# Christchurch Transport Strategic Plan

*2012–2042*

*Keep Christchurch moving forward*
*by providing transport choices to connect people and places*

*Christchurch Transport Strategic Plan*
*Technical Appendices*

Christchurch
City Council

# Technical Appendices

# Appendix A: Health Impact Assessment

This Appendix contains the Health Impact Assessment (HIA) which was undertaken as a partnership project between Christchurch City Council, Canterbury Public Health and Environment Canterbury.

The HIA reports can be found at:

·   Health Impact Assessment Report: in this appendix and posted on Christchurch Transport Plan website

·   Literature review – Wider Health and Wellbeing Impacts of Transport Planning, 2010
    http://ecan.govt.nz/publications/General/HIA%20Literature%20Review%20June%202010.pdf

·   Regional health profile: http://www.cph.co.nz/About%2DUs/Health%2DImpact%2DAssessment/

·   Appraisal workshops summary: http://ecan.govt.nz/publications/General/Appraisal%20Workshops%20Report.pdf

# *Appendix A*

# Health and wellbeing Impact Assessment

*Christchurch Transport Plan*
*2012 - 2041*

**Canterbury**
District Health Board
Te Poari Hauora ō Waitaha

**Environment
Canterbury**
Regional Council
*Kaunihera Taiao ki Waitaha*

**Christchurch**
City Council

# Ruth and Garry: An Access Story

Ruth and Garry both have physical disabilities, meaning that careful planning must go into all of their activities. *"It's never a case of grabbing a quick sandwich and hopping in the car on the spur of the moment for us."* They have recently returned to live in Papanui in Christchurch from Wellington and find the terrain and facilities here make it possible to get around in more ways than was possible in Wellington. One way they are able to see a movie at Riccarton Mall is by using their mobility scooters on the path which runs alongside the railway line.

Both have individualized funding packages which help to provide the support that is required to live, work and play. They spend the first hour and a half of their day being supported to rise, shower, dress and breakfast. They request that their support workers have their own cars to get to work and are well aware that this requirement does eliminate some people from the work but, as they pointed out, *"if our support workers don't get to work then we don't get up."*

Both have worked within the disability sector for many years. Air travel is required for their current work. If they need to be in Wellington by 10am, they like to take the 8am flight. *"Our support workers story is important in this too - for us to catch the 8am then we need to rise at 5.30am, this means our support workers need to be up an hour earlier."* Travelling the day prior to the meeting is an option, however the extra costs associated with taking support has to be weighed up.

*"I tried the red-eye flight once but it was too tough...needing to be up at 4.30am."*

For the journey to the airport, Ruth and Garry generally use a mobility taxi; their Total Mobility Vouchers cover 50% of the trip cost. Because these taxis do school and work runs they are not always available between 7 and 9am; this affects when they can fly. Ruth will fly with either her wheelchair or mobility scooter. Check-in with a scooter takes more time with a battery of questions to answer which makes it more difficult for them. They said that flying is easier than it once was with facilities like chair to gate, lifts and the skinny aisle chair, but they think that attitudes to a person with disabilities who is travelling have not really improved. During the interview Ruth reinforced the view that the journey is better if they are known and have been able to build relationships with staff.

Garry has a car that has been adapted for him. He spoke of the sense of freedom it gives him driving with his favourite music blasting, en route to bowls in Lyttelton. He plays in Lyttelton as there are supportive family members who belong to the club.

*"I am seen as a bowler and not a disabled person".*

Garry said it was good to find a flat entrance at the rear of the bowling hall which makes it easier for him to go in and out. This is now the preferred entranceway for many of the bowlers. He drives 17km to the club, a big improvement on the 30km he had to travel when they lived in Wellington.

Although having a car has improved life for Garry it is not the solution to all of his travel needs. For instance, he can't use public car parks which have ticket machines without a support person with him as he cannot reach the ticket himself. He has been assessed and provided with an Operation Mobility card which means he can use designated disability car parks – as long as they have not been taken by able-bodied people.

They acknowledged the work of Alexia Pickering in the 70s in improving access for people with disabilities within Christchurch; she lobbied for such things as better street crossings and building access. She was pivotal in making sure that Ruth's journey to school was accessible including improvements to curb cuts so the gutters could be negotiated by her wheelchair.

Ruth noted that a big part of her *"accessible journey"* has been about living in close proximity to shops, work and other facilities; it has not been about the public transport system. They noted that the low-floor buses are good for wheelchairs but not for the scooter, and good driver assistance is important. When they went to Sydney they found it was excellent to get around by scooter on the trains and ferries.

During the interview Ruth advised that the issues of access are similar for both older people and for the disabled, *"if we have it right for the disabled then it will be ok for the elderly"*. We will all be better off if these two communities work together on accessibility issues.

Garry spoke about *'the disability dollar'* which he has calculated to be about $10 billion per year in New Zealand. This is about the loss to our economy if disabled people are preventing from participating. He said *"if we can't get into a shop, café, theatre etc then we don't spend. Those businesses we can access get the dollar"*

*"To lead a good life we need to plan our day well in advance, we need to think ahead making sure there are people at our destinations that will help us out"*

# Acknowledgements

# Contents

# Executive Summary

In late 2009, a Health and Wellbeing Impact Assessment (HIA) was initiated by the Christchurch City Council focusing on the Christchurch Transport Plan (CTP). Health Impact Assessment (HIA) was the chosen process to assess links between transport, health determinants and health outcomes for the CTP 2011 - 2041. The primary purpose of this report is to outline the key findings and recommendations of the HIA.

There are many ways in which transport and health are linked. Health promoting effects of transport are:

· Transport enables access to employment, shops, recreation, social support networks, health services and the countryside;

· Transport can be used for recreation and exercise; and

· Transport facilitates economic development.

Health damaging effects of transport include:

· Road traffic injuries;

· Pollution – particulates, carbon monoxide, nitrogen oxides, hydrocarbons, ozones, carbon dioxide and lead;

· Reduced physical activity and consequent increase in prevalence of obesity;

· Constraints on mobility access and independence;

The HIA identified three focus areas for consideration:

· Making transport safe for people;

· Creating real transport mode choice; and

· Building healthier environments.

The health impacts of these focus areas were subsequently explored in more detail during an appraisal process involving a literature review and internal and external stakeholder workshops

The recommendations of the HIA are designed to enhance the positive impacts, and reduce the negative impacts, of the Christchurch transport system for public health and wellbeing.

**Key Recommendations**

1. The CTP direction supports a transport system based on high levels of active and public transport; that understands and reflects the needs of people rather than having a focus on moving vehicles; and provides guidance on the transport priorities for each mode.

2. That the objectives of the Christchurch Transport Plan provide the guiding principles to all transport projects and programmes in Christchurch. They should be easily transferable to project briefs and equally weighted. The HIA recommends that a new public health objective be added to CTP.

3. Land use planning and transport planning are well integrated to enhance active lifestyles for Christchurch people.

4. Undertake further research to increase understanding of the public health costs of transport in Canterbury. Lobby the Ministry of Transport for improved acknowledgement of health in transport funding decisions.

5. Undertake education and marketing to increase public and staff awareness of the links between public health and transport.

6. Improve mobility for the transport disadvantaged and work with Māori by providing opportunity to provide feedback on the draft plan prior to it being released.

7. Prioritise transport projects which support good health and wellbeing outcomes.

# 1. Context

## 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 Christchurch Transport Plan.  The intention of the HIA was to ensure the integration of issues of health and wellbeing into the development of the CTP.

In addition to this report, there are a number of companion documents that detail particular elements of the HIA.  It is anticipated that these will be included on the Christchurch City Council website as part of the information available for the CTP.  However at the time this report was finalised this was not available.

- ·  A detailed literature review – Wider Health and Wellbeing Impacts of Transport Planning, 2010 http://ecan.govt.nz/publications/General/HIA%20Literature%20Review%20June%202010.pdf
- ·  A report on the scoping process
- ·  A regional profile report http://www.cph.co.nz/About%2DUs/Health%2DImpact%2DAssessment/
- ·  A summary of the appraisal workshops held in Christchurch http://ecan.govt.nz/publications/General/Appraisal%20Workshops%20Report.pdf
- ·  An evaluation report (due Feb 2011).

## 1.2    What is Public Health?

The aim of public health is to improve the overall health of the population by having a particular focus on those with the poorest health outcomes.

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 Amendment Act 2003.

The diagram below is a classic representation of the different influences 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 HIA 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 clearly fits within the environmental context that affects the health and wellbeing of people and communities.
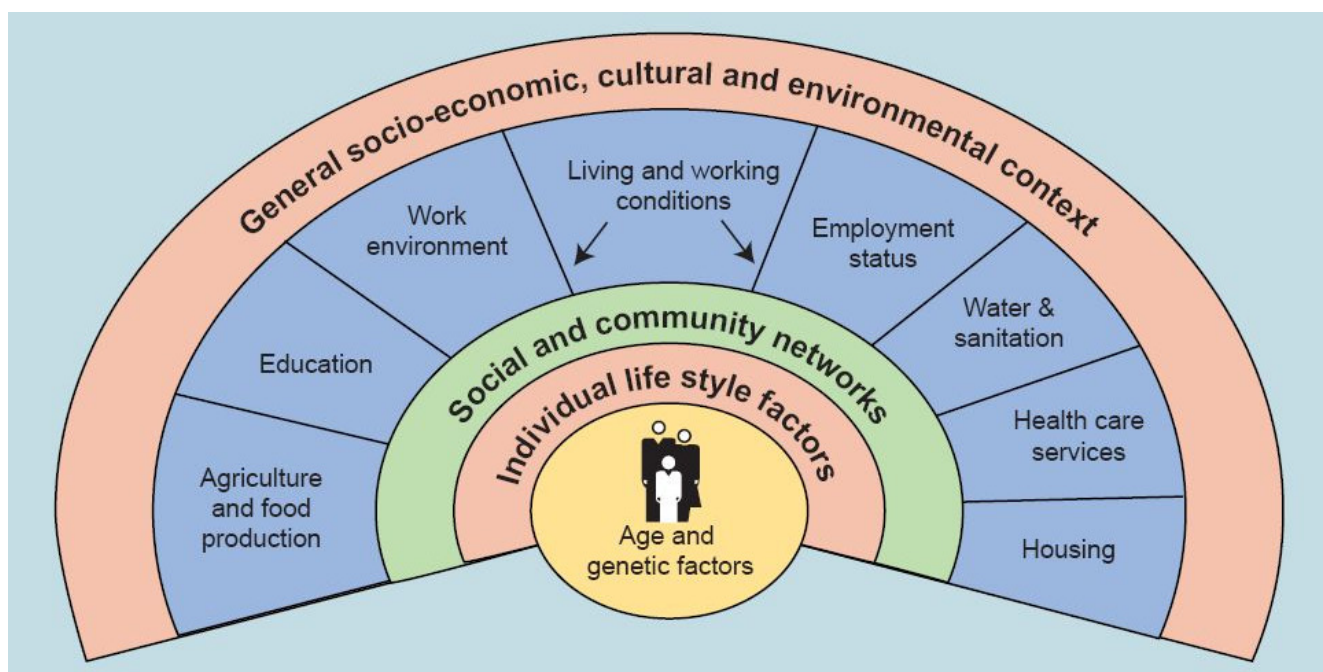
## 1.3    *What is Health Impact Assessment?*

Health Impact Assessment is a tool to support the development of healthy public policy.  Policy level HIA is a relatively new field and is entrenched in the idea that health at a population level is often affected 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 CTP, affects actual health outcomes for people and the determinants of those health outcomes.

HIA offers the opportunity to systematically explore potential health effects of the proposed policy.  HIA considers the distribution of health effects by identifying which populations bear disproportionate effects on their health.  It gives the community and affected populations a voice.  The evidence base of HIA is drawn from both expert advice and/or the published literature as well as community knowledge of an area or issue.

An HIA does not attempt to make the necessary policy decisions, but highlights areas of particular policy which may affect the health of a population. It provides recommendations to mitigate negative effects and make suggestions for improvements.  The HIA process assists policy writers and decision makers to understand the health impacts and to make informed decisions.

HIA is a structured yet flexible process that follows a well defined series of stages:

(0)  Screening – the initial selection process to assess an initiative's suitability for HIA;

(1)  Scoping – highlighting the key issues needing to be considered to define and shape the HIA;

(2)  Assessment - identifying the relevant determinants of health and using specific tools to identify potential health impacts, then assessing the significance of these impacts

(3)  Reporting and Recommendations – Reporting on the assessment findings and recommending practical changes to the policy; and

(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 ensure issues of health and wellbeing are integrated into the development of the CTP.
The objectives of this HIA are to:

·  Undertake HIA to assess the effects of the CTP objectives and approaches on health and wellbeing;

·  Use the planning guide 'Health Promotion and Sustainability through Environmental Design' (HPSTED) which comprehensively identifies the factors that determine our health and wellbeing;

·  Integrate the various stages of the development of the CTP with the stages of the HIA;

·  Provide evidence and recommendations to enhance the health and wellbeing benefits of the CTP.  Communicate recommendations to staff and councillors.

·  Assist in building 'Health in All Policies' capacity within the Christchurch City Council, so that future policy development can embed this approach into good practice.

## 1.5    *Christchurch Transport Plan*

The Christchurch Transport Plan (CTP) is a long term plan which details the priorities for the city's transport system over the next 30 years (2011-2041).  The immediate output of the Christchurch Transport Plan is a list of projects and programmes of work.  These priorities will feed directly into CCC's Long Term Council Community Plan (LTCCP) 2012-2022.  The longer term outcome of the CTP is an integrated transport and land use system.  To achieve an integrated approach the CTP brings together and replaces a number of existing transport strategies in Christchurch, including the Cycling Strategy, Pedestrian Strategy, Road Safety Strategy and Parking Strategy.  The CTP covers all of the Christchurch City Council territorial area including Banks Peninsula.

There are two parts to the CTP.  The first is the main document which introduces the plan, sets out the overarching vision for the transport system and outlines the main approaches for transport.  The second aspect is the Action Plan which will translate the vision and approaches into specific projects and packages of work.  The Action Plan will feed directly into CCC's Long Term Council Community Plan.

The CTP is strongly influenced by the Canterbury Regional Land Transport Strategy (CRLTS). The CRLTS is guided by the Land Transport Management Amendment Act 2008 (LTMAA). One of the core objectives of the LTMAA is to contribute towards "protecting and promoting public health". The Local Government Act 2002 (LGA) also charges territorial authorities with the responsibility of promoting social, economic, environmental and cultural wellbeing of communities. It is within this context that Christchurch City Council has commissioned this policy-level HIA to ensure that health and wellbeing considerations are integrated into the development of the CTP. Concurrent with this HIA is the CRLTS HIA. The two projects are linked, with Christchurch City Council, Community and Public Health, a division of the Canterbury District Health Board (CDHB) and the regional council, Environment Canterbury (ECAN) working together.

## 1.6    *How are transport and health linked?*

There are many ways in which transport and health are linked. The Transport & Health Study Group, a UK network of professionals and academics which promotes the study of and research into the relationship between transport and the health of the population, has provided a summary of the health impacts of transport. The summary is as follows:

**Health promoting effects of transport**

·   Transport enables access to employment, shops, recreation, social support networks, health services and the countryside;

·   Transport can be used for recreation and exercise; and

·   Transport facilitates economic development.

**Health damaging effects of transport**

·   Road traffic injuries

·   Pollution – particulates, carbon monoxide, nitrogen oxides, hydrocarbons, ozones, carbon dioxide and lead;

·   Noise;

·   Stress and anxiety;

·   Danger;

·   Loss of land and planning blight;

·   Severance of communities by road;

·   Constraints on mobility access and independence;

·   Reduced physical activity and consequent increase in prevalence of obesity; and

·   Reduced social use of outdoor space due to traffic and streets.

# 2. Methodology for 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, Martin Ward an independent consultant and Adrian Field from Synergia have supported and influenced the work.

The timeframe for the development of the CTP and the stages of the HIA have been run in parallel and are depicted in the following table.

**Table 1: HIA Stages and timeframe**

| HIA Stage | HIA Task | Timeframe | Christchurch Transport Plan |
|---|---|---|---|
| 1. Scoping | Literature Review Scoping Workshop Scoping Report Profile Report Evaluation Plan | December 2009 - February 2010 | Setting the draft vision, objectives and targets Engage stakeholders on these |
| 2. Assessment | Assessment workshops: CTP objectives (March) Approaches (April/ May) Māori (April/ May) | March - May 2010 | Drafting CTP: draft approaches, project's spatial considerations (central city, hubs, communities) |
| 3. Reporting & Recommendations | Final Report and Recommendations | December 2010 | Internal Draft CTP (December 2010) |
| 4. Evaluation | Ongoing – Evaluation Report (February 2011) | January 2010 - ongoing | LTCCP project recommendations Prioritisation of transport actions for LTCCP Plan Adoption & Monitoring Council adoption of Plan |

## 2.2 Literature Review

A review of the literature was undertaken by the Canterbury District Health Board. It was conducted prior to the scoping workshop and used to inform the subsequent stages of the HIA.

The framework for considering the health impact of transport planning was taken from the Christchurch City Council's Health Promotion and Sustainability Through Environmental Design: a Guide for Planning. Thirteen aspects of the wider physical and social environment in relation to transport were considered covering safety, active lifestyles, access to goods and services, natural capital, sustainability, equity, cultural diversity, housing, social and community capital, amenities, sustainability, community resilience, food security and economic development. Briefing papers based on a review of the international and New Zealand literature were drawn up.

The review was posted on a limited access website. Access was made available to experts in relevant fields across New Zealand for the peer review process. This website has an interactive component whereby peer reviewers could make comments and post additional documents. Some reviewers provided feedback directly to the HIA project officer.

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 http://ecan.govt.nz/publications/General/HIA%20Literature%20Review%20June%202010.pdf

## 2.3 Area Profile Report

This report is available as a companion document available at
http://www.cph.co.nz/About%2DUs/Health%2DImpact%2DAssessment/

It provides information on key regional health and transport issues as is entitled Regional Profile Report: Supporting the CTP HIA.

## 2.4 Scoping

A key stage of an HIA is the scoping phase, in which stakeholders discuss and decide on the key issues and populations of interest that the HIA should focus on. A joint scoping workshop for the CTP and the Regional Land Transport Strategy was held in December 2009, with representatives from a range of agencies and organisations (Appendix 1).

### 2.4.1 Focus Areas

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

1. **Making transport safe for people:** including increasing safety for all road users and creating environments where active transport (walking and cycling) can be fostered.

2. **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.

3. **Building healthier environments:** including reducing environmental effects of the transport system (air and water quality, and noise emissions).

### 2.4.2 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 CTP, 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 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 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, from approximately 76,000 (14%) in 2006 to approximately 154,000 (24%) in 2031 (Statistics New Zealand, 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, 2005).

**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 (Human Rights Commission, 2005).

**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.

## 2.5  Appraisal

The appraisal stage examined the key issues and populations of interest that the scoping workshop identified.  Three workshops were held between December 2009 and May 2010.  The workshops held were:

i) A workshop to review  the draft objectives of the CTP against the themes of the literature review.  This was attended by transport planners and health personnel.

ii) A workshop to consider the health impacts of two future transport scenarios.

iii) A hui at Rehua Marae for Māori to consider the health impacts of two future transport scenarios.

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.  A wide range of representatives attended from the health, transport, local government and community sectors (a list of those participating is detailed in Appendix 1).

## 2.6  Reporting and Recommendations

This report synthesises the key findings of each of the stages and components of the HIA.  Reports have been prepared for each of the stages of the HIA and are available as companion documents.

## 2.7  Evaluation

Evaluation has been ongoing throughout the HIA.  An evaluation report will be completed by February 2011 and will report on the HIA process, achievement of the HIA objectives and whether the recommendations of the HIA have been included in the CTP.  The evaluation is being lead by the evaluation co-ordinator at Community and Public Health and administered by a team of four people from ECAN, C&PH and CCC.

# 3. Key Findings from the HIA Process

## 3.1    Introduction

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

· Area Profile

· Literature review

· Appraisal workshops

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

## 3.2    Area Profile – Key Findings

The area profile  report is available as a companion document available  at http://www.cph.co.nz/About%2DUs/Health%2DImpact%2DAssessment/

The following is extracted from this report.

### 3.2.1    Key Health Trends

Approximately 3,500 people die in Canterbury each year.  Diseases of the circulatory system, including ischaemic heart disease and cerebrovascular diseases such as heart attack and stroke, account for the majority of deaths.  Cancers are the second most common cause of death followed by diseases of the respiratory system.  Diabetes is an underlying causative factor and leads to medical complications such as renal failure.  National data shows full renal treatment per patient costs $250,000.

### 3.2.2    Active/Sedentary Lifestyles

· Thirty minutes of exercise each day is enough to decrease the risk of obesity, type 2 diabetes, cardiovascular disease, colon cancer, respiratory disease, depression and stress.

· Physical inactivity accounts for almost 10% of New Zealand's 20 leading causes of death.  It is a contributor to obesity and type 2 diabetes, which together cost the health system over $500 million per year.  The NZ Ministry of Health states a 5% increase in physical activity can net a reduction of $25 million annually for health care costs.

· 39% respondents reported they were active every day in the Christchurch City Council 2006 "Quality of Life" survey.  In the Canterbury District Health Board geographic area 50.8% adults reported they were regularly physically active.  In Canterbury the rate of Māori doing regular physical activity appears higher than non-Māori.

· In New Zealand 47% of children aged 5-14 years usually use active transport to get to and from school (walking, biking, skating or using other forms of physical activity).  Common reasons given by parents for what stops their children walking, biking or skating to school – live too far from school, busy traffic/main road, too dangerous for reasons other than traffic, takes too long.

### 3.2.3    Health behaviours and risk factors

The negative health outcomes associated with poor health behaviours present an opportunity to improve health and wellbeing. Physical inactivity increases the risk of many chronic diseases; especially type 2 diabetes, cardiovascular disease, colon cancer and depression.

**Diabetes**

The self-reported diabetes prevalence is 3.6% of people aged 15 years and over in Canterbury DHB, this is lower than the national rate of 4.2%.

Age-standardised prevalence of self-reported diabetes, adults 15+ years, 2006/07 NZHS.   (Age standardisation takes into account differences in the age distributions of the CDHB and New Zealand populations so that differences in age distribution cannot distort the comparison between CDHB and the whole of New Zealand).

|  |  | Total (%) |
|---|---|---|
| Canterbury DHB | Female | 3.2 |
|  | Male | 4.0 |
|  | Total | 3.6 |
| New Zealand | Female | 3.7 |
|  | Male | 4.7 |
|  | Total | 4.2 |

The diabetes hospitalisation rate in Canterbury DHB was significantly lower than the national rate. Males had a significantly higher rate than females.

*Diabetes hospitalisations, 15+ years, age-standardised rates per 100,000, 2005-07*

|  |  | Total (%) |
|---|---|---|
| Canterbury DHB | Female | 151.1 |
|  | Male | 174.3 |
|  | Total | 161.4 |
| New Zealand | Female | 184.6 |
|  | Male | 221.6 |
|  | Total | 201.7 |

**Impact on inequalities**

There are significant disparities in prevalence and outcome of diabetes in New Zealand.   The prevalence of diabetes in Māori and Pacific populations is around three times higher than among other New Zealanders.   Prevalence is also high among South Asian populations.   Incidence and mortality rates for type 2 diabetes are expected to increase over the next 20 years (along with pre-diabetes, insulin resistance, and obesity) with the biggest impact being on Māori, Pacific people, and those living in deprived neighbourhoods.   Although family history, particularly in a parent or a twin, is  one of the strongest risk factors for developing Type 2 diabetes, genetic explanations in groups disproportionately affected by the disease can lead to misinterpretation of ethnic health disparities as genetic, and therefore, natural in origin, rather than recognising such disparities as being due, largely or solely, to social disadvantage.

## Cardiovascular disease

The cardiovascular disease mortality rate in Canterbury DHB was significantly lower than the national rate.   Males experienced a significantly  higher mortality from cardiovascular disease than females.

*All cardiovascular disease mortality, all ages, age-standardised rates per 100,000, 2003*

|  |  | Total (%) |
|---|---|---|
| Canterbury DHB | Female | 121.1 |
|  | Male | 173.3 |
|  | Total | 145.5 |
| New Zealand | Female | 123.5 |
|  | Male | 184.8 |
|  | Total | 152.2 |

*All cardiovascular disease hospitalisations, all ages, age-standardised rates per 100,000, 2005-07*

|  |  | Total (%) |
|---|---|---|
| Canterbury DHB | Female | 712.1 |
|  | Male | 1145.9 |
|  | Total | 915.1 |
| New Zealand | Female | 837.0 |
|  | Male | 1372.4 |
|  | Total | 1090.4 |

### Impact on inequalities

Mortality from all cardiovascular diseases is significantly higher among Māori than the general population.   A higher proportion of Māori under the age of 65 die from ischaemic heart disease and Māori are also younger on average at the time of first stroke.   Heart failure death rates for Māori between 2000-2004 were approximately 2.3 times the age and sex standardised rates for non-Māori.   Mortality for Pacific peoples are lower than rates for Māori but higher than other non-Māori, but Pacific people have higher rates of stroke than any other groups.   Mortality rates for coronary heart disease are higher among all people from lower socioeconomic groups.   In Canterbury Pacific people and Māori had significantly higher rates of cardiovascular disease mortality than European other.

### Colorectal Cancer
### Cancer Registration

Data from 2009 and 2010 shows that Canterbury has higher age standardised cancer registration rates than nationally for colorectal cancer.   (Age standardisation takes into account differences in the age distributions of the CDHB and New Zealand populations so that differences in age distribution cannot distort the comparison between CDHB and the whole of New Zealand).

### Colorectal Cancer

*Colorectal cancer registration, 25+ years, age-standardised rates (WHO) per 100,000, 2008 and 2009.  ICD-10 codes C18-C21*

|  |  | **2008** | **2009** |
|---|---|---|---|
| Canterbury DHB | Female | 41.5 | 39.9 |
|  | Male | 53.6 | 48.9 |
|  | Total | 47.1 | 44.3 |
| New Zealand | Female | 39.6 | 39.4 |
|  | Male | 49.7 | 49.3 |
|  | Total | 44.3 | 44.1 |

### Mortality

Age standardised cancer mortality rates in Canterbury did not differ significantly from the national age standardised mortality rates in 2003-05.  Males had a significantly higher rate than females.  Māori and Pacific people had significantly higher rates than European people.  In 2007, the age standardised cancer mortality rates for colorectal cancer were higher in all New Zealand than in Canterbury DHB.

*Lung and Colorectal cancer mortality, 25+ years, age-standardised rates per 100 000, for Canterbury DHB and New Zealand, 2007*

| Cause of death | Canterbury DHB population | | | Total New Zealand Population | | |
|---|---|---|---|---|---|---|
|  | Total | Female | Male | Total | Female | Male |
| Colorectal cancer | 18.4 | 15.7 | 21.6 | 19.4 | 16.8 | 22.6 |

### Impact on inequalities

The age standardised total cancer registration rate for Māori in Canterbury was lower than for non-Māori, however the age standardised mortality rate was higher for Māori.  Cancer incidence and mortality rates for Māori in Canterbury were lower than for Māori nationally.  The data suggests poorer cancer outcomes for Māori than non-Māori.  Some disparity can be explained by the relative socioeconomic disadvantage amongst minority ethnic groups and differences in, for example, smoking rates and obesity.

### Depression

In Canterbury DHB, 4.9% of males and 6.5% females had a high or very high probability of having an anxiety or depressive disorder, adjusted for age.

*Age-standardised prevalence of having high or very high probability of having an anxiety or depressive or depressive disorder, adults 15+ years, 2006/07 NZHS*

| Canterbury DHB | Female | 6.5 |
|---|---|---|
|  | Male | 4.9 |
|  | Total | 5.7 |
| New Zealand | Female | 7.7 |
|  | Male | 5.8 |
|  | Total | 6.8 |

# 3.3 Literature Review – Learnings for the focus areas of the HIA

The full literature review is contained in a companion document entitled the Wider Health & Wellbeing Impacts of Transport Planning.  It is available at http://ecan.govt.nz/publications/General/HIA%20Literature%20Review%20June%202010.pdf

Transport planning is one of the urban and social planning processes that has an impact on health and its role is a critical one, with many opportunities to influence people's lives and wellbeing.  Moreover, the wider determinants of health are interlinked so that improvements in one area are likely to have positive benefits in others.  Measuring the impact of interventions is not easy as the full effect may take a relatively long time to become apparent.  However, robust methods of calculating the benefits in health, social, and economic terms are increasingly being devised and evidence is building on the contribution that transport infrastructure can make if the health impact is considered in planning.

The following paragraphs incorporate what was learned from all the chapters of the literature review, applied to the three focus areas of the HIA.

## 3.3.1 Making transport safe for people

**Positive impacts on health**

· A safe environment and one that is perceived as safe will create opportunities for active transport to local destinations.

· A safe environment will assist our growing population of older people to feel safe walking in public places and using public transport and therefore help to maintain their health and independence.

**Negative impacts on health**

· Fatalities and injuries: Canterbury reflects the New Zealand trend over the past decade which has seen the number of road traffic fatalities falling but both serious and minor injury crashes increase.

· Safety of walkways, cycle ways, and public transport from harassment or attack by other users is an important consideration in transport planning.  New Zealanders are generally more worried about the safety of walking to, or waiting for, public transport particularly after dark, than the safety of the trip itself.

**Actions to enhance positive health impacts and mitigate negative health impact:**

· Enhance the understanding of traffic engineers about the wider determinants of health so that the local environment is pleasant and safe for nearby residents, pedestrians and cyclists and opportunities for active transport to local destinations are supported.

· Provide interventions such as widening footpaths, narrowing streets at pedestrian crossings, installing speed bumps and altering road alignments to slow or discourage vehicular traffic, make streets safer for pedestrians and cyclists and increase physical activity both for routine transport needs and for leisure activities.

· Encourage cross-sectoral collaboration on road infrastructure, positioning of schools, and pick up and drop off areas to make walking and cycling safer for children travelling to school, reduce traffic congestion around schools, and provide a daily level of physical activity that contributes to reducing obesity.

· Provide appropriate environmental changes such as good street lighting, red light cameras, speed enforcement devices and traffic calming to reduce traffic fatalities and injuries.

· Provide good lighting, security cameras, and emergency alarms at waiting points for public transport services to improve public perceptions of safety and encourage use of services.

· Integrate transport planning with other social and urban planning so that the growing population of older people can feel safe walking in public places and using public transport so they are helped to maintain their health and independence for as long as possible.

· Provide familiarisation programmes for public transport services to assist people with limited mobility no matter what their age.

· Increase the safety of boarding and alighting through good design to assist people with limited mobility no matter what their age.

## 3.3.2 Creating real transport mode choice for all people

Creating real transport mode choice for all will make public transport, walking and cycling safe and more appealing; foster active transport initiatives in urban centres; enhance access to goods, services and amenities; integrate transport initiatives; enhance environmental sustainability; provide more mode choices for commuters; and more mode choices in rural areas.

**Positive impacts on health**

· 30 minutes of cumulated exercise each day 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 increased productivity, reduced mortality and morbidity and health sector costs when an inactive person becomes physically active.

· Results of long term outcomes from transport interventions to encourage physical activity are starting to become available. One five year study in the United States for example, was able to show a lower incidence of type 2 diabetes in areas where neighbourhood resources made physical activity easily accessible. The same type of research is currently going on in both Australia and New Zealand.

· The personal motor vehicle as a means of transport has a number of benefits for individuals in allowing them to access a wide range of opportunities.

· New and improved roads to enhance traffic flow do benefit some people but they can also create physical barriers for nearby residents that reduce their access to services, facilities and social activities.

· Mode choice is important to enable access to safe, nutritionally adequate, and personally acceptable food and hence maintain good health.

· Access to attractive open spaces is associated with higher levels of walking and physical activity, and with health benefits such as reduced stress, a lower risk of obesity, and enhanced mental and physical wellbeing. Benefits may be derived not only from formal use of the facilities but from the overall pleasantness of areas that make them more appealing for walking and other activities. Green spaces retained around cities that are used for food production provide amenity value as well as improving access to fresh produce.

· Ready access to cultural facilities and events allows diversity to be promoted and celebrated and heritage to be conserved. It encourages participation, partnership and innovation and supports the mental health and wellbeing of people individually and collectively, thereby promoting a healthy society and community.

· Transport is an important component of social inclusion and requires fair and equal access. Affordability, availability and accessibility are key issues in planning.

· Transport provides an important means of contact between family members, friends, members of voluntary organisations, and other recreational activities.

**Negative impacts on health**

· People who have inactive lifestyles are at increased risk of obesity, type 2 diabetes, cardiovascular disease, colon cancer, respiratory disease, depression and stress.

· The health impacts of a poor diet are well documented. Food access includes being able to afford to buy and transport food, the mobility to get to the food source and the time to do so.

· Roadways and traffic can act as physical and psychological barriers to social contact. Roads bearing high levels of traffic which cut through housing areas can limit or disrupt interpersonal networks and reduce social contact. The impact is greater on those who have limited access to the range of transport options, including older people, people who are unemployed, people with young children and people with disabilities. An increase in traffic density can result in families moving out of an area and a withdrawal from community participation by those who are unable to leave.

**Actions**

· Encourage people to build exercise into a daily routine by walking, cycling or using public transport to get to their destinations.

· Encourage people to use active transport rather than drive their cars by connecting routes, and making sure pedestrian and cycle infrastructure is safe and pleasant to use.

· Ensure public transport is convenient and safe to increase uptake by both adults and children.

· Encourage mixed land use so destinations such as workplaces, schools and retail businesses are fairly close to where people live to encourage active transport.

· Encourage children's use of active transport to school by providing good footpaths, safe crossings at intersections, traffic calming measures and low speed limits.

- Promote parental supervision of walking school buses or cycle trains.

- Encourage effective cross sector measures that combine school policies, parental education about the benefits of active transport with provision of cycling and walking infrastructure that are matched to age and community context.

- Increase transport system diversity so there are more travel options; design transport systems so they accommodate the broadest range of users; support more compact development rather than urban sprawl; collect information needed for evaluating transport equity; and give a diverse range of stakeholders more influence on transport planning.

- Undertake transport planning that increases options for refugee groups and is integrated with other urban and social planning to support social capital and promote wellbeing.  Make special efforts to resolve language difficulties and increase communication with the various migrant and refugee communities; provide programmes to educate marginalised communities about the availability of walkways, cycleways, and public transport and how to access them.

- Give public transport priority over other road traffic on main routes.

- Ensure transport policies take the needs of all users into account to improve access to, and use of, local resources such as supermarkets and other sources of healthy food, primary health services, schools, community centres, parks, open spaces and cultural amenities.

- Develop national policy, indicators and monitoring and apply these at a regional and local level in an integrated approach to land use, transport, and social needs to improve the life chances of all New Zealanders.

- Consider the impact of transport on food security in all transport policy and planning; ensure planning is not focused on the private motor vehicle as the dominant mode of access; ensure roads do not displace local business that provide existing food sources or take land being used for local food production; and promote policies that encourage local distribution of food within the city and urban fringe so that access to fresh food with the minimum of transport and packaging is available.

- Combine policy and planning decisions across transport, land use, and other relevant sectors in the management of automobile traffic and create walkable, safe neighbourhoods with mixed land use, public transport options and recreational facilities to encourage people of all ages and abilities to participate.

### 3.3.3    *Transport and Healthy Environments*

**Positive impacts on health**

- A healthy environment supports a good state of health for people, such as reduced risk of respiratory illness.

- Living in less dense housing environments has benefits for some people in increased living space and privacy.

- Improving environmental sustainability.

**Negative impacts 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.  Environmental pollutants from road transport are influenced by the composition of vehicle fuels, type of engine, particles from tyre tread, brake wear and road dust, driving conditions and driver behaviour.

- 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, particularly heavy vehicles with diesel engines, whether the environment is fairly enclosed or more open, and whether the traffic is congested or flowing freely.  Recent research in both Australia and New Zealand 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 and daytime activities.  They have been linked to a broad range of negative health effects such as high blood pressure and heart conditions.

- Other environmental impacts from land transport are the 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.

- Low density housing can provide some benefits for people in increased living space and privacy but there are also negative economic, social and environmental effects. Thinly spread development makes walking or cycling to workplaces, services and schools difficult or impossible, and public transport services less viable. As oil production peaks and starts to decline, people living in outer suburbs or the rural areas around cities become very vulnerable to pressures from increased fuel costs.

- More compact cities with higher residential density supports access to better public transport, better access to public facilities, and reduced social segregation but there are also negative impacts in a lack of affordable housing, reduced living space and fears about crime.

**Actions**

- Use a combination of legislative and regulatory measures in combination with incentives and education to reduce the current and future environmental impact of transport related pollution. Legislative and regulatory measures cover areas such as 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 standards for fuels.

- Use incentives that make public transport safer, more affordable and more convenient; design urban areas so residents find it is safe, pleasant and more convenient to walk or cycle to utilities; and ensure amenities are located within a short distance.

- Build and foster relationships with Māori through such tools as memoranda of understanding or partnerships with iwi; foster the development of Māori capacity to contribute to land transport processes; and work to achieve better understanding of Māori principles within their own organisations.

- Develop "smart growth" policies which favour mixed land use, and provide medium to high density housing with good community facilities, high quality open spaces and good street connectivity to encourage development which is economically and environmentally sustainable.

- Use interventions that tax or restrict travel options simultaneously with incentives that make other modes of travel cheaper and more convenient. Restrictions range from policies that focus on increasing residential density where active transport is feasible; providing exclusion zones for certain types of traffic; reducing speed limits; preserving rural land on the outskirts of cities; and imposing taxes or charges on emissions, fuels, congestion, and parking. Incentives include boosting the convenience and safety of public transport and designing residential areas as pleasant safe environments with good connectivity to services and facilities so that walking and cycling are an easier choice than driving. Before implementing measures that affect core services, however, it is important to consider potential unintended effects on disadvantaged groups, for example, the impact of removing parking on people with disabilities, older people or those with young children.

### 3.3.4 Specific population groups to consider

The literature review confirmed that some population groups are more vulnerable than others.
It particularly identifies the following:

- All people including children who are not regularly exercising for 30 minutes per day

- A study in Christchurch using geographically detailed and accurate estimates of vehicle air pollution found that more socially deprived areas with a greater proportion of Māori, Pacific peoples, and migrant groups had significantly higher levels of traffic-related pollution than high income areas.

- Economically and socially disadvantaged groups to ensure that the adverse impacts of accident risk and pollution are mitigated.

- The elderly population, people with physical mobility restrictions and those with disabilities require additional consideration in planning as do parents with young children Economically and socially disadvantaged people with disabilities.

- People with limited mobility

- Māori, who are over-represented in low income and the most deprived areas.

- Our grandchildren, so that they don't bear the long term negative environmental effects.

- The 161 ethnic groups in Christchurch of which the Chinese, Samoan, and Korean communities are the largest.

- The refugee communities of Afghanis, Somalis, Kurds, and Ethiopians who have high rates of unemployment and who are considerably disadvantaged in comparison to the rest of the population.

# 3.4 Appraisal workshops – key findings

### 3.4.1 Workshop to assess the draft Objectives of the Christchurch Transport Plan

The CTP has nine draft objectives and these were assessed against the health themes of active lifestyles, equity, social capital, cultural diversity, access, housing, safety, healthy environments, community resilience and food security. The original intention was to assess each objective against each of the health themes of the literature review. However, the time frame meant it was not possible to discuss all of these and both amenity and economic development were not considered. The housing theme was only partially completed as the links between transport planning and housing are complex. The workshop was split over three separate meetings, held in March 2010. Attendees were the CTP HIA project team, transport planning staff and staff from the CDHB.

**The main recommendations from the workshop are:**

·   Separate the Safety and Health objective to create a new objective for Public Health;

·   To achieve the CTP vision it must be recognised that all the CTP objectives are interlinked;

·   The CTP Objectives must lead all transport projects; this could be achieved through Project Initiation Briefs;

·   Provide guidance to project designers about priorities for each transport mode.

·   CTP supports the delivery of objectives in other plans such as the Greater Christchurch Travel Demand Strategy, the Greater Christchurch Urban Development Strategy and the City Plan;

·   Re-word some of the objectives as shown below. The original objective is given first, with the recommended reworded objective beneath it in bold.

1.  Choice:   The transport system enables people and their businesses to make choices as to when and how they travel.
    **Sustainable Choice:   The transport system and land use enables people to make choices as to when and how they travel and when and how they move freight.**

2.  Safety and Health: The transport system enables safe travel and is designed to ensure the good health and well-being of our community.
    **Safety:  The transport system and land use enables safe travel for everyone.**

3.  Accessibility:  The transport system enables access to opportunities and social activities, for people of all abilities, to business, community and recreational areas.
    **Accessibility:  The transport system and land use enhances access to opportunities and social activities, for all people, to business, community, cultural and recreational areas.**

4.  Efficient and Effective: The transport system enables the efficient movement of people and goods, and transport facilities are designed to operate effectively.
    **Efficient and Effective: The transport system and land use enables the efficient and effective movement of people and goods, now and in the future.**

5.  Economic:  The transport system is affordable for the community now and in the future, and ensures it is easy to do business and live.  No Change

6.  Environment: The transport system is designed to reduce its impact on the environment.
    **Environment:  The transport system will reduce its impact on the environment.**

7.  Amenity: The transport system is well-designed ensuring that the Cities urban and rural areas are attractive and liveable, and the history and character of the City is maintained.
    **Amenity:  The transport system and land use ensure that the City's urban and rural areas are attractive and liveable, and the history, cultures and character of the City is enhanced.**

8.  Legibility: The transport network is clearly understood and enables easy navigation between streets, landmarks and key activities.
    **Legibility: The transport system is clearly understood and easy to use.**

9.  Public Health: The transport system ensures good health and well being for all (new objective)

### 3.4.2 Workshop to consider the health impacts of two future transport scenarios.

The workshop used two scenarios of future transport systems (set in 2041) to promote discussion on the potential health impacts and key actions that the CTP could foster.   The two scenarios are:
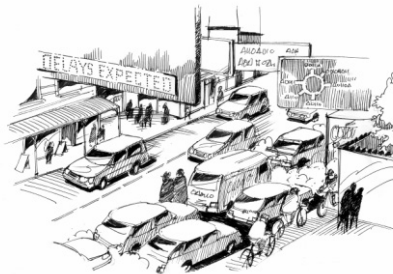
**Scenario A: Private Vehicle Mobility.**

· Improved roads, particularly key arterial links

· Targeted improvements to the road freight network

· Ample cheap or free parking

· Limited new investment in public transport, cycling and walking.

Home

The Journey

The Place

**Scenario B: Active and Public Transport**

· High frequency public transport services, including to some outlying rural areas

· More mixed-use land use development

· Excellent cycling and walking facilities

· Ride sharing measures, park & ride facilities, lanes for vehicles carrying multiple passengers

· Marketing campaigns to encourage walking, cycling and public transport use

· Investment to enhance the movement of freight by truck, rail and shipping

· Road infrastructure maintained with limited or no new investment

· Increased parking charges.

Home



The Journey



Place



Workshop participants were asked to identify and prioritise the issues and actions required to enhance the positive health impacts and reduce the negative health impacts of each scenario. Appendix 2 details the workshop findings for each of the scenarios. Across both scenarios, there was much commonality in the priority issues and actions.

**Priority Issues**

- Improved marketing to increase understanding of the full costs of personal vehicle use.

- Concerns with affordability of continued 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 cycling/walking

- Economic trade-offs from investment in roads rather than other sectors

- Need for education around mode choice and the links to wellbeing

- 'Tyranny of convenience' – travel to local shops by vehicle without taking into account the full costs and impact on personal health

- Importance of high quality urban design and land use planning which considers a range of health impacts.

- Land use planning and the location of industry/employment/housing

- Abilities of government agencies to affect change

- Need for greater inter-sectoral collaboration

**Priority Actions**

- Inverting the priority pyramid to prioritise the needs of people rather than vehicles;

- Fostering interconnections across sectors to ensure that transport systems encompass planning and design, urban form, accessibility, road safety and not just engineering;

- Investing 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 CTP 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 are considered work as normal in transport decisions.

- Workshop participants identified the need to influence decision makers.   Some suggestions were as follows:

> **Workshops/seminars to educate and raise understanding of key issues**
>
> **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  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 improvements.**
>
> **Working with funders.**

### 3.4.3  *Māori Engagement – key findings*

An important component of undertaking HIAs in New Zealand is to ensure that the principles of the Treaty of Waitangi are upheld. In addition, local government has the responsibility to provide opportunities for Māori to contribute to decision making processes.

A hui to engage the local Māori was held at Rehua Marae. The three key findings are described below, with more information on the hui in appendix 3.

1. **Provision for Kaumātua**

   One of the key themes to be discussed at the hui was the need to ensure that there is specific and special provision for kaumātua (elders) in the transport system. Specific concerns were raised about the ability and convenience for kaumātua to access and use the public transport system. Apprehension was raised around ensuring that community vans for kaumātua 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 kaumātua. It was felt that a concerted effort should be applied to educating youth around the use of public transport.

2. **Effects on Papatūānuku (Earth)**

   It was noted that the intensification of urban areas has contributed to decreased access for Māori to Papatūānuku. This situation was exacerbated by ongoing 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.

3. **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 CTP prior to it being released, to ensure that whakaaro Māori (Māori thoughts) are visible in and influence the CTP.

# 4. Recommendations and Actions for the Christchurch Transport Plan

## 4.1 Introduction

This section details the recommendations and actions of the HIA for consideration as the CTP is developed and implemented. It draws on the evidence gathered from the literature review, area profile and appraisal workshops described in section 3. The recommendations and actions are designed to enhance the positive health impacts and reduce the negative health impacts of the transport system for public health and wellbeing.

It is important to recognise the recommendations and actions are closely linked. As such, they are not reported separately against the original three focus areas. For example, by providing high quality cycling facilities, such as separated cycle paths with increased separation from traffic, cycling becomes both safer and the facilities attract new people into cycling. Creating an environment where more people can cycle will encourage healthier and more active lifestyles.

## 4.2 Key Recommendations and Actions

**1. The Christchurch Transport Plan Direction**

- Supports a future based on high levels of active and public transport.
- Supports a transport system that understands and reflects the needs of people rather than having a focus on moving vehicles.
- Provides guidance on the transport mode priorities.

Overall the HIA found that there were more health benefits from scenario B - high levels of active and public transport rather than a transport future based on high level of private mobility. Overall transport needs to focus on the movement of people rather than vehicles.

**2. The Objectives of the Christchurch Transport Plan**

The CTP objectives should provide the guiding principles for all transport projects and programmes in Christchurch. They should be easily transferable to project briefs. To achieve good health outcomes it is important to recognise that they are all interlinked and must be weighted equally. The HIA recommends that a new objective is created for public health to give a stronger emphasis and transparency to health. This recommendation aligns with the CRLTS and enables public health to be embedded in transport projects and considered alongside other priorities. A number of wording changes (section 3.4.1) are recommended for eight of the objectives.

| | Actions | Influence | Responsibility |
|---|---|---|---|
| 1. | The objectives are reviewed to incorporate the suggested revised wording or the principles of health and sustainability that underpin these suggestions. | Relevant CCC personnel | CCC |
| 2. | A new public health objective is developed | Relevant CCC personnel | CCC |

**3. Land use planning and transport planning are well integrated to enhance active lifestyles for Christchurch people**

There is a need to integrate land use planning and transport to create connected communities and invest more significantly in active and public transport infrastructure and services.

The CTP should provide clear guidance on the transport priorities for each mode. It was found that current transport priorities are often conflicting. The application of the road user hierarchy (see diagram) could be used alongside the objectives to help communicate the priorities. Clearly defining the road user hierarchy will enable CTP to support projects which integrate land use and transport with improvements to walking, cycling and public transport.
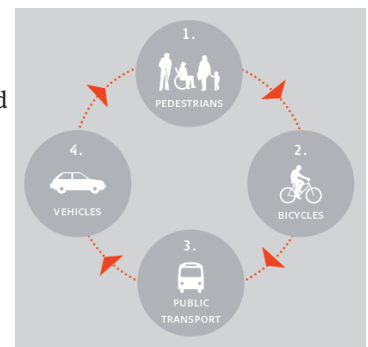
| | Actions | Influence | Responsibility |
|---|---|---|---|
| 3. | Apply the road user hierarchy (see diagram) alongside the objectives to help communicate the transport mode priorities. | Relevant CCC personnel | CCC |

## 4. Undertake further research to increase understanding of the public health costs of transport in Canterbury.

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 | Influence | Responsibility |
|---|---|---|---|
| 4. | Undertake further research to increase understanding of the public health costs of transport in Canterbury. (see Appendix 5) | Local and Central Government | CDHB<br>CCC<br>ECan |
| 5. | Use the Regional Transport Committee to communicate findings to lobby the Ministry of Transport and advocate for improved acknowledgement of health in transport funding decisions by Government. | Central Government | ECan |
| 6. | Use research to influence consultation on transport policy and funding programmes. | Policy | CCC<br>CDHB |

## 5. Undertake Education and Marketing to increase public and staff awareness of the links between Public Health and Transport.

The HIA process included education about the links between health and transport. It became evident that these links are generally not well understood. It is anticipated that such education will encourage people to increase their physical activity, reduce car dependency and understand the true costs of transport.

|  | Actions | Influence | Responsibility |
|---|---|---|---|
| 7. | Carry out education and marketing campaigns to<br>· Increase public understanding of the real costs of different travel choices.<br>· Widely communicate the knowledge and understanding of health and transport built through the HIA. | Christchurch residents | CCC |
| 8. | Use local, national and international speakers to raise understanding of health and transport issues to local Council and staff. | Council<br>CCC staff | CCC<br>ECan<br>CDHB |
| 9. | Provide workshops and seminars on the benefits of evaluating health in transport, integrating land use and transport, of healthy street design. | CCC staff | CCC |
| 10. | Share the HIA reports and recommendations widely to share methods, knowledge and information. Involve advocacy groups. | All | CCC |
| 11. | Investigate how the full costs of the transport system and travel choices should be accounted for and considered by decision makers. | Local and national funding | CCC |
| 12. | Ensure local funding decisions for transport recognise the importance of public health. | Local funding | CCC |

## 6. Improve mobility for the transport disadvantaged

It is recognised that supporting positive health outcomes for all people is important. However the HIA has identified particular groups of people as having particular priority with respect to either their poorer health outcomes or specific needs. These include those who are not regularly exercising for at least 30 minutes per day, Māori, Kaumātua (older people), people with physical mobility restrictions, those with disabilities, parents with young children, economically and socially disadvantaged

groups, ethnic groups and refugee communities.

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. Additionally, The Land Transport Management Act 2003 provides specific opportunities for Māori to participate in land transport decision-making processes.

| | Actions | Influence | Responsibility |
|---|---|---|---|
| 13. | Providing opportunities for Māori to provide feedback on the draft plan prior to it being released. | Local Decisions | CCC |
| 14. | Work on improving engagement with Māori (building on the HIA hui example) and recognising the Treaty of Waitangi across transport projects. | Staff | CCC |

### 7. Christchurch City Council Transport Projects

Through the HIA workshops a number of transport projects were recommended in Christchurch which would improve health and sustainability outcomes.

| | Actions – to prioritise projects which: | Influence | Responsibility |
|---|---|---|---|
| 15. | Promote interconnectivity between other disciplines and population groups | Staff | CCC |
| 16. | Integrate land use and transport planning to create safe, attractive, connected communities which are easily accessible by active and public transport | Council | CCC |
| 17. | Educate youth around the use of public transport | Youth | CCC ECAN |
| 18. | Give special provision for kaumātua (elders) in the transport system | Transport professionals | CCC ECAN |
| 19. | Consider supporting the use of community vans | Council | CCC ECAN |
| 20. | Recognise and evaluate the effects of transport projects on access to Papatūānuku. | Transport professionals | CCC |
| 21. | Provide education and promotion for safety and transport choice | Christchurch Residents | CCC |
| 22. | Improve enforcement, especially for lower speed limits | Police / Christchurch Residents | CCC CDHB Police |
| 23. | Support technological solutions, such as talking bus stops, fuel efficient vehicles and electric vehicles charging points. | Christchurch Residents | CCC |

# 5. Evaluation

The HIA has included an evaluation element from early in the process.  A full evaluation report on the HIA process and how it has influenced the CTP is expected alongside the Consultation Draft Christchurch Transport Plan in 2011.  The CTP HIA has been an excellent case study on the application of HIA and HPSTED to Transport planning.

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# Appendix 1 – 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 |

### Objectives workshop - Various days

| | |
|---|---|
| Alison Bourn | Community and Public Health, CDHB |
| Ruth Foxon | Christchurch City Council |
| James Ryan | Environment Canterbury |
| Siobhan Storey | Christchurch City Council |
| Anna Stevenson | Community and Public Health |
| Trudy Jones | Christchurch City Council |
| Eynon Philips | Christchurch City Council |
| Mo Kachfi | Christchurch City Council |
| Simon Ginn | Christchurch City Council |
| Steve McNeil | Christchurch City Council |

### 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 |

### 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

# Appendix 2 – Assessment Workshop Findings

The following table records the workshop findings of the scenarios on the focus areas (safety, travel choice and healthy environment).

**Scenario A: High Car Dependence**

| | Safety | Transport Mode Choice | Healthy Environments |
|---|---|---|---|
| Positive health implications | · New roads and car technology will be designed to be safer.<br>· Freight trucks may be less inclined to travel on residential and local roads making smaller urban streets easier for others to use. | · Convenience of vehicles for providing mobility and participating in society.<br>· Provide efficient freight movement which supports economic development, employment with the resulting health benefits.<br>· If this scenario meets the needs of vehicles, then driving would be a less stressful experience, particularly if there was investment in key arterials reducing 'rat-running'. However, this would be undermined if significant levels of congestion grew. | · A limited number of potential benefits were identified from this scenario.<br>· Improved access to rural areas could lower land prices and make housing more affordable.<br>· Other benefits are more convenient parking facilities, and journey time savings. |
| Negative health implications | · Increased risk of injuries and fatalities, particularly for pedestrians and cyclists.<br>· Adverse affects on perceptions of safety, thus undermining physical activity<br>· Increase in stress arising from traffic congestion.<br>· Increased number of car and truck crashes i.e. more deaths and injuries.<br>· Increase in social costs from vehicle crashes.<br>· More traffic conflicts with heavy vehicles.<br>· Exacerbation of community severance with fewer people willing to go out on to the streets, creating 'dead zones' of public life. With fewer eyes on the streets, a negative cycle may emerge of ever greater unwillingness to use urban streets on foot, heightening the sense of isolation and lack of safety.<br>· Older people may be more inclined to drive to an age beyond their capabilities<br>· The long-term affordability of the road investment model was questioned, with no obvious investment in alternative technologies<br>· Pressure on traffic management caused by ongoing road investment | · Supporting the needs of vehicle drivers does little to support physical activity.<br>· The ongoing growth in the numbers of vehicles on the road was seen to make other travel modes (walking, cycling and public transport) less attractive.<br>· Less pleasant for walking and cycling.<br>· Increased congestion.<br>· Those who are already transport disadvantaged i.e. unable to afford or drive cars are likely to be further disenfranchised.<br>· Increased exposure to fuel price volatility.<br>· Decreased journey time reliability.<br>· Would result in a 'lost generation' of young cyclists to the region.<br>· If fuel costs continue to rise how sustainable is this scenario? | · Increase in health problems associated with higher emissions (such as respiratory conditions), noise (including mental health), congestion and vibrations.<br>· Less amenable for people.<br>· Increased urban sprawl.<br>· Community severance.<br>· Loss of productive land to low density development.<br>· Loss of urban amenity to parking and road space.<br>· Reduced amenity value of urban environments, through being less pleasant to spend time in, and less land available for recreation;<br>· Potentially adverse economic impacts associated with the loss of business space due to the need for more land associated with vehicles and parking;<br>· Less permeability which adversely affects storm water run-off. |

| What actions are needed to reduce the negative implications and enhance the positive implications? | · Increase road safety budget proportional to road spending.<br>· Increase road space for walking or cycling.<br>· Segregated cycle lanes.<br>· Provide dedicated freight network.<br>· Integrate walking, cycling and public transport with all roading projects.<br>· Implement restricted speed zones in residential areas.<br>· Use urban design principles and traffic calming measures to encourage activity.<br>· Make driver testing harder.<br>· Actively support the increase of pedestrians in the central city.<br>· Implement disincentive measures for car use such as congestion charges.<br>· Use travel demand management strategies to give priority to active transport modes.<br>· Limit the speeds of cars for example at Governors Bay.<br>· Driver education and marketing. | · Develop park and ride facilities.<br>· Encourage active transport at schools and workplaces.<br>· Encourage mixed use development to support greater travel choice.<br>· Provide walking and cycling infrastructure eg bridge clip-ons.<br>· Pursue travel demand management more aggressively.<br>· Improve bus fleet accessibility.<br>· Support Gold card and other subsidised public transport initiatives.<br>· Support car clubs.<br>· Cycling marketing eg to encourage recreational cyclists to become commuter cyclists.<br>· Enhance public transport integration eg rail/buses and feeder services.<br>· Off-street cycle lanes.<br>· Expand bus services.<br>· More bike festivals<br>· Incentivise active and public transport use.<br>· Encourage ridesharing.<br>· Regional fuel tax.<br>· Compulsory travel plans.<br>· Congestion charging.<br>· Increase parking costs. | · Use land use planning such as district plans to achieve goals.<br>· Work more closely with developers to ensure high quality outcomes.<br>· Ensure high quality urban design which enhances active transport.<br>· Enhance public transport.<br>· Mitigate traffic noise including through improved road surface conditions.<br>· Tougher emission rules.<br>· Improve the vehicle fleet.<br>· Restrict the supply of parking (business and residential).<br>· Require cycle parking in commercial developments.<br>· More bus priority lanes.<br>· High occupancy vehicle lanes.<br>· Encourage ridesharing.<br>· Improve walking and cycling infrastructure.<br>· Encourage more fuel efficient and electric vehicles.<br>· Fuel tax.<br>· Support more rail freight and coastal shipping.<br>· Education and marketing eg health benefits calculator.<br>· Ensure road users pay full costs.<br>· Ensure natural buffers and amenities in road development. |
|---|---|---|---|

**Scenario B: Increased Active and Public Transport**

|  | Safety | Transport Mode Choice | Healthy Environments |
|---|---|---|---|
| Positive health implications | · Safer environment for people to undertake physical activity<br>· Improved health outcomes due to increased physical activity.<br>· Safety in numbers for cycling.<br>· Possible lower infrastructure & medical costs, through reduced reliance on road network expansions and fewer people presenting with injuries.<br>· Less vehicle crashes.<br>· Improvements in mental and physical health. | · Provides a range of transport choices<br>· Additional travel options for some population groups such as school children;<br>· Supports physical activity as part of daily life for more people, such as through walking and cycling to destinations, and walking to public transport stops;<br>· Economic benefits of transport choices (including the potential for reducing traffic congestion and more efficient use of the transport network), and reducing the need for road investment;<br>· Accessible buses;<br>· Improving access to services, facilities and amenities; | · Improved health outcomes.<br>· More healthy school children: improved education.<br>· Improvements to air and water quality as a result of fewer emissions.<br>· Less noise emissions.<br>· Reduced expenditure on roading.<br>· More disposable income – local spending.<br>· Better access to local shops and community facilities.<br>· Supporting more intensive land use development<br>· Improved population health and reduced health system costs over time.<br>· Savings on road maintenance, with less need to build and maintain roads. |

| | | | |
|---|---|---|---|
| | | · More disposable income (through less household expenditure on transport)<br>· Social and economic benefits of travel choices. | |
| Negative health implications | · This scenario poses the challenge of a cultural shift from all users of roads and footpaths. The challenges that planners seeking to create such a scenario would need to contend with include:<br>· Shared path conflicts between different users; for example, older people and people with disabilities may be less inclined to use footpaths and public transport stops if they are more worried about being knocked over by a cyclist;<br>· Shift in current driver attitudes and behaviours;<br>· Improving cyclist skills and responsibilities (including use of bells);<br>· Potential for jaywalking.<br>· Ensuring personal security for public transport users.<br>· Potential for increase in walking and cycling injuries. | · Safety fears associated with walking, cycling or using public transport. Lack of understanding on walking, cycling safety.<br>· Social pressure not to cycle or bus. (bus seen as the "looser cruiser")<br>· Challenge to achieve culture change. The level of investment required to achieve changes in mode choice would be significant.<br>· Potential for adverse economic impacts upon the local car industry. | |
| What actions are needed to reduce the negative implications and enhance the positive implications? | · Enhance shared path design.<br>· Education for all users.<br>· Ensure parking enforcement.<br>· Improve tactile paths, street lighting and full road crossings.<br>· Reduce vehicle speeds.<br>· Remove street clutter eg sandwich boards.<br>· Marketing to raise awareness and promotion of health benefits.<br>· Self explaining roads – know type of speed from design.<br>· Enhance urban design.<br>· Talking bus stops.<br>· Ensure high quality customer training for bus drivers.<br>· Promote safety and benefits of change to employers.<br>· Need to improve cycle skills and safety. | · Enhance the availability and quality of cycle parking.<br>· Provide park and ride facilities.<br>· Encourage the use of cycles on buses.<br>· Provide safe cycle infrastructure eg cycle lane on Waimakariri bridge.<br>· Enhance walking, cycling and public transport infrastructure.<br>· Ensure high standards of urban design in new developments.<br>· Make better use of rail network to regional towns.<br>· Move stations – centre of town or free shuttles – same ticket.<br>· Improve public transport to hospitals.<br>· Leverage business and tourist opportunities for cycling improvements.<br>· Improve public transport information. | · Ensure funding to support active and public transport improvements through for example Regional Land Transport Programme.<br>· Use savings from reduced road spending to invest in improving safety on rural roads.<br>· Travel plans.<br>· Education and behaviour change campaigns.<br>· Lower speeds around schools.<br>· Bike racks on school bus.<br>· Safe cycle parking.<br>· Ensure political support for initiatives. |

# Appendix 3 – Engagement with Māori

This appendix provides a report about the hui held on 28 May 2010

**Background**

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

> *'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 and other groups such as Pacific peoples.  Institutional racism, and the effects of colonisation and land confiscations (eg, by narrowing the Māori economic base and reducing Māori political influence) may play an important part in contributing to inequalities.' (Ministry of Health 2006).*

Social indicators in Canterbury demonstrate the need of targeted consideration for Māori.  Despite a number of specific health and social programmes to lift the status of Māori in Canterbury, social indicators continue to exhibit poor success and increased negative statistics in relation to health, education, standard of living and income (Canterbury District Health Board, 2010).

The rate of death from all causes is significantly higher for Māori than for non-Māori in Canterbury.  The five leading causes of death for Māori in Canterbury are ischaemic heart disease, lung cancer, chronic obstructive pulmonary disease, type 2 diabetes and transport accidents.

Transport accidents (most of which were motor vehicle related) is the one of the leading causes of death for Māori in Canterbury.  Māori (14%) are more likely to be involved in fatalities than non-Māori (9.7%) (Canterbury District Health Board, 2010).  While mortality by way of transport accidents is shown to be slightly more prevalent for Māori,  it is less frequent in Canterbury than for Māori on a national scale (21.5%) and was closer to the national non-Māori (11.4%) rate of mortality by transport accidents.

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

Community engagement through a hui at Rehua Marae in May 2010.  An invitation was distributed to a wide-ranging group of representatives of the community;

Participation of Māori in the project team: in addition to the guidance afforded by Hector Matthews (Executive Director of Māori and Pacific Health, CDHB), expert assistance in relation to the relationship between urban design and Māori knowledge was offered by Shadrach Rolleston (Policy Adviser).   Lee Tuki (health promoter for CDHB) and  Theresa Rongonui (Consultant, Kaa Te Rama Consultancy) provided support in the engagement and subsequent writing of this report.  Ted Te Hae and Bob Tai.

**Māori perspectives of the Environment and urban design**

Māori have a unique relationship with the environment that is demonstrated in the traditional knowledge systems and the spiritual, cultural, economic and social importance Māori place on the environment.

To date, urban planning and design have not taken Māori perspectives of the environment into account and urban development has often eroded the relationship that Māori have with the environment.  Many 'concrete jungles' now replace areas that previously offered an opportunity to reconnect with Papatuanuku (the Earth Mother), effectively taking away the ability to ensure that spiritual, cultural and social opportunities that formerly took place, can no longer occur.  The connection with people, places and spaces is a concept that Māori have traditionally lived by.   Rolleston (2010) recognises a particular set of principles that create an on-going relationship with the environment.   These are:

· kāitiakitanga          guardianship and stewardship;
· kotahitanga           collaboration;
· mana                 authority and control;
· mauri                 life principles;
· mātauranga           knowledge, expertise;
· tapu and rāhui        sanctions and restrictions;
· rangatiratanga         autonomy;
· tikanga               protocols and regulations;
· whakapapa            genealogical connections and
· whanaungatanga       relationships.

The sustainable nature of these concepts positively contribute to environmental management and urban design. Ongoing build up of urban development allows places of cultural significance to be forgotten about as each layer of urban design that is added presents another barrier to connection to whakapapa and traditional Māori ways of living.

**Māori consultation**

There were three key recommendations identified at the hui.

### 1. Provision for Kaumātua

One of the key themes to be discussed at the hui was the need to ensure that there is specific and special provision for kaumātua (elders) in the transport system. Specific concerns were raised about the ability and convenience for kaumātua to access and use the public transport system. Apprehension was raised around ensuring that community vans for kaumātua 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 kaumātua. It was felt that a concerted effort should be applied to educating youth around the use of public transport.

### 2. Effects on Papatūānuku (Earth)

It was noted that the intensification of urban areas has contributed to decreased access for Māori to Papatuanuku. This situation was exacerbated by ongoing 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.

### 3. 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.

# Appendix 4 – How are Transport Planning and Health linked?

Dr Alistair Humphrey, Canterbury Medical Officer of Health presented about this HIA to the Canterbury Regional Transport Committee on August 2010.  This is extracted from his talk.

**From Renal Failure to Active Transport**

*Although causal relationships between transport interventions and health outcomes from increased physical activity have been difficult to measure and prove in individual studies, evidence of positive effects is now building from longitudinal studies.   Natural experiments that are taking place at the moment will add to the accumulating evidence.*
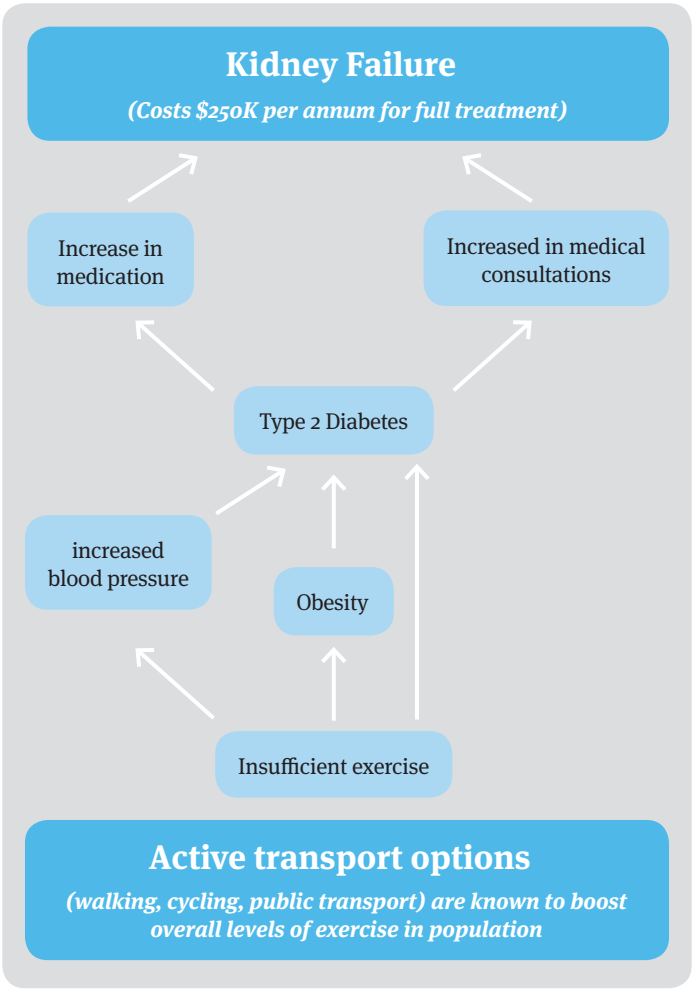


*Cautionary Note: In drafting this causal pathway it is acknowledged that there are many interrelated factors that determine an individual's health.  The point of this pathway is to demonstrate a logical link between a health outcome and physical activity.*

# Appendix 5 – Quantifying the Economic Benefit of Increasing Physical Activity

A paper to contribute to action 4 was prepared during the writing of this report.  The summary follows.  The  full paper is available on http://www.cph.co.nz/About%2DUs/Health%2DImpact%2DAssessment/

**Key points**

· Inactivity has significant costs for the health system.   For example, an Australian report estimated the direct gross cost of physical inactivity to the Australian health budget in 2006/2007 was $1.49 billion.

· Cost benefit analyses of existing interventions in pedestrian and cycling infrastructure along with social campaigns to encourage people to use them have shown that the benefits far outweigh the costs and are a "best buy" for personal health, the health system, and the transport sector.

· The New Zealand Transport Agency Economic Evaluation Manual has calculated a benefit for a new pedestrian facility (such as a footpath or walkway) of $2.70 for each kilometre of pedestrian use of the new structure.   For new cycle facilities, the benefit is calculated at $1.45 for each kilometre of cyclist use of the new structure.   These benefits are applied for all users, as it is assumed that a facility that enhances the walking or cycling environment will encourage existing pedestrians and cyclists to continue using that mode of transport.

· The same manual has also calculated that infrastructure improvement and/or subsidies combined with travel plans for workplaces and schools can achieve benefits valued between $58.21-$196.51 per employee per year for workplaces in Christchurch in the CBD, and benefits of $74.83 per pupil for primary and $77.97 for secondary schools.   The benefits are the average annual benefit for all people in the workplace or school whether or not they move to more active transport modes.

· A three year intervention funded by Cycling England and local authorities in six cycling demonstration towns returned £2.59 for every £1 invested in decreased mortality alone, without taking any other benefits into account.   It was estimated that £45 million would be saved over 10 years in reduced all-cause mortality in adults aged 20-60 years and £1-3 million in absenteeism.  Based on the initial success of the initiative, eleven additional towns and one city were added to the scheme as well as a further investment of £140 million for the next three years.

· A systematic review of sixteen economic evaluations of the health effects of transport interventions that increased walking and cycling found that the mean  benefit-cost ratio was 5:1.  and even at the most conservative estimate the value for each new cyclist or walker would be at least  €127.

· Aside from reduced all-cause mortality, and health care costs, there are measurable benefits in decreased morbidity, pollution, absenteeism, and traffic congestion.

· Better methods of valuing indirect benefits to economic productivity and social connectedness  are needed as well as more longitudinal studies to provide a sounder evidence base on which to base projections of future impact for planned interventions.

# Appendix B – Vision, Goals, objectives and Outcomes

# *Appendix B*

# Vision, Goals, Objectives and Outcomes

*Christchurch Transport Plan*
*2012 - 2041*

**Christchurch**
City Council

# Appendix B: Vision, Goals, Objectives and Outcomes

This table illustrates how the Plans objectives and goals achieve multiple outcomes through both direct and indirect relationships.

| Vision: Christchurch is easy to move around | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Council Outcome** | **CTP Goals** | | | | | | | |
| | **1. Improving Access and Choice** | | | **2. Create Vibrant, Healthy and Liveable Communities** | | | **3. Support Economic Vitality** | **4. Leaving a Positive Impact on the environment** |
| **Objective** | 1.1 Use the transport network more efficiently | 1.2 Balancing the networks | 1.3 Deliver high quality information and education services | 2.1 Supporting recovery | 2.2 Integrated transport and land use planning | 2.3 Safer Systems | 3.1 Easy movement of and access to goods and services | 4.1 Reduce emissions and invest in green and resilient frastructure |
| Liveable City — There are a range of travel options that meet the needs of people and businesses. | ● | ● | ● | ☆ (pink star) | ★ | ▬ | ● | ● |
| An increased proportion of journeys are made by foot, cycle and public transport. | ● | ● | ● | ▬ | ● | ● | ★ | ● |
| The transport system provides people with access to economic, social and cultural activities. | ★ | ★ | ● | ● | ● | ▬ | ● | ★ |
| Streetscape, public open space and public buildings enhance the look and function of the city. | ▬ | ▬ | ▬ | ★ | ★ | ★ | ★ | ★ |
| Strong Community — Transport safety is improved. | ★ | ▬ | ● | ▬ | ☆ (pink star) | ● | ▭ (yellow bar) | ▬ |
| Risks to public health and injury are minimised. | ▬ | ▬ | ● | ▬ | ★ | ● | ▭ (yellow bar) | ☆ (pink star) |
| Prosperous City — Christchurch's infrastructure supports sustainable economic growth. | ● | ★ | ▬ | ★ | ● | ▬ | ● | ● |
| Healthy Environments — Energy is used more efficiently. | ● | ● | ★ | ▬ | ● | ▬ | ★ | ● ● |
| Christchurch is prepared for the future challenges and opportunities for climate change. | ● | ● | ★ | ▬ | ● | ▬ | ★ | ● |

| Direct relationship ● | Indirect relationship ★ | No direct relationship ▬ |
|---|---|---|

**Appendix C – Draft Road Classification System, the Liveable Streets Approach**

# *Appendix C*

# Draft Road Classification System, and Liveable Street Approach

*Christchurch Transport Plan*
*2012 - 2041*

**Christchurch**
City Council

# Appendix C: Draft Road Classification System, the Liveable Streets Approach

## *Introducing the Liveable Streets approach*

### Introduction

A proposed new road classification system, called 'Liveable Streets' is being developed to replace the existing road classification. The Liveable Streets classification system combines and adapts a number of existing approaches. These include a Liveable Arterials Plan - developed by Auckland City Council 2009, the Living Streets Charter - adopted by Christchurch City Council in 2000, and New Zealand Standard 4404:2010 which is the national standard for land subdivision. The following document explains the Liveable Streets classification system further.

### Background

**The Liveable Streets classification system builds on Christchurch's existing link-based road classification system.**

The existing road hierarchy classification system for Christchurch has been used as an important planning tool since the late 1950's. It is integral to the City Plan and sets out how roads are managed and improved. Whilst the existing four level hierarchy (Major Arterial/Minor Arterial/Collector/Local Road) is attractive for its relative simplicity, it would retain a coarseness that would be a significant impediment to reflecting the true diversity of (existing and aspirational) movement functions. Additional 'levels' have been added where it is considered that a distinction would be helpful (e.g. an anticipated range of traffic volumes and/or where an appropriate cross-section to cater for the needs may be distinguishable from an adjacent level). Most terminology has been changed to distinguish the Liveable Streets classification system for the existing system and herald this new approach. The Liveable Streets classification system consists of eight main road types that reflect the link function. The classification for the link function of a road segment is analogous to the existing four-level hierarchy approach. It is however, defined by three main levels, that of Routes, Streets and Ways, which is outlined further in Section 3 of this appendix

**The Liveable Streets Classification system encourages better integration of road network with land use.**

The existing road hierarchy classification system primarily focuses on private vehicle travel, it seldom takes sufficient account of the communities and environment that surround our streets. The Liveable Streets classification system presents a more balanced view of the 'place' (land use) function of streets along with their movement or 'link' function. Six categories that reflect the different 'place' requirements are introduced (Rural, Semi-Rural, Industrial, Residential, Centres and Central City). In reality there are many more dimensions, beyond these six place types however, land use types have been simplified into this six place types in order to avoid the Liveable Streets classification system becoming overly complicated

When the six place types are combined with the eight levels of link function, a two-dimensional array or 'matrix' with 48 potential cells is created (refer to Section 4 for more detail). More detail on the place types is outlined further in Section 6 of this appendix.

**The Liveable Streets Classification system recognises priority routes for each mode, to reduce conflicts.**

The Liveable Streets classification system also recognises the modal networks (freight, cycling, walking, public transport and strategic roads) outlined in the Christchurch Transport Plan. Further information on the principles of the modal networks can be found in Section 5 of this appendix.

### Objectives

The Liveable Streets classification system also has the following objectives:

1. Improved amenity and context sensitive design and management: The design and management of each road segment considers the surrounding conditions and circumstances of each road corridor in order to determine the most appropriate appearance/layout and the appropriate operational management (speed limits, parking restrictions etc).

2. Self explaining roads: The principle of self explaining roads is that drivers are encouraged to naturally adapt their driving style and speed with the design and function of the road/street. The aim being that different classes of roads should be distinctive, and within in each class features such as width of carriageway, road markings, signing, and use of street lighting will be consistent throughout the network. Drivers will perceive the type of road and instinctively know how to behave. The environment effectively provides a 'label' for the particular type of road resulting in less need for separate traffic control devices such as additional traffic signs to regulate traffic behaviour. Such an approach uses simplicity and consistency of design to reduce driver stress and driver error.

**Table 1 shows how the Liveable Streets classification system achieves the Christchurch Transport Plan's goals.**

| Christchurch Transport Strategic Plan Goals | How the Liveable Street classification achieves the CTP's goals |
|---|---|
| Improving access and choice | Provide greater access and modal choice, by defining networks for alternative transport modes. |
| Creating safe, healthy and liveable communities | Recognising the communities that surround the road corridor, through identifying place types. |
| Supporting economic vitality | Continuing to recognise that transport has the important economic role of moving goods and people, by categorising transport links in terms of their movement function through recognising link types. |
| Creating opportunities for environmental enhancements | Encouraging greater use of more sustainable modes (such as walking, cycling and public transport). |

**Link and Place Classification**

The classification system proposes that there are Eight road classifications to represent the 'link' requirements and six area classifications to represent the 'place' requirements.

Link Types

The classification for the link function of a road segment is defined by three main levels: Routes, Streets and Ways.

**Routes** are those corridors that are most important for movement function, particularly at a national, regional and metropolitan level. Routes comprise of 3 main types:

**State Highway Routes** are the corridors of most strategic importance (National, Regional and Sub-regional). These corridors are under the control of the New Zealand Transport Agency. The principle role of state highway routes is the efficient distribution of goods and people. In most cases they will be designed for higher-speed travel. Within urban areas speeds will reflect a balance between the route function and the needs of the surrounding area.

**District Arterial Routes** reflect the next level of through-travel movement. They reflect high demand for longer-distance travel, at a metropolitan (city) level.

**Minor Arterials** do not have a particular strategic importance, nevertheless are important for trips throughout the city. They also have more of an access function than District Arterial Routes. Minor Arterials are considered to be both routes and streets.

Streets make up the remainder of the road network, streets are considered to be more intimate and people friendly environments. Streets comprise of 4 types:

**Main Distributor Streets** are corridors that reflect a lower (through-travel) movement function than arterials but are important in the distribution of trips around the city. They will however also tend to have a higher access function than Arterial Routes.

**Local Distributor Streets** are important for distribution of travel demand at the local, neighbourhood level. This type will generally have traffic volumes higher than a 'typical street' as a result of this function.

**Typical Streets** are characterised by relatively low traffic volumes and less through-traffic movement. Their principal movement role is to provide access to properties, be it a business site or residential area.

**Slow Streets** have low traffic volumes and/or a very high place function. They will most typically be found in places with high pedestrian demand and where the role of pedestrians is considered a priority over traffic.

**Ways** are in effect 'special cases' where it is deemed that a road should be given a unique classification. Reasons for a 'way' designation could relate to access-control, tourist routes, recreational routes etc.

Place Types

'Place' has been defined using 6 classifications:

Rural: Agricultural and undeveloped areas

Semi Rural: the transition between rural and urban and peri-urban

Urban Industrial: Industrial areas and suburban office parks

Urban Residential: Built up area within the city limits including urbanised settlements on Banks Peninsula. Excludes the central city

Urban Centres: Key Activity Centres, retail or commercial centres, significant public facilities (such as the University of Canterbury), and the central city (within and including the four avenues, except for the central business district).

Urban Central Business District: The Compact Central Business District, as defined in the draft Central City Recovery Plan (bounded by Manchester Street, Lichfield Street and the Avon River).

Transport Networks

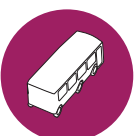The following five transport networks are proposed in the Christchurch Transport Plan:

Strategic roads

Freight routes

Public transport routes

Walking centres

Cycling routes

| | Transport Network Principles and Criteria |
|---|---|
| **Strategic Roads** | **Journey reliability on strategic roads, reducing conflict with adjacent land uses and other modes**<br>· State Highway: Roads that form a nationally strategic purpose in moving people and goods nationwide. State highways provide for longer distance traffic movement, connecting regional centres and are a preferred route to other arterials which have more conflict with adjacent land uses.<br>· District Arterials: Provides for traffic travelling across the city and connections to the state highway.<br>· Minor Arterials: Provides for access to key activity centres and connections to district arterial and state highways. |
| **Freight** | **Freight journey reliability on designated freight routes reducing conflict with adjacent land uses**<br>· Strategic Freight Routes: Provide for national and regional freight movement linking freight hubs, the port and airport to the national network. Routes have been designated to give direct links to the hubs whilst where possible avoiding residential areas.<br>· Local Freight Routes: Provides for local freight access connecting industrial areas to the strategic freight routes.<br>· Supporting Freight Route: Increases resilience on the network by providing for safe, occasional movement of hazardous goods, as an alternative to the Lyttelton tunnel. |
| **Public Transport** | **Attractive and efficient public transport corridors to enable journey reliability on core routes and provide good connectivity with key destinations and other modes**<br>· Core Route: Provides for high patronage and high frequency services connecting key activity centres with local services.<br>· Connection Points: Located where there is the ability to safely and efficiently transfer between core and local services. Connection points are located to enable easy transition to other modes and provide quality infrastructure. |
| **Walking** | **Attractive streetscapes for walking, improving safety and reducing conflict with all other modes**<br>· Central City: provides for the highest pedestrian demand. Good pedestrian connections, following desire lines, to surrounding areas within a 20 min walk.<br>· Centres: Provide good pedestrian access in areas of high pedestrian demand, especially in key activity centres and other commercial and retail centres. Good pedestrian connections, following desire lines to surrounding areas within a 10 min walk.<br>· Safe routes: Within 15 min walk to schools and other key destinations to achieve high level of safety and amenity (applying access for all and CPTED principles).<br>· Recreational route: Off road or quiet routes of recreational value, linking key destinations and recreational areas. |
| **Cycling** | **Attractive cycling network, improving safety, connectivity, visibility and reducing conflict with all other modes**<br>· Major Cycle Routes: High demand cycle routes (by commuter and recreational users) providing direct connections to urban centres, where possible following desire lines from residential areas. Mainly separated from other modes.<br>· Local Cycle Routes: Provide local cycle connections to major cycle routes and within a 15 min ride to schools, and key destinations (community centres, parks, recreational routes). Local cycle routes often on quieter streets, with greater emphasis on speed management, signage, safety and improving cycle lane connectivity.<br>· Recreational Routes: Off road or quiet routes of recreational value, often linking key destinations and recreational areas. |

Street Classification

Figure 1: illustrates the Liveable Streets link type classification system applied within Christchurch.
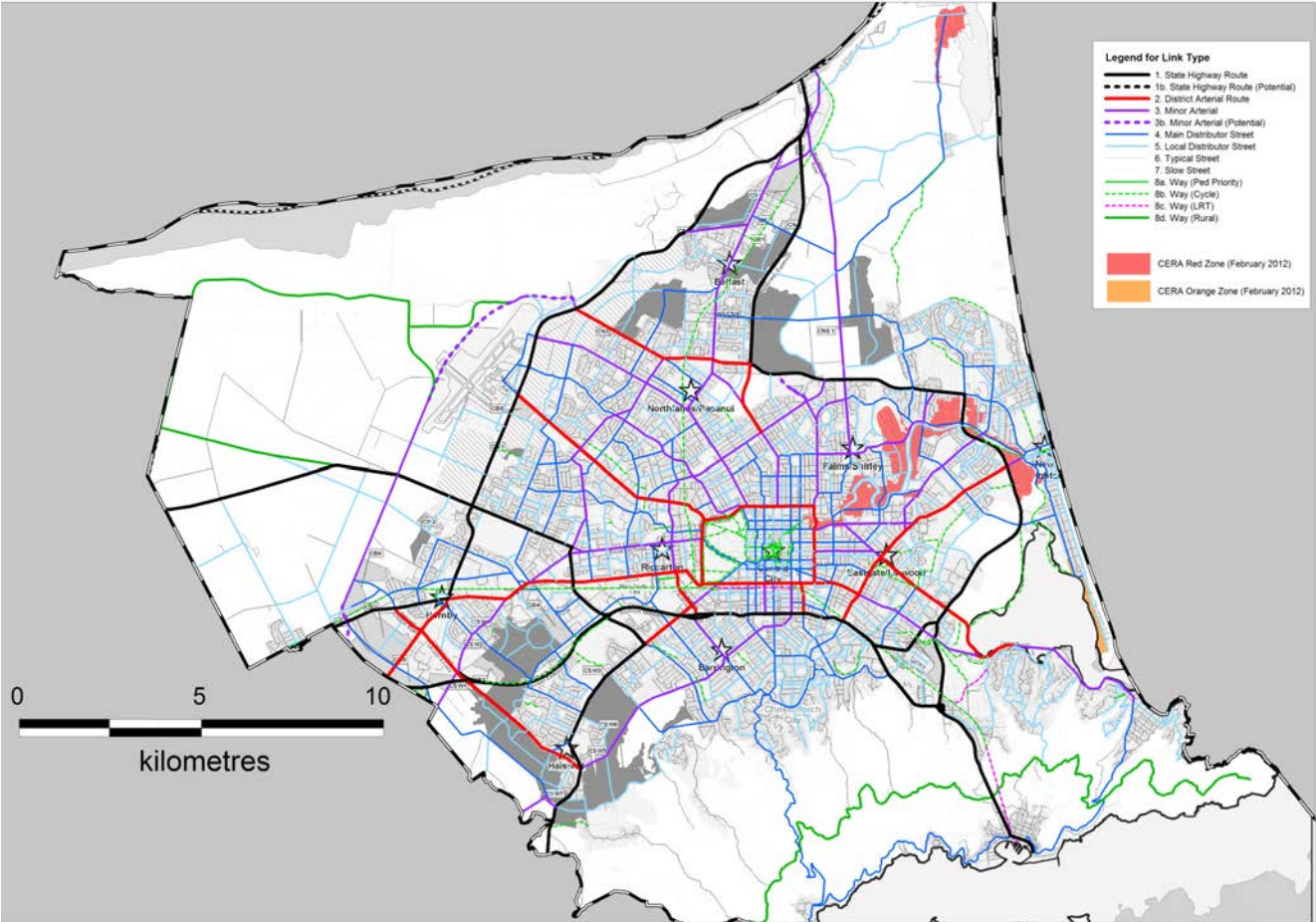
Figure 2: illustrates the Liveable Streets link type classification applied within Banks Peninsula.
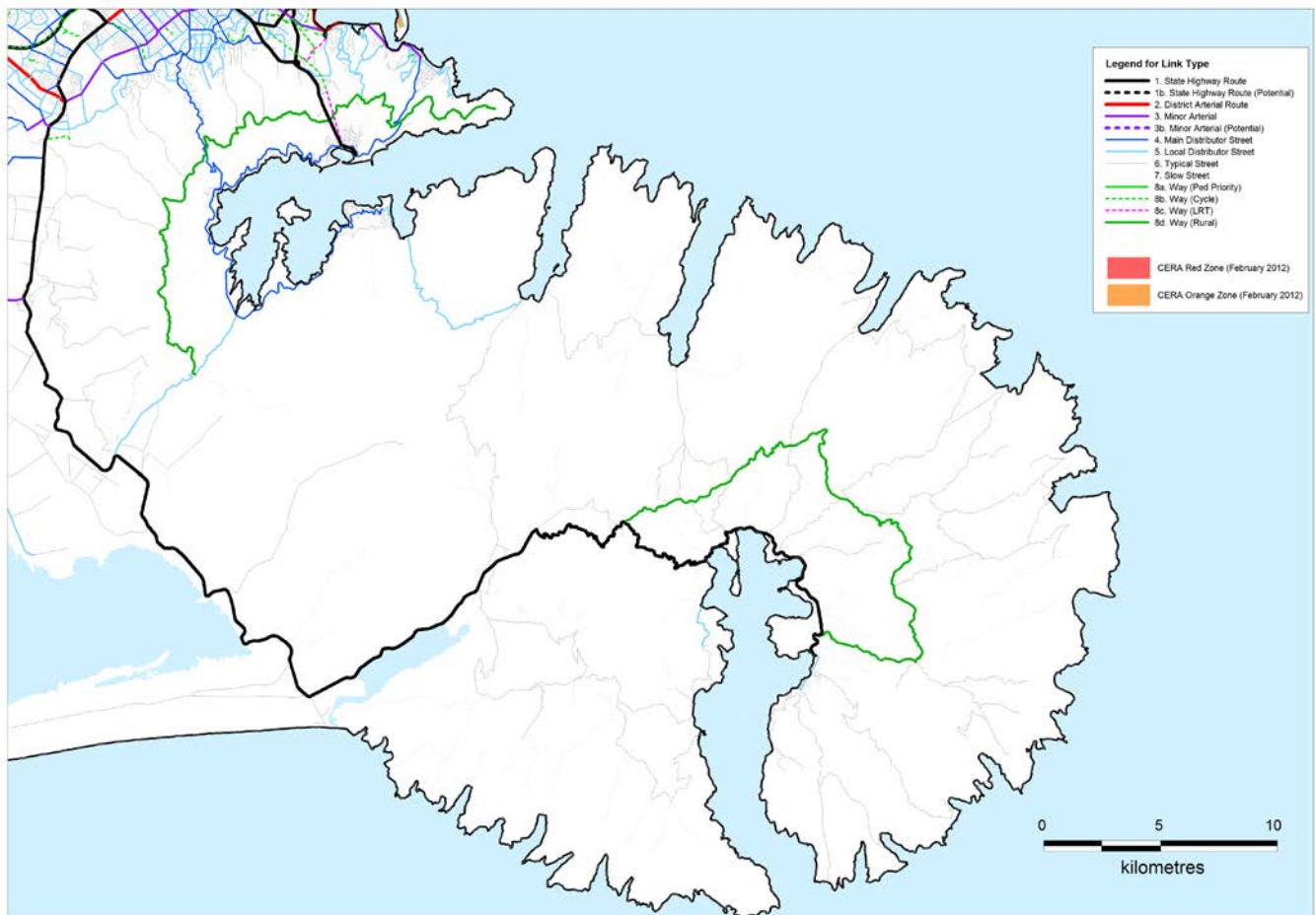
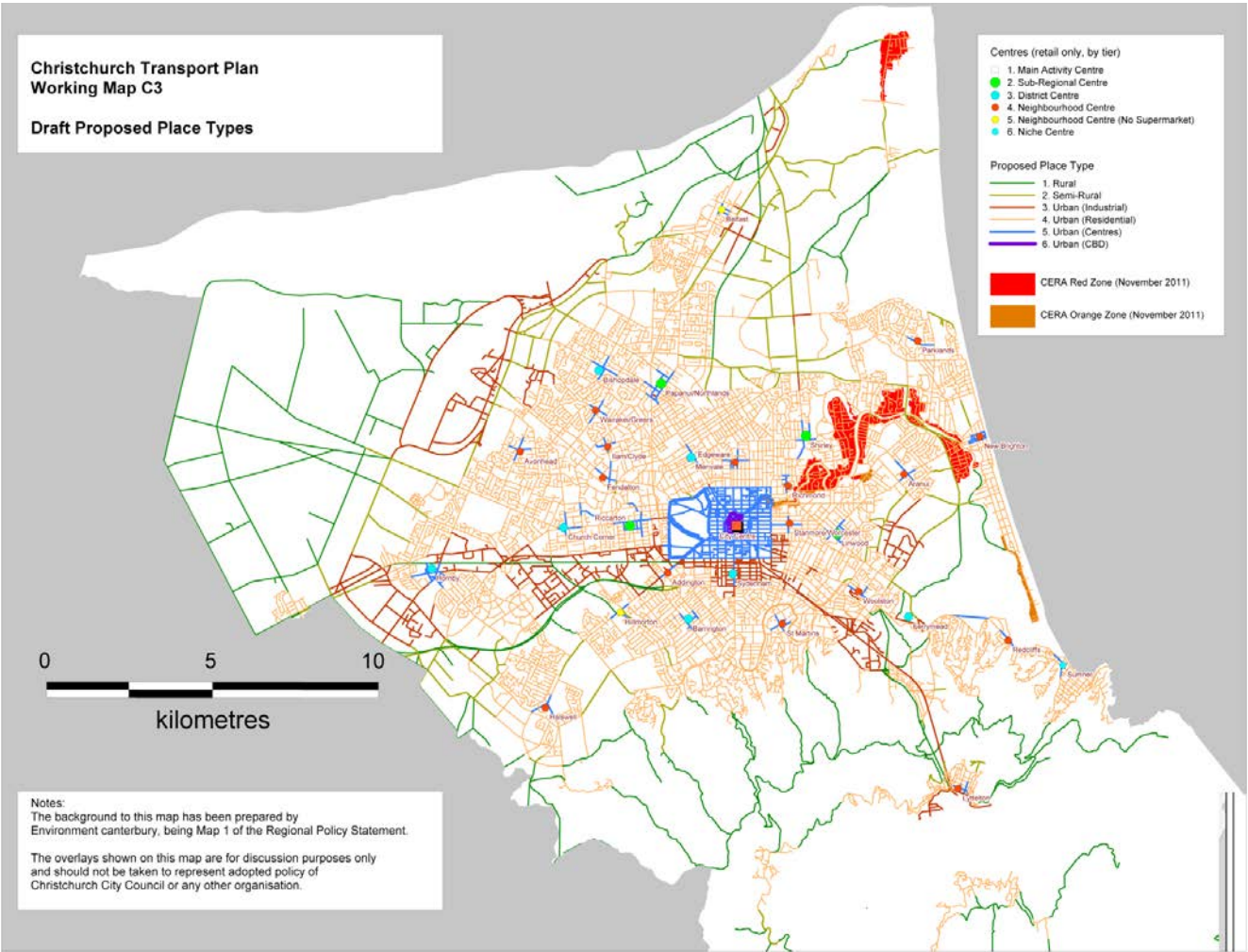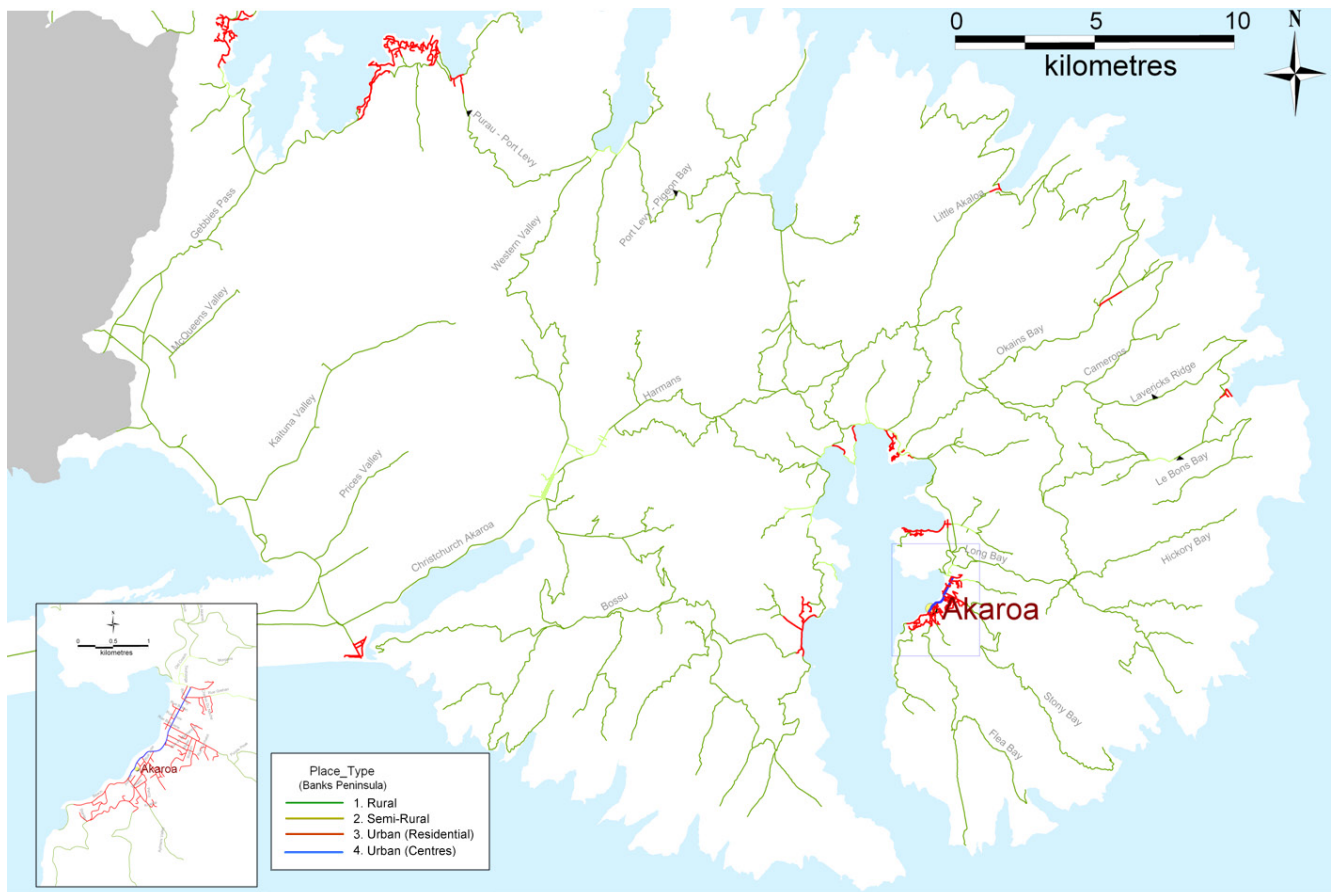Figure 3: illustrates the Liveable Streets place type classification applied within Christchurch.

Figure 4: illustrates the Liveable Streets place type classification applied within Banks Peninsula.

# Levels of Service

In order for the Liveable Streets classification system to operate it is important to identify the levels of service across the network for each transport mode (walking, cycling, public transport, freight and private vehicles). The level of service will be determined for each intersection or street and will be measured by the network operating gap for each mode, the larger the gap, the greater the issue that needs to be addressed. The network gap for each mode will be compared and the mode(s) with the largest gap will require the most improvements in order to achieve the Christchurch Transport Plan's objective of a balanced network.

This tool is largely based on VicRoads 'Smart Roads' approach with some alternations to fit it to the Christchurch Transport Plan's Liveable Streets classification system, and the addition of factors for both safety and accessibility as shown in the equation below.

**Level of Service x Safety x Accessibility x Efficiency x Priority x Growth**

- **Levels of Service (Mobility):** This is similar to the Smart Roads Levels of Service (LoS), which is based on delay and provision at intersections (see Table 1). However, unlike Smart Roads there is an additional table of LoS which looks at the provision for the various modes between intersections (Table 2). This is primarily concerned with lane widths and degree of separation from other modes. It is important to note that an 'A' LoS is not necessarily better than a 'B' LoS, but that a particular LoS will be appropriate to each link and place. This tool will then measure how far from the target LoS a particular intersection or street is.

- **Safety:** A measure of crash rates at an intersection or street, taking into account form, speed, environment and traffic volume.

- **Accessibility:** A measure which rates locations by the time it would take to reach areas with high place function, i.e. urban centres and the central city, by various modes.

- **Efficiency:** This is a Smart Roads measure which multiplies people, or goods, per hour that are moved by each mode within a single lane by a monetary delay value per person, and divides it by a base case value.

- **Priority:** Another Smart Roads measure, prioritising certain modes on particular routes or at particular times of day, depending on the place function of the route, the link function of the route and whether the route is located on a modal network.

- **Growth:** The final Smart Roads measure, this factors in the expected/targeted growth for each mode. This recognises the Christchurch Transport Plan's vision for increased walking, cycling and public transport, as well as the expected increase in freight movements with population and economic growth.

| Table 1: Intersection levels of service | Walking | Cycling | Public Transport | Freight | General Vehicle | Delay |
|---|---|---|---|---|---|---|
| A | Little to no delay, uses on call/ sensor system or default to pedestrian green phase, exclusive crossing phase. | Little to no delay, uses on call/ sensor system or default to cycling green phase, exclusive crossing phase. | Little to no delay, part of green wave, exclusive turning phase. | Little to no delay, part of green wave, exclusive turning phase. | Little to no delay, part of green wave, exclusive turning phase. | = |
| B | Short delay, moderate chance of being stopped, crossing head start provided. | Short delay, moderate chance of being stopped, advanced stop box provided. | Short delay, moderate chance of being stopped, bus priority provided. | Short delay, moderate chance of being stopped. | Short delay, moderate chance of being stopped. | Average waiting time |
| C | Moderate delay, and/or stopped at every signals. | Moderate delay, and/or stopped at every signals. | Moderate delay, and/or stopped at every signals. | Moderate delay, and/or stopped at every signals. | Moderate delay, and/or stopped at every signals. | + |
| D | Long delay, and/or multiple crossing conflicts. | Long delay, and/or multiple crossing conflicts. | Long delay, and/or not all traffic cleared within single phase. | Long delay, and/or not all traffic cleared within single phase. | Long delay, and/or not all traffic cleared within single phase. | Chance of being stopped |
| E | Very long delay, and/or no crossing provision. | Very long delay, and/or no crossing provision. | Very long delay, and/or not all traffic cleared within two phases. | Very long delay, and/or not all traffic cleared within two phases. | Very long delay, and/or not all traffic cleared within two phases. | + |
| F | Extreme delay, and/or barriers to crossing. | Extreme delay, and/or barriers to crossing. | Extreme delay, and/or traffic backed up to previous intersection. | Extreme delay, and/or traffic backed up to previous intersection. | Extreme delay, and/or traffic backed up to previous intersection. | Provision |

# Appendix C – Draft Road Classification System, the Liveable Streets Approach

| Table 1: Link Levels of Service | Walking | Cycling | Public Transport | Freight | General Vehicle | Delay |
|---|---|---|---|---|---|---|
| A | Pedestrian only (ie Car Free) street. | Exclusive and wide separated cycleway or Cycling permitted on a Car free street | Full time and continuous Public Transport Priority lane. | Full time and continuous exclusive Freight Vehicle lane. | Very wide traffic lane, no driveways or parking access. | = |
| B | Shared Space with a low speed environment | Wide marked on-street cycle lane or a narrow separated cycleway or a Shared Space with a low speed environment. | Full time and continuous High Occupancy Vehicle lane. | Full time and continuous Freight Vehicle lane (shared with High Occupancy Vehicles). | Very wide traffic lane, limited driveways or parking access. | Lane width |
| C | Wide footpath, separation from traffic by landscaping. | Narrow marked on-street cycle lane. | Part time and discontinuous High Occupancy Vehicle lane. | Part time and discontinuous Freight Vehicle lane (shared with High Occupancy Vehicles). | Wide traffic lane. | + |
| D | Narrow footpath, little separation from traffic. | Unmarked on-street cycle lane. | Wide shared lane. | Wide shared lane. | Wide shared lane. | Degree of separation |
| E | Narrow footpath, provided on one side of the street only. | Shared traffic lane within a low speed environment. | Narrow shared lane. | Narrow shared lane. | Narrow shared lane. | + |
| F | No footpath provided. | Shared traffic lane within a high speed environment. | Very narrow shared lane. | Very narrow shared lane. | Very narrow shared lane. | Interruptions |

# Next Steps

Further development is needed to complete the road classification.  Future work on the principle elements appropriate for each link / place type will include:

· Indicative speed environment;

· Level of appropriate access–control; and

· Road widths including cycle infrastructure.