DUNEDIN CYCLING STRATEGY

April 2004

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Photos on Pages 4, 7, 8 by Lizzie Goodall

1 INTRODUCTION

The New Zealand Government has committed to promoting cycling and walking. A national cycling strategy is currently being drafted. This will promote sustainable and healthy communities while contributing to meeting the Kyoto Protocol objectives. Already significant work has been done to improve the funding available to cycling and walking through Transfund New Zealand's new project evaluation procedures.

New Zealand now has one of the highest rates of vehicle ownership in the world. It is not surprising then, that New Zealanders have become more and more reliant on motor vehicles. This is causing not only environmental problems but also contributes to a loss of community cohesion and increasing health costs.

The impetus for this cycling strategy has in part derived from early 2000 discussions of the Strategic Plan Transportation Group, comprising members of the community with interest and expertise in transportation. 2001 community feedback on the Draft Strategic Plan confirmed support for alternative modes of transport such as cycling.

Much of the content was prepared by MWH New Zealand Ltd, based on the Environment Canterbury Cycling Strategy model. This content was further developed by the *Cycling Interest Group* (CIG) of stakeholders interested in and affecting cycling in Dunedin. Further description of the CIG and a list of its members is given in Appendix 3.

The purpose of this strategy is to encourage participation in cycling and address cycling safety. This will require taking steps to overcome the challenges that inhibit more Dunedin people from choosing to cycle and make it a more attractive option.

Cycling must be promoted within an integrated transport system for Dunedin. This integration will be achieved by ensuring that the policies and strategies relating to amenity, traffic management, road safety, parking, public transport, walking and cycling are effective and properly integrated.

The strategy covers cycle facilities on road reserve. Road reserve generally covers the width of a road from property boundary to property boundary. Off-road tracks and unsealed paths through reserves are covered in the Dunedin City Council's Track Policy and Strategy and Recreation Reserve Management Plans. It is intended that these policy documents and the Cycling Strategy will work in harmony.

The Dunedin Cycling Strategy was adopted by the Dunedin City Council in January 2003, and last updated in April 2004.

2 THE STRATEGIC CONTEXT FOR ADDRESSING CYCLIST NEEDS

2.1 OUTCOMES AND OBJECTIVES

2.1.1 Council's Strategic Outcomes

The Cycling Strategy was developed in line with the Council's Strategic Plan, recently replaced by the Council's Long Term Council Community Plan (LTCCP).

The Cycling Strategy contributes to the following LTCCP outcomes:

Outcome 2. An Accessible City:

- *Provide an effective, safe transport network for all road users.*
- *Provide and maintain a roading, cycling and footpath network that meets user needs*

Outcome 3. A Safe and Healthy City
"a City where residents feel safe and enjoy a healthy lifestyle"

Outcome 4: A Sustainable City and Environment
"a City that makes the most of it's natural and built environment"

Outcome 7: An Active City
"a City that provides and encourages participation in a broad range of sporting, recreational and leisure activities"

2.1.2 Cycling Strategy Vision

The Council's vision for the Cycling Strategy is:

Dunedin is a safe and pleasant city for cycling, where people of all ages choose to cycle for transportation, access, health and recreation.

2.1.3 Cycling Strategy Outcomes

It is intended that the Cycling Strategy will help achieve an enhanced community life, a safe and healthy city and a wealthy city by achieving the following outcomes:

Outcome 1: Increased cycling participation levels

Outcome 2: Improved cyclist safety rates

2.1.4 Measurable Objectives

To enable the effectiveness of this strategy to be assessed these outcomes will have to be measured. The achievement of the following objectives will be the best measure of the strategy's effectiveness:

Objective 1: Increase the proportion of people who cycle to work from 2.9% of all commuters in 2001 to 3.8% (increase of 30%) by 2006 and to 4.9% (increase of 70%) by 2011 (Source: DCC Monitoring Transport Report, April 2004, based on Census "Travel to Work" data).

Objective 2: Increase the numbers of people participating in cycling*** for recreational, health and fitness purposes by 2010.

Objective 3: Decrease the number of casualties resulting from crashes between cyclists and vehicles by 6% per annum. (Source: DCC Road Safety Policy, LTSA, December 2002)

3 BENEFITS OF CYCLING

Cycling results in numerous benefits, at various levels:

3.1 INDIVIDUAL

Individuals derive benefits from cycling through the convenience of door to door access without driving or parking hassles, increased independence and access to transport, particularly for school children. Cycling is an equitable form of transport, as it is low-cost and available to almost all people. Even at modest levels, cycling improves mental and physical health and fitness. In addition, for those with hip or knee problems (for whom extensive walking is not an option), cycling offers opportunities to keep fit and healthy.

3.2 COMMUNITY

Cycling not only increases people's awareness and knowledge of the city but also improves the city's vitality and image. Travelling by cycle gives opportunity for interaction with other cyclists and pedestrians, resulting in an improved sense of community. With more people on the streets there is increased security and less crime.

3.3 ENVIRONMENT

Cycling improves the quality of our natural environment and minimises environmental impacts because bicycles are the most energy efficient land transport vehicles. Up to 100 times less material is needed to manufacture a cycle than a car. Cycles emit no air or noise pollution. Because cycles produce no greenhouse gases, promoting cycling helps New Zealand meet its Kyoto Protocol obligations.

3.4 TRANSPORT

Cycling has many advantages for our transportation system. It will reduce the number of trips made by cars, thereby reducing traffic congestion and emissions. It will also reduce costs for the construction and maintenance of roads and parking facilities. Cycling can be readily combined with public transport, making both cycling and public transport more accessible.

3.5 ECONOMY

Cycling contributes to the local economy in a number of ways. Recreational cycling attracts both Dunedin residents and tourists. Cycle tourists in particular travel long distances carrying minimal weight and therefore will spend money locally on food, refreshments, accommodation and entertainment. Also, money that is not spent on motorised transport is available to Dunedin's economy to be spent in other ways.

4 BARRIERS TO CYCLING

4.1 FOR (POTENTIAL) CYCLISTS

According to the 2001 Census data, 2.9% of Dunedin's population cycle to work and 76% of people drive to work (Source: 2001 Census). The 1992 New Zealand travel survey indicated that 1.8% of all trips were made by cycle and 76% by motor vehicle. These statistics suggest that cycling is not considered an attractive option compared to driving.

People choose not to cycle for a variety of reasons, including:

- it is considered unsafe;
- the distances are too great;
- a car is needed because other people or goods have to be transported;
- the weather is a concern;
- the hills are a concern;
- helmets interfere with hairstyles;
- dress standards do not accommodate cycling.

As part of ongoing refinement of this strategy the reasons for not cycling in Dunedin will be defined by survey.

4.2 FOR THE COUNCIL

There are also barriers that have limited the Council's provision of cycling facilities:

- cycling has previously not been considered a serious travel mode option by funding bodies and by the public;
- there are low funding levels due to this undervaluing;
- some land uses have become more dispersed and are not always well connected by cycling routes;
- there is a serious lack of information on cyclists and their movements;
- crashes involving cyclists are not reported unless they result in significant injury.

5 CYCLISTS IN DUNEDIN

5.1 CYCLE USE

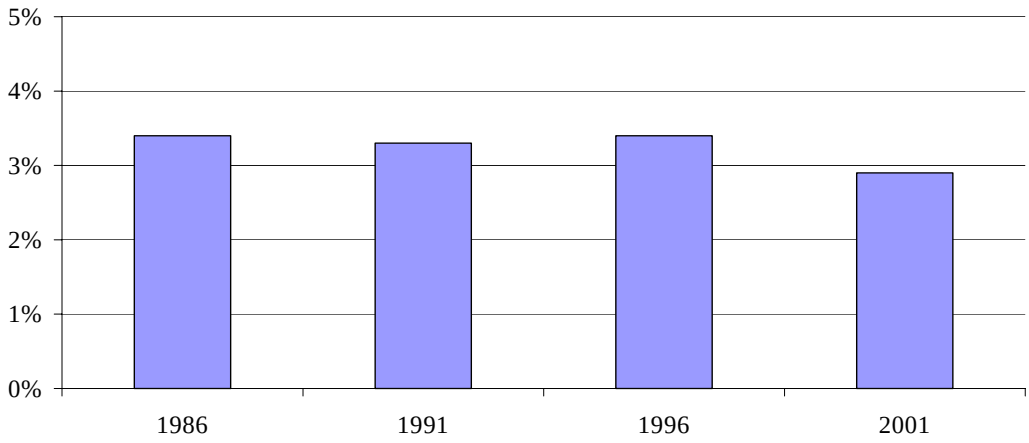
It is difficult to quantify the trends in cycle use in Dunedin. Anecdotally, it appears that use by school students is declining, as more students are driven to school by their parents (or drive themselves), while recreational use appears to be increasing. DCC Community and Recreation Services estimates that approximately 4,000 bicycles per year (3,000 of which are mountain bikes) are sold in Dunedin.

The New Zealand Travel Survey undertaken in 1997/98 has information on all travel in New Zealand, including trips by bicycle. Based on a fairly small sample size, approximately 2.2% of all trips in Otago were made by bicycle (compared with 19% by walking and 1.9% by bus). A breakdown for Dunedin is not available.

The Census "travel to work" statistics indicate that the proportion of Dunedin commuters that cycled to work was generally static between 1986 to 1996. This trend changed in 2001, with a decline in the proportion of cycling commuter trips from 3.4% of all Dunedin commuter trips in 1986 to 2.9% in 2001.

Figure 1. Source: Statistics New Zealand

Fig 3: Proportions of Commuters Cycling to Work in Dunedin in March



Note: In this graph a commuter is someone who travels to work; it does not include those who work from home.

5.2 POPULATION

Dunedin is a university city. For over half the year tertiary students make up 18.6% of Dunedin's total population. This has implications for promoting and planning for cyclists in Dunedin, as comparatively many students are cyclists.

It is useful to look at the models of two university-focussed cities in the UK: Oxford and Cambridge. These cities boast respectively 17% and 28% of *total trips* made by cycle and the ingrained cycling culture contributes to a vitality and sense of community. *(Source: UK Department of Transport - Transport Statistics; 1991 Census)*

5.3 CYCLE SAFETY

Over the last five years (1999 to 2003 inclusive), there has been an average of 29 injury collisions (minor, serious and fatal) involving cyclists per year.

As shown in the graph below, until 2001 reported collisions involving injuries to cyclists appeared to be declining. This is probably a reflection of general cycling numbers having declined in that period, rather than an underlying improvement in cycling safety.

From 2001, collisions involving cyclists appear to be increasing, most noticeably in 2002. The collision rate, however, is susceptible to changes in the reporting rate. Police and LTSA staff have been actively trying to increase collision reporting rates since the beginning of 2001. This has contributed to an increase in the reporting rate from 62% prior to 2001 to 79% in 2002. As the rate of reporting stabilises again, a more reliable reflection of collision trends will become clear.

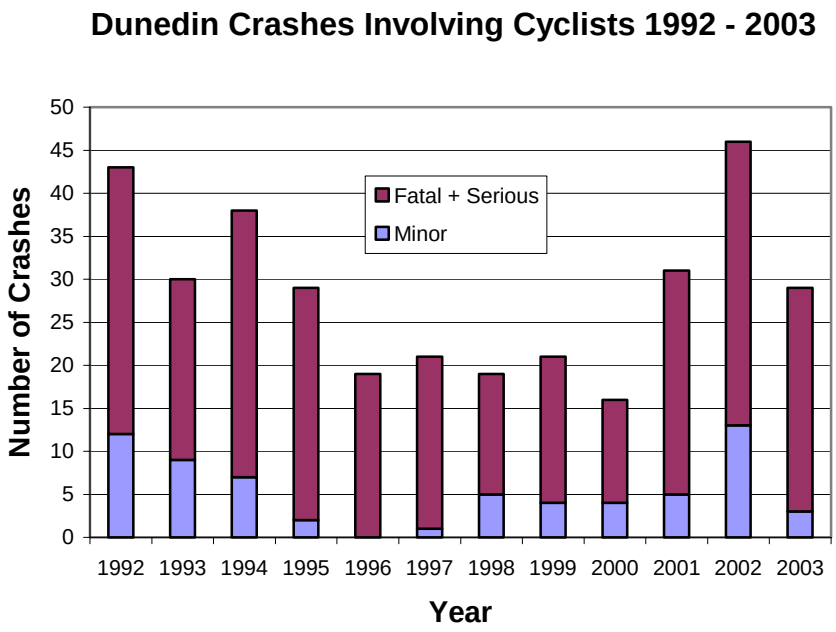


Figure 2. Source: Land Transport Safety Authority

5.4 EXISTING CYCLING FACILITIES IN DUNEDIN

Italicised text indicates work undertaken in previous 12 months

CYCLING FACILITY	Length (kilometres)
On-Road Cycle Lanes	
Great King St	1.75
Cumberland St	1.75
Gladstone Road South	0.7
Kaikorai Valley Road	*6*
Cycle Paths	
Portsmouth Drive	5.2
Main South Road	1.2
Botanic Gardens	0.35
Cycling Hazard Removal	
Wharf St Rail Siding	*0.1*
Albany Street	*1.35*
Total works in previous 12 months	*7.45*
TOTAL	18.4

5.5 EXISTING PUBLIC BICYCLE PARKING SPACES IN DUNEDIN

TYPE OF PARKING	NO. OF PARKS
Central Dunedin	
DCC Hitching Rails	106
Dunedin Public Library	47
Moana Pool	16
South Dunedin	
DCC Hitching Rails	8
Edgar Sports Centre	6
Mosgiel	
Factory Road Stand	14
DCC Hitching Rails	42
Mosgiel Public Library	12
Port Chalmers	
Port Chalmers Public Library	4
TOTAL	255

5.6 EVERY ROAD IS A CYCLING ROAD

Although most Dunedin roads may never have bicycle lanes or special cycling facilities on them, most roads (excluding motorways) are sometimes used by cyclists. In addition, most cycling in Dunedin is done on city streets and the State Highway network, rather than on special cycling facilities. Consequently, an important function of this cycling strategy is to ensure that the basic road network is safe and attractive for cycling.

Many of our roads were created and designed using different standards and different understandings of cyclists' needs from those that exist today. All possible means of improving cyclist safety need to be considered. For many roads, cycling conditions can be improved by attention to details such as road surface type and width; presence and/or type of parking; and maintenance practices.

Most collisions involving cyclists in Dunedin occur at intersections. Careful intersection design, including the choice of intersection control, can considerably improve cyclist safety.

6 POLICY/LEGISLATIVE FRAMEWORK

6.1 DUNEDIN CITY COUNCIL

This Cycling Strategy is intended to help the Council achieve its goals under the Long Term Council Community Plan (LTCCP) 2003/04 - 2012/13. In particular this Cycling Strategy will function as an element of the Council's overall Transportation Strategy. The 1999 Dunedin Transportation Strategy is currently under review, and a revised Transportation Strategy is expected to be adapted by the Council in the second half of 2004.

Funding for initiatives identified by the Cycling Strategy will be allocated under the Annual Plan process in the short term and for the future under the revised Long Term Financial Strategy.

The Cycling Strategy works in conjunction with the Council's other strategy initiatives such as the Pedestrian Strategy, Road Safety Policy, Track Policy and the Mobility Strategy (to be developed). The Cycling Strategy will not promote initiatives that are contrary to the Proposed Dunedin City District Plan 1999, but could provide initiatives that could contribute to the town planning processes.

6.2 REGIONAL

The Cycling Strategy will help achieve the objectives of the Otago Regional Land Transport Strategy. It is also intended that the strategy will work in harmony with regional health strategies and initiatives.

6.3 NATIONAL

Nationally there has been an increased awareness of the benefits of an intergrated transport system and the positive effects of an increase in cycling in our communities. This is reflected in a number of recent initiatives as listed below, that the Cycling Strategy is consistent with.

- *December 2002*: The New Zealand Transport Strategy, released by the Ministry of Transport, identified walking and cycling as one of five priority areas for the National Land Transport Fund (NLTF).
- *2003*: The 'Fundamentals of Planning and Design for Cycling' course undertaken by Transfund New Zealand throughout 2003, aimed at improving cycling design awareness within Road Controlling Authorities (RCA's).
- *October 2003*: The Road Safety 2010 report, released by the Ministry of Transport, identified improving safety for pedestrians and cyclists as a priority for road safety actions.
- *October 2003*: Transfund New Zealand increased their subsidy for Minor Safety Programmes. For the Dunedin City Council this corresponded to an increase in the Minor Safety programme from $520,000 / annum to $1,500,000 / annum in 2004/2005, as well as an increase in the maximum allowable cost per project to $150,000.
- *November 2003*:The Consultative Draft Cycle Network and Route Planning Guide, released by the Land Transport Safety Authority for submissions.

As well, the Cycling Strategy will work in conjunction with Transit New Zealand's State Highway Strategies and Annual Plan process, the Energy Efficiency Conservation Strategy and The New Zealand Health Strategy. The strategy will not be contrary to any legislative requirements, in particular the Local Government Act, the Disabled Persons Welfare Act or the New Zealand Disability Strategy.

A more detailed explanation on how the Cycling Strategy relates to the above documents is attached as Appendix 1.

7 FUNDING

Council's current Long Term Financial strategy includes an annual total of $100,000 for cycling network improvements until 2012/13.

The Council has recognised that in the past there has been under-funding for the maintenance of footpaths and cycling facilities. Dedicated and continuing funding through Council budgets will be necessary to ensure that this Cycling Strategy can be implemented. This should be allowed for in both Capital and Maintenance budgets. A detailed annual implementation plan will be prepared for Council's consideration.

Transfund New Zealand financial support is now available for:

- Developing cycling strategies;
- Implementing cycling implementation plans which are consistent with city and regional cycling strategies and which satisfy Transfund's Project Evaluation Manual requirements.
- Promoting cycling activity

8 STRATEGY OUTCOMES, OBJECTIVES AND METHODS

8.1 OUTCOME 1 – INCREASED PROPORTION OF TOTAL TRIPS MADE BY CYCLE

8.1.1 Objective 1

Increase the proportion of people who cycle to and/or from work from 2.9% of all commuters in 2001 to 3.8% (increase of 30%) by 2006 and to 4.9% (increase of 70%) by 2011 (Source: DCC Monitoring Transport Report, April 2004, based on Census "Travel to Work" data).

8.1.2 Objective 2

Increase the proportion of non-work-commute trips made by cycle (relative to all other modes)

8.1.3 Methods

The following methods will be employed to achieve Objectives 1 and 2:

#	Method	Aspect
1	Provide safe cycling infrastructure	Safety
2	Improve road safety culture	Safety
3	Provide linked network	Infrastructure
4	Provide a pleasant cycling experience	Infrastructure
5	Provide end-of-journey facilities	Infrastructure
6	Facilitate multi-modal travel	Infrastructure
7	Promote cycling	Promotion
8	Encourage employers to promote cycling	Promotion

(These and subsequent methods are expanded upon in section 8.3.)

8.2 OUTCOME 2 - IMPROVED CYCLING SAFETY RATES

8.2.1 Objective 3

To decrease the number of casualties resulting from crashes between cyclists and vehicles by 6% per annum over the previous 10 years. (Source: DCC Road Safety Policy, February 2002).

8.2.2 Methods

The following methods will be employed to achieve Objective 3:

#	Method	Aspect
1	Provide safe cycling infrastructure	Safety
2	Improve road safety culture	Safety
3	Provide linked network	Infrastructure

8.3 METHODS AND MEASURES

The Cycling interest Group determined specific measures that support these methods. These are given in Appendix 4 and will form the basis of the Cycling Implementation Plan document.

#	Method	Aspect	Examples of general measures to be employed in method
1	Provide a safe environment	Safety	Intersection facilities Maintenance practices Hazard removal/mitigation Safety auditing
2	Improve road safety culture	Safety	Road user education Police enforcement
3	Provide linked network	Infrastructure	Improved cycle-friendliness of identified cycle routes Provide connectivity between origins and desired destinations
4	Provide a pleasant cycling experience	Infrastructure	Smooth surfaces Interruption minimisation Adequate space
5	Provide end-of-journey facilities	Infrastructure	Increased number of bike parking facilities at appropriate locations
6	Facilitate multi-modal travel	Infrastructure	Buses with cycle-carrying facilities
7	Promote cycling	Promotion	Co-ordination with other bodies such as Push Play, Public Health South, Injury Prevention Unit
8	Encourage employers to promote cycling	Promotion	Provision by employers of: End-point facilities such as showers, secure storage Incentives for cycle use Bikes for people to try out Dress standard allowance

9 CYCLING IMPLEMENTATION PLAN

To implement this strategy, the Cycling Implementation Plan will be will be reviewed annually. The Implementation Plan will contain actions in line with the methods under each objective. These actions will be either *continuous initiatives* (such as monitoring cycling activity and trends) or *short term projects* (such as developing maintenance standards for cycling facilities).

The Targets and Actions that will form the basis of the Implementation Plan were determined by the Cycling Interest Group and are given in Appendix 4.

10 MONITORING

The three Objectives will be used to monitor the effectiveness of this strategy.

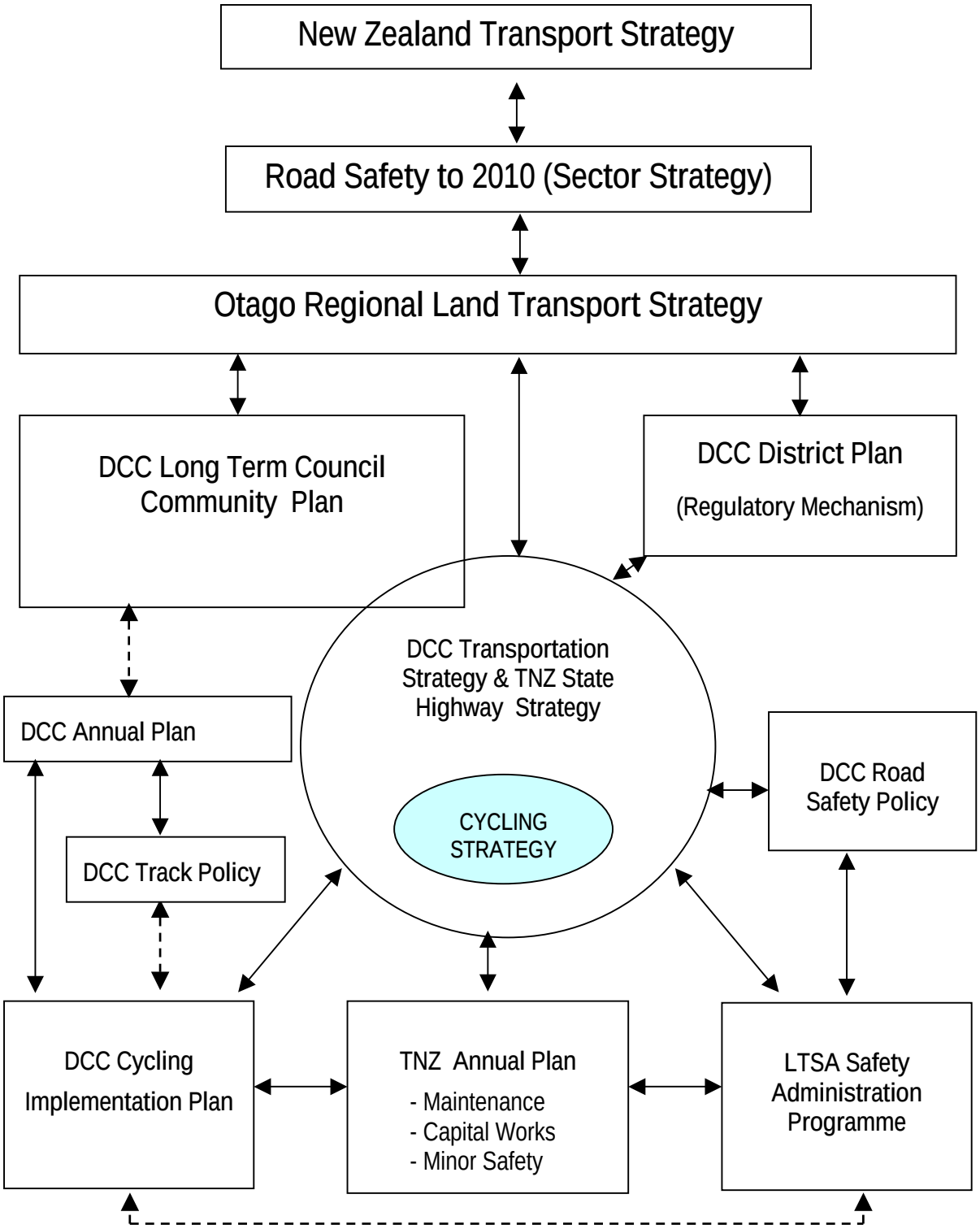
It is important that these objectives are monitored continuously so that trends can be established. Appendix 8 discusses the various types of surveys available and identifies actions needed to ensure that this data is available to inform the Cycling Strategy process.

11 APPENDIX 1: POLICY/LEGISLATIVE FRAMEWORK

A number of key documents underpinning the Cycling Strategy are described in the table and figure below.

Document	Comment/Extract
New Zealand Transport Strategy (12/2002)	The New Zealand Transport Strategy was published in December 2002, and outlines the vision for an affordable, integrated, safe, responsive and sustainable transport system. The strategy seeks to integrate all modes and users of transport and land transport funding provisions have been changed in line with the strategy, listing walking and cycling promotion as funding priorities.
New Zealand Walking and Cycling Strategy (Draft 2003)	The Ministry of Transport has developed a draft document, Getting there – on foot, on cycle, a draft strategy aiming to increase walking and cycling trips in New Zealand.
LTSA NZ Road Safety Programme	The principal means by which the Government co-ordinates the purchase of road safety outputs from the Land Transport Safety Authority (LTSA) and the NZ Police.
Road Safety 2010 (10/ 2003)	The Ministry of Transport released this document that identifies improving safety for pedestrians and cyclists as one of the road safety priorities for action.
Consultative Draft Cycle Network and Route Planning Guide (11/ 2003)	Developed by the Land Transport Safety Authority, submissions closed November 2003.
Transit NZ State Highway Strategy	Within national and regional highway strategies there are objectives for the provision of safe facilities for cyclists on urban and semi-urban highway routes.
Transit NZ Annual Plan	To programme projects of a cyclist amenity/safety nature.
Transfund NZ Programme and Funding Manual	Contains policies as to the financial assistance to Road Controlling Authorities for cycling and walking initiatives.
Otago Regional Land Transport Strategy 2000 – 2005	Under the Otago RLTS, there are objectives to promote energy efficient land transport modes and to make greater provision for cycling and walking in urban areas.
DCC Long Term Council Community Plan (2003)	Outcome 2. An Accessible City Outcome 3. A Safe and Healthy City Outcome 4: A Sustainable City and Environment Outcome 7: An Active City
DCC Proposed District Plan (1999)	Objective 20.2.1 "Avoid, remedy or mitigate adverse effects on the environment arising from the establishment, maintenance, improvement and use of the transportation network." Objective 20.2.3 "Achieve integrated management of the roading network, including walking and cycle use, with rail, air, and sea networks."
DCC Transportation Strategy	Goal: A transportation system that will support and enhance Dunedin's continued economic and community well-being
DCC Road Safety Policy	Strategy 1: To develop, promote and support community education programmes which address current road safety issues and focus on high risk groups in a cost-effective and culturally appropriate manner.
DCC Track Policy and Strategy 1998	Guiding document for off-road tracks including walking and cycling tracks.
DCC Cycling Implementation Plan	This plan will detail the tasks to be undertaken to ensure the objectives listed in this strategy are achieved

12 APPENDIX 2: CYCLING STRATEGY PLANNING FRAMEWORK



13 APPENDIX 3: CYCLING INTEREST GROUP

The following organisations were invited to participate in the development of this cycling strategy and were sent copies of:

- The draft strategy prior to the first of two meetings.
- An updated draft incorporating comments received from the first meeting
- An updated draft incorporating comments received from the second meeting, identical to that released for public comment.

Stakeholder	**Website**
Accident Compensation Corporation	http://www.acc.org.nz/
Automobile Association Otago	http://www.nzaa.co.nz/cg/MainMenu
Cycling New Zealand Otago Centre	http://www.cyclingotago.co.nz/
Dunedin City Council	www.CityofDunedin.com
Dunedin College of Education	http://www.dce.ac.nz/
Heavy Haulage Association	
Land Transport Safety Authority	http://www.ltsa.govt.nz/
New Zealand Police	http://www.police.govt.nz/
New Zealand Road Transport Association	
Otago Polytechnic Students Association	http://www.tekotago.ac.nz/OPSA
Otago Principals Association	http://www.oppa.org.nz/
Otago Regional Council	http://www.orc.govt.nz/
Otago University Students Association	http://www.ousa.org.nz/
Public Health South	http://www.phsouth.co.nz/
SPOKES Dunedin (Cycling Advocacy)	http://www.can.org.nz
Sport Otago	http://www.sportotago.co.nz/
Studholme Hall of Residence	http://www.otago.ac.nz/studholme/html/contact.html
Transfund New Zealand	http://www.transfund.govt.nz/
Transit New Zealand	http://www.transit.govt.nz/

14 APPENDIX 4: TARGETS AND ACTIONS (CIG)

These Targets and Actions were developed in conjunction with the Cycling Interest Group.

14.1 INFRASTRUCTURE – TARGETS

Target 1.1 To increase the length of on-street cycle lanes, off-street cycle paths or wide road shoulders with cycle route markings by 5 km per year.

Target 1.2 To install on-street cycle lanes on State Highway 1 between the Gardens and the Oval by the end of 2007.

Target 1.3 To increase the number of public bicycle parking spaces by 20 spaces per year.

14.2 INFRASTRUCTURE - ACTIONS

Action No.	Action	Lead Agency	Status
1.1	Ensure that all road works, new road developments and road changes consider the needs of cyclists, and are made as cycle-friendly as possible.	DCC TNZ	Ongoing
1.2	Review and implement appropriate standards and practices for road materials that affect cyclists, including winter service gritting, pavement marking materials, road surfaces, metal covers, drainage grates, kerbs and edge of seal conditions.	DCC TNZ	
1.3	Review and implement appropriate standards and practices for on-street parking, including angle parking.	DCC TNZ	Ongoing
1.4	Ensure traffic calming or Local Area Traffic Management schemes support cycling as a viable transport mode, where appropriate giving bicycles (and pedestrians) preference over motor vehicles.	DCC	Ongoing
1.5	Maintain a register of cycling hazard locations reported by cyclists and attempt to ameliorate these through a rational funded programme.	DCC TNZ	Ongoing
1.6	Develop, publicise and include within the City Plan a cycling network plan showing existing and proposed facilities which reflects the needs of the cycling community.	DCC	
1.7	Develop cycle routes and facilities in accordance with the network plan and on a location-by-location basis where safety or access issues justify them.	DCC TNZ	Ongoing
1.8	Undertake community consultation as a part of any cycling infrastructure improvements, and ensure that project budgets and timeframes reflect the need for this.	DCC TNZ	Ongoing
1.9	Develop NZ Cycle Design Guide	LGNZ TNZ	Preliminary Research
1.10	Provide and improve facilities for cycle parking at key locations.	DCC TNZ	Ongoing
1.11	Develop monitoring and auditing processes so that the quality and quantity of cycle facilities can be measured and the need for improvements can be assessed.	DCC TNZ	Monitoring in place
1.12	Develop education and information programmes advising cyclists and drivers where cycle facilities are, and how to use them appropriately.	DCC LTSA	Ongoing
1.13	Maintain cycle facilities to a high standard and establish an inspection programme to indicate the need for maintenance before safety or access difficulties occur.	DCC TNZ	

1.14	Encourage development of easy transfers between modes, such as 'cycle-and-ride' for transfers between bus and cycle.	DCC ORC	
1.15	Improve Provision for safe cycling on State Highway 88.	TNZ	
1.16	Implement the recommendations of any safety audits relating to the safety of cyclists where practicable.	DCC TNZ	
Note 1	Lead Agency = agency responsible for implementing or co-ordinating the activity.		
Note 2	DCC= Dunedin City Council; TNZ= Transit New Zealand; LGNZ= Local Government New Zealand		

14.3 PROMOTION - ACTIONS

Action No.	Action	Lead Agency	Status
2.1	Conduct market research and consultation to find out base data on cycling in Dunedin including the number of cycles and cyclists, the amount of cycling and the views of cyclists, residents and motorists with respect to cycling.	DCC	
2.2	Develop appropriate promotion programmes to encourage cycling, improve the image of cycling and cyclists, create greater respect between cyclists and vehicle drivers, and raise awareness of cyclists' vulnerability.	DCC	
2.3	Monitor and review the responses to, and impact of, cycling promotion programmes.	DCC	
2.4	Promote cycling through the City's normal publicity and promotion of Dunedin as a tourist destination.	DCC	
2.5	Facilitate promotion efforts for cycling through relevant local and regional strategies and plans.	DCC	
2.6	Support and/or initiate efforts to get greater encouragement of cycling and less dependence on the use of private motor vehicles in local and national policies.	DCC	
2.7	Operate and support enforcement and education programmes to improve the behaviour of cyclists and motorists that affect cycling safety and convenience.	DCC Police	Ongoing
2.8	Monitor cycling activity and trends, as described in this Strategy.	DCC	Ongoing

14.4 SAFETY AND EDUCATION - ACTIONS

Action No.	Action	Lead Agency	Status
3.1	Provide one course of cycling safety instruction for all Year 6 (Standard 4) to Year 8 (Form 2) school students (to standards agreed to by the LTSA) by the time students leave Year 8.	DCC LTSA	
3.2	Promote awareness of existing courses that aim to teach adults (for example, tertiary students) cycling competency skills.	DCC	
3.3	Promote the provision of material relating to the safety of cyclists in general road safety, driver education and defensive driving courses.	DCC	
3.4	Raise the awareness of pedestrians and motorists of cyclists' safety needs.	DCC	Ongoing
3.5	Provide appropriate enforcement of motorist violations of driving and parking practices which compromise cyclist safety.	Police	
3.6	Provide appropriate enforcement of cyclist violations, which compromise the safety of cyclists and other road users.	Police	

14.5 CO-ORDINATION – TARGET

Target 4.1 The Cycling Interest Group should meet at least twice a year.

14.6 CO-ORDINATION - ACTIONS

Action No.	Action	Lead Agency	Status
4.1	Establish/maintain a Cycling Interest Group to assist in the development and periodic review of the Cycling Strategy and to help co-ordinate activities to promote cycling.	DCC	Ongoing
4.2	Update this cycling strategy in one year and thereafter review it every three years.	DCC	Ongoing
4.3	Support planning that encourages and provides for non-motor vehicle transport routes, including appropriate policies and requirements within the City Plan.	DCC	Ongoing
4.4	Contribute to the City Plan process to provide long-range protection of future desirable cycling facilities and protect existing and proposed routes from future concentrations of motor vehicle traffic and parking.	DCC	Ongoing
4.5	Support and/or initiate efforts to change appropriate laws and regulations to benefit cyclists, either on their own merits or relative to motorists.	DCC	
4.6	Support and/or initiate efforts to develop motor vehicle emission controls and improve air quality locally, regionally and nationally.	DCC ORC	Ongoing

14.7 RESOURCES - TARGETS

Target 5.1 To maintain or increase funding levels at $100,000 per annum for the cycling infrastructure programme.

Target 5.2 To provide one full-time DCC staff equivalent dedicated to implementing this cycling strategy.

14.8 RESOURCES - ACTIONS

Action No.	Action	Lead Agency	Status
5.1	Provide adequate funding to support cycling through the Annual Plan and Long Term Financial Strategy.	DCC	Ongoing
5.2	DCC staff monitor their time spent working on cycling issues	DCC	Ongoing

15 APPENDIX 5: PROPOSED CYCLE ROUTES

15.1 CYCLING NETWORK MAPS

The cycling network maps show:

1. Existing cycle lanes,
2. Existing cycle paths,
3. Existing official cycle routes, and
4. Proposed cycle routes (DCC Recognised cycle movement desire lines).

15.2 STATUS OF PROPOSED CYCLE ROUTES:

These proposed cycle routes can be thought of as 'desire lines' and effectively represent the Cycling Arterial Network. These routes were identified by the Cycling Interest Group and subsequently modified following public feedback during the public consultation phase.

In accordance with the Dunedin Cycling Strategy Document Status (page 1), these identified roads will be given particular emphasis in terms of improving cycle-friendliness and preventing any changes that will compromise cyclists' needs. Improving roads for cyclists can incorporate any combination of measures including hazard removal; cycle-friendly maintenance practices; road widening; and installation of cycle facilities.

Any proposed major capital work will be subject to consultation in accordance with the guidelines in Council's Road Safety policy.

16 APPENDIX 6: ISSUES

16.1 INFRASTRUCTURE

16.1.1 Speed Differential

The speed differential between cycles and motor vehicles is a frequent contributing cause of cycle crashes with motor vehicles. Motorists often underestimate the speed of cyclists, and this can lead to conflicts when turning left or pulling out. The significance of this speed differential is increased when cycles and motor vehicles are close together laterally. When motor vehicles are travelling at higher speeds, more space is required for cyclists to reduce the effects of buffeting and the sense of danger created by large, fast-moving vehicles.

Where providing adequate space for cyclists is impractical, reducing motor vehicle speeds improves the safety of cyclists (and pedestrians) in a number of ways. Motorists get more time to notice and react to these road users; they can decelerate more quickly if needed to avoid a collision; and injuries resulting from impacts between motor vehicles and vulnerable road users are significantly less severe at lower speeds. Reducing motor vehicle speeds is a low-cost, highly effective means of reducing injury rates of cyclists, pedestrians and other road users.

Various techniques (including traffic calming, threshold treatments at urban/rural interfaces and speed limit reductions) are available for reducing motor vehicle speeds where this may be beneficial for vulnerable road users such as pedestrians and cyclists. Various references (such as Austroads Part 10 – Local Area Traffic Management) are available to determine which, if any, of these techniques may be appropriate in particular circumstances.

16.1.2 The Cycling Network

A cycling network might include:

- Cycle lanes marked on roads;
- Allocated cycle space at intersections;
- Cycle routes on urban local roads chosen for the low traffic environment (sign-posted but not marked with cycle lanes);
- Off-road cycle paths in urban areas (often dual-use with pedestrians);
- Off-road cycle paths in rural areas that traverse areas of natural and heritage value or provide linkages between roads suitable for cycle touring;
- A combination of cycle lanes and cycle paths along the same stretch of road; and
- Wide paved shoulders on higher volume rural roads and State highways.

A published network map also encourages cycling. Cycle routes need to be continuous and should go where cyclists want to ride, such as the city centre, tertiary institutions, schools, shops, and tourist or recreational destinations. The needs of cyclists and the requirements of the cycling community should drive the development of the network.

European research[1] (which is relevant to New Zealand) has identified five main requirements for cycling infrastructure:

- "Coherence – The cycling infrastructure should form a coherent entity, linking all trip origins and destinations; routes should be continuous and consistent in standard.

- "Directness – Routes should be as direct as possible, based on desire lines, since detours and delays will deter use.

- "Attractiveness – Routes must be attractive to cyclists on subjective as well as objective criteria. Lighting, personal safety, aesthetics, noise and integration with the surrounding area are important.

- "Safety – Designs should minimise casualties and perceived danger for cyclists and other road users.

- "Comfort – Cyclists need smooth, well-maintained surfaces, regular sweeping and gentle gradients. Routes must be convenient to use and avoid complicated manoeuvres and interruptions."

In addition to these requirements, the facilitation of *speed-maintenance* should be considered in cycle facility design.

When considering roads that may be suitable for inclusion in a cycling network the following attributes should be reviewed:

Engineering
- Carriageway width
- Intersection control
- Centre and edge marking
- Shoulder width
- Road surface
- Road gradient
- Traffic volumes
- Traffic speed
- Traffic composition (ie. % of truck traffic)

Planning
- Road hierarchy
- Land use
- Origins and destinations
- Connectivity
- Integration with passenger transport interchanges
- Aesthetics
- Spacing of facilities, toilets/rest areas, water, food, accommodation

[1] Sign up for the bike – Design manual for a cycle-friendly infrastructure C.R.O.W. 1993

The maps in Section 9 show the DCC cycling network plan, identifying existing facilities and proposed cycle routes, where construction will occur only after consultation has been concluded in accordance with the guidelines outlined in Council's Road Safety Policy.

The types of cyclist using each route or location are important in the design of cycling facilities, as competent and confident adult cyclists will behave quite differently (and have different needs) from young, less experienced cyclists. The facilities along a route, or outside schools or recreational facilities, need to be appropriate to the existing or anticipated users. Both on- and off-street facilities may need to be provided in some locations.

Facilities should be developed to "best practice" standards. An attempt should be made to provide consistent design standards with those used by neighbouring road controlling authorities. Technical advice on design issues should be sought from acknowledged cycling experts, either within the DCC or from other organisations. Even apparently simple decisions, such as whether to provide cycle lanes or an off-road cycle path, are not trivial, and acquiring expert advice is strongly advised. Some suggested reference material regarding standards and technical guidelines for cycling facilities and general roading matters which affect cyclists are listed in Appendix C – Design of Cycling Facilities.

In general, provision of off-street cycling facilities parallel to roads (such as shared footpaths/cycle paths) needs to be carefully considered. Motor vehicle drivers do not expect cyclists in these locations and can collide with them when exiting driveways, for example. Either wide shoulders or cycle lanes on both sides of a road are often preferable solutions. Where physically possible, the road-shoulder adjacent to a cycle path should be cycle-friendly to provide for cyclists choosing to ride on-road.

In many locations, the opportunity will exist to provide an isolated cycling facility as part of some other infrastructure initiative, rather than one which is part of an overall cycling network. These opportunities should be taken when available. As the cycling network evolves over time, isolated facilities can be integrated into the network to improve its connectivity.

A road or pathway will be far less cycle-friendly and less effective for cycling if the surface is uneven or broken. Issues include maintaining clear riding surfaces, repairing and upgrading damaged facilities, maintaining lighting, trimming of hedges and vegetation, and maintaining clear signage.

To ensure that elements of the cycling network continue to offer good service to cyclists, it is necessary to both audit the facilities and carry out regular maintenance checks. A route audit will ensure that the facilities remain appropriate to modern standards, continue to offer safety benefits and take account of the changing road and/or traffic environments. A regular maintenance programme will ensure a facility is offering the high level of service for which it was originally designed.

The provision of end-of-journey facilities, including secure cycle storage and lockers, also encourages people to cycle more.

16.2 PROMOTION

16.2.1 Issues – Promotion

Most people acknowledge that there are considerable societal benefits to cycling. Thus while there is some room for improvement in public attitudes towards cyclists, the attitude towards cycling is generally supportive. This strategy attempts to help reconcile this apparent contradiction.

Despite the favourable impression most people have towards cycling, many people do not cycle. Reasons given vary from individual to individual, but fulfilment of the vision and objectives of this strategy will depend on getting many more people to cycle than currently do so, even if only for a small proportion of their trips.

Translation of the positive attitude of cycling by many non-cyclists into a change of behaviour, so that they undertake some trips by cycle, is the big challenge. All aspects of cycling are likely to need promotion, including utilitarian cycling (getting to work, school, shops or friends), recreational cycling and cycle tourism. Promotion should be undertaken simultaneously with other activities identified in the objectives in this strategy.

16.2.2 Possible Remedies – Promotion

Provision of a safe infrastructure for cycling and improved safety and education programmes need to be complemented by comprehensive marketing and promotion campaigns aimed at changing the behaviour of many motorists for some trips.

Cycling needs to be promoted as a normal, environmentally and socially responsible mode of travel for a wide variety of age groups, income levels and trip purposes.

Promotion campaigns should identify cyclists as typical Dunedin citizens who enjoy cycling and care about our community by actively doing something to help maintain and enhance our "clean, green" image. Promotion should also point out the benefits identified in Section 2.4.

DCC, with support from the Otago Regional Council, should encourage people to consider alternative modes of travel for their daily trips. Cycling is one such mode that should be encouraged.

Research was done by the Christchurch City Council in the late 1990s to identify why people change transport mode, and what actions or messages can encourage people to consider cycling as a viable transport choice. According to this research people would cycle more if: cycling was safer; if there were more cycle lanes and paths and; if there were secure bicycle parking facilities. The research results should be used to target any promotion campaigns at particular segments of the community or at types of trips.

16.3 ISSUES – SAFETY AND EDUCATION

The aim of cycling education for new cyclists is to build competence and confidence so they can cope successfully with any potential hazards they encounter. Without such skills they are more likely to feel vulnerable and may not continue to cycle. LTSA research in Christchurch indicates that education programmes that teach Year 6 (Standard 4) cyclists how to ride safely on the road are very effective in reducing their involvement in traffic crashes. This improvement in safety is likely to be maintained into adulthood.

In addition to educating cyclists to keep themselves safe, we also need to provide education for motor vehicle drivers. One of the greatest fears of cyclists is the "door prize", where a car driver, having parked their car, opens a car door into the path of an approaching cyclist. Educating motorists to provide more space for cyclists when overtaking would also improve the safety and comfort of cyclists.

The majority of reported cyclist crashes involve motor vehicles, with conflicts between pedestrians and cyclists being relatively rare. Of these motor vehicle-cyclist crashes, the motorist is over twice as likely to be at fault[2] and has less risk of severe injury, than the cyclist.

[2] *Road Safety New Zealand*, October 2002, LTSA reported NZ crash data March 2001-March 2002, primary responsibility fro cyclist/motorist collision attributed to: motorist 65%, cyclist 27%

Therefore to achieve the greatest improvements in safety a correspondingly higher proportion of enforcement and education resources should be directed towards motorists than towards cyclists.

Collisions between pedestrians and cyclists usually result in injuries of less severity than collisions with motor vehicles. Facilities intended for use by both pedestrians and cyclists must be designed for the safety of both users. Safety and education campaigns can improve pedestrian and cyclist safety by encouraging courteous use of shared facilities, and by other interventions.

In safety, education, and enforcement matters, it is important to co-ordinate efforts among all relevant agencies, many of which form part of the Cycling Interest Group.

16.4 ISSUES – CO-ORDINATION

Many groups influence the safety and popularity of cycling. To ensure that all of these groups are working in harmony, and without compromising the work of others, a high level of co-ordination is necessary.

16.4.1 Possible Remedies – Co-ordination

One of the essential ingredients to a successful cycling programme is the collaboration and co-operation of all key stakeholders. To a certain extent there is already a healthy climate for this to exist, with good lines of communication in place between many of the parties. However there is no room for complacency. To ensure on-going success both formal and informal meetings amongst the parties will continue to be needed. The Cycling Interest Group can help ensure this outcome.

The interests and responsibilities of the main stakeholders are as illustrated in Table 5.

16.4.2 Table 5: Key Stakeholders

Organisation	Cycling Interests	Responsibilities
Accident Compensation Corporation	Injury prevention	Education
Automobile Association Otago	AA Otago members	Education of motorists
Dunedin Road Safety Coordinator	Community Road Safety	Promotion, education
Cycling New Zealand Otago Centre	Recreational cycling	Promotion of recreational cycling
Dunedin City Council	Dunedin residents and businesses	Promotion, infrastructure, safety, education, co-ordination, tourism
Land Transport Safety Authority	Road safety	Safety, education
New Zealand Police	Road safety/ enforcement	Enforcement
New Zealand Road Transport Association (Region 5)	Truck/cycle safety	Education of truck drivers
Otago Regional Council	Regional land transport strategy	Regional planning
Public Health South	Health/injury prevention	
Spokes (Dunedin)	Cycling advocacy for all kinds of on-road cycling	Cycling advocacy
Transfund New Zealand	Road funding and transportation policy	Funding and policy
Transit New Zealand	State highways	Infrastructure, safety

Numerous organisations (both local and remote) have valuable information relating to cycling on their websites. A selection of these is contained in Appendix 3.

16.5 ISSUES – RESOURCES

If inadequate resources are available to implement the cycling programme, this cycling strategy will be ineffective. Cycling is sometimes considered a luxury at budget time, and vigilance will be needed to ensure that cycling is funded and staffed appropriately so it can play its part in providing transport choices for Dunedin's residents.

This section relates mainly to the DCC's resource responsibilities relating to cycling, although other organisations will need to provide their own resources to complement DCC initiatives.

16.5.1 Possible Remedies – Resources

DCC should explore all avenues of fund-raising for supporting the cycling programme including partnerships with other interested parties (both public and private) such as tourism and health, the involvement of the community through charitable trusts and support "in-kind", the production of promotional and publicity material.

Transfund financial support is likely to be available for:

- Developing cycling strategies;
- Implementing cycling implementation plans which are consistent with city and regional cycling strategies and which satisfy Transfund's Project Evaluation Manual requirements.

Conventional road funding sources can be used for a range of improvements which have multiple advantages. For example, rural road shoulder widening treatments not only improve the safety and convenience of cyclists, they also protect the road structure from edge damage by heavy commercial vehicles and generally improve safety for motor vehicle traffic by providing a safety margin for overtaking vehicles.

Dedicated funding through City budgets will be necessary to ensure that this Cycling Strategy can be implemented. This should be allowed for in both Capital and Maintenance budgets. With funding mechanisms in place, Dunedin can actively plan and implement the policies contained in this Strategy. A detailed annual implementation plan should be prepared to ensure that this happens.

It is important with any strategy to monitor its effectiveness and to assess whether or not targets are being met. The trends and targets set out in this strategy have been established from known data about cycling. It is important that these trends continue to be monitored and that additional data are gathered to enhance that monitoring. Various types of surveys and data are available for monitoring cycling use and facilities. Appendix E – Possible Monitoring Activities discusses these and identifies actions needed to ensure that data are available to inform the cycling strategy process.

17 APPENDIX 7– POSSIBLE MONITORING ACTIVITIES

The following is a checklist of possible monitoring activities that could be considered for this or future cycling strategies.

Data Set	Comments
Census journey to work (Statistics New Zealand)	Good long-term data series of trends for cycle commuting ("main means of travel to work") but does not capture school or recreational traffic. Disadvantages are that the data are collected only once every five years, and may be weather-dependant on any particular Census day
Collision statistics (LTSA)	Cycling collisions 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 cycling crash numbers, however, are useful indicators of cycling safety, and should be monitored routinely. A five-year analysis of cycle crash data is included below.
Cycling infrastructure	An inventory should be established and maintained of public cycling facilities, including cycle lanes (on-street), cycle paths (off-street, usually available to pedestrians and possibly horse traffic), wide shoulders on rural roads marked as cycle routes and bicycle parking facilities. A component of this inventory should be a cycle route network map.
Funding and staffing	Funding and staff resources will be needed to develop, implement and maintain the Cycling Strategy. Tracking these items will demonstrate the DCC's commitment to cycling.
Automatic traffic counts	Routine classified traffic counts identify the proportion of traffic of each mode (including cars and many different classes of truck and bus). With little extra effort or cost, traffic counters can count bicycle traffic too. No data have been collected yet in Dunedin, but routine counts will collect bicycle traffic in most future automatic traffic counts.
Manual traffic counts	Manual surveys help distinguish between school and other types of cyclists. They tend to be more expensive than automatic counts and consequently may be carried out for shorter intervals.
Special bicycle counts	Some data exist for special locations and further locations will be counted as necessary.
School bike stand surveys	Cycling to school gives an indication of the use of cycles by younger residents of the community. If this number declines then the future numbers of cyclists may decline.
Bicycle tourism	Numbers of visitor nights of cyclists on organised cycle tours in the city.
Cycling Events	Number of cycling events held in the city such as Bike Week promotion, fun rides, road or off-road races.

Opinion survey of cyclists	Attitudes of existing cyclists toward cycling facilities can be documented.
Opinion survey of residents	Attitudes toward cycling in general can be documented to ascertain what would be needed to encourage non-cyclists to cycle and to encourage occasional cyclists to cycle more.
RAMM	Maintenance standards of cycling facilities will be monitored by RAMM on a yearly basis.

18 APPENDIX 8– DESIGN OF CYCLING FACILITIES – REFERENCES

Geometric design guidelines for cycling facilities can be obtained from a variety of sources. The following are recommended:

1. *Guide to Traffic Engineering Practice – Part 14 Bicycles* Austroads, Second Edition 1999

2. *New Zealand Cycling Design Guide,* Transit New Zealand 2003 (In preparation and scheduled for publication during 2003. It will complement Austroads Part 14 with specific New Zealand content.).

3. *Sign Up For The Bike, Design Manual for a Cycle-Friendly Infrastructure*, C.R.O.W. The Netherlands (in English)

4. *Cycle-friendly Infrastructure, Guidelines for Planning and Design*, Department of Transport

5. *14 Key Cycling Issues for Local Authorities* CAN, Cycle Advocates Network http://elena.aut.ac.nz/homepages/staff/Tony-Bewlay/can/home/index.htm

6. Also recommended to consult for further guidelines and standards
   - Transit New Zealand
   - Christchurch City Council
   - LTSA

19 APPENDIX 9: GLOSSARY OF TERMS

Bicycle	A cycle with two wheels (see cycle).
Cycle	A vehicle designed to be propelled solely by the muscular energy of its rider(s) through pedalling.
Cycle facility	A facility especially constructed for cyclists.
Cycle lane	Part of a roadway allocated specifically for cycle use but which may occasionally be used by motor vehicles for turning at intersections or driveways or manoeuvring into parking spaces. May be installed on one or both sides of a road.
Cycle path	A physically separated path for cycles to which motor vehicles do not have access, but pedestrians usually do. May be dual or single direction and installed on one or both sides of a road.
Cycle route	A recommended route for cyclists comprising cycle lanes, cycle paths, signposting, pavement markings or other cycling facilities.
Cycle network	A network of cycle routes represented on a publicly available map.