunedin in a different way. This strategy expects major new development and subdivisions to incorporate cycling facilities - in an effort to ensure that cycling access, facilities and routes are provided.

The DCC Sport and Recreation Strategic plan sets targets and actions for the maintenance of off-road tracks and paths to support cycling for recreation. This strategy, and the Council's Cycling Strategy, supports these with complementary actions and targets for on-road cycling facilities.

Walking

Like cycling, pedestrian travel is mainly an urban travel mode for shorter trips. The role of pedestrian activity in the city, in the short to medium term, is to actively promote public health and to improve access and mobility. Pedestrian activity has a somewhat more limited role in terms of modal shift than cycling, as most pedestrian trips are for distances of less than one kilometre. However, this strategy envisages a greater role for pedestrian trips in the longer term, particularly in conjunction with other transportation modes (for example, public passenger transport), and, when land-use changes, create additional employment and residential areas in close proximity to one another.

This strategy expects major new development and subdivisions to continue to incorporate pedestrian facilities in an effort to ensure that pedestrian access, facilities and routes are provided.

As with most large urban centres, Dunedin has a reasonable proportion of people who walk to work, especially compared to those who cycle or take public transport. There is still plenty of opportunity to get more people walking to work.

Walking is also a popular recreational and leisure activity for Dunedin residents. The DCC Sport and Recreation Strategic plan found that 59% of respondents walked or jogged for more than 2 kilometres at least once a fortnight, and 60% did so annually. This was the highest level of frequency and participation for any recreation activity in the survey. Walking for fitness remains the top active recreation activity for New Zealanders.

These levels of participation in commuter and recreational walking and jogging indicate that because these activities are so accessible, there will be significant opportunities to increase participation. In the future, walking will continue to play an important role in work and education-related trips, and gain a higher profile amongst residents and tourists to the city who wish to explore Dunedin on foot.

The DCC Sport and Recreation Strategic plan sets targets and actions for the maintenance of off-road tracks and paths to support walking for recreation. This strategy, and Council's Pedestrian Strategy, supports these with matching actions and targets for footpaths and pedestrian facilities.

Private car

Currently, the car is the dominant individual travel mode in Dunedin. In 2005, the number of private cars and motorcycles licensed in the region was 65,000, representing an annual average growth in motor vehicle registrations of 3% since 2001.

Despite the aims expressed in this strategy, the car is likely to continue to be the preferred mode for the foreseeable future. This strategy recognises the critical role that private car transport will continue to play in the region by enabling the efficient movement of people and goods and ensuring that all communities in the region have access to services and facilities. It is recognised that in the longer term, limitations on the supply of oil could impact on car use. However, it is envisaged that alternative fuel sources and/or technologies will be in place ensuring continued high levels of personal mobility.

In terms of land use, most of Dunedin is rural. As a result, the car is often the only means of transportation for rural residents or to rural areas. Other modes of transport are often not available or are simply not viable.

Dunedin has experienced sustained economic growth and the roading network in certain

parts of the city is becoming congested. A key outcome of this strategy is to have a transportation network that supports Dunedin's continued economic growth and development and provides for the efficient movement of goods, services and people. Providing an effective and efficient roading system is therefore important. Demand on that network also needs to be managed by promoting viable alternatives to car transport where these can provide a realistic alternative, developing a travel demand management strategy and reducing unnecessary trips by car. There are also opportunities for integration between the different modes outlined above. This includes providing for services such as park and ride, pedestrian and rides, and cycle and ride.

Motorcycles are also an important form of private transportation and can provide people with the independence gained from private motor vehicle travel. They can also reduce traffic congestion and improve energy efficiency, as they are a much smaller and more fuel-efficient mode of transport.

MONITORING

Approach

To make the strategy effective and enable the achievement of its outcomes to be measured, monitoring in the next cycle of the strategy will be focussed on:

- Policy targets as identified below
- Residents' perceptions
- Milestones set out in the action plan and progress in implementing these programmes and projects.

Targets need to identify what is being counted (that is, the measure, the proportion of people driving to work, or the number of people cycling on a road) and identify a benchmark (for example, year 2003, or level of service C). Targets may be 'stretch targets'. Stretch targets are targets that are acknowledged as being difficult to achieve; trying for them and coming close is not a failure. Stretch targets can help maintain momentum to undertake constant improvements and encourage innovation.

When setting targets, the Council needs to consider when monitoring should occur and who is responsible for it. Ideally, measures should be chosen and set when data gathering has run for a time. Measures should be within the Council's influence.

All-or-nothing targets, such as the implementation of a project, must be achievable. Progressive targets step up progressively and are unlikely to be achieved overnight. A new performance record will generally become the target, unless the achievement of that standard was beyond our control.

Dunedin City Council seeks to minimise use of external measures (to ensure that measures are continuously and consistently taken). An exception is safety targets, where a considerable amount of collaboration occurs with NZ Police and Land Transport New Zealand to ensure that consistent information is being used.

After a measure is chosen, the measure and level of target require periodic review to make sure they remain relevant. Over time, there may be a move to more output/outcome-oriented measures to ensure we continue to reflect our community outcomes.

Things currently measured by the Council (or by others) are:

Data Set	Comments
Census journey to work (Statistics New Zealand)	This is a good long-term data series of trends for commuting ("main means of travel to work") but does not capture school or recreational traffic. Disadvantages are that the data is collected only once every five years and may be weather-dependent on any particular census day.
Collision statistics (Land Transport New Zealand)	Note collisions involving pedestrians and cyclists tend to be statistically rare events. This means that many potentially dangerous locations are not identified by conventional "black spot" collision analysis, and also that locations with one collision (or more) may not be any more dangerous than other locations. Overall trends in pedestrian/cyclist crash numbers, however, are useful indicators of pedestrian/cyclist safety, and should be monitored routinely. These must be considered against reporting rates (the ratio of seriously injured casualty numbers from police crash reports to hospital admissions, given that a serious injury is generally one requiring hospital attention).
Traffic modelling	Including vehicle traffic and passenger transport. Outputs include levels of service, vehicle kilometres travelled and so on, which can be obtained every two-and-a-half years.

Data Set	Comments
Traffic counts	Screen line (a cordon or imaginary line across the road, established for the purposes of traffic counting) counts done every two-and-a-half years to compare to the transportation model and check its accuracy, and routine counts done every two or three years.
Parking surveys	Every five years. An inventory is included to describe the supply of parking by type, and an occupancy survey to determine utilisation of parking and estimate demand. One-off parking surveys for specific projects are taken throughout Dunedin as required, using methods consistent with the wider survey to enable comparison.
Household travel surveys	National records data on the travel undertaken by the members of a sample of households. Two surveys have been undertaken to date, the first in 1989/90 (Ministry of Transport) and the second in 1997/98 (Land Transport Safety Authority). In each case, all members of the sample households were interviewed regarding their travel on two specified days of the year. While the infrequent nature of the surveys has limited their use, Land Transport New Zealand now continuously surveys household travel on an annual basis. The proposal is to survey a sample of approximately 1,700 households. One of the key advantages of using the household travel survey data is the ability to monitor not only trends in mode choice but also the distance travelled by mode and purpose. In 1991, similar data was collected in Dunedin to enable generation of the transportation model and provide details on trips made, their purpose, origin and destination, vehicle type, make and model. These surveys are to be carried out from time to time to validate travel trends at the local level, provide data to refine the transportation model, and provide useful trip data to identify individual travel trends amongst groups of interest.
RAMM	Infrastructure database. The RAMM database, which is a roading asset management database, provides an inventory of infrastructure including public pedestrian and cyclists' facilities, which include footpaths, access ways and safe road-crossing points, cycle lanes and bike racks. The database also provides a record of the physical condition and maintenance of the network. A cycling route network map was developed as part of the Cycling Strategy and is published separately.
Manual pedestrian and cycling counts	Manual surveys are the only way that numbers can be quantified and they can also distinguish between types of pedestrians and cyclists. They tend to be more expensive than automatic counts and consequently may be carried out for shorter intervals. Annual counts are undertaken of important routes such as the main street (pedestrians). One-off cycling counts are taken on important routes such as North Road and Portsmouth Drive or during other transportation surveys/audits as circumstances permit.

Data Set	Comments
Pedestrian crossing surveys	These surveys are undertaken in the same manner as the manual pedestrian surveys. In the past, they have been used only to assess the warrants for the installation/removal of the crossings. It is possible that this type of survey could be used to assess the number of pedestrians using a particular route.
Opinion surveys	Attitudes of key road users towards facilities are documented annually (through the User Satisfaction Survey). Attitudes of residents towards the condition of the network, facilities, traffic flows and car parking.
Passenger numbers (Otago Regional Council)	Patronage numbers on passenger transport network, User Satisfaction Survey.
Possible future data collection:	
School surveys	The ways in which children travel to school, and surveys targeted within schools, could provide an indication of barriers to alternative transportation modes, opportunities for incentives or encouragement, and the level of interest in being provided with information and support. These would be best undertaken as part of a project such as School Travel Planning, which would give a comprehensive view of travel patterns within a school/site and provide a basis for targeted marketing/information. School Travel Planning aims to identify and remove practical and attitudinal issues attached to walking, cycling and other environmentally friendly modes of travel to and from the schools in a particular community. Removing these barriers can involve programmes such as the Walking School Bus or cycle training, or infrastructure changes such as pedestrian crossings, traffic calming or cycle lanes.
Business surveys	The ways in which people travel to work, and surveys targeted within larger organisations or employers, could provide an indication of barriers to alternative transportation modes, opportunities for incentives or encouragement, and the level of interest in being provided with information and support. These would be best undertaken as part of a project such as Business Travel Planning, which would provide a comprehensive view of travel patterns within an organisation and form the basis of targeted marketing/information. Business Travel Planning is a systematic process for addressing workplace-related traffic. It aims to maximise the uptake of environmentally friendly modes of travel and improve transportation options in and around the workplace.

LEVEL OF SERVICE

The level of service is a measure of how well a road can meet the demand placed on it. It is a qualitative description of operating conditions and the perception of these by motorists and passengers. A level of service describes the conditions in terms of things such as speed and travel time, freedom to manoeuvre, interruptions, comfort, convenience and safety. In general, there are six levels of service, "A" through "F", where "A" is the best operating condition (that is, free flowing) and "F" is the worst (significant congestion and delays).

Roads are built to provide an adequate level of service and to have sufficient spare capacity to accommodate projected growth. For the purposes of the Dunedin City Council transportation model, it has been assumed that when traffic growth causes a road or intersection to fall into level of service E or F, there is a problem that needs to be investigated.

For the purposes of the transportation model, the following levels were defined:

Level of service A – *free flow.* Drivers are ***virtually unaffected*** by the presence of others in the traffic stream. Freedom to choose a desired speed and to manoeuvre within the traffic stream is extremely high. The general level of ***comfort and convenience is excellent.***

Intersection: 0-12s delay

Level of service B – *stable flow.* ***Reasonable freedom*** but the presence of other users begins to be noticeable. Choice of desired speed is relatively unaffected, but there is a slight decrease in the freedom to manoeuvre. The level of ***comfort and convenience provided is somewhat less than at level of service A.***

Intersection: 0-12s delay

Level of service C – *stable flow.* Drivers become significantly affected by interactions with others. ***Some restrictions*** as the selection of speed is now affected by the presence of others, and manoeuvring within the traffic stream requires vigilance on the part of drivers. The general level of ***comfort and convenience declines noticeably.***

About 650-900 vehicles/hr/lane

Intersection: 13-19s delay

Level of service D – *high density but stable flow.* All drivers are ***severely restricted*** in their freedom to choose their desired speed and to manoeuvre. General levels of ***comfort and convenience are poor.*** Small increases in traffic flow will generally cause operational problems at this level.

About 750-1050 vehicles/hr/lane

Intersection: 19-25s delay

Level of service E- *unstable flow nearing capacity*. Speeds are low. ***Virtually no freedom*** to manoeuvre, and it is generally accomplished by forcing others to "give way". ***Comfort and convenience levels are extremely poor*** and driver frustration is generally high. Minor disturbances within the traffic stream will cause operational problems.

About 850-1600 vehicles/hr/lane

Intersection: 25-50s delay

Level of service F - *forced flow*. Extremely unstable flow, ***queues form*** with very high ***delays.*** This condition exists when the amount of traffic approaching a point exceeds that which can pass it.

More than 1300-1600 vehicles/hr/lane

Intersection: More than 50s delay

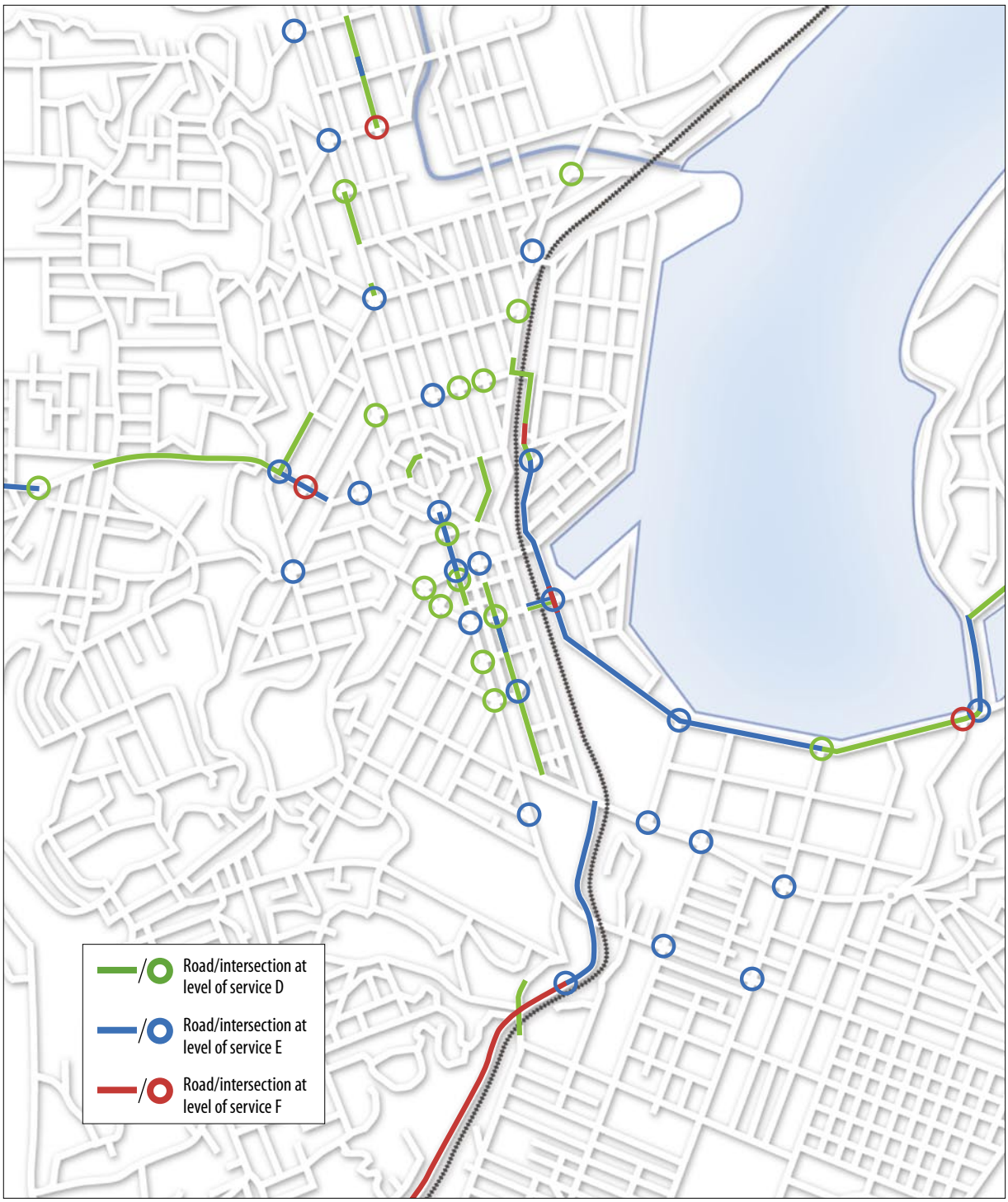
The minimum level of service means that it is desirable that roads should not operate at worse than this level; for example, if the minimum is level of service D, then roads should not be at E or F. If they are, then investigations should be made. It is accepted that in some circumstances these benchmarks might not be achievable; for example, where the social, environmental, or economic cost of improvements means they are not feasible. For Dunedin's arterial network, the target is to operate at level of service D or better. In the morning peak, up to three lane kilometres may operate at level of service E.

Minimum Levels of Service

Road type	Peak times*	Other times
Arterial/collector roads	LoS E or better	LoS D or better

* Peak times are generally between 8-9am and 4-6pm weekdays but may vary.

Figure 11. 2031 Morning peak levels of service



ROLE OF AGENCIES

The following are the key organisations, and their roles and responsibilities, relating to Dunedin's transportation network.

AGENCY	KEY RESPONSIBILITIES
Ministry of Transport	• Provides transportation policy advice to the Minister of Transport and prepares the National Land Transport Strategy • Contracts and monitors a number of transportation agencies, including most of the following agencies
Land Transport New Zealand	• Allocates funding for: - construction, maintenance and improvement of state highways and local roads - passenger transport services and projects - regional development - promotion of cycling and walking • Prepares the National Land Transport Programme • Develops and monitors land transport safety standards • Prepares and manages the New Zealand Road Safety Programme • Manages vehicle, driver and operator licensing and registration • Collects road user charges • Manages driver licensing and road user education
Otago Regional Council	• Establishes the Regional Land Transport Committee • Prepares the Regional Land Transport Strategy • Prepares the Regional Programme • Prepares and administers the Regional Policy Statement and Regional Plans under the RMA
Dunedin City Council (Territorial Authority)	• Prepares the District Roading Programmes and Activity Management Plans (previously called Asset Management Plans) • Constructs and maintains roads that are not part of the state highway network • Prepares and administers the District Plan under the RMA • Considers resource consents for land use and subdivision activities under the RMA • Is responsible for the effects associated with the emission of noise and the use of hazardous substances
Transit NZ	• Operates the state highway system in a way that contributes to an integrated, safe, responsive and sustainable land transport system. • Prepares the State Highway Programme
NZ Police	• Enforces and educates on road safety laws • Carries out road crash and incident investigations • Provides search and rescue services

AGENCY	KEY RESPONSIBILITIES
Civil Aviation Authority	• Establishes civil aviation safety and security standards, and monitors adherence to those standards • Carries out accident and incident investigations • Provides search and rescue services
Maritime Safety Authority	• Provides search and rescue services • Develops maritime safety rules and marine protection rules • Investigates maritime accidents and conducts safety inspections of ships • Licenses seafarers and registers ships • Provides navigation aids, a coastal maritime safety and radio distress service and participates in maritime searches and rescues • Maintains the New Zealand Marine Oil Spill Response Strategy and national contingency plan and administers the New Zealand Oil Pollution Fund
Dunedin Airport Ltd	Manages the operation of Dunedin International Airport
Port Otago Ltd	Operates port activities at Port Chalmers and Dunedin
OnTrack	Owns, maintains and controls the use of the rail network, excluding locomotives and rolling stock
Taieri Gorge Railway Ltd	Operates a tourist and community-orientated passenger train on the Taieri Gorge Railway line and provides other train services on its line and throughout the South Island, principally for charters and excursions

GLOSSARY

Access	Broadly, the ability to obtain desired goods, services and activities, including by older or disabled people. Such accessibility depends upon a range of factors such as proximity to desired services or locations, travel alternatives available, speed of travel, cost of travel and so on. It does not equate to mobility, which refers to the ease of movement.
Arterial route	Arterial routes provide for high levels of movement, with lower priority given to access functions for adjacent land uses. There are two levels of arterial routes recognised by the Dunedin City District Plan, regional roads which provide for the greatest level of movement (in conjunction with national roads) and a minimum access function, and district roads which provide connections between regional roads and connect major rural, suburban, commercial and industrial areas.
Commercial services	Public passenger transport services specified in the Regional Passenger Transport Plan for Otago, which are provided without the need for financial assistance from the Regional Council.
Commuter parking	Parking for drivers who travel back and forth, usually between home and work.
Contract services	Public passenger transport services contracted by the Otago Regional Council under a competitive tendering procedure and subsidised by central Government funding (from Land Transport New Zealand).
Engineering road safety works	Physical works that change the shape of the road by altering kerb lines and adding traffic islands, roundabouts, pedestrian refuges and the like.
High occupancy vehicle (HOV)	Any vehicle with a driver and one or more passengers. When a car is used as an HOV, it is often called a car pool, though the term HOV includes buses and vans.
Inland port	Inland ports can vary in their particular functions, but primarily they provide international trade/cargo processing. More specifically, they are sites located away from traditional land, air, and coastal borders, containing a set of transportation assets (normally multimodal; i.e. rail/truck/water/air). They allow international trade to be processed and altered by value-added services at the site, as goods move through the supply chain. Metroport Auckland was New Zealand's first inland dry port. It links the Port of Tauranga to South Auckland by rail. Goods bound for export are aggregated at Metroport (the inland port), railed to the seaport at Tauranga and loaded onto the vessel. The reverse process is also utilised. MetroPort Auckland is fully Customs bonded and MAF approved.

Level of service (LoS)	The qualitative standards used to characterise the operating condition of the transportation network and roading asset and the perceptions of these by users. The descriptions usually characterise these conditions in terms of such factors as speed, travel time, freedom to manoeuvre, traffic interruptions, and comfort and convenience. Six levels of service are defined for each type of facility. They are given letter designations from A to F with level of service A representing the best operating conditions and F the worst. Each level represents a range of operating conditions. Individual levels of service can be specified for arterial roads, freeways, bus transit, intersections, links, multi-lane highways, rail transit, two-laned highways and walkways. Refer to Appendix 5 – Level of Service, for additional detail on what the Council has established as acceptable levels of service for Dunedin.
Mobility	The ease of movement, or ability to move freely, around Dunedin, including by older or disabled people. (Compare "Access")
Mode	A particular form of transportation; for example, buses, automobiles, car pools, single-occupant vehicles, walking, cycling, rail, air and water-borne vessels.
Mode shift	Generally, a change in transport behaviour, where a user chooses to change from one mode to another for all or part of a journey.
Off-street parking	Parking provided off-street, to which the public has access and for which a fee may be charged.
Paid parking	Spaces set aside on-street, where a fee must be paid for the vehicle occupying the space.
Park and ride	Park & Ride consists of parking facilities at passenger transport hubs and highway on-ramps, especially at the urban fringe to facilitate passenger transport and Rideshare use. Park and ride can also include bicycle parking. Parking is generally free or significantly less expensive than in urban centres. Park and ride can utilise existing parking resources. Patrols and lighting are sometimes provided to address security concerns that people may have about leaving their vehicles at such a location.
Parking	The provision of space where a vehicle may legally be placed and left in accordance with conditions displayed.
Residents' parking	Parking set aside for residents, in terms of the Council's policy, in areas affected by commuter parking demand.
Restricted parking	Space set aside on-street that is not paid parking, with conditions attached to its use; for example, the length of occupation and/or the vehicle class entitled to use the space.
Ride sharing	The function of sharing a ride with other passengers in a common vehicle. The term is usually applied to car pools and van pools.
Ride-sharing programmes	Travel demand management programmes with institutional and operational actions needed to implement and support the use of high-occupancy vehicles.

Road hierarchy	Dunedin City District Plan Road Hierarchy identifies the Council's hierarchical network of roads for the City, classifying roads with respect to their traffic function. Intended as a mechanism for identifying appropriate locations for access onto roads. Shown on District Plan maps 73 and 74.
Road trauma	The effect road crashes have on people, whether they are directly involved in a crash or associated with those involved in a crash.
Road users	All who use roads, regardless of their transportation mode for example; pedestrians, cyclists, skateboarders, drivers, passengers and joggers.
Safety improvements	Improvements that can be made by changing signs and road markings; for example, the painting of flush medians. These works are operational works and staff will determine the need for them. Prior to any major road-marking changes being implemented, the public will be advised of the change.
Single occupancy vehicle (SOV)	Privately operated vehicles whose only occupant is the driver.
Sustainability	In the terms of The World Commission on Environment and Development (1987) "Our Common Future" (often referred to as 'The Bruntland Report'): "Meeting the needs of the present generation without compromising the ability of future generations to meet their needs." Or, in simpler terms, sustainability is providing the best for people and the environment, now and in the future.
Total Mobility Scheme	Total Mobility is a nationwide scheme designed to increase the mobility of people with disabilities. It was started in 1984. Over the last decade, the scheme has been managed and 60% funded by regional councils. Land Transport New Zealand meets the remaining 40% of the cost. The scheme provides financial assistance by way of a discount on taxi fares to any eligible person whose disabilities prevent them using public passenger transport (if available). Currently, the discount is 50%. The user is required to pay the other half of the fare to the taxi driver at the time the trip is taken.
Unrestricted parking	Parking to which no conditions of use or fees apply.