HEALTH AND WELLBEING IMPACT ASSESSMENT

# CANTERBURY REGIONAL LAND TRANSPORT STRATEGY 2011 - 2041

2010

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Canterbury District Health Board
Te Poari Hauora o Waitaha

Christchurch City Council

## ABOUT THE FRONT COVER

Te Pae Mahutonga is the name given to a model for Maori health promotion described by Mason Durie in 1999. It brings together elements of modern health promotion. Te Pae Mahutonga is the name for the constellation of stars referred to as the Southern Cross. It has long been used as a navigational aid and in this case is used as a symbolic map for bringing together the significant components of health promotion. The four central stars of the Southern Cross represent four key tasks of health promotion Mauriora (secure cultural identity), Waiora (environmental protection), Toiora (healthy lifestyles) and Te Oranga, (participation in society). The two pointers represent Nga Manukura (leadership) and Te Mana Whakahaere (autonomy or community ownership).

This series of graphics are aligned with each of these tasks of health promotion. They are part of the work of the Healthy Christchurch project, in which this Health Impact Assessment is situated.

**Te Oranga**
Participation in society

**Toiora**
Healthy lifestyles

**Mauriora**
Secure cultural identity

**Nga Manukura**
Leadership

**Waiora**
Environmental protection

**Te Mana Whakahaere**
Autonomy or community ownership

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## ACKNOWLEDGEMENTS

This Health Impact Assessment (HIA) has been led by a project team comprising representatives from a range of organisations including Alison Bourn, Dr Anna Stevenson, Hector Matthews, (Canterbury District Health Board), James Ryan (Environment Canterbury), Ruth Foxon, Siobhan Storey, Trudy Jones (Christchurch City Council) and Martin Ward (independent consultant). The HIA process has been supported by the Ministry of Health through financial assistance via the "Learning by Doing Fund".

The development of this HIA has been made possible through the support of the Health Impact Assessment Project Officer for Canterbury. This position has been funded by Environment Canterbury, the Christchurch City Council, Partnership Health Canterbury and the Canterbury District Health Board to build the capacity of the partner organisations to undertake HIAs.

The literature review was led by Susan Bidwell and the evaluation process led by Dawn Gourdie from the Canterbury District Health Board. Expert advice on Māori engagement was provided by Bob Tai (Environment Canterbury), Lee Tuki, Theresa Rongonui and Ted Te Hae from the Canterbury District Health Board. Additionally, there have been a range of other staff from Environment Canterbury, the Christchurch City Council, Partnership Health Canterbury, Canterbury District Health Board and the Ministry of Health who have supported the process.

The project team would like to thank Adrian Field from Synergia for his professional support and advice.

The project team is particularly grateful to the members of the community who have given their time and expertise to contribute to this HIA.

# EXECUTIVE SUMMARY

The use and composition of the transport system has positive and negative implications for public health. This report focuses on the outcomes of a health and wellbeing impact assessment process to support development of the Canterbury Regional Land Transport Strategy 2011 – 2041 (RLTS). It highlights potential directions that the transport system could take to promote and protect the health of the people of Canterbury.

HIA offers the opportunity to explore potential health effects of a policy, plan, programme or project, and to incorporate health and wellbeing considerations into policy and planning. The HIA has been carried out to ensure that public health outcomes are taken into account as the RLTS is developed and implemented. As the majority of the HIA process has been undertaken while the RLTS was in the early stages of development, the HIA process has been used as a tool for exploring the potential impacts of transport scenarios for the future. Therefore, rather than critiquing a draft Strategy, the HIA provides policy direction to inform the subsequent development of the RLTS.

Three focus areas were identified during the HIA scoping stage involving:

- Making transport safe for people;
- Creating real transport choice; and
- Building healthier environments.

The health impacts of these focus areas were explored during an appraisal process involving a literature review, stakeholder workshops and simulation modelling.

The recommendations of the HIA are designed to enhance the positive impacts, and reduce the negative impacts, of the transport system for public health and wellbeing. The HIA highlights a range of policy initiatives to assist preparation of the RLTS. As the Canterbury Regional Transport Committee considers the strategic direction for the region's transport system, the HIA provides a repository of policies to help protect and promote public health. The final combination of health related policies that are included in the RLTS, and the agencies responsible for their implementation, will need to be considered alongside the other policies that form the RLTS.

## OVERRIDING RECOMMENDATION

The overriding recommendation of the HIA is that:

**The RLTS supports a strategic direction that enhances active and public transport and reduces car dependency.**

## KEY RECOMMENDATIONS

The other key recommendations of the HIA are to:

- Improve mobility for the transport disadvantaged;
- Increase public understanding of the true costs of transport;
- Enhance urban design and land use planning to improve active lifestyles;
- Undertake education and marketing to increase awareness of the links between public health and transport;
- Reduce private vehicle dependence;
- Ensure that regulation and enforcement supports public health benefits;
- Ensure funding and investment supports public health benefits;
- Improve active transport infrastructure;
- Enhance public transport services and infrastructure;
- Support increased energy efficiency and environmental sustainability;
- Support the efficient and effective movement of freight; and
- Ensure effective representation.

If the RLTS is to achieve its stated objective of "protecting and promoting public health" then a concerted package of measures is required to be implemented, and sustained, on a much larger scale than has been previously undertaken.

## 1.1 Introduction

Transport decisions have significant impacts on the health and wellbeing of our communities. This report focuses on the outcomes of a health and wellbeing impact assessment process to support development of the Canterbury Regional Land Transport Strategy 2011 – 2041 (RLTS). It recommends implementation of a range of policy initiatives that could create a transport system that better promotes and protects the health of the people of Canterbury.

In addition to this report, there are a number of companion documents (available at the Environment Canterbury website: www.ecan.govt.nz/rltsreview) that detail particular elements of the HIA including:

- A detailed literature review of transport and health;
- A report on the scoping workshop;
- A regional profile report;
- A report on the computer simulation modelling;
- A summary of the appraisal workshops and engagement with Māori; and
- An interim evaluation report.

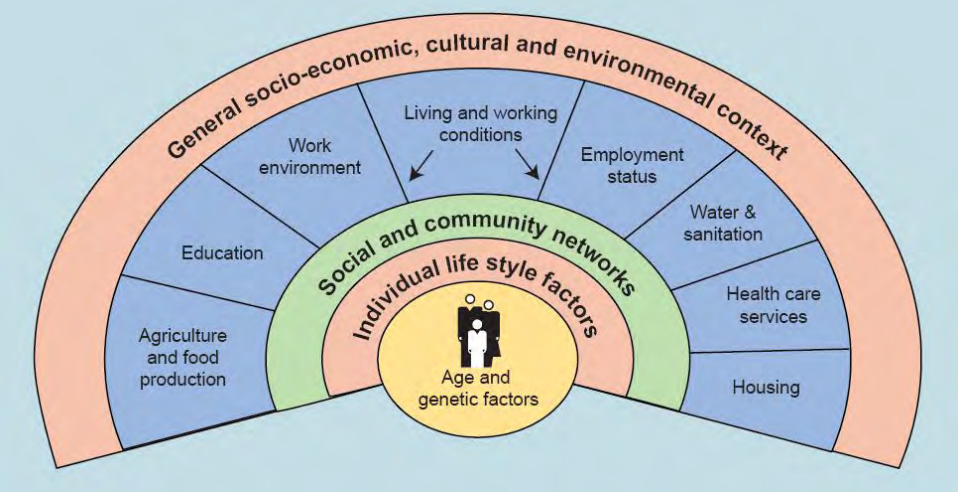
## 1.2 What is Public Health?

Public health aims to improve the overall health of the population by having particular focus on those with the poorest health outcomes.

*"Public health makes a difference when society moves collectively on an issue. The basis of effective public health action is not a single service or intervention, but the organised efforts of society itself" Ministry of Health (2010).*

Public health acknowledges that the factors which have the greatest effect on people's health and wellbeing lie outside and beyond the control of the health sector. Transport is one of these factors or determinants of health. This concept is acknowledged by the inclusion of public health considerations in legislation, such as the Land Transport Management Act 2003.

The diagram below is a classic representation of the different influences (also known as determinants) on health and wellbeing, ranging from genetic and behavioural factors, through to familial and environmental factors (Dahlgren & Whitehead 1991). The further the influences are from the individual, the less control the individual has over these factors. In this sense, an important value of health impact assessment is the potential to influence broader policy and planning processes that shape the environments in which people live healthy or unhealthy lives. In the model below, transport fits within the environmental context that affects the health and wellbeing of people and communities.




*Source: Dahlgren and Whitehead 1991*

## 1.3 What is Health Impact Assessment?

Health Impact Assessment is a tool to support the development of healthy public policy. Project level HIA is often undertaken in New Zealand within the context of the Resource Management Act 1991. Policy level HIA is a relatively new field and is entrenched in the idea that health at a population level is often impacted on by policy decisions made in sectors outside of the health portfolio. The focus of policy level HIA is on how a particular policy, in this case the RLTS, affects actual health outcomes for people and the determinants of those health outcomes.

HIA offers the opportunity to explore potential health effects of a proposed plan or project, and to incorporate health and wellbeing considerations into policy and planning. An HIA does not attempt to make the necessary policy decisions, but highlights areas of particular policy which may impact on the health of a population, and provide recommendations.

It is recognised that sometimes policy makers may choose to make decisions which are not ideal in terms of health, though they meet the interests of other community or corporate goals. In this respect, the HIA process assists policy makers and decision makers to understand the health impacts and to make informed decisions.

A primary objective of performing an HIA is to minimise health inequalities and to create opportunities for improving and maintaining good health. HIA considers the distribution of health effects across populations and groups within populations, by identifying which populations bear disproportionate impacts on their health.

HIA's influence is prospective in that it is systematically applied in the window between the initial formulation of policy and planning and their detailed finalisation. Applied in this way, HIA supports democratic engagement, equity, cross-sectoral collaboration, and transparency.

HIA is a structured, yet flexible, process that follows a defined series of steps involving:

1. **Screening**: the initial selection process to assess an initiative's suitability for HIA;
2. **Scoping**: highlighting the key issues needing to be considered to define and shape the HIA;
3. **Appraisal and reporting**: identifying the relevant determinants of health and using specific tools to identify potential health impacts; then assessing the significance of these impacts and recommending practical changes to the policy;
4. **Evaluation:** assessing how the process was undertaken and the extent to which the recommendations were taken up by the policy-makers.

## 1.4 Aims and Objectives of the HIA

The aim of this HIA is to assess the links between transport planning, health determinants, and health outcomes for the RLTS.

The HIA has four supporting objectives:

- To highlight areas of policy which may impact on the health of the Canterbury population and make recommendations on how to reduce health inequalities which will be taken into account when developing RLTS policies so as not to exacerbate or continue existing inequalities in different geographical areas;
- To suggest measures to be incorporated into the RLTS that seek to reduce or mitigate the potential harm identified;
- To evaluate the process and outcomes of this HIA for the purpose of contributing to the development and the building of an evidence base for HIAs;
- To assist in building sustainable capacity within Environment Canterbury to perform HIAs on future policies and embed this approach into good practice.

As the RLTS was in the early stages of development when much of the analysis contained in this report was carried out, the HIA process has been used as a tool for exploring the impacts of the transport system upon the health and wellbeing of the Canterbury population. Therefore, rather than critiquing a Draft RLTS, the HIA has been developed to influence the strategic direction taken in the RLTS and to identify a range of policy initiatives that are important for enhancing the health outcomes of the RLTS.

## 1.5 Legislative and Policy Context

### 1.5.1 New Zealand Transport Strategy 2008

In 2008, Government released the New Zealand Transport Strategy (NZTS) to provide the transport sector with a long-term strategic framework for achieving an affordable, integrated, safe, responsive and sustainable transport system. The NZTS sets a number of targets to protect and promote public health which include:

- Reducing the number of people exposed to health-endangering noise levels from transport;
- Reducing the number of people exposed to health-endangering concentrations of air pollution in locations where the impact of transport emissions is significant;
- Increasing walking, cycling and other active modes to 30 percent of total trips in urban areas by 2040;
- Reducing road deaths to no more than 200 per annum by 2040;
- Reducing serious injuries on roads to no more than 1,500 per annum by 2040.

### 1.5.2 Regional Land Transport Strategies

Under the Land Transport Management Act 2003, all regional councils are required to prepare a transport strategy with a 30-year horizon at least every six years. The strategy must contribute to the aim of achieving an affordable, integrated, safe, responsive and sustainable land transport system, and which supports the five underlying principles of the Act:

- Assisting economic development;
- Assisting safety and personal security;
- Improving access and mobility;
- Protecting and promoting public health; and
- Ensuring environmental sustainability.

### 1.5.3 Canterbury Regional Land Transport Strategy 2011 - 2041

The proposed new RLTS will provide strategic direction to the region. It is important for: guiding local authorities as they prepare and implement their long-term council-community plans; and influencing how Canterbury's transport funding is used, particularly through the Regional Land Transport Programme.

The proposed vision of the RLTS is:

- Canterbury has an affordable, integrated, safe, resilient and sustainable transport system.
- The proposed objectives of the RLTS are:
- Ensuring a resilient, environmentally sustainable and integrated transport system;
- Increasing transport safety for all users;
- Protecting and promoting public health;
- Assisting economic development; and
- Improving levels of accessibility for all.

The RLTS must contain strategic options for achieving the outcomes of the Strategy. As the options of the RLTS are being developed, the HIA will provide some context to assist with their evaluation.

The key milestones for development of the RLTS are summarised below.

| | |
|---|---|
| Define key issues and challenges | February 2010 |
| Define Vision & Objectives | April 2010 |
| Develop Outcomes & Indicators | June 2010 |
| Identify Strategic Options | August 2010 |
| Assess the Strategic Options | October 2010 |
| Identify the Preferred Option | December 2010 |
| Develop supporting Policies & Actions | January 2010 |
| Consult on the Draft RLTS | March 2011 |
| Adopt RLTS | June 2011 |

# 2. PROCESS FOR CONDUCTING THE HEALTH IMPACT ASSESSMENT

## 2.1 Introduction

The HIA has been led by a project team comprising representatives from the Canterbury District Health Board, Environment Canterbury and Christchurch City Council. In addition, the project team has been supported by Synergia Ltd (an independent health consultancy). Coinciding with the development of the RLTS, the Christchurch Transport Plan (CTP) is being developed by the Christchurch City Council with a parallel HIA process underway. The two HIAs have been designed to link closely together, with some joint planning, evidence-gathering and evaluation activities.

## 2.2 Literature Review

A literature review was undertaken by the Canterbury District Health Board and peer-reviewed by experts in relevant fields across New Zealand. It was conducted prior to the scoping workshop and used to inform the subsequent stages of the HIA.

The literature review provides a key evidence base for the links between transport and health, and provides a basis to validate or critique the issues and potential actions raised through the appraisal workshops. A summary of the literature review is detailed in Section 3.1. The full report, Wider Health and Wellbeing Impacts of Transport Planning, 2010, is available at the Environment Canterbury website www.ecan.govt.nz/rltsreview

## 2.2 Scoping

A key stage of any HIA is the scoping phase, in which stakeholders discuss the policy or project being explored, and decide on the key issues and populations of interest that the HIA should focus on. A scoping workshop for the RLTS was held in December 2009, with representatives from a range of agencies and organisations (detailed in Appendix 1).

### 2.2.1 Focus Areas

Three key issues were identified for detailed exploration in this HIA:

- **Making transport safe for people**: including increasing safety for all road users and creating environments where active transport (such as walking and cycling) can be fostered.
- **Creating real transport mode choice**: including planning and delivering urban design and transport options that make active and public transport safe and more appealing; increasing travel choices for commuters; and increasing travel choices in rural areas.
- **Building healthier environments**: including reducing environmental effects of the transport system (air and water quality, and noise emissions).

#### Key Populations of Interest

Consistent with longstanding public health approaches, equity and social inequalities are underlying issues of importance for the HIA. HIAs have proved effective in reducing inequalities in health by ensuring that policies do not exacerbate or continue existing inequalities for particular population groups (Public Health Advisory Committee 2007). As part of the HIA for the RLTS, this concept encompassed:

- Consideration of those with greatest social and economic needs;
- Enabling accessibility for all, particularly for those that face the greatest difficulties;
- Ensuring transport disadvantaged people can access services/transport to work; and
- Providing affordable transport options.

The term "transport disadvantaged" is used to define those in the community who have the lowest levels of accessibility to goods, services and activities they need, such as work, education, health care, welfare and food. The Public Transport Management Act 2008 defines transport disadvantage as:

*"people whom the regional council has reasonable grounds to believe are the least able to get to basic community activities and services (for example, work, education, health care, welfare, and food shopping)."*

With this concept of transport disadvantage in mind, the following groups were suggested as key populations of interest for the HIA.

### Older People

Older people are potentially more at risk of being transport disadvantaged by virtue of their stage of life development which generally results in slower reaction times, weakened vision and physical ability, loss of confidence, and concerns about personal safety. Older people can face significant mobility barriers including loss of the ability to drive and difficulty with physical access to public transport. It is noteworthy that the numbers and proportion of Canterbury's population aged 65 or older is expected to grow significantly over the life of the RLTS, from approximately 76,000 (14%) in 2006 to approximately 154,000 (24%) in 2031 (Statistics New Zealand, Census 2006).

### Lower socio-economic populations

As the transport system is largely designed around vehicle mobility, people that cannot afford the costs associated with the purchase and operation of a vehicle are more likely to be disadvantaged. In New Zealand the burden of fatalities and injuries is disproportionately borne by those in lower socio-economic circumstances (Public Health Advisory Committee 2003).

### People with disabilities

People with disabilities are more likely to be transport disadvantaged because they face intellectual or physical barriers to accessing and using the transport system. In addition, people with disabilities may be dependent upon others providing support to meet their needs. It is expected that the numbers of people with disabilities will increase, particularly as the population ages.

### People living in isolated rural areas

People living in isolated rural areas may be more likely to be disadvantaged because they have a lack of transport choice, other than the private vehicle. There is a risk that those living in rural areas, including lifestyle blocks, become increasingly disadvantaged as a result of increases in fuel prices.

### Māori

"In New Zealand, Māori at all socioeconomic levels have worse health status than non-Māori. Persistent ethnic disparities suggest that there are other features in our society that produce ill-health in Māori..." (Ministry of Health 2006).

Although Māori living in Canterbury tend to have better health than Māori nationally, they are in a worse position than non-Māori in Canterbury including in terms of cardiovascular disease, respiratory disease and diabetes (Canterbury District Health Board, 2010). In Canterbury, Māori (14%) are more likely to be involved in road fatalities than non-Māori (9.7%) (Canterbury District Health Board, 2010).

### Children and Young people

Young people, including children, are more likely to be transport disadvantaged because they have not gained the experience, or developed the cognition, to use the transport system safely, and they are often highly reliant upon others to meet their accessibility needs.

Further details of the key populations of interest and other key regional health and transport issues is contained in a companion document entitled Regional Profile Report: Supporting the RLTS HIA, which is available at the Environment Canterbury website www.ecan.govt.nz/rltsreview

## 2.3 Simulation Modelling

To help understand the links between transport and health outcomes, Synergia Ltd were commissioned to develop a computer simulation model to explore the impacts of different transport scenarios. System dynamics modelling, or simulation modelling, is an approach to improve understanding of how a system performs over time. It draws together evidence with expert insight to develop a picture of the overall system, analysis of available data and a causal model to identify what outcomes can emerge. The model itself is developed through a collaborative process of identifying causes, researching connections and critiquing findings.

The model developed for the HIA sought to quantify some of the key linkages between transport choices and health outcomes, and the scale of potential health impacts over time. The analysis, using system dynamics modelling approaches, drew on international evidence, transport and population data for Canterbury.

Findings from the modelling exercise are detailed in Section 3.3, and in more detail in a separate report: Regional Transport in Canterbury: Health Impact Analysis – Dynamic Simulation Report, 2010 which is available at the Environment Canterbury website www.ecan.govt.nz/rltsreview

## 2.4 Appraisal

The appraisal stage of an HIA examines the key issues and populations of interest that were identified as the focus of the HIA at the scoping workshop.

### 2.4.1 Appraisal Workshops

A series of appraisal workshops were held with a wide range of representatives from the health, transport, government and community sectors (detailed in Appendix 1). Each workshop sought participants' feedback on the health and wellbeing impacts of the transport system, and key actions that could be taken to enhance the positive impacts and reduce the negative impacts. The key findings arising from the workshops are highlighted in Section 3. A full day workshop was held in Christchurch with smaller workshops taking place in Rangiora and Timaru.

### 2.4.2 Engagement with Māori

An important component of undertaking HIAs in New Zealand is to ensure that the principles of the Treaty of Waitangi are upheld. Additionally, local government has the responsibility to provide opportunities for Māori to contribute to decision making processes (required by legislation such as the Local Government Act 2002).

The opportunity for Māori to contribute to the development of this HIA has occurred via a number of approaches, including:

- A hui at Rehua Marae;
- Participation of Māori in the project team; and
- Expert independent assistance.

## 3.1 Introduction

This section details the key findings from the HIA process, involving the:

1. Literature review;
2. Simulation modelling;
3. Appraisal workshops and engagement with Maori.

These inputs have been used to arrive at the HIA recommendations detailed in Section 4.

## 3.2 Literature Review – Key Findings

The following summary highlights the key findings of the literature review in line with the focus areas of the HIA:

- Making transport safe for people;
- Creating real transport mode choice; and
- Building healthier environments.

The summary is not an exhaustive list of the positive and negative impacts of the transport system on health. However, it highlights some of the key themes to emerge from the literature review.

The full literature review is contained in a companion document entitled the *Wider Health & Wellbeing Impacts of Transport Planning*. It is available at www.ecan.govt.nz/rltsreview

### 3.2.1 Making Transport Safe for People

#### Positive impacts of the transport system on health

- A safe environment, including one that is perceived as safe, will create opportunities for people to travel to local destinations.

#### Negative impacts of the transport system on health

- Road crashes have a significant effect upon people's health. Canterbury reflects the national trend over the past decade which has seen the number of road traffic fatalities falling but both serious and minor injury crashes increasing.
- Perceived safety is an important consideration in transport planning. New Zealanders are generally more concerned about the safety of walking, cycling or waiting for public transport, than the safety of the trip itself, particularly after dark.

#### Actions to enhance the positive health impacts and mitigate the negative health impacts:

- Measures that increase the safety of walking and cycling have consistently been shown to increase physical activity both for routine transport needs and for leisure activities.
- Interventions such as widening footpaths, narrowing streets at pedestrian crossings, speed bumps, and altered road alignments which can slow vehicular traffic can make streets safer for pedestrians and cyclists.
- For children travelling to school, cross-sectoral collaboration on road infrastructure, positioning of schools, pick-up and drop-off areas, and initiatives tailored to the particular context and user group make walking and cycling safer, reduce traffic congestion around schools, and help provide a daily level of physical activity that contributes to reducing obesity.
- There is evidence that initiatives such as street lighting, red light cameras, speed enforcement devices and traffic calming together with legislative interventions requiring seatbelts, cycle helmets, and child restraints can reduce traffic fatalities and injuries.
- Projects implemented by local authorities using Crime Prevention Through Environmental Design (CPTED) principles have shown that good lighting, security cameras, and emergency alarms at waiting points for public transport services improve public perceptions of safety and encourage use of services.
- It is important that the growing population of older people feel safe walking and using public transport so they are supported to maintain their health and independence. Familiarisation programmes for public transport services, and designs that increase safety of boarding and alighting also assist people with limited mobility, regardless of their age.

### 3.2.2 Creating Real Transport Mode Choice

#### Positive impacts of the transport system on health

- The motor vehicle provides numerous benefits for people to access a wide range of goods and services including health facilities and recreational opportunities.
- New and improved roads to enhance traffic flow can provide many benefits such as improved access to goods and services.
- 30 minutes of cumulated exercise each day, through for example walking and cycling, is enough to decrease the risk of obesity, type 2 diabetes, cardiovascular disease, colon cancer, respiratory disease, depression and stress.
- There are economic benefits from an inactive person becoming physically active such as increased productivity, reduced mortality and reduced health sector costs.
- Transport interventions which encourage physical activity have demonstrable health benefits.

#### Negative impacts of the transport system on health

- Car dependence has been linked with physical inactivity and growing levels of obesity.
- The personal motor vehicle is costly to purchase, maintain and run. The average New Zealander in 2007 spent 14% of their income on transport. Low income households tend to spend a greater percentage of income on transport than other households.
- New and improved roads can create physical barriers, or community severance, by reducing some residents access to services, facilities and social activities.

#### Actions to enhance the positive health impacts and mitigate the negative health impacts:

- Improvements to active and public transport (infrastructure and services) has been demonstrated to provide health benefits.
- Increasing understanding about the wider determinants of health can help build support for safety and active transport improvements.
- Well designed footpaths, safe crossings at intersections, traffic calming measures, speed limits, and parental supervision of walking school buses or cycle trains encourage children's active transport to school.
- The provision of convenient public transport services is a key factor in increasing uptake by both adults and children.
- For those without private transport, or who are unable to drive, the availability of public transport services is particularly important.
- The creation of walkable, safe neighbourhoods with mixed land use, public transport options and recreational facilities support health outcomes.

### 3.2.3 Building Healthier Environments

#### Positive impacts of the transport system on health

- A healthy environment supports sustainability and a good state of health for people.
- Living in less dense housing environments, that are readily accessible, has benefits for some people through increased living space and privacy.


- Access to attractive open spaces is associated with higher levels of walking and physical activity that is linked to health benefits such as reduced stress, a lower risk of obesity, and enhanced mental and physical wellbeing.
- The availability of land which can be used for food production provides amenity value and improves access to healthy produce.

### Negative impacts of the transport system on health

- Vehicle emissions contribute to the risk of allergies and increase morbidity and mortality from respiratory disease. New Zealand studies have estimated that mortality in people aged over 30 is an "invisible road toll" equal to the number of fatalities caused by road crashes.
- People become exposed to traffic pollutants from living or working in locations close to roadways, in-vehicle exposure, and exposure while walking or cycling. The level of exposure depends on the traffic density, the type of vehicle, fuel type, whether the environment is fairly enclosed or more open, and whether the traffic is congested or flowing freely. Research has found that in-vehicle exposure may be higher than exposure for walking or cycling of the same duration especially in heavily congested traffic or when travelling behind a smoky vehicle.
- Traffic noise and vibration have an effect on health. Long term exposure to traffic noise has been associated with annoyance and stress which in turn are linked to increased risk of heart attacks, poor educational and work performance, aggression, and depression. Traffic noise and vibration disturb sleep, which affects sleep quality, day time activities, and have been linked to a broad range of health effects such as high blood pressure, heart conditions and associated increase in use of health services.
- Other environmental impacts from land transport include leaching to groundwater of industrial by-products used in road construction or the release of contaminants to air from dust and fumes, the impact of vehicle and fuel contaminants in storm-water run-off and their discharge into freshwater resources with subsequent effects on aquatic life.

### Actions to enhance the positive health impacts and mitigate the negative health impacts

- A range of legislative and regulatory measures, in combination with incentives and education, have been utilised to reduce the environmental impact of transport related pollution.
- This includes: technical and engineering improvements in vehicle engines, fuels, and road construction materials; integrated land use planning to separate freight corridors from residential areas, schools, and neighbourhood amenities; taxation and restrictions such as road-user and congestion charges, noise restrictions, and fuel standards.
- Planning policies which favour mixed land use and medium to high density housing with good community facilities and high quality open spaces and street connectivity are considered to be effective at fostering environmentally sustainable development.

## 3.3 Simulation Modelling – Key Findings

The following section summarises the key findings from the simulation modelling process. A more detailed report is contained in a companion document entitled: *Regional Transport in Canterbury: Health Impact Analysis – Dynamic Simulation Report*. The report is available from the Environment Canterbury website www.ecan.govt.nz/rltsreview

### 3.3.1 Key Findings

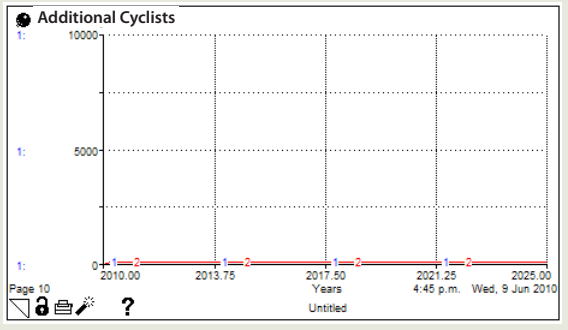
A number of options were tested in the model which were based on a range of hypothetical transport scenarios. Although the scenarios were based largely on the Greater Christchurch area, for which the most detailed data was available, some analysis was carried out for the wider Canterbury region.

## Scenario A: "High Car Dependence Simulation"

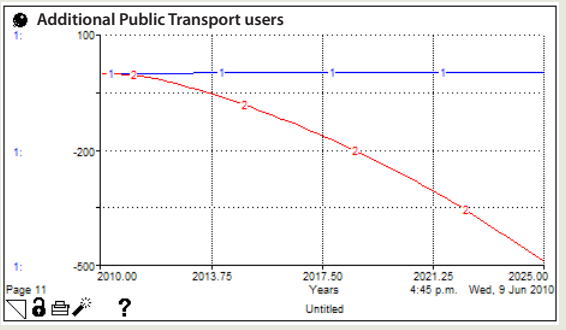
This scenario simulates continued growth in car use, and moderate decreases in public transport, walking and cycling. As the use of cars continues to grow, other transport modes decline, leading to the following mix of transport modes:

- Public transport 4.0%: a decline of 1.4% compared to the baseline
- Cycling 1.5%: a decline of 0.3 % compared to the baseline
- Walking 3.0%: a decline of 0.3% compared to the baseline
- Cars 91.5%: a rise of 2.6% compared to the baseline

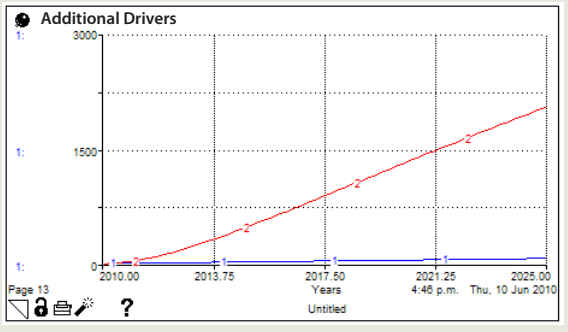
### Transport mode use



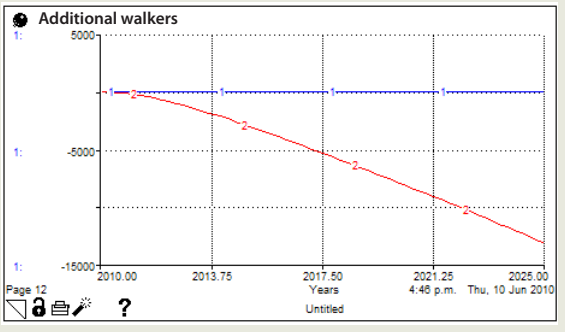

*Within this scenario, there is no significant change in cycling with the total number of cyclists remaining around 26,000.*




*The number of people using public transport shows a small but steady decline. By 2025 the number of people using public transport has declined to just over 43,000.*

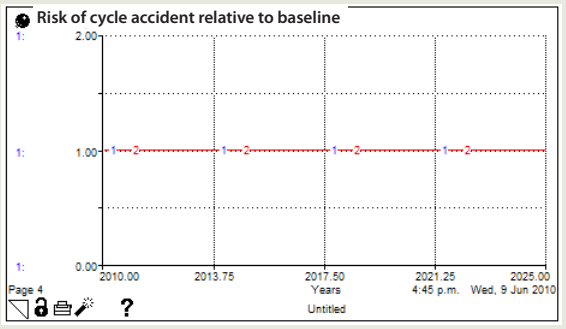


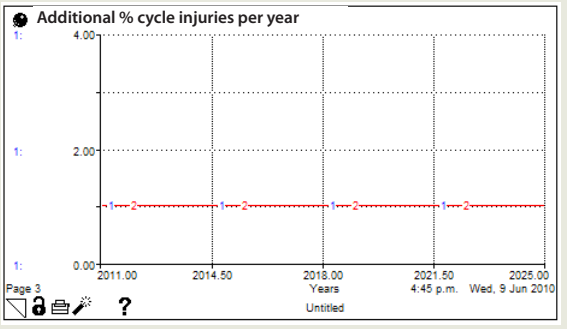

*The drop in the number of users in other transport modes is balanced by the rise in private vehicle usage. Compared to the baseline scenario, the number of additional drivers increases from the current figure of 241,000 to just over 243,000.*




*The number of people walking also declines in this scenario. The model indicates a drop of around 13,000 people over 15 years, with the number of walkers dropping from around 184,000 to 171,000.*

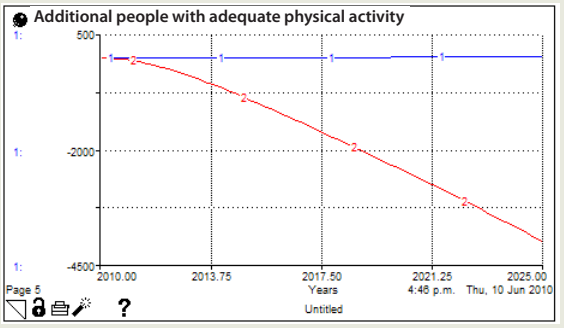
## Impact upon cycle injuries



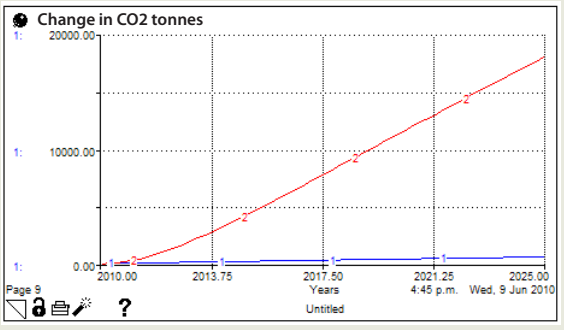

*Within this scenario, the model shows no change in either the number of cycle injuries or the relative risk of cycle injuries. This is probably due to the small number of additional cyclists that this scenario produces, resulting in no discernable change.*

## People with adequate physical activity




*The New Zealand Health Survey indicates that around 50% of people with Canterbury undertake enough exercise to be considered to have adequate physical activity. The "high car dependence" scenario has a negative impact upon this situation, decreasing the number of people within Greater Christchurch considered to have adequate physical activity by around 4,000 over 15 years.*

## CO2 emissions



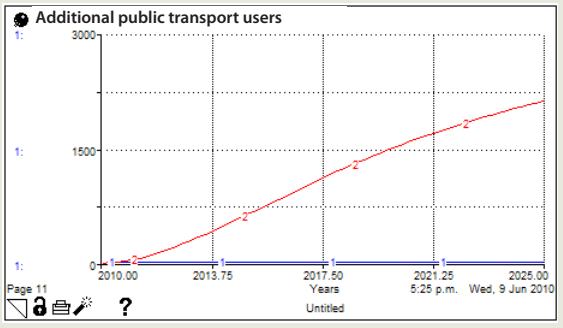

*As to be expected, this scenario indicates a significant increase in CO2 emissions of nearly 20,000 tonnes per year above the baseline by 2025.*

## Scenario B: "Increased Active and Public Transport Simulation"

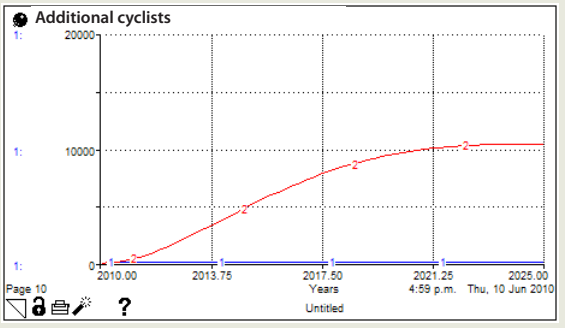
This scenario decreases the dominance of private vehicles. As the use of cars declines, other transport modes increase leading to the following mix of transport modes:

- Public transport 15.0%: a rise of 9.6% compared to the baseline
- Cycling 7.0%: a rise of 5.2 % compared to the baseline
- Walking 8.0%: a rise of 4.1% compared to the baseline
- Cars 70.0%: a decline of 18.9% compared to the baseline

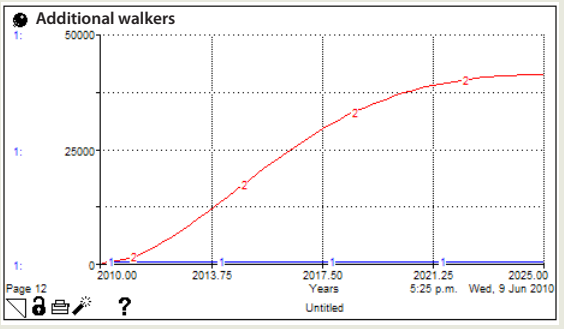
### Transport mode use



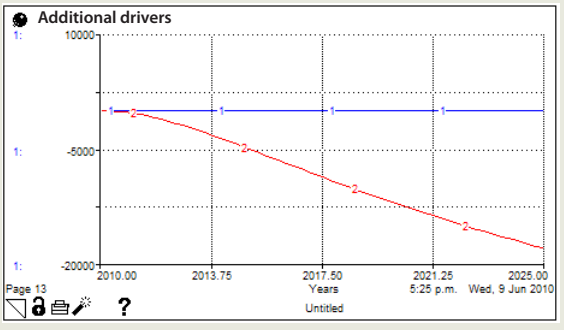

*This scenario increases the use of public transport with over 2,000 additional people using public transport.*




*This scenario has a significant impact upon the number of cyclists with a far greater increase in numbers.*

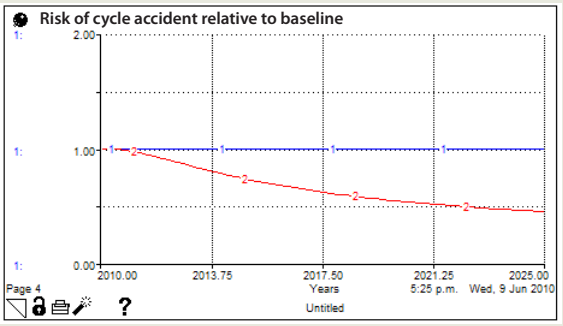


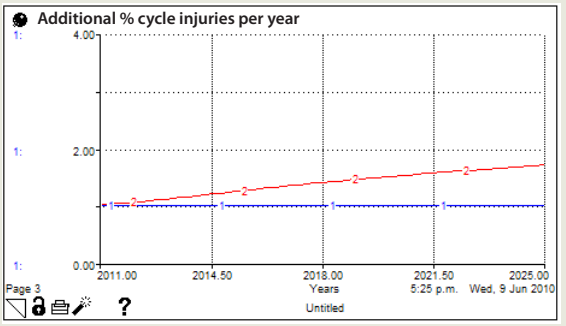

*The number of people walking also rises in this scenario. As the number of kilometres walked nearly doubles, the number of people walking increases by 40,000, rising from a current estimate of 184,000 to 224,000 by 2025.*




*The increase in the number of users of other transport modes is balanced by a decline in private vehicle usage. Compared to the baseline scenario the number of drivers decreases by nearly 20,000, reducing the number of drivers from the current figure of 241,000 to just over 223,000.*

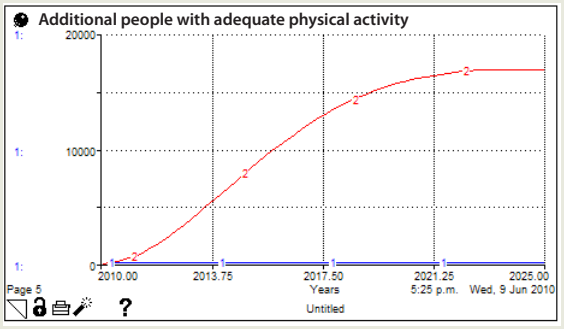
## Impact upon cycle injuries



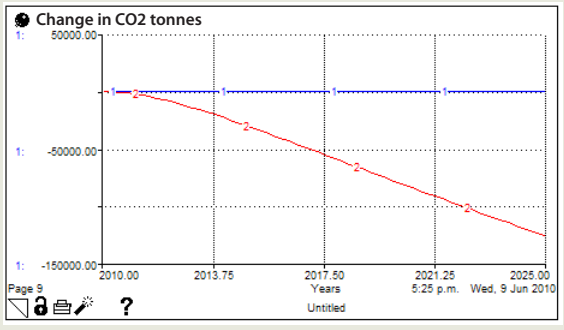

*The rise in the number of cyclists also brings with it a rise in cycle injuries. Of significance, however, is the significant drop in the relative risk of cycling with the risk per cyclist being approximately 50% of the baseline by 2025. This is because of what is termed 'safety in numbers'; the greater the number of cyclists on the road the less risk for each individual cyclist. This is hypothesised to occur due to the increased visibility that an increase in numbers would bring. Because there are more cyclists on the road, drivers are more generally aware and are therefore less likely to crash.*

## People with adequate physical activity




*The greater use of walking and cycling brings with it a significant increase in the number of people with adequate physical activity. This scenario indicates that the health gain could be around an extra 17,000 people within Greater Christchurch that have adequate physical activity.*

## CO2 emissions




*This scenario brings with it significant decreases in CO2 emissions of over 125,000 tonnes per year, compared to the baseline.*

### 3.3.2 Summary of Simulation Modelling

The model demonstrates that small changes achieved year by year can lead to significant changes in the long term. This was evidenced by both scenarios that were explored. In the "high car dependence" scenario, maintaining the current trends serves to deepen the negative transport-related health impacts, particularly in terms of physical activity and vehicle emissions.

If however, the RLTS can stimulate the investment and environmental/behavioural conditions that can achieve incremental changes over time (highlighted by the "Increased active and public transport" scenario), there is significant potential for improved health outcomes for the people of Canterbury. The findings from these simulation models validate the directions identified in the appraisal workshops (note Section 3.4), which highlight the need for policy and strategic directions at local, regional and national levels that actively promote active and public transport over private vehicle use.

## 3.4 Appraisal Workshops – Key Findings

The following section highlights the key findings from the appraisal workshops held in Christchurch, Rangiora and Timaru, and the results of engagement with Māori. Workshop participants were asked to identify the priority:

- Issues associated with improving transport and public health outcomes;
- Actions required to enhance the positive impacts and reduce the negative impacts of the transport system upon health;
- Population groups for whom policies should be targeted.

A separate report of the appraisal workshops and the process for engaging Māori in the HIA is available as a companion document entitled: *Canterbury Regional Land Transport Strategy 2011 - 2041: HIA Appraisal Workshops*. It is available on the Environment Canterbury website www.ecan.govt.nz/rltsreview

### 3.4.1 Christchurch Workshop

**Key Issues Identified by Workshop Participants:**

- Need better marketing to increase understanding of the full costs of private vehicle use.
- Concerns with affordability of road investment.
- Futility of induced demand: build roads and they will be used therefore exacerbating congestion.
- Lost generation of cycling, particularly amongst young people.
- Need for good parenting/education to encourage walking/cycling.
- Economic trade-offs from investment in roads rather than in other areas.
- Need for education around mode choice and impacts upon wellbeing.
- The "tyranny of convenience": travel down to the local shop by vehicle without taking into account the full costs.
- Importance of high quality urban design and land use planning.
- Land use planning and the location of industry/employment/housing.
- Abilities of government agencies to affect change.
- Need for greater inter-sectoral collaboration.

**Key Actions Identified by Workshop Participants**

- Prioritise the needs of people rather than vehicles.
- Fostering interconnections across sectors to ensure that transport systems encompass planning and design, urban form and access, not just engineering.
- Invest more significantly in active and public transport (infrastructure and services).
- Improving urban design to improve active lifestyles.
- Education and promotion for safety and transport choice.
- Enforcement and regulation, such as lower speed limits.
- Seeking broad engagement and new ways of engaging to foster more democratic participation in transport decision-making.
- Making use of technological solutions, such as talking bus stops and more fuel efficient or electric vehicles.
- Using the RLTS to advocate to local and central government for increased funding for active and public transport and more effective regulation.
- Moving away from silos in the health/transport debate so that health and social-wellbeing issues are considered.

The priority action identified by workshop participants was the need to influence decision makers through, for example:

- Workshops/seminars to raise understanding.
- Working with health professionals e.g. to better understand economic benefits, and to support recommendations.
- Developing supporting images and models to provide evidence and support.
- Using international speakers to raise understanding of the issues.
- Widely sharing reports and recommendations such as through a project launch event(s).
- Lobbying MPs and other decision-makers.
- Utilising lobby groups effectively.
- Use and influence other consultation exercises to promote awareness such as health promotions.
- Developing funding strategies to support implementation of transport improvements.
- Working with funders.

**Who are Priority Groups for the RLTS to consider?**

- People who travel short distances by car.
- Young children.
- Young people.
- Adult role models.
- People with disabilities.
- People moving house.
- Māori.
- Pacific Island people.
- Asian communities.
- Non-drivers.
- Older persons.
- Lower socio-economic groups.
- Inner city workers.
- Rural populations
- Overweight and obese people.
- Vulnerable road users.
- Refugees and new migrants, particularly non-English speaking people.

### 3.4.2 Rangiora Workshop

**Key Issues Identified by Workshop Participants**

**Safety**

- Increase in safety fears can lead to increased vehicle use which decreases safety.
- Some roads are too dangerous to safely cross.
- There is increasing potential for conflicts between mobility scooters and other road/footpath users.

**Vehicle driver behaviour**

- Aggressive attitudes of some car drivers.
- Stress of driving.

### Economic

- Business expectations of convenient car parking.
- Current government focus on economic growth through road investment.
- When the price of fuel increased significantly, people modified their travel behaviour and started to use the bus.

### Health and transport

- Lack of understanding around health links and the real costs of car use.
- Lack of mobility can cause social isolation.
- Community severance by busy roads.
- When the weather is bad then some people may have to stay at home such as wheelchair users.
- Public transport provides freedom for parents (as "taxi-drivers").

### Government

- Difficulties with maintaining progress as when there is a change in government there is often a change in policy.
- There is tension between short-term implementation and long term strategic planning.
- Lack of listening to local communities.

### Local issues

- Generally transport system works well.
- Travel by car is normalised as part of life in North Canterbury. People are car dependent and this is cultivated by the transport system.
- People are used to travelling relatively long distances to reach destinations (compared to many city inhabitants).
- The proportion of the local population aged 65 or older is increasing.
- There is a relatively good bus service between Rangiora and Christchurch.
- There is a limited taxi service in Rangiora.

### Key Actions Identified by Workshop Participants

- Build understanding of transport and health related issues through public education.
- Need to change car culture.
- Target groups at-risk to emphasise importance of physical activity.
- Increase investment in public transport by recognising the wider benefits (social, economic, environmental, health) that it provides.
- Improve roadside amenity to make walking more attractive.
- Marketing and publicity to promote health benefits of active transport.
- Maintain support for Total Mobility.
- Encourage trip-chaining which involves carrying out a number of stops on the way to another destination.
- Encourage travel planning, particularly to schools by targeting parents.
- Tap into environmental concerns such as climate change to modify travel behaviour.
- Teach children how to use public transport.



- Prioritise walking and cycling investment.
- Encourage increased physical activity.
- Ensure footpaths designed for scooters (which are likely to increase).
- Focus on people not vehicles.
- Education for immigrants about road safety and rules.
- Provide bus services to outlying rural settlements e.g. commuter and shopping services.
- Regulate for mobility scooter use.
- Improve accessibility through enhanced public transport services.
- Enhance public transport customer information.
- Ensure all buses accessible e.g. for scooter and wheelchair users.
- Recognise hidden costs of transport e.g. for disabled.
- Improve the accessibility of the bus stop to the airport terminal.
- Place pedestrians and transport disadvantaged at top (not bottom) of user hierarchy.
- Improve safety for pedestrians crossing roads.
- Place more emphasis on improving road safety for the vulnerable.
- Increase the driving age.
- Provide Park and Ride facilities.

**The priority actions identified by workshop participants was the need to:**

- Design for the vulnerable, then everyone can use it.
- Increase awareness about the alternatives to travelling by the car and the real costs of car travel.
- Education about health benefits of active travel.
- Improve public transport customer information.

**Who are Priority Groups for the RLTS to consider?**

- Children.
- Young people.
- Older people.
- People with disabilities.
- People with low incomes.
- New migrants, particularly non-English speaking people.
- People living in isolated rural areas, particularly as fuel prices increase.

### 3.4.3 Timaru Workshop

**Key Issues Identified by Workshop Participants**

**Accessibility**

- Potential negative health impacts of social isolation caused by increasing fuel prices.
- Positive health impacts on both physical and mental health if access to services, shops, recreational activities is enhanced for the older person. Improved wellbeing for young people if they can access recreational activities.

**Safety**

- Potentially safety issues associated with increased use of mobility scooters and wheelchairs.
- Increased fear about the safety of cycling.

### Physical activity and choice of transport mode

- Potential negative impacts if cars (including cheap parking) continue to be the dominant mode which contributes to low levels of physical activity.
- Positive health impacts in achieving daily physical exercise for people who are cycling. Benefits for children to be walking and playing sport. People walk more if they take the bus.

### Ageing population

- Ageing population will increase the need for public transport, particularly to enable access to services and avoid social isolation.
- Likely to see increasing use of electric wheelchairs and mobility scooters.

### Oil price and supply

- The price of fuel is likely to increase irrespective of the peak oil concept.

### New technology

- It is expected that alternative means of energy will be developed over the lifespan of the RLTS which will allow people to preserve vehicle mobility. Cars are likely to change including smaller vehicles that are fuelled by other means.

### Public transport

- There will be a growing need for accessible and cost effective public transport services to cater for all, particularly with an ageing population.

### Urban design

- The development of shopping centres in Timaru has been linked to development outside of the town centre which has been accompanied by large car parks.
- People have expectations of convenient parking near to shops.

### Community severance

- As State Highway 1 has been diverted away from downtown Timaru, community severance was not considered a current issue.
- The role of the Port, and its links with the rail system, may continue to evolve.

### Population change

- Population projections indicate a slight decrease within the local authority area. Some areas may experience a slight decline in population, such as Timaru, while others are likely to experience modest growth, such as Geraldine.

### Walking and cycling

- While cycling amongst adults is thought to be increasing, school children are perceived to be cycling less due to safety concerns.

### Key Actions Identified by Workshop Participants

### Public transport

- Support schemes to enhance accessibility for the elderly such as SuperGold Card.
- Increase investment in public transport, including maintaining and enhancing accessibility for the ageing population and low income areas.


- Develop the rail network for passenger services.
- Ensure shopping malls and community facilities are well serviced by bus services.
- Improve public transport with innovative bus services such as a circular service taking in key destinations, and the use of community vans to some areas.
- Consider use of smaller vehicles/vans on some routes.
- Investigate park and ride opportunities.

**Education and marketing**

- Educate people about the benefits of using public transport.
- Increase public understanding of the actual costs of transport.
- Undertake safety education campaigns for mobility scooter users.

**Technology**

- Support new fuel and car technology research.

**Freight**

- Enhance the rail system for freight.

**Parking**

- Maintain parking restrictions to enable shoppers to access shops.

**Walking and Cycling**

- Support implementation of the Timaru Walking and Cycling Strategy.

**The priority actions identified by workshop participants were the need to:**

- Provide accessible, cost effective public transport services to cater for all users including the future development of passenger rail services.
- Undertake marketing to support the use of public transport services.
- Distinguish the needs of vehicle users through short/long term parking policies.
- Ensure that the public transport needs of rural areas and townships are considered, including areas such as Geraldine.

**Who are Priority Groups for the RLTS to consider?**

- Older people.
- Young people.
- Low socio – economic groups.
- People living in rural areas and small townships.

### 3.4.4 Māori Engagement – Key Findings

A hui to engage the local Māori community was held at Rehua Marae. The key findings are described below.

**Effects on Papatuanuku (Earth)**

One of the key discussion points to emerge from the hui concerned Māori perspectives of the environment. In many cases urban development has affected the relationship Māori have to traditional resources, landscapes and other sites of

significance (Rolleston 2010). In this regard, it was felt that urban development has diminished access for Māori to Papatuanuku. This situation has been exacerbated by the development of roads, highways and other transport infrastructure. There was discussion about the development of more open green spaces and areas that signify cultural significance for Māori which provide a connection between place and people.

### Provision for Kaumatua

One of the key themes to be discussed at the hui was the need to ensure that there is particular provision for kaumatua (elders) in the transport system.

Specific concerns were raised about the ability and convenience for kaumatua to access and use the public transport system. Issues were raised around ensuring that community vans for kaumatua use were included in the same classification as the bus system.

In addition, there were concerns raised about etiquette for public transport users particularly where rangatahi (youth) no longer adhere to what was regarded as traditional ethical values, such as rangatahi giving up their seat for kaumatua.

It was felt that a concerted effort should be applied to educating youth around the use of public transport.

### Recognition of the Treaty of Waitangi

There was discussion about the importance of increasing access to Reo Māori through signage, in particular ensuring Māori place names are used including for example 'Pahi Kura' signs available for Kura Kaupapa and Kohanga Reo buses.

There was discussion about the opportunity for Māori to provide feedback on the Draft RLTS prior to it being released, to ensure that whakaaro Māori (Māori thoughts) are visible in and influence the RLTS.

Additionally, there was discussion about the importance of having a Māori representative on the Regional Transport Committee.

# 4. RECOMMENDATIONS AND ACTIONS

## 4.1 Introduction

This section details the recommendations of the HIA for inclusion in the RLTS. It draws on the evidence gathered from the literature review, modelling, appraisal workshops and engagement described in Section 3. The recommendations and actions are designed to enhance the positive impacts and reduce the negative impacts of the transport system for public health and wellbeing. It is important to recognise that the recommendations and actions are closely linked and interrelated. As such, the recommendations and actions are not reported separately against the three focus areas. For example, a bus priority project could potentially increase mode choice, enhance road safety for bus users, and reduce some of the adverse effects of the transport system upon the environment.

Some of the proposed actions are already being carried out to some extent such as cycle skills training for children, bike racks on buses, the introduction of bus priority lanes and the provision of Total Mobility services. However, if the RLTS is to achieve its stated objective of "protecting and promoting public health" then a concerted package of measures needs to be implemented, and sustained, on a much larger scale than has been previously undertaken.

As part of the process for considering the recommendations and actions for inclusion in the RLTS, it is expected that the extent of the programme anticipated, and the agencies responsible for their implementation, will be determined alongside the other policies that will support implementation of the final RLTS.

## 4.2 Overriding recommendation

The overriding recommendation of the HIA is that:

**The RLTS supports a strategic direction that enhances active and public transport and reduces car dependency.**

## 4.3 Key Recommendations and Actions

The key recommendations and actions of the HIA are to:

### 1. Improve Mobility for the Transport Disadvantaged

#### Explanation

Legislation requires the consideration of the needs of the transport disadvantaged when planning and funding the transport system. There are certain population groups within the region who are "transport disadvantaged" that suffer disproportionate impacts on their health. People who are transport disadvantaged are faced with a lack of choices because they have limited access to a private vehicle or other transport options such as public transport. There is growing international evidence that transport disadvantage can directly or indirectly contribute to social inequalities.

The HIA has highlighted that disadvantaged groups are more likely to suffer poor health and are over-represented in traffic fatalities and injuries. Low income groups that live in urban areas are more likely to be affected by vehicle emissions, noise, and lack of active transport amenities. Low income groups that live in rural areas may be disadvantaged by a lack of public transport and access to employment opportunities and amenities, particularly if they do not have access to a private vehicle. There is growing evidence that policy interventions that decrease social inequalities, including transport interventions, will enhance the capacity of the whole community to enjoy higher levels of health and wellbeing.

The HIA has highlighted the need to better understand some of the issues affecting disadvantage. In Canterbury, the transport disadvantaged tend to comprise particular population groups that are described in Section 2.2.

#### Actions:

- Maintain and extend support for Total Mobility services.
- Ensure that public transport serves low income areas.
- Undertake research to improve the understanding of the issues facing the transport disadvantaged in Canterbury, including the development of indicators which track and measure transport disadvantage.
- Ensure that the needs of the transport disadvantaged are considered as an integral part of urban design, transport planning and service provision.
- Provide public transport fare concessions to low income population groups and maintain support for the elderly through initiatives such as SuperGold Card.

- Recognise the needs of rural communities when planning public transport services including the provision of public transport services between Christchurch and surrounding rural towns.
- Recognise the needs of elderly and kaumatua as part of public transport service provision.
- Design the transport system for vulnerable users so that everyone will be able to use it.

### 2. Increase Public Understanding of the True Costs of Transport

#### Explanation

There is growing local and international evidence which demonstrates that road users do not bear the full costs of using the transport system including externalities such as air pollution, climate change, safety and traffic congestion. Consequently users undertake travel choices which impose costs on the environment, economy and health of the population that are not accounted for (Johansson O, Pearce D and Maddison D 1996).

Recent research undertaken for the New Zealand Transport Agency (2008) concluded that the public health benefits of active and public transport are often underestimated, or not taken into account, by traditional economic evaluation methods. Further research is needed to establish the external costs of transport for all modes so that decisions can be made which support public health, economic and environmental outcomes.

#### Actions:

- Undertake further research to increase understanding of the public health costs of transport in Canterbury.
- Carry out education and marketing campaigns to increase public understanding of the real costs of different travel choices.
- Ensure that the full costs of the transport system are taken into account by transport charging and funding including initiatives such as congestion charging and regional fuel tax.
- Ensure that the full costs of travel choices are taken into account by decision-makers.

### 3. Enhance Urban Design & Land Use Planning to Improve Active Lifestyles

#### Explanation

*"Urban design is concerned with the design of the buildings, places, spaces and networks that make up our towns and cities, and the ways people use them"* (Ministry for the Environment, 2005).

The way that our communities are planned and designed affects public health. Communities can be planned in ways that enhance the positive and reduce the negative impacts of the transport system upon the health of the population (Public Health Advisory Committee 2005).

Rolleston (2010) suggests that integrating Māori world views into urban design can enhance the character and amenity of a location, which could potentially increase the potential for active transport.

#### Actions:

- Ensure that urban design and land use planning provides for active modes and public transport, not just private vehicles.
- Use district and land use planning, such as the Greater Christchurch Urban Development Strategy, to encourage more mixed-use development that supports greater travel choice.


- Recognise the role of urban design and place-making along transport corridors including Māori perspectives of urban design.
- Collaborate with developers to enhance the use of urban design principles and increase understanding of land use planning requirements.

### 4. Undertake Education and Marketing to Increase Awareness of the Links between Public Health and Transport

#### Explanation

Education and marketing has been shown to achieve public health benefits by encouraging people to increase their physical activity and reduce car dependency, particularly when combined with regulatory measures, and service quality and infrastructure improvements (Sloman L, Cairns S et al 2010).

#### Actions:

- Undertake campaigns to modify travel behaviour to reduce vehicle dependence.
- Undertake healthy lifestyles campaigns that increase the awareness of the health benefits of active and public transport, particularly with vulnerable groups.
- Hold education training for at-risk drivers such as for the elderly, new migrants and mobility scooter users.
- Undertake cycle skills training programmes for children.
- Develop and implement a plan to build understanding of the environmental and public health benefits of increased active and public transport with key decision-makers (including local and central government).

### 5. Reduce Private Vehicle Dependence

#### Explanation

The Canterbury region is characterised by a relatively dispersed population with low density communities reliant upon motor vehicles to travel. Census data for the region confirms that approximately 80% of people used a car for the journey to work.

The HIA process has noted that high levels of car ownership and use provide people with many benefits. However, car dependence has been linked to increased levels of physical inactivity and obesity. Additionally, high vehicle use is linked with adverse environmental impacts such as air pollution, noise and community severance. The modelling carried out for the HIA highlighted that a reduction in car dependence can support a number of health outcomes, including safety and environmental benefits.

#### Actions:

- Undertake travel plans in schools and workplaces.
- Undertake regional ridesharing initiatives.
- Plan for, and implement, high occupancy vehicle lanes where appropriate.
- Develop parking policies which support the use of public transport and active modes.
- Develop park and ride facilities in appropriate locations.
- Support the development of car clubs and community van services.
- Support land use development that reduces private vehicle dependence.

### 6. Ensure that Regulation & Enforcement Supports Public Health Benefits

#### Explanation

Evidence from the HIA has found that targeted initiatives such as land use zoning regulations and parking enforcement can help deliver public health benefits. With respect to safety issues, regulatory initiatives such as speed enforcement, seatbelts, cycle helmets and child restraints are effective in reducing traffic fatalities and injuries. Additionally, measures to reduce vehicle speed use can help increase safety for active mode users.

#### Actions:

- Ensure that parking standards are enforced.
- Ensure the driver licensing regime requires high standards.

- Establish limited speed zones in residential streets and around schools.
- Prohibit street clutter, particularly in areas of high pedestrian activity.
- Advocate for the legal blood alcohol concentration limit for drivers to be lowered.
- Increase the driving age.

### 7. Ensure Funding and Investment Supports Public Health Benefits

#### Explanation

The HIA process has found evidence that investment in active modes can deliver significant economic and health benefits. Although research in New Zealand is still limited, a recent report (NZTA 2008) suggests that transport funding and decision-making significantly underestimates the health benefits of active transport.

#### Actions:

- Ensure sufficient funding for road safety improvements including infrastructural and behavioural programmes.
- Increase targeted investment in active and public transport which delivers health benefits.
- Support targeted investment in initiatives to manage travel demand and reduce private vehicle dependence.
- Strengthen the alignment between policy and funding to ensure that the projects in the Regional Land Transport Programme and Long Term Council Community Plans support the Regional Land Transport Strategy.
- Consider ways in which transport funding, programme and project evaluation can more effectively take account of public health considerations.

### 8. Improve Active Transport Infrastructure

#### Explanation

The HIA process has found evidence that improvements to walking and cycling infrastructure can lead to increased use of active modes which provide public health benefits. In particular, the literature review cited numerous studies where initiatives such as footpath improvements, traffic calming measures, segregated cycle-ways and safety improvements for pedestrians and cyclists have been shown to increase physical activity.

#### Actions:

- Ensure that footpaths and pedestrian crossings are accessible, including for mobility scooters.
- Enhance walking and cycling infrastructure through:
- Development of off-street cycle lanes;
- Improved street lighting;
- Safe pedestrian crossings;
- Increased availability of secure cycle parking;
- Tactile paths for disabled.
- Enhance the safety of walking and cycling routes to key activity centres and schools.
- Develop appropriate walking and cycling infrastructure alongside roading projects, such as the Waimakariri Bridge strengthening.
- Support increased use of bike racks on buses.


- Leverage business and tourist opportunities for cycling improvements.
- Ensure that active transport initiatives that are identified in plans and strategies are followed through and implemented.

### 9. Enhance Public Transport Services and Infrastructure

#### Explanation

As public transport often requires a walk at either end of the journey it can play an important role in encouraging physical activity (Public Health Advisory Committee 2003). Evidence from the HIA process has found that improvements in public transport services and infrastructure can lead to public health benefits. Initiatives to prioritise public transport over private vehicles, such as bus lanes, have increased public transport use. Additionally public transport helps provide travel choice.

Public transport is generally regarded as being the safest land transport mode (New Zealand Transport Agency - Crash Statistics for Canterbury 2000 - 2010). Projects implemented by local authorities using Crime Prevention Through Environmental Design (CPTED) have shown that good lighting, security cameras, and emergency alarms at waiting points for public transport services improve public perceptions of safety and encouraged use of services.

#### Actions:

- Improve the public transport network through the development of suburban interchanges and bus priority lanes.
- Enhance public transport customer information such as real time passenger information and talking bus stops.
- Utilise the existing rail network more effectively through, for example, passenger services between major towns.
- Implement lighting and security improvements at public transport interchanges by using - Crime Prevention Through Environmental Design principles.
- Improve public transport services to rural areas such as commuter and shopping services.
- Ensure high quality public transport services to key activity centres, community and recreational facilities and hospitals.
- Ensure public transport services are fully accessible.
- Ensure best practice customer training for bus drivers so they have a good understanding of the needs of people with disabilities and the elderly.
- Consider the use of innovative bus services including cross-suburban services, community vans or smaller vehicles where appropriate.

### 10. Support Increased Energy Efficiency and Environmental Sustainability

#### Explanation

The use of motor vehicles and development of transport infrastructure has significant impacts on the environment including air pollution, dust, greenhouse gas emissions, visual intrusion, polluted stormwater run-off, noise and vibration. Many of these adverse environmental effects have also been linked with significant public health costs.

Transport is responsible for approximately 20% of New Zealand's greenhouse gas emissions which contributes to climate change. The Government has committed to reducing the country's greenhouse gas emissions through the New Zealand Emissions Trading Scheme. This scheme is expected to encourage the use of more energy efficient and low-carbon transport modes.

Measures to reduce vehicle dependency and encourage the use of active and public transport have been shown to reduce negative impacts of transport upon the environment and foster greater energy efficiency. The modelling carried out for the HIA highlighted that a reduction in car dependence can support a number of public health and environmental outcomes.

**Actions:**

- Implement measures to mitigate traffic noise through, for example, improved road surface conditions.
- Support the development of electric vehicles through, for example, infrastructure investment.
- Ensure high standards for vehicle fleet emissions.
- Provide for natural buffers and amenities in transport developments which provide connections to open space including sites of cultural significance to Māori.
- Support new fuel and vehicle technology research.

### 11. Support the Efficient and Effective Movement of Freight

**Explanation**

In order to support economic development, greater energy efficiency and environmental sustainability the New Zealand Transport Strategy 2008 sets ambitious targets for moving freight by rail and coastal shipping.

Evidence from the HIA process has found that the development of dedicated freight corridors can support environmental and amenity improvements by reducing freight movement in residential areas. Additionally, the separation of heavy traffic from other road users can support increased use of active modes by increasing safety.

**Actions:**

- Support increased rail freight and coastal shipping.
- Continue to support and develop a dedicated road freight network.

### 12. Ensure Effective Representation

**Explanation**

The HIA process has found evidence that advocacy planning, where representatives are appointed to advocate for a particular sector's interests, can provide social and decision-making benefits.

The Land Transport Management Act 2003 provides specific opportunities for Māori to participate in land transport decision-making processes, including the appointment of a cultural representative to the Regional Transport Committee. Additionally, legislation provides for a public health representative on the RTC.

**Actions:**

- Ensure Māori representation on the Canterbury Regional Transport Committee which supports recognition of the Treaty of Waitangi.
- Continue to support the involvement of a public health representative on the Canterbury Regional Transport Committee.


## Interim Evaluation Summary

Throughout the development of the HIA a range of initiatives were undertaken to provide insights into the effectiveness of the process including:

- Collation and analysis of feedback from workshop participants;
- Interviews with HIA project team members and workshop participants; and
- Regular evaluation meetings.

Much of this evaluation process was facilitated by an independent evaluator who has written up a companion document entitled *Interim Health Impact Assessment Evaluation Report* (available at the Environment Canterbury website: www.ecan.govt.nz/rltsreview). Although the RLTS is not yet complete, the HIA Project Team felt there was merit in reflecting on some of the insights obtained to date from the development of the HIA. These insights are summarised below:

- The availability of a project officer to coordinate the HIA was important to provide leadership, focus and support.
- The core project team from three different organisations worked effectively together. This supported a 'Learning by Doing' approach and enabled local ownership.
- Independent advice and support from professional consultants and the Ministry of Health helped keep the project on track and ensured a professional output.
- The use of generic templates for the planning, review and evaluation of workshops facilitated information gathering processes and consistency of information.
- Development of a peer-reviewed literature review on transport and health provided transferable evidence-based information.
- The appraisal workshops have extended and supplemented the usual RLTS consultation processes, and identified opportunities for further engagement.
- Feedback and review processes indicate that capacity building is occurring for those directly involved in the HIA as well as for members of the wider community.
- There is evidence indicating that the HIA process is extending the scope and/or criteria for consideration of the RLTS.
- To date there have been limited opportunities to meaningfully engage key decision-makers in HIA processes.
- In hindsight, the project team could have devoted more resources to exploring the economic benefits of increased physical activity.
- There is a need to make better use of existing data to help develop better understandings on the links between transport and health, including for the transport disadvantaged.

A final evaluation will be carried out as the RLTS is completed.

# 6.0 REFERENCES


Canterbury District Health Board (2010) ***Hauora Waitaha I: Health Profile for Māori in Canterbury.***

Christchurch City Council (2008) ***Health Promotion and Sustainability Through Environmental Design: A Guide for Planning.***

Dahlgren and Whitehead (1991) ***Policies and Strategies to Promote Social Equity in Health.***

Human Rights Commission, (2005) ***The Accessible Journey.***

Johansson O, Pearce D and Maddison D ***(1996) True Costs of Road Transport.***

Ministry for the Environment (2005) ***The New Zealand Urban Design Protocol***.

Ministry of Health (2006) ***Decades of Disparity III: Ethnic and Socioeconomic Inequalities in Mortality, New Zealand 1981–1999.***

Ministry of Transport (2008) ***New Zealand Transport Strategy.***

Ministry of Health (2010) www.moh.govt.nz/publichealth

New Zealand Transport Agency (2008) ***Valuing the Health Benefits of Active Transport Modes.***

New Zealand Transport Agency (2010) ***Crash Statistics for Canterbury 2000 – 2010.***

Public Health Advisory Committee (2005) ***Healthy Places, Healthy Lives: Urban Environments and Wellbeing***.

Public Health Advisory Committee (2007) ***An idea whose time has come. New opportunities for Health Impact Assessment in New Zealand Public Policy and Planning.***

Rolleston, S (2010) ***Māori Perspectives of Urban Design: Preliminary Findings***.

Sloman L, Cairns S, Carey Newson C, Anable J, Pridmore A and Phil Goodwin (2010) ***The Effects of Smarter Choice Programmes in the Sustainable Travel Towns.***

Statistics New Zealand (2006) ***Census.***

Synergia (2010) ***Regional Transport in Canterbury: Health Impact Analysis – Dynamic Simulation Report.***

## HIA Participants

### Scoping Workshop - 9 December 2010

| | |
|---|---|
| **Susan Bidwell** | Community and Public Health, CDHB. |
| **Vincie Billante** | Christchurch City Council |
| **Alison Bourn** | Community and Public Health, CDHB. |
| **Ruth Foxon** | Christchurch City Council |
| **Adrian Field** | Synergia |
| **Alistair Humphrey** | Community and Public Health, CDHB. |
| **Trudy Jones** | Christchurch City Council |
| **Hector Mathews** | Canterbury District Health Board |
| **James Ryan** | Environment Canterbury |
| **Richard Shaw** | New Zealand Transport Agency |
| **Korine Stewart** | Community and Public Health, Timaru CDHB. |
| **Siobhan Storey** | Christchurch City Council |
| **Jill Waldron** | Waimakariri Health Advisory Group |

### Christchurch Appraisal Workshop - 7 May 2010

| | |
|---|---|
| **Paul Durdin** | Ableys |
| **Lisa Logan** | Christchurch Resettlement Services |
| **Brian Woolsey** | Walking Group, Kaiapoi |
| **Toni Durham** | Ashburton District Council |
| **Dirk de Lu** | Spokes |
| **Fiona Whero** | Living Streets Canterbury |
| **Simon Atkinson** | Disabled Advisory Group |
| **Ciarán Fox** | Mental Health Foundation |
| **Gloria Weeks** | Disabled Advisory Group |
| **Stephen Phillips** | Age Concern |
| **Joy Kingsbury-Aitken** | Christchurch City Council |
| **Maureen Bishop** | Environment Canterbury |
| **Tony Francis** | Francis & Cambridge |
| **Susan Cambridge** | Francis & Cambridge |
| **Edith Ieremia** | Community and Public Health - Pacific Communities |
| **Wendy Everingham** | Project Lyttelton |
| **Taz Mukorombindo** | CPIT and Central City Business Association |
| **Ric Hyden** | Ministry of Social Development |
| **Lisa Clifford** | Dunedin City Council |
| **Laila Cooper** | Canterbury Community PHO |
| **Meg Christie** | Community and Public Health |
| **Adrian Field** | Synergia |
| **Alison Bourn** | Community and Public Health |
| **James Ryan** | Environment Canterbury |
| **Ruth Foxon** | Christchurch City Council |
| **Anna Stevenson** | Community and Public Health |

## Rangiora Appraisal Workshop - 17 June 2010 (Waimakariri Accessibility Group)

**Cathie Spencer**
**Jill Waldron**
**Jill Robinson**
**Neil Cruickshank**
**Vicky Anderson**
**Bryce Stanley**
**Carina Duke**
**Chris Neason**

## Timaru Appraisal Workshop - 13 July 2010

| | |
|---|---|
| **Ireen Crisp** | Walk Group |
| **Robyn Baldwin** | Timaru Senior Citizens |
| **Anton Facey** | KF Consilium Ltd |
| **Paul Dewsbery** | Rest Home and Retirement Villages |
| **Tony Henderson** | Environment Canterbury |
| **Nathan Smith** | Cobblers Inn/Stompz |
| **Shannon Ussher** | Environment Canterbury |
| **Edward Wright** | Environment Canterbury |
| **Alison Bourn** | Canterbury District Health Board |

## Rehua Marae Hui - 28 May 2010

**Nick Te Paa**
**Sue Tipene**
**Doug Couch**
**Hector Matthews**
**Marlene Kamo**
**Shadrach Rolleston**
**Henare R Tai**
**Mita Te Hae**
**Maria Tait**
**Jo McLean**
**Lee Tuki**
**Theresa Rongonui**
**Alison Bourn**
**Ruth Foxon**
**James Ryan**