THE NEW ZEALAND
TRANSPORT STRATEGY
2008

VISION
OBJECTIVES
TARGETS
CHALLENGES
ACTIONS

sustainability
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PART A: CORE STRATEGY

CHAPTER 1: discusses the overall context for this Strategy and sets out the transport **vision, objectives** and **targets.**

CHAPTER 2: summarises trends in transport, and describes the **key challenges** facing the transport sector that may put at risk the achievement of the vision and targets.

CHAPTER 3: sets out the **key components** of the Strategy. These are strategic priorities for action that will help to overcome the key challenges and deliver the vision and targets by 2040.

PART B: FURTHER GUIDANCE FOR TRANSPORT AGENCIES

CHAPTER 4: sets out the **strategic approach** to delivering each transport objective. This chapter makes reference to the key components, but also recognises other areas of transport activity that will contribute to achieving the transport vision and targets.

CHAPTER 5: sets out **short-term supporting actions** that the government and others will take in the next three years to inform and assist with achieving the vision and targets.

PART C: MONITORING AND REVIEW

CHAPTER 6: sets out the proposals for further developing the targets, the approach to additional research, and the framework for **monitoring** and **reviewing** this Strategy.

CONTENTS

FOREWORD

We all use transport in our daily lives – that is a reality. The challenge we face is to improve the way we travel, so we cause as little damage as possible to the environment and minimise harmful effects on others. At the same time, we need a transport system that will assist economic development, be more accessible to all New Zealanders and that remains affordable.

Since the launch of the first New Zealand Transport Strategy in 2002, we have made progress towards achieving our vision of having 'an affordable, integrated, safe, responsive and sustainable transport system'.

However, greenhouse gas emissions from transport are still responsible for a significant proportion of New Zealand's total emissions and will continue to increase if we do not make further improvements to the way we move around. Urban congestion is increasing, and the number of transport-related deaths that occur each year, despite improvements over the past 30 years, is still far too high.

This updated Strategy introduces targets to address what has become a very different operating environment from the one that existed when the initial Strategy was launched – new challenges will require new measures to address them. Your feedback on the discussion paper leading to this update helped determine the new goals needed to have a truly sustainable transport system – economically, socially and environmentally.

The revised Strategy provides direction for the transport sector over the next 30 years, in line with the government's sustainable development, energy and climate change agendas. It translates that direction into defined targets for the transport sector, sets out actions for achieving those targets and provides context for decisions about funding allocations. We will continue to work with our stakeholders to further refine these actions and targets over the next couple of years – any new developments will be included in future revisions of the Strategy.

Over time, achieving the targets will result in a reduction of emissions because of an increase in the number of hybrid and full electric vehicles on our roads; more people using public transport, walking and cycling; and more transportation of freight by rail and sea. There will also be increased use of renewable fuels, more fuel-efficient technology and improved operating practices. Together these will help achieve the major goal to address climate change: to halve per capita domestic greenhouse gas emissions from transport by 2040.

Another goal is to enhance safety on our roads through improvements to the vehicle fleet and road networks, road safety education and the enforcement of road safety rules. The target is to have no more than 200 road deaths per annum, and no more than 1,500 serious injuries, by 2040. Safety is also vital within the maritime, aviation and rail sectors.

Better transport networks will support and assist long-term economic growth. Key to New Zealand's continued economic prosperity will be maintaining international links, for example by continuing to negotiate new 'open skies' agreements with other countries, and maintaining our commitment to international standards for aviation and maritime security.

Domestically, the focus will be on investment in infrastructure which will improve journey times and journey time reliability on critical routes (particularly for freight). Congestion issues will also continue to be addressed by managing the demand for travel; providing better public transport systems; and encouraging greater use of public transport, walking and cycling. The need to reduce congestion in Auckland is particularly important in fulfilling its potential as a world-class city.

Across all modes, in both domestic and international transport, we intend to take action to tackle shortages of skilled workers.

We must remember too that transport is a means to an end, providing people and freight with access to services, facilities and markets, and not an end in itself. We wish to ensure that all members of the community have access to the services they need and that the transport system supports these needs.

It is a challenging time ahead. Meeting the needs of different industries and people in all communities (from freight movers and vehicle owners to public transport users and those who walk or cycle) is a difficult task. Understanding the issues, collaboration and integration of planning processes will be the key to success.

Ultimately, it will be the willingness of all New Zealanders to make different transport choices that will determine whether or not we meet our goals. Each and every one of us can make a difference.

Hon Annette King
Minister of Transport

SUMMARY

This update of the New Zealand Transport Strategy replaces the previous Strategy published in 2002. It has been developed to enable the transport sector to respond more effectively to the changing environment in which it must operate and to support New Zealand becoming a more sustainable nation.

The Strategy also responds to calls from within the transport sector for more guidance on how the vision for the transport system, established in the 2002 Strategy, should be delivered.

The 2002 Strategy covered the period until 2010. This version takes a longer view and sets the direction for transport to 2040. This reflects the fact that many transport investments have long-term implications and that achieving change will take time.

The Strategy provides direction for all parts of the transport sector. As well as setting out the government's intentions for transport, it provides a framework for the activities of transport Crown entities and guidance for local authorities. It sets the strategic context for the development of Government Policy Statements (GPSs), which will establish the government's funding policy and priorities for land transport development on a three-yearly cycle. The Strategy also provides a long-term plan which will help the private sector to make investment decisions with greater confidence.

There are formidable challenges facing the transport sector. It needs to find affordable ways to support the economic transformation of New Zealand and improve the health, safety, security and accessibility of New Zealanders, while at the same time addressing climate change and other environmental impacts. Business as usual will not lead us to where we want to be in 2040. Successful delivery of this Strategy requires change, and the government is committed to working in partnership with local authorities, businesses and the broader community to deliver that change.

The transport vision and objectives

FIGURE 1: STRATEGIC FRAMEWORK FOR THE
NEW ZEALAND TRANSPORT STRATEGY
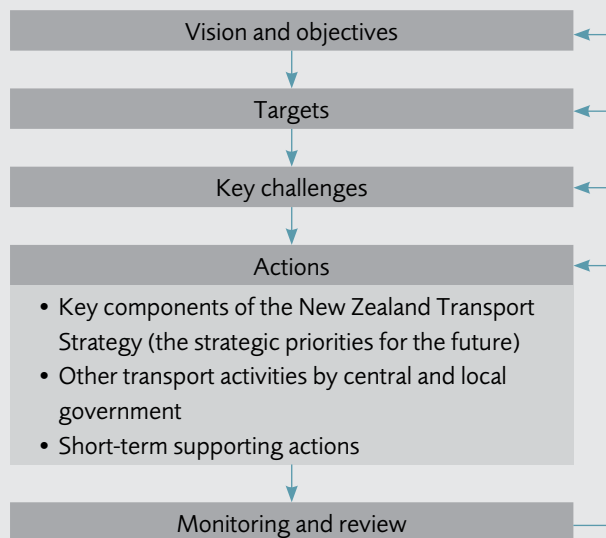
The government's vision for transport in 2040 is that:

'People and freight in New Zealand have access to an affordable, integrated, safe, responsive and sustainable transport system.'

That vision is supported by five transport objectives:

* ensuring environmental sustainability
* assisting economic development
* assisting safety and personal security
* improving access and mobility
* protecting and promoting public health.

The transport sector outcomes provide a more detailed description of these objectives and are set out in Appendix B.

The transport targets

The government has established targets that support the delivery of the transport objectives and provide a focus for many of the government's actions over the life of the Strategy. The targets also give a basis for measuring progress and many contribute to more than one objective. However, the targets do not cover all aspects of the transport system and further detailed targets will need to be developed over the next two years.

TABLE 1: THE TRANSPORT TARGETS

ENSURING ENVIRONMENTAL SUSTAINABILITY
Halve per capita greenhouse gas emissions from domestic transport by 2040[1].
Increase coastal shipping's share of inter-regional freight to 30 percent of tonne-kilometres by 2040.
Increase rail's share of freight to 25 percent of tonne-kilometres by 2040.
Become one of the first countries in the world to widely use electric vehicles.
Reduce the kilometres travelled by single occupancy vehicles, in major urban areas on weekdays, by ten percent per capita by 2015 compared to 2007.
Reduce the rated carbon dioxide (CO_2) emissions per kilometre of combined average new and used vehicles entering the light vehicle fleet to 170 grams CO_2 per kilometre by 2015, with a corresponding reduction in average fuel used per kilometre.
Increase the area of Crown transport land covered with indigenous vegetation.

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1.   Relative to 2007 per capita emissions.

ASSISTING ECONOMIC DEVELOPMENT

For identified critical routes:

- improve reliability of journey times
- reduce average journey times.

ASSISTING SAFETY AND PERSONAL SECURITY

Reduce road deaths to no more than 200 per annum by 2040.

Reduce serious injuries on roads to no more than 1,500 per annum by 2040.

IMPROVING ACCESS AND MOBILITY

Increase use of public transport to seven percent of all trips by 2040 (ie from 111 million boardings in 2006/7 to more than 525 million boardings in 2040).

Increase walking, cycling and other active modes to 30 percent of total trips in urban areas by 2040.

PROTECTING AND PROMOTING PUBLIC HEALTH

Reduce the number of people exposed to health-endangering noise levels from transport.

Reduce the number of people exposed to health-endangering concentrations of air pollution in locations where the impact of transport emissions is significant.

Key challenges

Achieving the targets will not be easy and there are many barriers to progress. In particular, there are seven key challenges that will need to be addressed if the transport vision is to be achieved by 2040. These are:

RESPONDING TO CLIMATE CHANGE

Transport is currently responsible for around one-fifth of New Zealand's greenhouse gas emissions and these emissions are increasing. The government has made the decision to halve per capita domestic transport emissions by 2040. The challenge in moving to a low-carbon transport system is to ensure, at the same time, that it remains affordable and does not adversely affect economic growth or participation in society.

The transport system will also need to adapt to the effects of climate change – the frequency and severity of events such as storms and floods, and sea level rises in the longer term.

ENERGY SECURITY AND COST

Supplies of conventional (cheap) oil are finite and global demand is growing due to rapidly increasing consumption in developing countries such as China and India. In the future, demand will almost certainly exceed supply and prices will rise. Both security of oil supply and price are key challenges for the transport sector in New Zealand, which is highly dependent on fossil fuels. If oil shortages or high costs occur before alternatives can be found, this would have a negative impact on the New Zealand economy. It would also have major implications for the lives of New Zealanders, particularly those on low incomes.

FUNDING OF INVESTMENT IN INFRASTRUCTURE AND SERVICES WHILE KEEPING TRANSPORT AFFORDABLE

Demand for transport is growing. At current rates, the total number of vehicle kilometres travelled on New Zealand roads is expected to increase by around 40 percent by 2040. The amount of freight that is moved is expected to more than double in the same period. This growth will place increasing burdens on the transport system, potentially requiring additional funding for maintenance and the development of new capacity. Despite an increased population, demographic changes will result in relatively fewer 'economically active' people in the workforce and the growth rate for the economy is predicted to slow from 2020 onwards. The challenge will be to invest enough in the transport system to support New Zealand's global competitiveness while ensuring that transport remains affordable for its users.

INCREASES IN THE ENVIRONMENTAL AND SOCIAL IMPACTS OF TRANSPORT

Growth in travel demand over recent years has resulted in undesirable environmental and social effects including congestion, air pollution, carbon emissions and noise. Even road safety, which for years has been improving, in recent times appears to have reached a plateau. Increased travel demand in the future has the potential to significantly worsen these trends. The challenge will be to better understand the public health and local environmental impacts of transport, and to develop fair and cost-effective solutions.

CHANGING DEMANDS ARISING FROM THE AGEING OF THE POPULATION

In the future, owing to demographic changes, there will be a larger number and proportion of older people in the population. A major challenge will be to ensure that the mobility and access needs of those people (as well as people with disabilities and those who are transport disadvantaged[2] in other ways) can continue to be met, particularly in rural areas.

LAND-USE DEVELOPMENT AND ITS IMPACT ON TRANSPORT DEMAND

One of the strong messages from stakeholder feedback in the development of this Strategy was the need for better integration between land-use and transport planning. New Zealand has relatively low density communities compared to many other developed countries. Residential areas are often physically remote from the facilities and services people need. This has created a high demand for transport and a reliance on the car to meet daily mobility needs. Developing better transport links connecting houses with shops, businesses and schools represents a significant challenge. It is essential that future urban growth does not cause unnecessary increases in travel demand or place excessive costs on the transport sector.

GLOBAL TERRORISM

Global terrorism and the security of New Zealand's international transport links are an increasingly important challenge for transport. New Zealand's international trade and tourism depend on secure and efficient global maritime and aviation transport systems. Since 11 September 2001, many new international security measures have been introduced to increase aviation and maritime security. These measures, though necessary, can impose considerable costs on the transport sector, on users of the transport system and on governments.

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2. Members of the community who have the lowest levels of accessibility are sometimes referred to as 'transport disadvantaged'. A range of factors can lead to transport disadvantage which can be temporary or permanent. These include impairment (physical, sensory, neurological, psychiatric and intellectual), illness or injury, affordability, lack of transport facilities, lack of information and fear.

Delivering the vision and targets – the key components of the New Zealand Transport Strategy

Strategic approach

A range of actions by government, including regulation and enforcement, economic incentives, investment in infrastructure and services, and education, can be used to guide the development of the transport system and to deliver the vision and targets. The government will use this full range of measures at different times, and to different degrees, depending on the extent to which the objectives and targets set out within this Strategy are being achieved, as well as the affordability of the solutions that may be required.

Key components

Many of the types of action listed above are already part of existing transport provision, but certain areas require greater emphasis. In the future, the government will apply increased priority to the following seven key components.

INTEGRATED PLANNING

This includes promoting more effective integration between land-use and transport planning, and better urban design. It also involves better integration between different forms of transport to provide a more efficient transport system (eg ensuring freight can be easily transferred from road to rail to shipping).

MAKING BEST USE OF EXISTING NETWORKS AND INFRASTRUCTURE

This involves ensuring that cost-effective measures have been applied to achieve maximum efficiency from the existing network before investment to expand the capacity of, or otherwise improve, infrastructure is considered. Best use also includes retaining strong safety measures such as enforcement and education that apply equally across land, maritime and aviation transport modes.

INVESTING IN CRITICAL INFRASTRUCTURE AND THE TRANSPORT SECTOR WORKFORCE

Sustained investment in transport infrastructure – road, rail, sea and air – is a vital aspect of this Strategy. New Zealand cannot, however, afford to invest equally everywhere. A priority will be improving economically important routes that support tourism and help producers and manufacturers get their goods to market. The government will also continue to place a high priority on key public transport routes, and on investing in Auckland to support its potential as a world-class city. In addition, investment in developing the workforce within the transport sector will be required to address growing shortages of skilled personnel in the sector.

INCREASING THE AVAILABILITY AND USE OF PUBLIC TRANSPORT, CYCLING, WALKING, AND OTHER SHARED AND ACTIVE MODES

Increasing the use of public transport, cycling, walking, and other shared and active modes[3] is important in reducing congestion, fossil fuel consumption and greenhouse gas emissions from transport. Active modes will also contribute to improving public health and the vibrancy of urban areas. Increasing the availability and accessibility of shared and active modes will help improve people's ability to participate in society.

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3.   A shared mode is a vehicle that contains more than one person. Measures that encourage mode sharing include public transport, ridesharing and car pooling schemes. An active mode is when transportation is powered by humans and includes cycling, walking, using a wheelchair, in-line skating and skateboarding.

CONSIDERING OPTIONS FOR CHARGING THAT WILL GENERATE REVENUE FOR INVESTMENT IN TRANSPORT INFRASTRUCTURE AND SERVICES

Revenue for providing and maintaining transport infrastructure and services is primarily raised through charging for road use[4]. Changing the way that this is done could provide a more targeted, efficient and fair way to reflect the actual costs to society of using vehicles, while raising sufficient revenue for transport investment. Options include systems based on distance, time and location of travel, and the type and weight of vehicle. This would have benefits in reducing congestion and carbon emissions. It would also allow drivers of electric vehicles and vehicles using alternative fuels to fairly contribute to the costs of maintaining the transport network, while recognising their lower 'externality' costs[5]. The government will consider options for generating revenue to invest in infrastructure and services by improving the framework for charging over the medium term.

USING NEW TECHNOLOGIES AND FUELS

Technology and new fuels will play a major role in improving the fuel efficiency of the transport system, as well as reducing its reliance on fossil fuels and emissions of harmful pollution. The government has agreed that New Zealand should be one of the first countries to widely use electric vehicles. New technology can also improve the operational performance of the transport system in many other ways (eg improvements to vehicle technology have been responsible for a significant proportion of the reduction in road deaths over the last 30 years).

MAINTAINING AND IMPROVING INTERNATIONAL LINKS

It is essential, for New Zealand's economic prosperity, to maintain and improve international air and maritime links (eg by negotiating 'open skies' agreements for air travel). In addition, New Zealand must comply with increasingly stringent international security and environmental standards. It is critical that New Zealand participates in international forums so that its interests are understood and considered in international agreements relating to safety, security, and environmental standards for travel and transportation.

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4.   In addition to general taxation and local contributions from rates.

5.   The costs to society that transport users do not pay directly for, eg pollution and congestion.

Turning strategy into action

These key components, together with other areas of transport activity by central and local government, will help to achieve the transport vision and targets by 2040. However, the transport needs of different parts of New Zealand vary and different solutions will need to be applied to reflect local conditions. Priorities will also change over time. Detailed policies, proposals for action and funding arrangements will be determined as follows:

- Within the land transport sector, a Government Policy Statement on Land Transport Funding (GPS) will be produced every three years that will set out the levels of funding allocated to different areas of the transport system. The GPS will contain short-term targets. Three-yearly National Land Transport Programmes will give effect to the GPS.

- The government will develop more detailed strategies that set out the specific actions for particular modes or aspects of the transport system. Examples already in place include strategies for walking and cycling, domestic sea freight, rail, State highways, road safety and recreational boating safety. Some of these will need to be updated and additional documents will be required in other areas to implement this Strategy.

- At the regional level, many of the specific actions that will deliver the land transport targets in this Strategy will be set out in Regional Land Transport Strategies (RLTSs) and Regional Land Transport Programmes. RLTSs will also set regional transport targets. A key task for government and local authorities within the regions will be to work together and ensure these regional targets reflect local circumstances and priorities, but are also consistent with the national targets in this Strategy and in the GPS.

- A number of short-term supporting actions have been identified to assist in achieving targets and develop improved responses to transport issues. These actions will be undertaken over the next three years. This work will be led by the government but will involve local authorities and other stakeholders as necessary.

The government will develop a comprehensive action plan by 31 March 2009 that will identify accountabilities and timing for the various actions to implement this Strategy.

Going forwards, the government will continue to work with transport sector stakeholders in a collaborative, accountable and evidence-based manner.

Monitoring and review

This Strategy has established, for the first time, a set of targets to achieve the vision for transport in this country. However, the set of targets is not complete – insufficient data in some cases has meant it has not been possible to set a specific target. Other targets set the broad direction for progress, but have yet to be refined into quantified and measurable targets. Furthermore, there is also a need to develop a set of interim targets that will enable progress to be measured in the short to medium term. The government is committed to strengthening the targets by the time the Strategy is next reviewed in 2010.

Monitoring performance against the targets and wider trends in the transport sector is an important part of this Strategy. Monitoring will enable the identification of areas where progress is on track and those where faster progress is required. A Transport Monitoring Indicator Framework has been developed and will be used to support future reviews of this Strategy. The results of that monitoring will be published at least annually on the Ministry of Transport's website: **www.transport.govt.nz**.

PART A: CORE STRATEGY

Transport **vision** and **objectives** to 2040.

Transport **targets**: these define success at a national level and provide a basis for measuring progress. However the targets are not complete, as there are important areas of activity that currently are not represented by a target. The targets will be further developed in the future to ensure they cover the transport objectives more comprehensively. Where possible, interim targets will also be identified.

Key challenges: these are the factors that threaten the achievement of the transport vision and targets and will need to be addressed.

Key components of the Strategy: these are the strategic priorities – the areas of action that require new or additional focus to address the key challenges facing the sector. The key components do not represent all transport activity – transport agencies deliver many other actions outside these priorities that are important in achieving the vision and targets. However, greater emphasis and, where relevant, a higher priority for funding will apply to these key components.

VISION, OBJECTIVES AND TARGETS – WHERE WE WANT TO BE BY 2040

This Strategy is part of the government's broad vision for a sustainable, prosperous New Zealand, secure in its identity and proud of its achievements. This Chapter describes the transport **vision** and **targets** that support a sustainable New Zealand.

1.1 The role of this Strategy

Transport touches the lives of all New Zealanders and contributes profoundly to the social, economic, environmental and cultural wellbeing of the nation. The transport sector therefore has a major role to play in supporting the government's vision for sustainability. This Strategy provides direction to the sector in fulfilling this role.

There are formidable challenges facing the transport sector. It needs to find affordable ways to support the economic transformation of New Zealand and improve the health, safety, security and accessibility of New Zealanders, while at the same time addressing climate change and other environmental impacts. The first New Zealand Transport Strategy was developed in 2002 to meet these challenges. Since then, global understanding of issues such as climate change has deepened. In addition, there have been calls for government to take a stronger leadership role within the transport sector. The *Next Steps in the Land Transport Sector Review*[6] identified the need to fill the gap between the broad direction for transport outlined in the 2002 Strategy and the actions of individual transport agencies. This update of the Strategy responds to those calls. It sets out the government's vision for the transport system to 2040, and the strategic approach that will be taken to achieve this vision. In doing so, it replaces the 2002 Strategy.

The 2002 Strategy covered the period until 2010. This update takes a longer view and sets the direction for transport to 2040. This reflects the fact that many transport investments have long-term implications and that achieving change will take time.

The Strategy covers all aspects of the transport sector – moving people and freight by air, sea and land. As well as setting out the government's intentions for transport, it provides a framework for the activities of transport Crown entities and guidance for local authorities. It also sets the context for the development of Government Policy Statements on Land Transport Funding (GPS), which will establish the government's funding policy and priorities for land transport on a three-yearly cycle. In addition, the Strategy provides a long-term plan which will help the private sector to make investment decisions with greater confidence.

GOVERNMENT POLICY STATEMENT ON LAND TRANSPORT FUNDING

The Government Policy Statement (GPS) will ensure that funding and planning for land transport contribute to the objectives set out in this Strategy. The GPS will be issued on a three-yearly basis. It will set short-term targets directly related to the relevant long-term targets set out in this Strategy. The GPS will establish the funding ranges by activity class, or investment category, for the first six years and forecast funding ranges for the following four years.

The GPS will have an impact on the funding regional and local councils are likely to receive from the National Land Transport Fund. In doing so, it will directly influence the transport programmes prepared by local authorities and provide the basis for the New Zealand Transport Agency's funding decisions.

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6.   In January 2007, the State Services Commission led this review and reported in April 2007. It was the last in a series of reviews designed to ensure value for money in the land transport sector. The review recommended a number of changes to the sector including significant amendments to the planning and funding systems for land transport, and creating a new Crown entity to replace Land Transport New Zealand and Transit New Zealand. The New Zealand Transport Agency has consequently been established under the *Land Transport Management Amendment Act 2008*.

1.2 How this Strategy was developed

Transport is important for many areas of government policy and this document has been influenced by a number of existing government strategies[7]. In addition, there has been an extensive process of stakeholder engagement. This process included the release of the discussion paper *Sustainable Transport* in December 2007, which set out a number of draft targets. It was used to engage stakeholders in discussions on the issues facing the transport sector, the targets and the best ways these might be delivered. In total, 172 submissions were received in response to the discussion paper, reflecting a high degree of interest in the future of transport in New Zealand. A number of stakeholder engagement meetings and events were also held including two major multi-agency workshops, discussions with most Regional Land Transport Committees and bilateral discussions with a range of agencies.

In developing this Strategy, stakeholder engagement has been complemented by monitoring of transport trends, transport modelling and other research from within New Zealand and overseas.

1.3 Strategic framework – vision and objectives

The strategic framework set out in this document includes the vision and objectives for transport; specific targets that will allow measurement of progress in delivering the Strategy; the key challenges that put the achievement of the vision and targets at risk; the actions that are required to move forward; and the monitoring and review proposals. These are represented as follows:

FIGURE 1: STRATEGIC FRAMEWORK FOR THE NEW ZEALAND TRANSPORT STRATEGY

Vision and objectives

Targets

Key challenges

Actions
- Key components of the New Zealand Transport Strategy (the strategic priorities for the future)
- Other transport activity by central and local government
- Short term supporting actions

Monitoring and review

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7.   Section 1.7 provides a list of the relevant strategies.

1.3.1   VISION

The government's vision for transport in 2040 is that:

'People and freight in New Zealand have access to an affordable, integrated, safe, responsive and sustainable transport system.'

This vision is based on the following principles:

Affordable – the transport system needs to be affordable for individuals, households, businesses, regions, local government and central government. A key component of affordability is the need for all investments in transport to be cost-effective and represent value for money.

Integrated – the transport system needs integration between different forms of transport, so that travel from one end of a journey to the other is straightforward and seamless. Transport and land-use planning must also be integrated so that demand for travel is managed and public investment is used efficiently.

Safe – the transport system needs to be based on design, operating and maintenance standards that protect people and property.

Responsive – the transport system needs to be responsive to users by recognising that people wish to travel and move freight at different times and by different modes. It must also be prepared for, and able to recover well from, unforeseen events (such as floods and earthquakes).

Sustainable – the transport system needs to contribute to achieving New Zealand's economic, social, environmental and cultural goals for the benefit of current and future generations.

Further details on the principles for transport to 2040 are provided in Appendix A.

1.3.2   OBJECTIVES

This Strategy retains the five transport objectives from the 2002 Strategy. These are:

- ensuring environmental sustainability
- assisting economic development
- assisting safety and personal security
- improving access and mobility
- protecting and promoting public health.

These objectives have equal importance and it is expected that progress will be made on all of them over time. However, the need for transport to be more responsive to issues, such as climate change, means there will be a focus on achieving better environmental outcomes in the short to medium term. Government transport agencies that develop land transport programmes are legally required to consider the impact of their activities on the objectives. More widely, it is expected that central and local government decision-making on the development of the transport system will, collectively, contribute to all of the objectives.

A number of the transport sector outcomes are set out in Appendix B. These provide a more detailed description of what the government wishes to achieve in relation to each objective. The transport sector outcomes have a particular role in defining and measuring the work of transport Crown entities.

1.4 Targets

The transport targets are set out below under the five transport objectives[8]:

TABLE 1: THE TRANSPORT TARGETS

ENSURING ENVIRONMENTAL SUSTAINABILITY

Halve per capita greenhouse gas emissions from domestic transport by 2040[9].

Increase coastal shipping's share of inter-regional freight to 30 percent of tonne-kilometres by 2040.

Increase rail's share of freight to 25 percent of tonne-kilometres by 2040.

Become one of the first countries in the world to widely use electric vehicles.

Reduce the kilometres travelled by single occupancy vehicles, in major urban areas on weekdays, by ten percent per capita by 2015 compared to 2007.

Reduce the rated CO_2 emissions per kilometre of combined average new and used vehicles entering the light vehicle fleet to 170 grams CO_2 per kilometre by 2015, with a corresponding reduction in average fuel used per kilometre.

Increase the area of Crown transport land covered with indigenous vegetation.

ASSISTING ECONOMIC DEVELOPMENT

For identified critical routes:
- improve reliability of journey times
- reduce average journey times.

ASSISTING SAFETY AND PERSONAL SECURITY

Reduce road deaths to no more than 200 per annum by 2040.

Reduce serious injuries on roads to no more than 1,500 per annum by 2040.

IMPROVING ACCESS AND MOBILITY

Increase use of public transport to seven percent of all trips by 2040 (ie from 111 million boardings in 2006/7 to more than 525 million boardings in 2040).

Increase walking, cycling and other active modes to 30 percent of total trips in urban areas by 2040.

PROTECTING AND PROMOTING PUBLIC HEALTH

Reduce the number of people exposed to health-endangering noise levels from transport.

Reduce the number of people exposed to health-endangering concentrations of air pollution in locations where the impact of transport emissions is significant.

These targets have been selected to cover all transport objectives and, where possible, to provide practical mechanisms to measure progress with delivering the vision. They draw on research, monitoring, modelling, and the views of stakeholders. The specific rationale for choosing each target is provided in Appendix C.

As set out in section 6.2 the target framework will require development and refinement to provide a comprehensive tool for measuring and managing progress. This will be undertaken, in collaboration with stakeholders, for the next update of the Strategy in 2010.

8.   Although targets have been grouped under specific objectives, many targets contribute to a number of objectives.
9.   Relative to 2007 per capita emissions.

1.5 Treaty of Waitangi

The Treaty of Waitangi is a founding document of
New Zealand. The government is committed to upholding
the principles of the Treaty. Central to these principles is
that Māori have a special relationship with their ancestral
lands, water, sites, wāhi tapu and other taonga. Transport
planning and decision-making needs to take account of that
relationship, as well as the more general needs of Māori
communities. Therefore the government is committed to
ensuring that Māori are involved in making decisions about
transport that affect their cultural, economic, environmental
and social well-being.

The Land Transport Management Act 2003 provides
specific opportunities for Māori to participate in decision-
making processes about land transport and for approved
organisations[10] to foster the development of Māori capacity
to contribute to these processes.

1.6 Partnership, delivery, funding and regional targets

While the vision describes the desired future transport system
for New Zealand, that system can only be achieved through
the combined efforts of all transport stakeholders. Transport
provision in New Zealand is a partnership, and central and
local government, private businesses, non-government
organisations and individuals all have a role to play in moving
towards a sustainable transport system in the future.

Central government is responsible for setting the strategic
policy and regulatory framework for transport in New
Zealand. It also provides a proportion of the funding for
investment in transport infrastructure and services which
comes from both general taxation and charges for road use.
The New Zealand Transport Agency manages the State
highway network and ONTRACK manages rail infrastructure.
Other transport Crown entities and the police service also
play a critical role in enforcement and inspection activities
in the air, maritime, rail and road sectors.

Local government leads in planning and providing local
transport. Territorial authorities (TAs) own and manage
local roads, and have financial interests in some ports and
airports. Regional councils commission public transport
services and have a major role working with TAs and
Regional Transport Committees in developing Regional
Land Transport Strategies and Regional Land Transport
Programmes. Special arrangements apply in Auckland, with
the Auckland Regional Transport Authority (ARTA) having
a particular role in transport planning and funding. Most
local transport provision attracts financial support from
central government via the National Land Transport
Programme. As set out in section 1.1 above, in future
the GPS will set funding levels.

Private sector businesses operate ports, airports, sea, road
and air freight services, bus, passenger air and taxi services,
and many of the support services that the transport sector
needs. Some services, such as community buses, are
provided by the voluntary sector.

Partnership is particularly important between central and
local government. Furthermore, as stakeholders made clear
in the development of this Strategy, one of the vital elements
in making this partnership work relates to funding of local
transport. It is important to achieve an appropriate balance
between the costs that fall respectively on transport users
and taxpayers on the one hand, and local ratepayers on the
other. In the future, the Regional Fuel Tax[11] established by
the *Land Transport Management Amendment Act 2008* will
provide a new mechanism for local government to generate
revenue for local projects from transport users.

The government will carefully consider the views of local
government on funding issues. It will be important to develop
an appropriate balance between the national priorities and
targets set in this Strategy, and those adopted by local
government in Regional Land Transport Strategies and Long
Term Council Community Plans. The future aim will be for the
government and regions to develop regional targets that meet
local aspirations, but also ensure that national targets are met
when all regional contributions have been added together.

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10.   Organisations that are eligible to receive funding from the New Zealand Transport Agency
for land transport activities. Defined in the Land Transport Management Act 2003 as
including regional councils, territorial authorities or a public organisation approved by the
Governor-General by order in council.

11.   Regional fuel tax is a tool available to regions for high priority projects that would not
otherwise get national funding within a timeframe desired by the region. The tax is a
supplement to normal fuel excise duty.

1.7 Relationship between this Strategy and other government priorities and strategies

Through its role in facilitating the movement of people and freight, the transport system can make a broad contribution to the government's priorities that determine New Zealand's development as a sustainable nation (ie economic transformation, families - young and old, and national identity). In particular, it will contribute to the following government strategies.

THE NEW ZEALAND ENERGY STRATEGY AND THE NEW ZEALAND ENERGY EFFICIENCY AND CONSERVATION STRATEGY

The government released the New Zealand Energy Strategy (NZES) and the New Zealand Energy Efficiency and Conservation Strategy (NZEECS) in October 2007. The NZES sets the strategic direction for the energy sector to contribute to New Zealand's future prosperity and sustainability. It specifically responds to the challenges of providing enough energy to meet the needs of a growing economy, maintaining security of supply and reducing greenhouse gas emissions (from electricity produced by burning fossil fuels). The NZEECS is the government's action plan to maximise energy efficiency and renewable energy. It includes a number of transport actions, some of which have been incorporated into this Strategy.

In the NZES, the government has made a decision (in principle) to halve per capita greenhouse gas emissions from domestic transport by 2040. It sets out five action areas for transport, in addition to emissions trading, that will do so. These are:

- managing demand for travel
- shifting to more efficient and/or lower impact means of transport
- improving the fuel efficiency of the vehicle fleet
- developing and adopting future fuels
- ensuring the security of short-term oil supplies and a diverse supply of transport fuels.

This transport Strategy builds on the work already undertaken in the transport related components of the NZES and NZEECS.

The Emissions Trading Scheme (ETS) for greenhouse gas emissions is also part of the government's response to climate change. In the transport sector, the ETS will cover liquid fossil fuels used in New Zealand including petrol, diesel, aviation gasoline, jet kerosene, light fuel oil and heavy fuel oil[12].

The ETS, when introduced, will apply as far up the supply chain as possible (eg refined oil products, as they leave the refinery or are imported). It is expected that the cost of emission units[13] will be passed on to consumers.

The objective of the ETS in New Zealand is to support and encourage global efforts to reduce greenhouse gas emissions by:

- reducing New Zealand's net emissions below business-as-usual levels
- complying with international obligations (including those in the Kyoto Protocol) while maintaining economic flexibility, equity and environmental integrity at least cost in the long term.

OTHER STRATEGIES

Other national and local government strategies that impact on, or are affected by, transport policy include:

- the New Zealand Disability Strategy
- the New Zealand Tourism Strategy
- the New Zealand Positive Ageing Strategy
- the New Zealand Housing Strategy
- the New Zealand Injury Prevention Strategy
- the New Zealand Health Strategy
- the Digital Strategy
- the New Zealand Urban Design Protocol
- the New Zealand Waste Strategy
- the Biosecurity Strategy for New Zealand
- Regional Growth Strategies, Regional Land Transport Strategies, Long Term Council Community Plans, and other strategies and programmes developed by local government.

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12.   For more information please go to www.climatechange.govt.nz.

13.   Also known as carbon credits.

Chapter 1 set out the vision and targets for transport up to 2040. The ability to achieve this vision will be affected by a range of factors – both domestic and international. Understanding these **key challenges** is essential if appropriate responses are to be developed.

2.1 Context

2.1.1 HISTORIC CONTEXT AND TRANSPORT TRENDS IN NEW ZEALAND

New Zealand is a recently settled country. Settlement patterns over the past 100 years have been heavily influenced by the increasing availability of motor vehicles. Despite traditionally being a pastoral economy, New Zealand has experienced a strong population drift from rural to urban areas throughout this time and is now a highly urbanised society. Almost three-quarters of New Zealanders live in the 16 largest urban areas[14] and over 86 percent of New Zealanders live in towns and cities with a population of 1,000 or more.

For much of the last 30 years, greater prosperity has led to an increased need to travel, resulting in rapid growth of car ownership and use. Transport policies have focused on meeting this demand. Businesses have also sought better access to markets in an ever more competitive global economy. Because of this, road traffic has steadily grown. New Zealand's transport system is now highly dependent on roads which are, for example, used to move approximately two-thirds of domestic freight. There has also been a rapid increase in domestic and international air traffic.

Despite this growth in demand, until recently New Zealand's investment in transport infrastructure has been relatively low as a proportion of GDP compared to other OECD countries. This situation is compounded by New Zealand's often difficult terrain and comparatively low population. Consequently, the country is behind many of its competitors in the basic provision of transport infrastructure and there is a need to 'catch up'[15]. In the last five years the levels of investment, particularly in State highways, have grown significantly. If New Zealand is to keep up with global competitors, the level of investment in transport will need to be maintained.

The following table sets out some of the key trends and statistics relating to the New Zealand transport sector[16]. Sources of data are available from the Ministry of Transport.

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14.   At 30 June 2006, Statistics New Zealand.

15.   A World Economic Forum report in 2007 placed New Zealand at 20th out of 30 OECD countries on the state of its ground infrastructure (the quality of roads, railroads and ports, as well as the extent to which the national transport network offers efficient, accessible transportation to key business centres and tourist attractions).

16.   Further information on transport trends can be found in the Transport Monitoring Indicators Framework on www.transport.govt.nz.

TABLE 2: KEY TRENDS AND STATISTICS RELATING TO THE TRANSPORT SECTOR

Emission levels	• Greenhouse gas emissions from transport increased by 64 percent in the period 1990 - 2006 and currently make up 18 percent of New Zealand's total emissions. • Harmful vehicle emissions in New Zealand have been estimated to contribute to the premature mortality of approximately 500 people per year. • In Auckland, each year, around 45 percent of all PM_{10} emissions, 85 percent of all CO_2 emissions, 80 percent of all NO_X emissions and 65 percent of all SO_2 emissions come from transport[17].
Personal land based transport	• New Zealand has one of the highest levels of per capita vehicle ownership in the world, with over 700 vehicles per 1000 people. • Overall travel distance (for cars, buses and bicycles) on roads per household has increased by 14 percent between 1997/8 and 2003-6, an average increase of 1.8 percent per year. The New Zealand population increased by seven percent during this period. • The predominant users of roads, accounting for about 80 percent of road traffic, are people in cars. About 90 percent of people travelling to work in cars do so alone. • Road congestion in Auckland is occurring outside traditional peak periods and is estimated to cost the economy approximately $750 to $900 million per annum. • Bus boardings have increased around 30 percent since 2000/1, from 68 to 90 million. • It is estimated that in Auckland approximately 5.7 million passengers travelled on the city's rail network in the year ending June 2007. This is an increase from 2.3 million passengers in the year 2000. • Between the years 1990 and 1998, there was a decrease of 39 percent in the number of cycling trips as a form of household travel. The decline in cycling trips is most apparent among the young.
Freight	• Road freight tonne-kilometres has increased by 34 percent since 2000. • Rail currently moves 18 percent of freight (in tonne-kilometres) within New Zealand. Coastal shipping moves 15 percent of inter-regional freight (in tonne-kilometres). • New Zealand has experienced a trend towards fewer, but larger ships in the sea freight sector. Between 2002 and 2007, the average number of vessels arriving in ports each month reduced from approximately 600 to below 500. However, in the same period, the total gross tonnage of freight increased from approximately 2.2 to 4.2 million tonnes. • In the period 2000 – 2007, there was 14 percent growth in value of New Zealand exports carried by air and eight percent growth in value of imports.
Aviation – passengers	• In 2000 (on average each week) 119,000 people flew within, or to and from, New Zealand on 840 flights. This increased in 2007 to 172,000 people on 1,130 flights.
Safety	• The number of deaths on the roads each year has halved since the early 1970s and there has been a steady decline since the late 1980s. However, this decline in the past five years has slowed and may have levelled out at around 400 deaths per year. Hospital admissions from road crashes have started to increase in the last few years. • Deaths in the rail, maritime and aviation sectors are fewer than on roads with an average of 18, 24 and 12 deaths per annum respectively.

17. PM_{10} – particulates with a diameter of around 10 microns (a harmful component of vehicle pollution, particularly from diesel vehicles). CO_2 – carbon dioxide. NO_X – various oxides of nitrogen which are harmful pollutants. SO_2 – sulpur dioxide, another harmful pollutant.

2.1.2   FUTURE DRIVERS OF CHANGE

The use and development of the transport system in the future will be strongly influenced by a number of factors – drivers of change – over which New Zealand has only limited control. These drivers of change will affect demand for transport and shape the options available to manage that demand. Six key drivers of change for New Zealand's transport system have been identified: demographics, economic performance, rising demand for transport, climate change, energy security and cost, and technological change. Further information on each key driver is outlined below.

DEMOGRAPHICS

New Zealand's population is projected to grow from 4.2 million today to about 5.3 million in 2041[18]. This population growth is expected to continue to be concentrated in the North Island with two-thirds of the growth likely to be in Auckland. The Bay of Plenty, Waikato and Nelson-Tasman regions are also expected to experience strong population growth. By 2031, 38 percent of New Zealanders could be living in Auckland and by 2050, Auckland is expected to be home to two million people.

New Zealand is also experiencing a demographic shift. The population is ageing due to falling birth rates and increasing life expectancy. In 2001, 12 percent of New Zealanders were aged 65 and over, and that figure is projected to reach 24 percent in 2041.

ECONOMIC PERFORMANCE

New Zealand is a trading nation whose economic future is closely linked to the international economy. New Zealand's network of trading partners is changing with increased globalisation and the rise of China and India as major economies. The greater number and diversity of potential trading partners will provide New Zealand with increased resilience to disturbances in different parts of the global economy.

Transport-dependent industries such as agriculture and forestry are likely to remain the mainstay of New Zealand's exports for some time to come. Tourism is one of the world's fastest-growing industries and is also an important part of the New Zealand economy. New Zealand's international visitor arrivals for the year ending March 2008 were 2.5 million and are expected to reach 3.4 million annually by 2015[19].

The Treasury long-term GDP forecasts are that the economy will grow by 36 percent in real terms between now and 2020. Growth is then forecast to slow to half this rate for each of the two decades after that[20]. This lower rate reflects the further ageing of the population. Despite this slowdown, economic growth is likely to result in higher transport demand in the future.

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18.   Medium Term Population Projection, Statistics New Zealand.

19.   New Zealand Tourism Strategy 2015.
20.   19 percent GDP growth is forecast for 2020 –2030 and 18 percent for 2030 –2040.

RISING DEMAND FOR TRANSPORT

Rising population and growth in the economy are predicted to lead to a significant increase in transport demand in the future. At current rates, the total number of kilometres travelled by vehicles on roads in New Zealand is expected to increase by approximately 42 percent by 2040[21]. Growth in freight transport is projected to be even higher – with the freight task[22] expected to more than double by 2040. Similar growth could occur with other scenarios. Such growth in demand will place significant burdens on the transport network and could harm economic competitiveness as a result of congestion. It may also adversely affect the social and environmental wellbeing of New Zealanders because of safety, noise, air pollution and other effects.

CLIMATE CHANGE

There is now much greater awareness of the implications of climate change and the contribution that increasing travel demand has made to New Zealand's greenhouse gas emissions. Transport accounts for around one-fifth of New Zealand's total emissions. New Zealand has made clear its intention to play its part in the global response to climate change, in particular by meeting its Kyoto Protocol commitments. The need to reduce emissions from transport therefore represents a major driver of change. New Zealand's response to climate change will both inform and be informed by international policy developments in this area.

ENERGY SECURITY AND COST

As set out in the New Zealand Energy Strategy, supplies of conventional (cheap) oil are finite, and global demand is growing due to rapidly increasing consumption in developing countries such as China and India. The International Energy Agency (IEA) expects demand for oil to grow by 41 percent by 2030. In its 2006 Medium Term Oil Report[23], the IEA states that world oil markets may come under increasing pressure due to supply constraints within the next five years and prices are likely to rise. While this may stimulate extraction of oil from currently uneconomic sources, there may be disruptions in supply and ongoing cost increases in the future.

TECHNOLOGICAL CHANGE

Transport technologies will continue to evolve, with vehicles becoming more fuel efficient and producing fewer greenhouse gas and other harmful emissions. New technologies, such as electric cars and alternative fuels, are currently under development. Some of these are expected to go into commercial production over the next five to ten years. Significant uptake of many of these technologies will require investment in new infrastructure such as distribution networks for biofuels and charging networks for electric vehicles. The decisions of exporting countries, especially Japan, to shift the manufacture of cars to new technologies will be important for New Zealand as an importer of new and second-hand vehicles.

Developments in aviation technology are also important, given the growing concern about the impacts of greenhouse gas emissions from air travel and the limited prospects of developing alternative propulsion technologies for aircraft. The development of alternative liquid aviation fuels, such as sustainable biofuels, is therefore highly desirable.

Technological innovation will also drive improvement in other areas, eg more widespread use of global positioning systems for improving the efficiency of freight movement.

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21. Based on modelling using the Ministry of Economic Development 2008 'Net Positions' analysis, ie:
  • oil at US$100 a barrel until 2040
  • New Zealand currency dropping to NZ$1 = US$0.60 by 2012
  • the Emissions Trading Scheme in place
  • GDP growth as per Treasury long-term forecast ie 19 percent over 2020-2030 and 18 percent over 2030-2040.
22. The amount of freight that needs to be transported.

23. IEA World Energy Outlook 2006, Paris.

2.2 Key challenges

The analysis of the historical context for the New Zealand transport system, the likely future drivers of change and feedback from stakeholders have led to the identification of the following seven key challenges for the transport sector in the next 30 years:

• responding to climate change

• energy security and cost

• funding of investment in infrastructure and services while keeping transport affordable

• increases in the environmental and social impacts of transport

• changing demands arising from the ageing of the population

• land-use development and its impact on transport demand

• global terrorism.

2.2.1 RESPONDING TO CLIMATE CHANGE

The government has made the decision to halve per capita emissions from domestic transport by 2040. Although demand for transport is increasing, particularly in the freight sector, this target is achievable through a combination of technological and behavioural change. However, some stakeholders in the development of this Strategy expressed concerns about the effects this might have on economic performance, accessibility and the affordability of the transport system. The challenge in moving to a low-carbon transport system is to ensure adverse effects on other objectives are minimised.

The transport system will also need to adapt to the effects of climate change, eg the frequency and severity of extreme weather events such as storms and floods, and sea level rises in the longer term.

2.2.2 ENERGY SECURITY AND COST

New Zealand, as elsewhere, is highly dependent on fossil fuels such as petrol and diesel for transport. As such, the nation is vulnerable to potential fuel supply disruptions and future cost increases. If oil shortages or high costs occur before alternatives can be found, they would have an

adverse impact on the New Zealand economy. This may lead to decreased funding available for transport services and investment in transport infrastructure. High oil costs may increase the price of commodities that require a lot of energy to produce such as concrete and steel, as well as products made from oil such as bitumen. This would, in turn, increase costs for the transport sector. The costs of public transport services that use fossil fuels would also increase. Equally, high oil prices would have major implications for tourism, business, the price of goods that need to be transported and the ability of New Zealanders to get around. Those on low incomes are particularly vulnerable.

The challenge for New Zealand is to decrease energy use in the transport sector, while moving to sources of energy that are not based on fossil fuels, and are less vulnerable to changing international prices and availability. Although this is a key challenge, New Zealand is relatively well placed to do this because of its potential to generate renewable electricity and, in the future, to produce sustainable biofuels.

2.2.3 FUNDING OF INVESTMENT IN INFRASTRUCTURE AND SERVICES WHILE KEEPING TRANSPORT AFFORDABLE

Growth in travel demand, particularly for moving freight, will place increasing strain on the transport system, potentially requiring additional funding for maintenance and the development of new transport capacity. If travel demand continues to grow, it will be difficult to meet these costs in the future while also ensuring that transport remains affordable. Although increasing, New Zealand's population is ageing. This will result in relatively fewer 'economically active' people in the workforce and a greater proportion of people reliant on retirement incomes. In addition, the growth rate for the economy is predicted to slow from 2020 onwards.

The challenge will be to maintain the investment in the transport system necessary to support New Zealand's global competitiveness while ensuring that it remains affordable for its users. This challenge will also increase the focus on achieving value for money in every investment made and on the role of travel demand management to reduce the need for new infrastructure.

2.2.4   INCREASES IN THE ENVIRONMENTAL AND SOCIAL IMPACTS OF TRANSPORT

Growth in travel demand over recent years has resulted in undesirable environmental and social effects including road congestion, air pollution, carbon emissions and noise. Even road safety, which has for years been improving, appears to have reached a plateau. As noted above, travel demand is expected to increase considerably in the future and this has the potential to significantly worsen these trends. Although technological change such as vehicle improvements will help address some of these impacts, other solutions such as safety improvements or noise walls[25] are expensive. The challenge will be to better understand these social and environmental impacts of transport, and to develop fair and cost-effective solutions.

2.2.5   CHANGING DEMANDS ARISING FROM THE AGEING OF THE POPULATION

In the future, owing to demographic changes, there will be a larger number and proportion of older people in the population. This will have an impact on the type of transport needed to enable these people to continue to participate in society and access essential services, particularly if they are unable to drive. A major challenge in the future will be to ensure that the mobility and access needs of older people (and also people with disabilities and those who are transport disadvantaged[25] in other ways) can continue to be met in both rural and urban areas. An increase in the number of elderly drivers and pedestrians may also present challenges for the road safety targets.

2.2.6   LAND-USE DEVELOPMENT AND ITS IMPACT ON TRANSPORT DEMAND

One of the strong messages from stakeholder feedback was the need for more emphasis on integration of land-use and transport planning. New Zealand has relatively low-density communities compared to many other developed countries. Residential areas are often physically remote from the facilities and services people need. This has created a high demand for transport and a reliance on cars to meet daily needs. Once development has taken place, its impacts on transport demand are long term.

The need for better links between housing and the facilities and services people need represents a significant challenge for transport because of predicted increases in population and economic growth. It is essential that future urban growth does not cause unnecessary increases in travel demand or place excessive costs on the transport sector.

2.2.7   GLOBAL TERRORISM

Global terrorism and the security of New Zealand's international transport links are an increasingly important challenge for transport. Transport systems have long been the target of terrorist activities because of their relative accessibility and the potential for casualties on a large scale. New Zealand's international trade and tourism depend on secure and efficient global maritime and aviation transport systems. Since 11 September 2001, many new international security measures have been introduced to increase aviation and maritime security. These measures, though necessary, can impose considerable costs on the transport sector, transport users and governments. Individual governments are also imposing new security measures at short notice.

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24. Physical barriers sometimes erected alongside roads to reduce noise levels in nearby properties.

25. Based on modelling using the Ministry of Economic Development 2008 'Net Positions' analysis, ie:
   • oil at US$100 a barrel until 2040
   • New Zealand currency dropping to NZ$1 = US$0.60 by 2012
   • the Emissions Trading Scheme in place
   • GDP growth as per Treasury long-term forecast ie 19 percent over 2020-2030 and 18 percent over 2030-2040.

ACHIEVING THE VISION AND TARGETS – THE KEY COMPONENTS OF THE NEW ZEALAND TRANSPORT STRATEGY

The key challenges set out in Chapter 2 present a significant risk to the achievement of the transport vision and targets. Finding ways to respond over the next 30 years will be essential and the government will apply increased priority to a series of **key components**.

3.1 The government's strategic approach

Achieving an affordable, integrated, safe, responsive and sustainable transport system will require advances in technology and changes to the transport choices that people and businesses make. Neither on its own will be enough to deliver the vision and targets.

Government (both central and local) has an important role in encouraging technological and behavioural change. To do this, a range of actions or interventions can be used, as illustrated in figure 2 below:

FIGURE 2: GOVERNMENT INTERVENTIONS

Regulation and enforcement
(eg speed rules, vehicle standards)

Economic instruments
(eg charging for transport use to generate revenue for infrastructure and services)

POLICY AND GUIDANCE

Provision of infrastructure and services
(eg road construction, public transport services)

Social marketing and education
(eg drink-drive campaigns, travel plans)

In implementing this Strategy, a balance between these interventions must be found. In particular, an appropriate balance is needed between:

- the management of travel demand, and the level of supply to meet demand and maintain levels of service
- regulatory and voluntary approaches to achieving behaviour change in people's transport choices[26]
- the appropriate level of expenditure and, as a consequence, the level of charging required to generate this revenue
- the priorities for expenditure.

The balance between different types of intervention will vary over time. It will depend on the degree to which the objectives and targets set out within this Strategy are being achieved, and the affordability of the solutions that may be required.

Currently, levels of traffic, congestion and greenhouse gas emissions are increasing and the transport system remains highly dependent on fossil fuels. This indicates that a business-as-usual approach in the future will not lead to the achievement of the targets and that the balance of interventions will need to change. In particular, there will need to be a greater focus on the management of travel demand.

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26.   A number of stakeholders also used the terms 'hard' and 'soft' measures, 'push' and 'pull', or 'sticks' and 'carrots' to describe alternative approaches to achieving behaviour change.

TRAVEL DEMAND MANAGEMENT

Travel demand management (TDM) has four objectives:

* reducing the need to travel (while still allowing people to access the services and facilities they need)
* reducing the distances people need to travel to access the same services and facilities
* achieving more efficient travel that uses less fuel, less road space and produces fewer emissions (eg rideshare[27], public transport, cycling and walking)
* changing the time people travel to minimise 'peaks' in demand.

The government will seek progress across all four TDM objectives[28]. As the table below illustrates, land-use planning, the design of businesses and services, and information technology (I.T.) can all play important roles.

TDM OBJECTIVES	DESIGN OF BUSINESSES AND SERVICES, AND USE OF I.T.	LAND-USE PLANNING	TRANSPORT PLANNING
Reducing the need to travel	✓✓		
Reducing travel distances	✓	✓✓	
Promoting more efficient travel	✓	✓	✓✓
Changing the time people travel	✓✓		✓
✓✓ = Key contribution ✓ = Makes a contribution			

The term 'travel demand management' is often used to include measures to do with both travel demand and supply. The former seek to influence the demand for certain types of transport, particularly single occupancy use of cars. Examples include both 'pull' measures such as travel plans and 'push' measures such as congestion charging and parking management. Supply measures seek to provide choice by improving services and facilities for shared and active modes of transport.

Stakeholder responses during the development of this Strategy clearly signalled a widely held view that to be effective in achieving behavioural change, both push and pull measures will be required. However, it is important that travel choices are available before push measures are widely applied, if access and mobility are not to be adversely affected.

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27. Individuals going to the same destination who share the car journey.
28. Traffic management initiatives that seek to manage traffic flows more efficiently are not strictly part of travel demand management. However, measures such as high occupancy vehicle lanes contribute to both objectives, which are generally complementary.

3.2 The key components of this Strategy

For the foreseeable future, the government will apply increased priority to the following key components:

- integrated planning
- making best use of existing networks and infrastructure
- investing in critical infrastructure and the transport sector workforce
- increasing the availability and use of public transport, cycling, walking, and other shared and active modes
- considering options for charging that will generate revenue for investment in transport infrastructure and services
- using new technologies and fuels
- maintaining and improving international links.

These are the areas of activity that require new or additional focus in the future, particularly to address the key challenges facing the sector and help achieve the targets. The key components do not represent all transport activity – many of the actions delivered on a routine basis (by government, Crown entities, local authorities and private sector operators) are not represented here, but are also essential for the achievement of the targets and the delivery of the vision. These activities are described in Chapter 4. However, greater emphasis and, where relevant, a higher priority for funding will apply to the key components in the future.

The following table shows the key components that will help address the challenges set out in Chapter 2. Appendix D sets out in detail how the actions under each key component will contribute to delivering the targets.

TABLE 3: CONTRIBUTION OF KEY COMPONENTS TO KEY CHALLENGES

KEY COMPONENTS	KEY CHALLENGES						
	RESPONDING TO CLIMATE CHANGE	ENERGY SECURITY AND COST	FUNDING OF INVESTMENT IN INFRASTRUCTURE AND SERVICES WHILE KEEPING TRANSPORT AFFORDABLE	INCREASES IN THE ENVIRONMENTAL AND SOCIAL IMPACTS OF TRANSPORT	CHANGING DEMANDS ARISING FROM THE AGEING OF THE POPULATION	LAND-USE DEVELOPMENT AND ITS IMPACT ON TRANSPORT DEMAND	GLOBAL TERRORISM
Integrated planning	✓	✓	✓	✓	✓	✓	
Making best use of existing networks and infrastructure	✓	✓	✓			✓	
Investing in critical infrastructure and the transport sector workforce	✓		✓			✓	
Increasing the availability and use of public transport, cycling, walking, and other shared and active modes	✓	✓	✓	✓	✓	✓	
Considering options for charging that will generate revenue for investment in transport infrastructure and services	✓	✓	✓	✓		✓	
Using new technologies and fuels	✓	✓		✓			✓
Maintaining and improving international links	✓						✓

In pursuing these key components, the government will achieve its objectives through gradual but accelerating change. Businesses and people require time to adapt. Also, many of the changes that are required, particularly in relation to vehicle technologies, have lead-in periods of 20 years or so. Small changes need to be made now to help prepare for major changes later on.

3.2.1   INTEGRATED PLANNING

As many submissions stated, one of the most important long-term influences on transport demand is the pattern of land-use. The government has signalled its support for sustainable urban design through its ongoing commitment to the *New Zealand Urban Design Protocol* launched in 2005. Nevertheless, processes for planning land-use and transport in New Zealand have not always been well-integrated or well-implemented. Despite some positive examples, evidence shows that many New Zealand settlements in urban and rural areas are expanding in a way that will significantly increase travel demand. Examples include ribbon development[29], out of town shopping centres, coastal development and residential settlements that are physically separated from main urban centres.

Part of the solution to these problems is for processes under the *Resource Management Act 1991*, the *Land Transport Management Act 2003* and the *Local Government Act 2002* to be brought closer together. Legislation provides a framework for integration[30], but this is often not used to its full potential. Tools such as regional growth strategies, structure planning and integrated transport assessments are extremely useful for identifying patterns of land-use that are consistent with this Strategy's vision. Incorporating these strategies and assessments into statutory documents will give them greater weight in the decision-making process.

The government's approach to integrated planning is to build on the extensive base of existing good practice and develop further guidance for the sector on sustainable urban design. It will also consider ways to encourage wider adoption of good practice and will incorporate integrated planning principles more explicitly into the ways that transport projects are developed, designed and funded.

The government has agreed on the desirability of a National Policy Statement on urban design under the *Resource Management Act 1991* and work on scoping this will commence in the near future. This may include consideration of objectives and policies to encourage better integration between transport and land-use. In addition, future funding for major transport projects is likely to require them to have been identified through integrated planning processes, or at least to be compatible with Regional Growth Strategies and District Plans that have been based on sustainable urban development principles.

URBAN DESIGN PROTOCOL

The Urban Design Protocol was launched in 2005 as a voluntary commitment to urban design. Signatories are drawn from central and local government, consultancies, developers and other relevant organisations. By signing, these organisations have agreed to implement specific urban design initiatives or actions.

The Protocol identifies seven essential design qualities that together create quality urban design: context, character, choice, connections, creativity, custodianship and collaboration. These 'seven C's' are based on urban design principles that are recognised and demonstrated throughout the world.

The Protocol confirms that good connections enhance choice, support social cohesion, make places lively and safe, and facilitate contact among people. Quality urban design therefore recognises the importance of transport networks in connecting and supporting healthy sustainable neighbourhoods, towns and cities. Urban areas with good connections between activities and careful placement of facilities can benefit from reduced travel distances and lower environmental impacts.

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29.   Development extending along main arterial roads out of urban centres.

30.   For example, amendments to section 30 of the *Resource Management Act 1991* introduced in 2005 provide for regional councils to promote the strategic integration of infrastructure with land-use for the purposes of giving effect to the Act.

Integrated planning also applies to the integration of transport modes to provide a more efficient and seamless transport system – ensuring people and freight can easily transfer between transport modes and that all modes play their part. For freight, improved inter-modal transfer reduces bottlenecks in moving goods and improves supply chain efficiencies. For people, integrated transport planning enables easier end-to-end journeys and greater choice of modes.

There is also a growing awareness of the need for all government agencies to work together when making decisions about where and how to locate facilities within communities. A tool such as accessibility planning may assist with identifying the best solutions to transport and land-use issues. Accessibility planning is a systematic assessment of whether people are able to get to important destinations such as workplaces, healthcare facilities, educational institutions or shops. In the UK it has provided a framework for transport authorities and other relevant organisations to work together to develop and deliver solutions to accessibility problems, depending on the particular needs and priorities of local areas.

3.2.2 MAKING BEST USE OF EXISTING NETWORKS AND INFRASTRUCTURE

Developing new infrastructure is often expensive and disruptive. Therefore, before considering investment in new and improved infrastructure, it is important to ensure that cost-effective measures have been applied to achieve maximum efficiency from any existing network. Achieving efficiency in this way is a core element of this Strategy.

In practice there is already much activity in this area, with a strong focus on traffic management and infrastructure maintenance. Traffic management helps reduce congestion by improving traffic flows. Generally, this represents a sensible and cost-effective use of resources, and should be applied before consideration is given to major increases in the capacity of a transport corridor. Traffic management measures are generally most effective when applied as part of a co-ordinated, network-wide traffic management plan. Such plans are likely to need to focus on measures, such as priority lanes for buses and high occupancy vehicles in urban areas, that represent a more efficient use of road space.

Investments in safety measures such as enforcement and education are important mechanisms to improve the efficiency of networks across all modes. Actions to address localised traffic bottlenecks may also represent good value for money, as alternatives to more extensive and expensive projects. In addition, it is important to ensure that infrastructure is maintained to a standard appropriate for its level of use and its strategic and economic importance.

In the case of freight, there is significant potential for increasing the productivity of supply chains, an important task given the expected growth in the amount of freight needed to be transported over the next 30 years. This will rely, in part, on sector-led fleet and logistics management initiatives. Efficiencies can also be gained by working with relevant industries to identify opportunities to create hubs (for road, rail and shipping interchange) on the existing network.

3.2.3   INVESTING IN CRITICAL INFRASTRUCTURE AND THE TRANSPORT SECTOR WORKFORCE

Investment in transport infrastructure – road, rail, sea and air – is a critical aspect of this Strategy. If transport is to remain affordable for the nation, however, prudent and selective prioritising of where and how to invest is necessary. Investment also needs to take account of the Strategy's other key components. For example, investments should align with land-use planning and take account of potential future reductions in demand (including as a consequence of possible changes to charging systems).

Stakeholder feedback during the development of this Strategy clearly identified the need to invest in economically important routes and infrastructure if the nation's economic competitiveness is to be maintained. These will include major routes used for moving freight, particularly by primary producers and manufacturers to get their products to export markets. Such routes are likely to include arterials linking major ports, airports and major urban areas, and also those that connect rural forestry, horticultural and agricultural areas into the national transport network. As production volumes increase (particularly from the dairy and forestry sectors) there may be a need to upgrade single lane and gravel roads (and their associated bridges). Economically important infrastructure will also include key tourist routes. In addition, investing in Auckland is a priority because New Zealand's economic success is dependent on Auckland being a world-class city.

The focus on important economic links must be multi-modal, and will include rail and sea freight infrastructure. Because of projected increases in the volume of freight, it is essential that, where possible, goods are moved by these modes as they have less impact on the environment than road transport. For rail, the amount of investment to achieve increased capacity can be modest compared to road investments. For example, in the Waikato and Bay of Plenty regions, rail carries the equivalent of 400,000 truck loads a year in container, forestry, coal and steel products. Relatively small amounts of investment in rail infrastructure in the region would provide the potential (if accompanied by rolling stock investment) to treble the amount carried[31]. The government is identifying those parts of the rail network that require renewal and upgrading to provide for future growth in demand and network resilience. For sea freight, the focus is likely to be on intermodal capacity at ports.

Critical routes will also include important passenger transport corridors. Further details on providing for public transport are detailed in section 3.2.4 below.

Identification of critical routes and infrastructure will be a significant task and is an immediate priority for action. It will be undertaken by central and local government working with other stakeholders. This work will build on the information provided by the National Freight Study and will take account of national and regional strategies (including the National State Highway Strategy, the Domestic Sea Freight Strategy – *Sea Change* and Regional Land Transport Strategies).

A further priority for investment is the development of the transport sector workforce to address shortages caused by demographic changes and migration.

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31.   ONTRACK annual report 2007.

3.2.4   INCREASING THE AVAILABILITY AND USE OF PUBLIC TRANSPORT, CYCLING, WALKING, AND OTHER SHARED AND ACTIVE MODES

This Strategy seeks a multi-modal approach by aiming to increase public transport, cycling, walking, and other shared and active modes. A shift to these forms of transport can reduce congestion and therefore bring significant economic benefits. The use of these modes reduces fossil fuel consumption and greenhouse gas emissions, improves the health of individuals through physical activity, enhances accessibility and increases the vibrancy of urban areas. In addition, the more transport choices that are available, the more flexible a transport system becomes, bringing a degree of resilience into the system.

PUBLIC TRANSPORT AND OTHER SHARED MODES

Increasing the use of public transport will be an important challenge that will require significant investment throughout the course of this Strategy. Central and local government have increased the level of funding for public transport in recent years and will need to continue to prioritise investment, particularly in urban areas, for:

- public transport services and infrastructure, eg increased frequency of bus, rail and ferry services, higher quality services, and extended provision of 'park and ride' facilities

- public transport priority, eg greater use of measures that give public transport priority such as bus lanes and high occupancy vehicle lanes

- other measures, eg integrated ticketing and real-time information.

In providing improved public transport, there will be important issues such as whether to invest in high quality frequent services on key routes or in a more extensive network of lower frequency services for scattered communities (for example in rural areas). These issues will be addressed at a regional level via the target setting process, as there will be differing priorities throughout the country.

The government is committed to the concept of a fully accessible journey[32], but recognises that there are issues associated with achieving this. These will need to be collaboratively addressed with transport providers and funders, people with disabilities and other relevant stakeholders such as the Human Rights Commission. This will be an immediate priority for action.

Investments in public transport, as in all other aspects of transport, must represent good value for money. Supporting traditional public transport is likely to be more cost-effective in larger urban areas and for travel between cities. Elsewhere, less traditional forms of shared transport (such as voluntary and community transport, ridesharing and car clubs[33]) will need to be explored to address accessibility and social exclusion issues in a cost-effective way.

32. An accessible journey is one whereby all the steps needed for a person to get from their home to their destination, and then home again, are regarded as linked and of equal importance (definition from The Accessible Journey Report by the Human Rights Commission 2005).

33. Car clubs where a group of people jointly own a car can give people access to a car on a pay-as-you-go basis. Car clubs can save users from the associated costs of sole ownership a vehicle or a second vehicle.

WALKING, CYCLING AND OTHER ACTIVE MODES

There was strong support, in feedback during the development of this Strategy, for the target to increase walking, cycling and other active modes to 30 percent of total trips in urban areas. Although focused on urban areas, it does not rule out encouraging increases in smaller centres. The government's *Getting there – on foot, by cycle* strategy sets out its approach to promoting walking and cycling. Key priorities are to strengthen the foundations for effective action; provide supportive environments and systems; influence individual travel choices; and improve security and safety.

In encouraging walking and cycling, measures that place pedestrians and cyclists higher up the 'road user hierarchy'[34] will need to explored. These include reducing traffic volumes and speeds to improve safety, as well as the further adoption of shared zones[35].

Achieving a shift to active and shared modes will require more than just investment in services and infrastructure. New Zealand's towns and cities need to be designed to support and invite these activities, as well as to make the best use of the road space available. Information, education and social marketing all help to encourage people to use these types of transport.

It will be particularly important to encourage children to walk, cycle and use public transport, since experience as a child can influence how people choose to travel as an adult. Walking school buses are a good example of how to encourage this behaviour.

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34. A 'road user hierarchy' can be applied to reflect the importance attached to each mode of travel, often starting with people with mobility and sensory impairments at the top, followed by pedestrians, cyclists, public transport users, powered two wheeled vehicles, commercial businesses and, lastly, car trips.

35. A shared zone refers to a section of street where pedestrians, cyclists and motorised traffic share the same road space. Special rules and speed limits apply for shared zones.

3.2.5   CONSIDERING OPTIONS FOR CHARGING THAT WILL GENERATE REVENUE FOR INVESTMENT IN TRANSPORT INFRASTRUCTURE AND SERVICES

Charging for road use provides a mechanism for generating the revenue required to provide and maintain transport infrastructure and services. Charging also affects the cost of travel for the user. The rates applied to different users, and the methods of charging, can influence travel behaviour by providing incentives for certain types of travel (at particular times and locations) and disincentives for others. The system for charging for road use is potentially a tool for travel demand management, as well as revenue generation.

The current system for charging – Motor Vehicle Registration, Road User Charges and Fuel Excise Duty – has generally served New Zealand well. However, considering new forms of revenue generation (for example, the electronic-based charging systems being introduced in the Netherlands) that address a range of policy objectives could bring a number of benefits. Such systems could help to maintain necessary income at a time when it is planned that traditional fuel use, and therefore taxation, will diminish as a result of increasing vehicle efficiencies and moves towards other power systems such as electric vehicles. By ensuring that users of vehicles powered by electricity or other new fuels contribute to land transport funding, such systems would potentially be fairer though still allowing charges to reflect the lower 'externalities'[36] associated with these fuels. They could also affect the demand for infrastructure, and the use of certain modes at particular times and places, through their ability to differentiate the rates applied. In addition, they can be designed to take into account the needs of disadvantaged groups and those in rural areas.

Such systems have, in the past, been expensive to implement and have generated concerns over acceptability and the need for alternative forms of travel. Nevertheless, they can be powerful tools in helping to achieve behavioural change and thus a number of the transport targets. An integral part of the Strategy is that different options and technologies for generating revenue through charging should be considered for New Zealand, as in other developed countries.

The government will therefore evaluate the costs and benefits of different options for generating revenue for potential introduction in the medium term. This will include consideration of charging based on the distance, time and location of travel, and the type and weight of vehicle. Any decision on changing the system would depend on:

- how well other measures have achieved progress towards the targets
- the further development of the necessary technologies and reduction in their costs
- trends in the levels of funding that come from traditional charging methods.

Further work is required to establish the most appropriate systems – including consideration of how such systems can take account of social issues and local government interests as owners (and significant funders) of 90 percent of the road network. Research is also required into the full costs associated with different modes at different times and places, including the costs of externalities. In evaluating distance and time based charging, consideration will be given to the impact such initiatives would have on businesses dependent upon long-distance supply and delivery chains (such as primary sector producers and rural supply businesses).

Meanwhile, the evaluation of major infrastructure projects should consider the possible effects that different methods of generating revenue may have on managing future demand and therefore, whether the need for that project remains.

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36.   The costs to society that transport users do not pay directly for, eg pollution and congestion.

3.2.6   USING NEW TECHNOLOGIES AND FUELS

The government is committed to supporting the development of new technology and its rapid uptake. New technology and fuels will play a major role in improving the fuel efficiency of the transport system, as well as in reducing its reliance on fossil fuels and emissions of CO_2 and harmful pollution. The government will pursue an increase in the diversity of the fuel mix and has committed to being one of the first countries to widely use electric vehicles.

New technology can improve the operational performance of the transport system in many other ways. Improvements to vehicle technology have been responsible for a significant proportion of the reduction in road deaths over the last 30 years. They have made similar contributions to the safety of other modes and will continue to play a major role in safety in the future. Technology will also improve efficiency through the use of fleet and logistics management systems, traveller information systems such as real-time information, traffic management, integrated public transport ticketing, the systems that support air and maritime security, and emergency planning and response management.

New technologies are almost exclusively developed by the market. However, the government is able to speed up their roll-out (building on New Zealand's reputation as an 'early adopter' of technology) through direct investment, promotion and other measures. Promoting new technologies may also require action to speed up the removal of old technologies from the system, for example by considering vehicle retirement initiatives.

3.2.7   MAINTAINING AND IMPROVING INTERNATIONAL LINKS

As a trading nation heavily dependent on tourism and primary production, New Zealand's international transport connections are critical to sustaining the economy. In 2006/7, 99 percent of New Zealand's export and import tonnage travelled by sea and 99 percent of international visitors arrived by air. To participate in international transportation, New Zealand must comply with increasingly stringent international security, biosecurity and environmental standards. There is growing global concern about the level of greenhouse gas emissions produced by the international aviation and maritime industries. This is particularly significant for New Zealand as it is remotely located from many of its trading partners. International bodies such as the International Maritime Organisation are investigating ways to reduce these emissions. Furthermore, in response to terrorist threats, international organisations and individual states are introducing additional security standards often with short lead times.

New Zealand will continue to liberalise its air agreements with other countries to open up new opportunities and markets for trade and tourism. High priority is given to securing additional access to New Zealand's most important tourism markets and trading partners, where open arrangements have yet to be secured. The challenges faced by Pacific Island countries in complying with international maritime and aviation safety, biosecurity and security standards are considerable. New Zealand will continue to support capacity building and assistance to these countries in particular, working through regional organisations such as the Pacific Aviation Safety Office and the Secretariat of the Pacific Community's Regional Maritime Programme. This action will ensure that safe and reliable direct connections between New Zealand and Pacific Island countries remain.

The government will continue to participate in international forums so that New Zealand's interests are understood and considered in international agreements relating to safety, security, climate change, biosecurity, and environmental standards for travel and transportation.

3.3 Turning strategy into action – delivering the vision and targets

These key components, together with other areas of transport activity, will help to deliver the transport vision and targets by 2040. Central and local government will continue their normal policy, planning, regulatory, investment and monitoring functions across air, sea and land transport (as set out in Chapter 4). However, increasing the focus on the key components, and where necessary their priority for funding, will achieve the changes that are required.

This Strategy provides the high-level framework for transport decision-making over the next 30 years. However, the transport needs of different parts of New Zealand vary and different solutions will need to be applied to reflect local conditions. Priorities will also change over time. Detailed policies, proposals for action and funding arrangements will be determined as follows:

- Within the land transport sector, a three-yearly Government Policy Statement on Land Transport Funding (GPS) will set out the levels of funding that go to different areas of the transport system. The GPS will contain short-term targets. Three-yearly National Land Transport Programmes will give effect to the GPS.

- The government will develop more detailed strategies that set out the specific actions for particular modes or aspects of the transport system. Examples already in place include strategies for walking and cycling, domestic sea freight, rail, State highways, road safety and safety for recreational boating. Some of these will need to be updated and additional documents will be required in other areas to implement this Strategy.

- At the regional level, many of the specific actions that will deliver the land transport targets in this Strategy will be set out in Regional Land Transport Strategies (RLTSs) and Regional Land Transport Programmes. RLTSs will also set regional transport targets. A key task for government and local authorities within the regions will be to work together and ensure these regional targets reflect local circumstances and priorities, but are also consistent with the national targets in this Strategy and in the GPS.

- A number of short-term supporting actions have been identified to assist in achieving targets and develop improved responses to transport issues. These actions will be undertaken over the next three years. This work will be led by the government but will involve local authorities and other stakeholders as necessary.

The government will develop a comprehensive action plan by 31 March 2009 that will identify accountabilities and timing for the various actions to implement this Strategy.

Going forwards, the government will continue to work with transport sector stakeholders in a collaborative, accountable and evidence-based manner.

Finally, the government will rigorously monitor and evaluate progress, and will review the Strategy at regular intervals to ensure it responds to changing circumstances (as set out in Chapter 6).

PART B: FURTHER GUIDANCE FOR TRANSPORT AGENCIES

The strategic approach required to deliver each transport objective: this includes the key components from Part A and the other areas of activity that will continue to be required to deliver the transport vision.

Short-term supporting actions: mainly led by government, to improve knowledge and develop more informed strategic approaches to delivering the targets.

MAKING PROGRESS TOWARDS THE TRANSPORT OBJECTIVES

Progress will need to be made against all the transport objectives. This Chapter sets out for each objective: relevant targets[37], the key issues and the government's **strategic approach** to addressing those issues. Reference is also made to the key components in Chapter 3 and other areas of transport activity.

Appendix E summarises how the key components contribute to the transport objectives.

4.1 Ensuring environmental sustainability – greenhouse gas emissions

TARGETS TO REDUCE GREENHOUSE GAS EMISSIONS

Halve per capita greenhouse gas emissions from domestic transport by 2040[38].

Increase coastal shipping's share of inter-regional freight to 30 percent of tonne-kilometres by 2040.

Increase rail's share of freight to 25 percent of tonne-kilometres by 2040.

Become one of the first countries in the world to widely use electric vehicles.

Reduce the kilometres travelled by single occupancy vehicles, in major urban areas on weekdays, by ten percent per capita by 2015 compared to 2007.

Reduce the rated CO_2 emissions per kilometre of combined average new and used vehicles entering the light vehicle fleet to 170 grams CO_2 per kilometre by 2015, with a corresponding reduction in average fuel used per kilometre.

Increase use of public transport to seven percent of all trips by 2040 (ie from 111 million boardings in 2006/7 to more than 525 million boardings in 2040).

Increase walking, cycling and other active modes to 30 percent of total trips in urban areas by 2040.

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37.   Many targets contribute to more than one objective.

38.   Relative to 2007 per capita emissions.

4.1.1   INTRODUCTION

Around the world, there is a growing sense of urgency over the need to address the threat of climate change. For New Zealand there are four main climate change challenges, as set out in the New Zealand Energy Strategy (NZES). These are to:

- control and reduce greenhouse gas emissions
- support international initiatives for multilateral action to reduce emissions, principally by maintaining momentum on the implementation of the Kyoto Protocol and ensuring this momentum is carried through after 2012
- prepare for, and adapt to, the impacts of climate change on transport systems by responding to the risks and taking advantage of the opportunities they present
- overcome the challenges above at the lowest achievable long-term cost.

This section sets out how the transport sector can reduce its domestic greenhouse gas emissions. Section 4.4 includes information about transport resilience and considers the impacts of climate change on the transport system.

If New Zealand does not make changes to the way freight moves and people travel, energy use within the transport sector is expected to increase by approximately 26 percent from 2007 levels to 2030[39] – with three-quarters of that growth coming from road transport. Emissions from transport would increase at a similar rate because of the dominance of fossil fuels. The dangers of climate change make this path unsustainable.

The key challenge is to reduce emissions while ensuring that transport systems continue to support a strong, competitive economy and high quality of life.

4.1.2   STRATEGIC APPROACH

The government's approach to reducing transport emissions, in addition to emissions trading, builds on the low-carbon scenario in the NZES and focuses on:

- managing demand for travel
- shifting to lower emission transport
- improving the fuel efficiency of vehicle fleets and transport networks
- developing and adopting future fuels.

MANAGING DEMAND FOR TRAVEL

The government's approach to travel demand management is set out in section 3.1. Key components that will contribute to managing travel demand include integrated planning and considering options for charging. In addition, the government's *Digital Strategy* and its support for broadband will reduce pressure on transport services by promoting teleconferencing, telecommuting[40] and other forms of long-range communication.

SHIFTING TO LOWER EMISSION TRANSPORT

European Union experience suggests that coastal shipping and rail have lower greenhouse gas emissions per tonne-kilometre of freight moved than road transport[41]. Moving an increasing proportion of freight by sea and rail will reduce emissions in the future.

The government will support industry in the use of freight modes that produce fewer emissions through providing information, targeted investment, possible support for intermodal terminals and funding for coastal shipping initiatives. The increased use of public transport, walking and cycling will also reduce domestic emissions. Investing in critical infrastructure (including coastal shipping and rail) and public transport, walking and cycling are key components described in Chapter 3.

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39. Based on modelling using the Ministry of Economic Development 2008 'Net Positions' analysis, ie:
- oil at US$100 a barrel until 2040
- New Zealand currency dropping to NZ$1 = US$0.60 by 2012
- the Emissions Trading Scheme in place
- GDP growth as per Treasury long-term forecast ie 19 percent over 2020-2030 and 18 percent over 2030-2040.

40. Working regularly from home whilst using information communication technologies.

41. It is estimated that the typical number of grams of CO_2 per tonne-kilometre of freight carried is: road 123.1, heavy duty road vehicles 92.0, rail 22.8 and coastal shipping 13.9 (European Conference of Ministers of Transport 2006).

IMPROVING THE FUEL EFFICIENCY OF VEHICLE FLEETS AND TRANSPORT NETWORKS

Improvements to vehicle technology and changes to the composition of New Zealand's fleets can improve the fuel efficiency of transport. The choices made by drivers about how their vehicles are maintained and driven also influence transport emissions.

The government has adopted a target to improve the fuel economy of the New Zealand light fleet through improvements in fuel and engine technologies. It is also developing policies and actions to achieve changes in consumer choices. In addition, there may be opportunities to accelerate the removal of high emission vehicles from the New Zealand fleet. The government will continue to raise awareness of how the way vehicles are driven and maintained will affect fuel efficiency and cost. Using new technologies and fuels is a key component in Chapter 3.

Reduced carbon emissions can also be achieved through improved network efficiency. Traffic management, improved freight productivity and other measures that do this are described under the 'Making best use of existing networks and infrastructure' key component within Chapter 3.

The aviation sector has taken a proactive approach to improving the efficiency of aircraft, driven in part by the need to reduce fuel costs. The government endorses the sector's initiatives around the use of improved engines, airframes, biofuels and other energy sources. In addition, it also supports initiatives to improve air traffic management and airport procedures, maximise operational efficiency and minimise aircraft weight.

DEVELOPING AND ADOPTING FUTURE FUELS

The greater use of alternative fuels and electric vehicles will play a significant role in reducing greenhouse gas emissions from transport, as described in the 'Using new technology and fuels' key component in Chapter 3. The government has established an expert group to consider the issues involved. The following are the main alternatives:

BIOFUELS

Biofuels can be used to run conventional motor vehicles primarily as blends with petrol and diesel. Bioethanol and biodiesel are the two most commonly used transport biofuels. When produced from sustainable biomass sources, biofuels can make a contribution to reducing greenhouse gas emissions from transport. However, concerns have been expressed globally about the use of biofuels produced unsustainably (eg by displacing food crops) and governments internationally are seeking ways to address this issue.

The government has introduced legislation to establish a biofuels sales obligation. The obligation will introduce biofuels into the New Zealand fuels market at a low level and progressively increase that level over several years.

The potential for markedly increasing the use of biofuels, particularly bioethanol, is dependent on the composition and turnover of the vehicle fleet, as well as the availability of sustainably produced biofuels. For example, the compatibility of light vehicles with 10 percent blends of bioethanol is uncertain for the New Zealand fleet, in particular for used vehicles imported from Japan, which are generally less compatible with biofuels. By 2020 however, 75 percent of the light vehicle fleet is expected to be capable of operating on a 10 percent bioethanol blend[42]. The import of 'flex-fuel' vehicles that can run on very high level biofuel blends (eg 85 percent blends), but cost little or no more than existing vehicles, could enable a more rapid uptake of biofuels.

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42. For biodiesel, it is generally accepted in New Zealand and the European Union that diesel vehicles are already capable of operating on five percent blends. However, the European Union is investigating the possibility of increasing the biodiesel component of diesel to seven or 10 percent.

Developments in technology that produces biofuels promise greater benefits and the ability to use sources of biomass that do not compete with food production. The timeline for commercialisation of these technologies, commonly called 'second generation' biofuels, is uncertain but expected before 2020.

ELECTRIC POWERED VEHICLES

The government has made the decision that New Zealand should be one of the first countries to widely use electric vehicles in its fleet. Conventional hybrid electric vehicles are already available and several major vehicle manufacturers are actively working on commercialising both plug-in hybrid and battery electric vehicles. These are expected to become available in small numbers before 2012.

Electric vehicles are a good fit for New Zealand, given the high proportion of renewable electricity generation[43] and they have the potential to make a significant contribution to reducing greenhouse gas emissions from transport. Provided that electric vehicles are charged off-peak, the additional electricity demand they require is expected to fall within the capacity of the grid.

HYDROGEN POWERED VEHICLES

Hydrogen can be used as a transport fuel in modified internal combustion engines or fuel cells that power electric motors. As the only by-product of hydrogen combustion is water, its use can also contribute to reducing greenhouse gas emissions. To achieve these reductions, hydrogen needs to be produced from either renewable resources or from fossil fuels, provided that the carbon released during the production process is captured and stored.

The other major benefit of hydrogen technology is that it can offer comparable range and performance to the internal combustion engines of today. However, the development of the infrastructure needed to distribute and store hydrogen is expected to take decades. Further research is also needed to ensure safe, low-cost, light-weight and low-volume hydrogen storage technologies become available. Some manufacturers believe that a small number of hydrogen fuel cell vehicles may be available within a decade.

OTHER FUELS

Researchers and motor vehicle manufacturers are developing other technologies to power motor vehicles that produce lower or no greenhouse gas emissions – for example, those that use compressed air, compressed natural gas and liquid petroleum gas. The government will keep abreast of these developments.

43.   The NZES has a target that 90 percent of New Zealand's electricity should be from renewable sources by 2025.

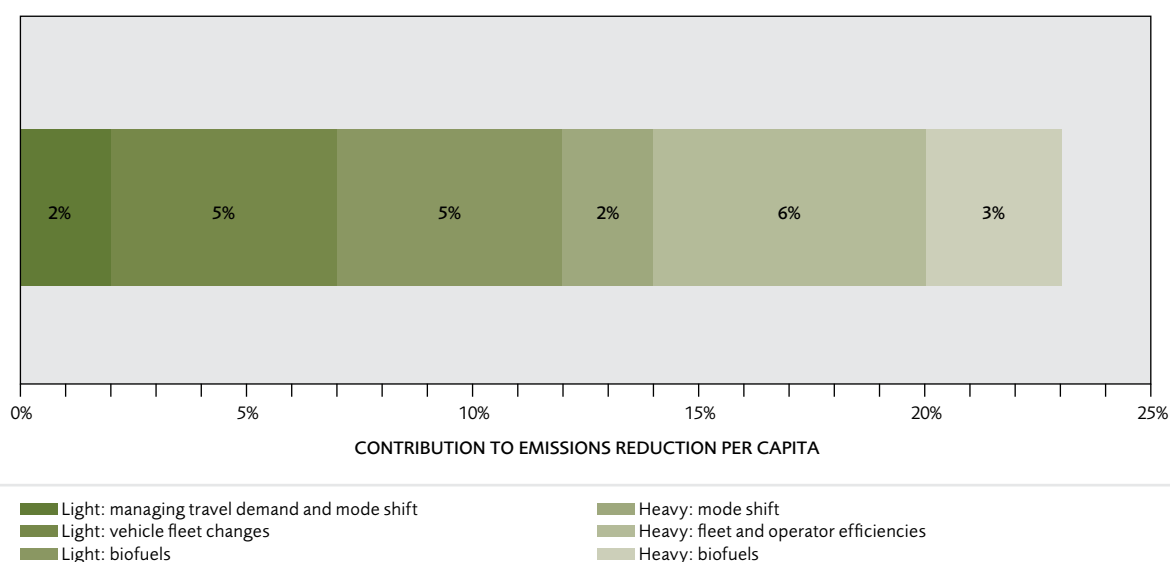### 4.1.3   PATHWAY TO HALVING EMISSIONS FROM DOMESTIC TRANSPORT BY 2040

An implementation pathway has been identified below for reducing, by half, New Zealand's per capita emissions from domestic transport by 2040, relative to 2007 levels. This reflects current understanding of the likelihood of technological advances and is expressed in carbon dioxide-equivalent (CO_2-e)[44] savings. The target equates to a reduction of 60 percent in predicted 2040 levels of per capita emissions[45]. Without action, emissions per capita are likely to increase in the future (ie total emissions are likely to increase faster than the population).

The implementation pathway adopts an interim milestone of a 23 percent reduction in per capita emissions by 2040. The diagrams below illustrate the contributions that are expected from different areas of activity to meet the 23 percent milestone by 2020 and 60 percent target by 2040 respectively.

By 2020, New Zealand could achieve an approximate 23 percent reduction in per capita CO_2-e emissions from transport. Just over half of this reduction is expected to come from changes in the light vehicle fleet, as well as an increase in walking, cycling and the use of public transport. The anticipated change in composition of the light vehicle fleet includes a reduction in engine size and the increasing adoption of diesel engines and biofuels. The expected rate for adopting diesel is in line with overseas trends.

The rest of the CO_2-e reduction would come from heavy vehicles, including a shift in moving freight from road to rail and sea, increases in the fuel efficiency of road freight operations and the use of biodiesel.
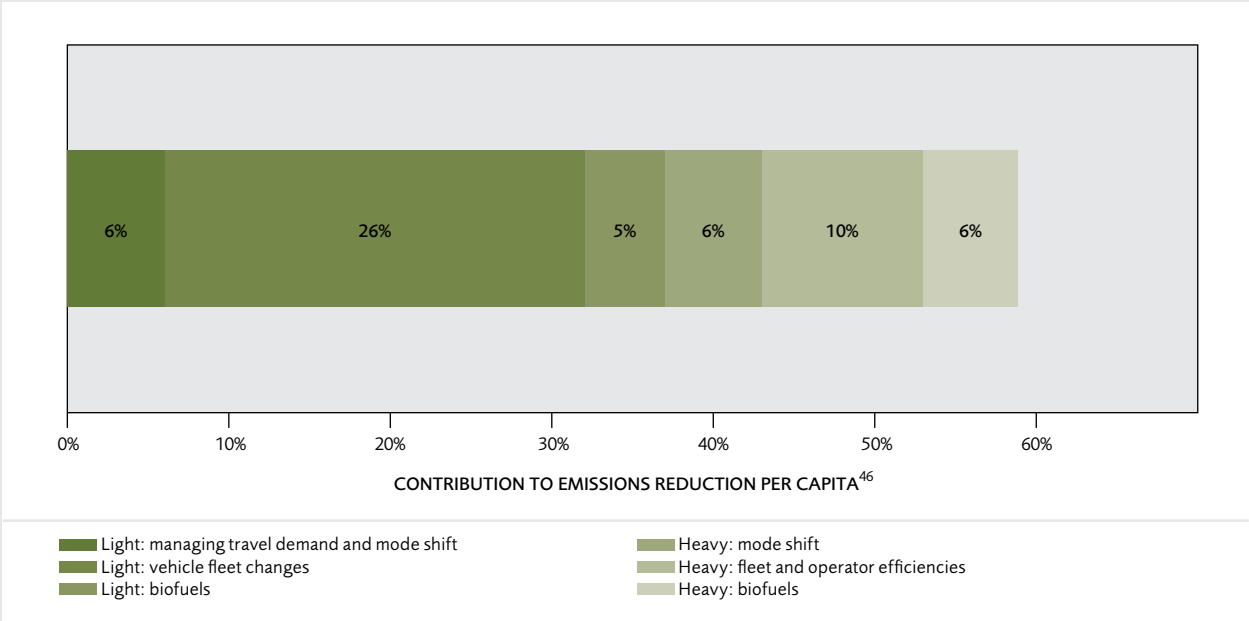
MILESTONE FOR 2020

CONTRIBUTION TO EMISSIONS REDUCTION PER CAPITA

- Light: managing travel demand and mode shift
- Light: vehicle fleet changes
- Light: biofuels
- Heavy: mode shift
- Heavy: fleet and operator efficiencies
- Heavy: biofuels

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44. CO_2-e measures the combined climate changing potential of emissions of multiple greenhouse gases. Emissions of each gas are converted to an amount of CO_2 that would cause the same climate change impact and summed.

45. Based on modelling using the Ministry of Economic Development 2008 'Net Positions' analysis, ie:
- oil at US$100 a barrel until 2040
- New Zealand currency dropping to NZ$1 = US$0.60 by 2012
- the Emissions Trading Scheme in place
- GDP growth as per Treasury long-term forecast ie 19 percent over 2020-2030 and 18 percent over 2030-2040.

TARGET FOR 2040

CONTRIBUTION TO EMISSIONS REDUCTION PER CAPITA[46]

- Light: managing travel demand and mode shift
- Light: vehicle fleet changes
- Light: biofuels
- Heavy: mode shift
- Heavy: fleet and operator efficiencies
- Heavy: biofuels

As technology and alternative fuels develop and become commercially viable, they will play a more prominent role in reducing greenhouse gas emissions from transport. In 2040, it is envisaged that biofuels will be used throughout the light and heavy vehicle fleets, reducing per capita CO_2-e emissions from transport by approximately 11 percent. The composition of the light fleet is expected to be a third diesel, a third petrol and a third electric or hydrogen. This change in composition will reduce CO_2-e emissions from transport by about 26 percent per capita.

Achieving the freight mode share targets for rail and coastal shipping, and vehicle and operator efficiency improvements, will result in a 16 percent reduction per capita in CO_2-e emissions from transport. Achieving the public transport, walking and cycling mode share targets, together with other travel demand measures (such as integrated planning), will contribute to a six percent reduction per capita in CO_2-e emissions from transport.

While manufacturers are reporting progress in some of the key technological areas necessary for this pathway to be a reality, it will take many years for those technologies to achieve mass market production and penetration. Although the rate of development is still uncertain, it is likely that by 2020 the timeframe for the uptake of new technology vehicles and biofuels will be clear, enabling the pathway to be further refined in the future.

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46.   The figures in the diagram add up to 59 percent due to rounding.

4.2 Ensuring environmental sustainability – resource use and local environmental effects

4.2.1 INTRODUCTION

Transport can potentially affect the environment[47] in a number of ways other than through greenhouse gas emissions. These include:

- use of non-renewable resources
- waste
- water-borne pollution, including maritime oil spillage
- land contamination
- flooding, stormwater erosion and water conservation
- loss of habitat/biodiversity
- risks to biosecurity
- impacts on landscape and the character of urban areas
- damage to sites of cultural, archaeological or spiritual importance
- light pollution.

One of the key environmental issues relating to transport is its use of non-renewable resources, in particular fossil fuels. The use of finite fossil fuels would be a major issue even if greenhouse gas emissions were not a concern. It is essential to conserve supplies by managing travel demand and moving to alternative fuels. Large volumes of other non-renewable resources including bitumen, concrete, steel and aggregate are needed for the construction and maintenance of transport projects.

There is also a significant issue with the waste that arises from transport activity, including scrapped vehicles, tyres and oils. There is scope for the recycling of some materials, such as vehicle parts, but the level of recycling is currently low and large amounts of waste go to landfill.

The local environmental effects of construction projects are generally managed under the *Resource Management Act 1991* (RMA), through the process of obtaining designations and resource consents. Other provisions, such as the Treaty of Waitangi and the *Historic Places Act 1993,* are also important.

Other environmental effects arise from the operation of the transport system, primarily from moving vehicles and are not therefore covered directly by the RMA. This includes pollution to water, both from routine operations (eg stormwater run-off from roads) and as a result of accidental spillage of fuels and other harmful materials. Oil spillages in the marine environment are a particular concern.

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47.   Noise, vibration and air pollution are also environmental effects of transport. These have been covered under 'Protecting and promoting public health', section 4.6.

Photo courtesy of the Ministry for the Environment

4.2.2 STRATEGIC APPROACH

Although the RMA is the main mechanism for managing the local environmental effects of transport projects, there is a need to develop clearer guidance to assist in RMA processes. The Ministerial Advisory Group report on the costs of road construction[48] advised that one of the reasons for cost escalation in roading projects was the inclusion of additional measures to reduce environmental impacts at a late stage in the development process. It is therefore essential that agreement about design and appropriate mitigation is achieved at the earliest possible stage in the process. Furthermore it is important that, when consent conditions are applied, they are complied with and monitored over time. Guidance is also required on managing the effects of transport operations that are not encompassed by the RMA, such as the scrapping of vehicles and the promotion of recycling.

A national framework for managing the environmental effects of transport would help to provide this guidance, by:

- developing improved baseline and trend data on each issue
- evaluating the general scale of impact on the environment and identifying specific areas or issues of concern
- developing consensus-based good practice industry guidelines (eg through New Zealand Standards)
- encouraging adoption of these guidelines
- where appropriate, developing National Environmental Standards.

It will not be possible to move forward on all environmental issues at the same pace, given the resources that are likely to be available. A staged and prioritised approach to developing such a framework will be required. There is much good work to build on – for example, Transit New Zealand established a framework for managing the environmental effects of State highways in its Environmental Plan. There is also considerable work underway in the areas of urban design (through successive New Zealand Urban Design Protocol action plans) and stormwater treatment (with draft guidelines prepared by Transit New Zealand). These are likely to be early priorities. There are also opportunities to proactively enhance the environment, for example by planting indigenous vegetation on roadside verges.

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48.   Ministerial Advisory Group on Roading Costs, Final Report, August 2006.

4.3 Assisting economic development

TARGETS TO ASSIST ECONOMIC DEVELOPMENT

For identified critical routes:

- improve reliability of journey times
- reduce average journey times.

Increase coastal shipping's share of inter-regional freight to 30 percent of tonne-kilometres.

Increase rail's share of freight to 25 percent of tonne-kilometres.

Increase use of public transport to seven percent of all trips by 2040 (ie from 111 million boardings in 2006/7 to more than 525 million boardings in 2040).

Increase walking, cycling and other active modes to 30 percent of total trips in urban areas by 2040.

Reduce the kilometres travelled by single occupancy vehicles, in major urban areas on weekdays, by ten percent per capita by 2015 compared to 2007.

4.3.1 INTRODUCTION

New Zealand needs a transport system that supports and assists long-term economic growth, and the more productive use of resources. Businesses need to be able to transport goods and services to domestic and international markets efficiently. People also need to be able to travel easily for work.

Recent years have seen a rapid increase in demand for transport – as New Zealand becomes more affluent, more people and goods are on the move with the freight task expected to more than double by 2040. This has significant implications for the economy, in particular because of the effects of congestion on the efficiency of supply chains, and because road freight itself contributes to congestion and increases the maintenance costs of roads. The government has adopted targets for increasing the proportion of freight that is moved by sea and rail.

The table below shows how the freight task will have grown by 2040[49], and how much additional freight each mode will need to move as a consequence of that growth and the targets for shifting freight to other modes.

TABLE 4: INCREASE IN FREIGHT MOVED, IN TONNE-KILOMETRES, BY EACH FREIGHT MODE IN 2040

SECTOR	FREIGHT TO BE MOVED IN 2040
Total freight sector	2.2 times more freight to be moved than now
Road sector	will need to move 1.6 times more freight than now
Rail sector	will need to move 2.9 times more freight than now
Coastal shipping sector	will need to move 3.7 times more freight than now

49. This estimate for all freight growth is based on Treasury long-term forecasts for GDP and makes an assumption that tonne-kilometres will begin to decouple from GDP growth in the 2020 to 2040 period. The predicted annual growth rates in freight are three percent to 2020, 2.2 percent to 2030 and two percent to 2040.

The ability of the transport system to support New Zealand's long-term economic growth is affected by a range of other issues including:

- *Funding* – there is potentially a funding gap between the transport infrastructure that is desirable to support economic development and the ability of existing funding mechanisms to deliver the revenue necessary to develop that infrastructure.

- *Changes to freight distribution networks* – global shipping is rationalising, with moves to larger ships and the likely development of hub ports that will impact significantly on freight transportation patterns.

- *Tourism and New Zealand's export reputation* – New Zealand trades on its 'clean and green' image in export and tourism markets. With growing international concern over climate change, it is important that all parts of the New Zealand economy respond appropriately.

- *Access to international markets* – New Zealand has liberalised air service agreements with most key destinations, but further agreements are needed with major markets such as the European Union, China and Japan.

- *Skills shortages within the transport sector* – there is a growing shortage of skilled people in the road, maritime, rail and aviation sectors, including public transport.

Economic development is a priority for the government and transport is generally recognised as being one of the principal factors in supporting economic growth and productivity. The relationship between transport and the economy, however, is complex. Work will be undertaken to improve the understanding of this relationship. A National Freight Study is currently underway to provide baseline information on existing and future freight movements. This research will enable the government to develop a strategic, multi-modal approach to freight and make more informed decisions in the future on how and where to invest in the transport system.

4.3.2 STRATEGIC APPROACH

The following initiatives will be progressed to improve transport's contribution to economic development in New Zealand:

- improving efficiency of supply chains and ensuring that critical transport corridors and infrastructure support the movement of goods, services and people
- attracting and retaining a highly skilled transport workforce
- meeting Auckland's transport infrastructure and service needs to support Auckland becoming a world-class city
- supporting tourism and export industries.

IMPROVING SUPPLY CHAIN EFFICIENCY

An efficient freight system is particularly important for New Zealand's small, open economy which is distant from world markets. Primary production (including agriculture, horticulture and forestry) is one of New Zealand's biggest sectors, contributing to more than 65 percent of total exports[50]. The sector depends on the efficient and cost-effective movement of freight to and from farm, horticultural and forest properties. Most primary products, particularly logs, have a low value-to-weight ratio meaning that freight costs can have a significant effect on net returns. Transport costs are also an important issue for other areas of production and manufacturing.

50.   Provisional figures for 12 months ending February 2008, source: http://www.stats.govt.nz.

Improving the efficiency of supply chains and competitiveness is a key component in supporting economic development (particularly for those businesses that compete internationally in export markets). This will be achieved by a combination of the following:

- *Improving reliability of journey times* – where journey times are affected by road congestion, measures will include travel demand management, traffic management, effective traveller information systems (that provide real-time information on traffic congestion, incidents and road works) and selective investment in road capacity. Although congestion is primarily an issue for road transport, it can affect rail and sea freight and is a particular concern near sea ports and airports.

- *Reducing average journey times* – through the measures to address congestion set out above.

- *Promoting productivity increases within the freight sector* – through support for industry-led initiatives such as the introduction of fleet and logistics management systems, and consideration of possible changes to weight limits on particular roads.

The strong focus for improving reliability and journey times will be on economically important routes – road, rail, sea and air[51]. The government's approach to investing in critical infrastructure, travel demand management and traffic management is set out in Chapter 3.

An important immediate priority for action is to identify economically important (and other critical) routes in collaboration with local government and other stakeholders. When doing so, it will be essential to look at freight distribution networks from a multi-modal perspective, given the freight targets in this Strategy. An important priority will then be to achieve improved facilities for transfer between modes.

The government is also looking to improve the operational efficiency of New Zealand's freight movements through the development of a controlled permit system that allows heavier and larger vehicles on selected routes.

ATTRACTING AND RETAINING A HIGHLY SKILLED TRANSPORT WORKFORCE

The transport sector requires a suitably trained and skilled workforce, and there is a growing shortage of such people in the road, maritime, rail and aviation sectors (including public transport). The stakeholder engagement process on the *Sustainable Transport* discussion paper identified those shortages as a significant problem facing the sector. The situation in New Zealand mirrors that in Australia and other competing nations, and the loss of trained staff to other countries is a contributing factor.

Future demographic changes in New Zealand may further exacerbate the problem. In the medium to long term, this issue represents a significant threat to the efficiency of the transport sector and the extent to which it can support economic development and other transport objectives.

The government has already signalled, through *Sea Change*, that it will work with the shipping industry to address workforce issues. Similarly, current initiatives within the road, rail and aviation sectors to improve skills in the existing workforce and attract new people into the industry need to be stepped up. This will require a focus on increasing capability within the industry, and within central and local government (including policy capability).

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51.   While only a small proportion of international and domestic cargo is carried by air, it accounts for 15 percent of New Zealand's exports by value and is essential for moving time critical products.

Photo courtesy of Ports of Auckland Ltd

AUCKLAND AS A WORLD-CLASS CITY

Developing Auckland into a world-class city is a major component of the government's plan for economic transformation. Auckland is home to a third of New Zealand's population and responsible for around a third of economic activity. About 73 percent of international visitors arrive and leave New Zealand via Auckland.

Auckland's economic potential is constrained by congestion, which is estimated to cost the economy around $750[52] to $900[53] million per annum. There has been significant investment in the strategic highway network to help address this issue in recent years, but on its own this is unlikely to solve the problem. Many other large international cities have invested in metro systems, and other high quality public transport, to deal efficiently with high levels of travel demand. The government and the Auckland region have invested, and are continuing to invest, hundreds of millions of dollars in a substantial upgrade of the metropolitan rail network and the Northern Busway. The next stage of this development will involve the proposed electrification of the rail network. A continuing strong focus on improving public transport, along with managing travel demand, will help address congestion and contribute to improving the competitiveness of Auckland as an international hub and world-class city.

International evidence shows that areas of concentrated economic activity can be more productive and therefore generate more economic growth. These 'agglomeration' effects can be supported by integrating land-use and transport planning, as well as good urban design and targeted improvements to the road network, public transport, and cycling and walking facilities. To compete internationally as a modern innovation-based economy, Auckland needs the infrastructure to attract business and a lifestyle that retains skilled workers. The benefits of agglomeration need to be considered in developing the Auckland transport system.

SUPPORTING TOURISM AND EXPORT INDUSTRIES

Tourism, one of the nation's largest industries, relies on the ability of tourists to travel to New Zealand and to move around the country easily. It is important to consider the needs of tourists, and the economic benefits they bring, in identifying critical transport routes and making transport investment decisions. Furthermore, New Zealand trades on its reputation of being 'clean and green' in its tourism and export markets. It is in the nation's economic interests to actively maintain this reputation. For example, being recognised as a global leader in addressing climate change and environmental pollution has the potential to offer economic benefits that help offset the associated costs. As set out in section 4.1, the transport sector will play its part in reducing greenhouse gas emissions and the effects of climate change.

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52.   Ernst & Young, 1997.
53.   Ministry of Transport, Auckland Road Pricing Evaluation Study, 2006.

4.4 Assisting safety and personal security

4.4.1 INTRODUCTION

Improving the safety and security of the transport system and its users is central to achieving the transport vision. The government seeks a transport system that will result in fewer deaths, fewer injuries and lower social costs arising from transport-related incidents. It is also important that people are able to travel without fear of death, injury or crime. Similarly, resilience to events such as floods or major accidents is a vital aspect of a well-performing transport system.

4.4.2   STRATEGIC APPROACH

The government will progress initiatives in the following areas to enhance safety and personal security across the transport system:

* safety
* personal security
* transport security
* transport sector resilience.

SAFETY

Transport-related incidents are one of the main causes of accidental loss of life in New Zealand and are a leading cause of death for children aged one to 14 years. The majority of transport-related deaths and injuries occur on roads, and improving road safety has been a major feature of transport policy for many years. Deaths and injuries also occur within the rail, aviation and maritime sectors.

ROAD

In 1973, New Zealand's road toll was at its highest with 843 deaths. Since then, the number of deaths has roughly halved in absolute terms to 423 in 2007 – a 65 percent reduction on a per capita basis. Although the road toll increased in the early 1980s, since 1987 there has been a general reduction.

FIGURE 3: THE NEW ZEALAND ROAD TOLL 1950 TO 2007
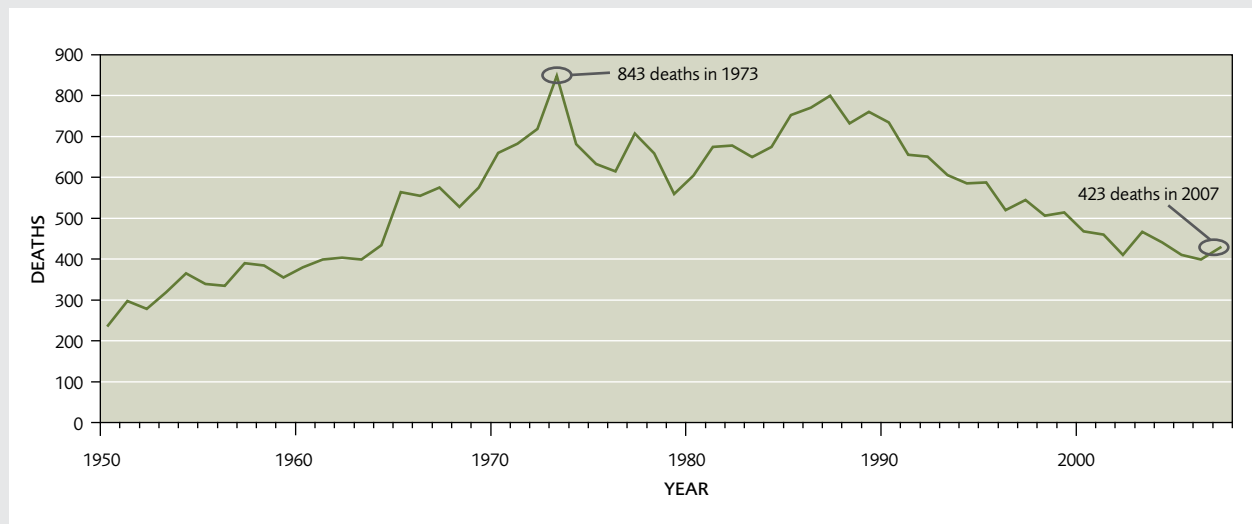
Although this reduction has been welcome, as a nation it is important not to be complacent. At 9.9 deaths per 100,000 people, New Zealand's road toll is higher than countries such as the UK, Sweden and the Netherlands that have rates of fewer than six deaths per 100,000 people. Furthermore, progress has been much slower in the last five years and the road toll in 2007 was higher than that in 2006. This suggests that the rate of reduction in road deaths has declined and may have even levelled out.

The government's targets to reduce road deaths to no more than 200 per annum, and serious injuries to no more than 1,500 per annum, both by 2040, represent a major improvement on current rates. The targets are equivalent to current world best safety levels and consistent with historic rates of progress in New Zealand (eg the approximate halving of the road toll that has been achieved since 1973). In the stakeholder engagement process there were widely diverging views, with some saying that New Zealand should adopt an aspirational target of zero deaths. Others felt the target should be realistic and achievable, based on the affordability of measures such as engineering improvements, and public acceptability in New Zealand of the tighter regulations and stronger enforcement adopted in the world's best road-safety countries.

The targeted reduction of the number of road deaths and serious injuries will be advanced through four main work areas: safer roads and roadsides, safer speeds, safer vehicles and safer road users. The balance between these work areas and the specific measures to be used will be set out in a road safety 2020 strategy (which will be published by 2010). This strategy will introduce targets for road deaths and serious injuries for 2020.

RAIL, MARITIME AND AVIATION

On the rail network, there were on average 18 recorded deaths per year between 2000 and 2007. Most rail accidents occur either at level crossings[54] or as a result of trespass onto operational rail land. A strategic approach to rail safety will be developed in a rail safety 2020 strategy (which will be published in 2009) and is likely to focus on those two areas.

For maritime, safety includes the commercial use of ships for freight, passengers and fishing, and the recreational boating sector. Between 2000 and 2007, there were on average 24 recorded maritime deaths per year (the majority of which occurred within recreational boating). To improve maritime safety, the government will focus on enhancing and enforcing the safety regulatory framework, developing the safety response services and increasing awareness within the maritime sector.

For domestic aviation, there were 12 recorded deaths in 2006, primarily within the 'general aviation' sector. This includes the sporting and agricultural use of aircraft, which are higher risk areas. Incidents involving commercial airlines remain rare. Improving aviation safety will focus on the development of aviation safety policy, the certification and licensing of aviation participants, the monitoring of compliance with relevant legislation and rules, and increasing education and promotion.

PERSONAL SECURITY

Personal security relates to crime directed at the individual, particularly when it happens on public transport and while cycling and walking. It is concerned not just with incidents of crime, but also with the fear of crime and the impact this can have in deterring people from using these forms of transport.

Many local authorities have put measures in place to address personal security concerns. Guidance on the design of public spaces to minimise personal security risks has also been published by the Ministry of Justice[55]. In 2008, Land Transport New Zealand commissioned a report on personal security and public transport, and is working through its findings.

Improving personal security on public transport, cycling and walking networks requires partnership action at the local level involving local authorities, transport providers and the police. Specific measures that improve personal security include:

- design of public spaces to prevent crime
- information gathering to determine the number and severity of incidents, and to assess public perceptions of the threat to personal security
- identification of locations where significant numbers of incidents have been reported and those that are perceived to be unsafe
- where cost-effective, installation of surveillance, lighting, the removal of vegetation or other measures to minimise the risk of incidents and the fear of them
- policing to apprehend offenders, deter future offenders and reassure transport users.

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54.   Fatalities at level crossings are recorded as both road and rail deaths.

55.   National Guidelines for Crime Prevention through Environmental Design in New Zealand, 2005 (2 parts).

TRANSPORT SECURITY

Transport security relates to the protection of the transport system and the safety of its users from acts of terrorism. Its focus has been on aviation and maritime transport. The possibility of terrorism on land-based transport systems is now being considered as well.

Maintaining the security of aviation and maritime transport is vital not just for the safety of users, but also for New Zealand's economic well-being as a trading nation and major international tourism destination. The terrorist attacks of 11 September 2001 focused international attention on the threat of terrorism to air passengers and led to increased aviation security around the world. In August 2006, an alleged terrorist plot to use liquid explosives disguised in water bottles resulted in further changes to aviation security. Although security incidents domestically are very rare, New Zealand cannot be complacent. As a member of the International Civil Aviation Organisation (ICAO), New Zealand is obliged to comply with its security standards.

The government's approach to delivering transport security will be addressed under three main areas:

- compliance with international standards
- consistency with international best-practice
- implementation of recent legislative changes.

Amendments to New Zealand's aviation security laws were passed in September 2007. These amendments gave more power to Aviation Security Officers to detect any security risk and to deal with that risk appropriately. A review of the *Civil Aviation Act 1990* is also currently underway, with amendments to the legislation planned for 2010. In 2011, the ICAO will undertake an audit of New Zealand's aviation security regime. The government will manage this audit and will be responsive to its recommendations for improvements.

For maritime, security has been improved globally since 2001. In 2004, New Zealand passed the *Maritime Security Act* to enable compliance with the International Ship and Port Security Code.

TRANSPORT SECTOR RESILIENCE

Resilience relates to the transport sector's ability to respond to emergencies or failures that disrupt or damage transport infrastructure, the speed at which it can recover, and its ability to reduce the impact of such events. It is also concerned with the ability of the sector to anticipate and respond to external changes in the environment, such as technological developments and variations in the global economy.

Possible causes of disruption or damage include:

- natural disasters such as floods, storms, volcanic eruptions or earthquakes
- acts of crime or terrorism
- major transport accidents
- failure in transport infrastructure
- disruption to fuel supplies
- the effects of climate change.

EMERGENCY MANAGEMENT

The government's work in this area has largely been on the 'four Rs' of emergency management: reduction, readiness, response and recovery. Significant progress has been made on readiness and response. For example, the Transport Emergency Management Co-ordination Group (known as the Transport Cluster) was established in 2005 to improve the transport sector's response to national emergencies. The Transport National Emergency Response Plan has also been developed. This sets out operational arrangements to aid the rapid, co-ordinated and effective response of the sector to significant emergencies. Further work is required in the areas of reduction and recovery.

ANTICIPATING AND RESPONDING TO CHANGES

As described in Chapter 2, the main drivers of change for transport are external factors that New Zealand has little control over. These uncertainties affect the current and future transport systems. A methodology has been developed to assess the durability of various policy decisions, strategies and plans over the long term. This methodology will be made available to regional councils and Regional Transport Committees to assist in the development of Regional Land Transport Strategies and Programmes.

4.5 Improving access and mobility

TARGETS TO IMPROVE ACCESS AND MOBILITY

Increase use of public transport to seven percent of all trips by 2040 (ie from 111 million boardings in 2006/7 to more than 525 million boardings in 2040).

Increase walking, cycling and other active modes to 30 percent of total trips in urban areas by 2040.

4.5.1   INTRODUCTION

The government seeks improved, reliable access to the facilities and activities that enable all New Zealanders to participate fully in society and the economy. People need to be able to travel with ease and confidence, at home and overseas, and by a form of transport that is appropriate to their needs[56].

Transport systems help provide people with mobility and accessibility. By contrast, where services are unavailable (for all or part of a journey), inaccessible or unaffordable, full participation in society can be impeded. Barriers can also be physical, for example busy roads or railway lines that need to be crossed. These barriers can reinforce social exclusion and need to be addressed.

Non-transport solutions such as telecommunications can improve access to some services and are important, but will not replace the need for people to be mobile and physically interact with others.

Members of the community who have the lowest levels of accessibility are sometimes referred to as 'transport disadvantaged'. A range of factors can lead to transport disadvantage, which can be temporary or permanent.

These factors include:

- *Urban form designed around the private car* – urban areas have developed around widespread ownership and use of the private car. For example, some retail and other facilities are difficult to access without a car. The car, a flexible and relatively cheap mode of transport may therefore indirectly have led to lower levels of accessibility for those without access to one. Congestion in urban areas, a consequence of increased travel demand, can also limit accessibility.

- *Lack of modal choice* – in recent years there has been significant investment in public transport, cycling and walking. In many locations, however (particularly in rural areas), these modes play only minor roles. Lack of information and fears over personal security may also limit the perceived availability of these modes.

- *Affordability* – low-income households in urban and rural areas are finding the cost of transport difficult to meet, yet with limited alternative transport options they have to absorb these costs or face restricted accessibility. Sometimes, participation in economic activity hinges on the cost of travelling to and from work relative to earnings. If travel consumes too much of a worker's resources (money and time), transport can act as a 'poverty trap' for poor households and any increases in transport costs will exacerbate this situation.

- *Disability* – physical, sensory, neurological, psychiatric and intellectual impairment can all lead to disability. The Human Rights Commission's *The Accessible Journey* report found that significant numbers of people with disabilities in New Zealand have acute and ongoing difficulties with using land-based passenger transport services: buses, trains, taxis and related services. This is despite the considerable progress that has been made in improving the accessibility of passenger transport. Feedback on the *Sustainable Transport* discussion paper noted that similar problems occur for some people with disabilities when using aviation services.

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56.   Access for freight is covered in section 4.3 under 'Assisting economic development'.

Over the long term, New Zealand has to reduce its reliance on car-based mobility if access for all is to be improved in an affordable way. Good urban design principles need to be employed to reduce the need for car-based travel. People need more choice about how they travel, and transport services need to be available, accessible and affordable.

Cost-effective transport solutions may not always be in the form of traditional public transport. For example, community buses, specialised transport for people with disabilities and demand responsive transport[57] may be more efficient ways of providing mobility. Transport services provided by other agencies can also represent an efficient solution. Examples include district health boards that provide a bus service to ensure that patients are able to get to their appointments on time.

Bringing the services to the users, rather than vice versa, is another option – for example mobile surgical units and libraries in rural areas. This can reduce the need for people to travel or own a private car, although it does not always provide the connectivity required for social wellbeing.

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57.   Demand responsive transport is a user-oriented form of public transport. It is characterised by flexible routeing and scheduling of small/medium sized vehicles according to passengers' needs. New developments in technology – satellite tracking, on-screen information in call centres and buses, and routeing software – have made it possible to create services which respond more directly to the requirements of the individual passenger.

Photo courtesy of Land Transport New Zealand

4.5.2   STRATEGIC APPROACH

The following initiatives will be progressed to improve access and mobility for all New Zealanders:

- *improving social connectivity* by overcoming transport disadvantage and actively planning for accessibility
- *improving transport choice* by developing an integrated, multi-modal transport system.

IMPROVING SOCIAL CONNECTIVITY

Improving social connectivity requires a particular focus on meeting the accessibility needs of the transport disadvantaged. Overcoming the factors that can lead to transport disadvantage will require:

- integrated planning (including accessibility planning) and improved urban design
- improving the availability and accessibility of shared and active modes
- developing the use of less traditional passenger transport such as demand-responsive and community transport
- measures to address transport affordability such as concessionary travel schemes
- measures to improve personal security.

In the development of this Strategy, stakeholders expressed concerns that policies and actions to address other objectives might lead to a decrease in social connectivity. For example, higher vehicle standards to improve safety and reduce emissions may make car ownership more expensive. Where possible, the government will consider measures that will reduce any negative impacts.

IMPROVING TRANSPORT CHOICE

Improving accessibility is also concerned with increasing travel choice. In particular, this involves providing people with the option of using shared and active modes such as public transport, walking and cycling, even when they own a private vehicle. Alternatives such as ridesharing and car clubs also need to be promoted. Integrated planning and other measures that tackle travel demand (such as possible changes to methods of charging and parking management) can help create an environment that encourages greater use of shared and active modes, which in turn will stimulate greater provision.

Key components set out in Chapter 3 that contribute to improving access and mobility are increasing the availability and use of public transport, cycling, walking, and other shared and active modes; integrated planning (including accessibility planning); and considering options for charging. The strategic approach to improving personal security is described in section 4.4.

4.6 Protecting and promoting public health

TARGETS TO PROTECT AND PROMOTE PUBLIC HEALTH

Reduce the number of people exposed to health-endangering noise levels from transport.

Reduce the number of people exposed to health-endangering concentrations of air pollution in locations where the impact of transport emissions is significant.

Increase walking, cycling and other active modes to 30 percent of total trips in urban areas by 2040.

Reduce road deaths to no more than 200 per annum by 2040.

Reduce serious injuries on roads to no more than 1,500 per annum by 2040.

4.6.1 INTRODUCTION

Certain forms of transport can positively benefit the health of New Zealanders by providing a convenient way to exercise and making it easier for people to participate in society. However, noise and airborne pollution from transport can adversely affect health. The occupational health of workers in the transport sector is also an important issue.

4.6.2 STRATEGIC APPROACH

The strategic approach of the government towards increasing the contribution transport makes to protecting and promoting public health includes:

- encouraging walking, cycling and other active modes
- increasing participation in society
- reducing adverse noise and vibration
- improving air quality
- improving occupational health within the transport sector.

WALKING AND CYCLING

Walking, cycling and other active modes of transport can contribute to the 30 minutes of exercise a day recommended for adults by health professionals[58]. According to the 2002/3 New Zealand Health Survey, one in three adults is overweight and as many as 3,000 deaths a year may be the result of low physical activity levels. Unfortunately, walking and cycling rates have been declining in recent years.

The government's approach to improving walking and cycling is described in Chapter 3 (alongside public transport) as a key component.

PARTICIPATION IN SOCIETY

Transport provides access to educational institutions, workplaces, recreational facilities, social networks and public services (including health services), all of which are important determinants of health and wellbeing. Isolation can lead to mental and physical health problems. The focus, in section 4.5 of this Strategy on overcoming transport disadvantage and improving access and mobility, will help people to participate more effectively in society.

NOISE AND VIBRATION

Concern about noise remains one of the most common public objections to new transport infrastructure projects in New Zealand. There are also significant concerns about noise from existing roads, railway lines, ports and aircraft. Noise issues can be exacerbated when new, noise-sensitive development is located in areas that already suffer from significant levels of transport noise (an issue known as 'reverse sensitivity'). It was estimated in 2005 that 3.2 percent of the population (over 130,000 individuals) was exposed to a level of road noise generally considered by the OECD to be unacceptable. International research shows that stress caused by noise can be a contributing factor to early deaths from heart attacks and other medical conditions.

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58.   Healthy Eating Healthy Action Strategy, Ministry of Health.

Vibration from moving vehicles can have similar health effects to those generated by noise. It can also cause physical damage to buildings and other structures, and can affect the operation of vibration-sensitive equipment such as that used in hospitals.

A strategic approach to noise and vibration needs to consider the location and design of transport infrastructure, vehicle standards and driver behaviours, as well as the location, use and design of development near transport corridors. It also needs to consider the contribution that other non-transport sources of noise and vibration may make in a particular locality. Because responsibility for these areas is shared among a wide range of agencies, a partnership approach will be essential.

Noise and vibration issues associated with new transport infrastructure are generally controlled through the RMA, and District Plans may contain noise rules.

The management of airport noise is provided for in the New Zealand Standard NZS 6805:1992 *Airport noise management and land-use planning.* Similarly, the New Zealand Standard NZS 6809:1999 *Port noise management and land-use planning* includes provisions for the management of noise arising from sea port operations.

Transit New Zealand's Environmental Plan describes a well-established approach for managing noise from State highways. A new New Zealand Standard NZS 6806 is expected to be published in 2009 which will contain criteria for the management of noise from new and substantially upgraded roads. The government has recently introduced new rules for tail-pipe noise emissions and is looking to extend these rules in response to public concerns over 'boy racers'.

The government intends to develop a framework for the management of land transport noise which could form the basis of a more comprehensive transport noise and vibration management strategy. It is intended that the framework will be developed in partnership with relevant agencies, and will consider the role of guidance, voluntary standards, regulations and rules to deliver noise management objectives. One of the first steps in developing this framework will be improving the collection of noise data.

AIR QUALITY

There are well established links between air pollution from vehicles and public health. A four-year study[59], completed in 2007, estimated that air pollution from motor vehicles contributed to the premature death of 500 people per year in New Zealand and that a further 809 people were suffering serious illnesses attributable to air pollution from motor vehicles. Other research[60] has indicated that air pollution may have a disproportionately adverse effect on young children, whose growing lungs are particularly susceptible.

Air pollution from transport comes in a number of forms, the most damaging of which are particulates, oxides of nitrogen, carbon monoxide and volatile organic compounds from road vehicles. Ships can also contribute to air pollution by burning fuels with high levels of pollutants in ports that are in, or near, built-up areas. Regional emission inventories throughout New Zealand show that transport is the main source of oxides of nitrogen in all main centres of population, accounting for about 80 to 90 percent of these emissions[61]. In terms of the contribution from road vehicles, trends towards cleaner engines with less harmful emissions have been counteracted by increases in traffic volumes and a rise in the proportion of older technology diesel vehicles in the fleet.

The government revised the Vehicle Emissions Rule in 2007 as part of a package of measures aimed at achieving improvements in air quality. The revised rule is intended to reduce the level of harmful emissions produced from motor vehicles entering the New Zealand fleet. Other recent policies have led to a reduction in the sulphur content of diesel and the introduction of the visible smoke test as part of the Warrant of Fitness inspection. In addition, the Ministry for the Environment recently released the *Good Practice Guide on Assessing Discharges to Air from Land Transport* (see www.mfe.govt.nz).

59.   G Fisher et al, Health and Air Pollution in New Zealand, June 2007.
60.   WHO, Effects of Air Pollution on Children's Health and Development: A Review of the Evidence, 2005.
61.   Ministry for the Environment, Environment New Zealand, 2007.

A strategic approach to air quality management needs to consider the location and design of transport infrastructure, vehicle standards, driver behaviours, and the location, use and design of development near transport corridors. It also needs to consider the contributions that other non-transport sources of air pollution may make in a particular locality. Because responsibility for these areas is shared among a wide range of agencies, a partnership approach will be essential.

Air quality management issues associated with new transport infrastructure are generally controlled through the RMA. Regional policy statements and district plans can also include policies and rules relating to air discharges. The National Environmental Standard for Air Quality prescribes minimum requirements that outdoor air quality should meet, in order to guarantee a set level of protection for human health and the environment.

Addressing air pollution from the maritime sector will focus on effects near centres of population – particularly in ports. Solutions such as shore-side power supplies for ships at berth[62] could be used to help reduce pollutants from ships.

OCCUPATIONAL HEALTH WITHIN THE TRANSPORT SECTOR

Working in some parts of the transport sector brings elevated levels of exposure to health risks. These include health issues such as lifting injuries, loss of hearing and exposure to high levels of chemicals like volatile organic compounds in petrol. Occupational health also covers mental health issues, for example the emotional trauma caused to train drivers exposed to suicides or accidental deaths on the rail network. This is an area that requires more research.

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62.   Referred to in the industry as 'cold ironing'.

SHORT-TERM SUPPORTING ACTIONS

CHAPTER 5: SHORT-TERM SUPPORTING ACTIONS

This Chapter identifies a number of **supporting actions** that will be undertaken over the next three years to help inform and progress the delivery of the targets and the achievement of the transport vision. These supporting actions generally seek to fill gaps in knowledge and develop appropriate responses to transport issues. Most will be led by government, with involvement of local authorities and other stakeholders as appropriate.

A number of these supporting actions have been identified as immediate priorities and are highlighted in bold.

The government will expand and develop the supporting actions listed here into a comprehensive action plan, that will identify accountabilities and timing, by 31 March 2009.

The action plan will also include transport related actions from the New Zealand Energy Efficiency and Conservation Strategy, and other government strategies, where not included in the following table.

INTEGRATED PLANNING	

Integrated planning and urban design	• **Scope a National Policy Statement on urban design.**
	
	• Promote the introduction of requirements that:
	
	  – major and other significant transport projects must demonstrate they are consistent with regional and local growth strategies
	
	  – where a transport project is required as a result of land-use development, that development should be consistent with statutory planning documents and with sustainable planning principles for the transport project to receive funding through the National Land Transport Programme.
	
	• Promote wider industry understanding and knowledge of sustainable urban design principles.
	
	• Assess final recommendations from the cross-agency 'Integrated Approach to Planning'[63] project and progress relevant actions.
	
	• Develop a trial of an accessibility planning scheme[64].

Improving social connectivity	• **Develop an implementation plan by July 2009 in response to the recommendations made in *The Accessible Journey* report and a specific accessibility target for inclusion in the next update of this Strategy in 2010[65].**
	
	• Undertake research into transport disadvantage to further understanding of:
	
	  – the primary causes of transport disadvantage in New Zealand
	
	  – the number and geographical distribution of transport disadvantaged (urban and rural areas) and whether these groups are predicted to grow in the future
	
	  – the impacts of these trends and how the transport system influences them
	
	  – the implications of an ageing population.
	
	• Investigate the options and feasibility of establishing demand-responsive public transport networks in New Zealand.
	
	• Establish the current levels of transport provided by the voluntary/community sector, and identify the barriers and potential for supporting this sector.

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63. A cross government initiative that considered ways to improve the integration of land-use and transport planning. The final report is due to be completed in mid-2008.

64. This would require the development of accessibility planning models to assess levels of physical access to identified activities and develop indicators and set targets.

65. This will include agreement on a process for developing good practice accessibility standards (eg through New Zealand Standards) and the encouragement of their widespread adoption.

MAKING BEST USE OF EXISTING NETWORKS AND INFRASTRUCTURE	
Travel demand management	• Promote travel demand management (TDM) best-practice by building on Transit New Zealand's TDM manual and guidance material produced by Land Transport New Zealand and local authorities. • Through the GPS, strengthen the role of TDM (alongside other measures such as traffic management) in the evaluation process for transport projects to be funded by the National Land Transport Programme. • Support measures to increase the uptake of travel plans and rideshare projects, and show leadership by developing and adopting travel plans across government[66]. • Develop whole-of-government approaches to managing travel demand through the design and delivery of government services. • Establish the potential impact of digital communication (eg teleconferencing) on travel habits and transport needs.
Freight and logistics productivity	• Develop a controlled permit system to allow over-mass and over-dimension vehicles on selected routes.
Traffic management and traveller information	• Investigate the feasibility, costs and benefits of an integrated transport information gathering and collation network, organised at a regional or national level, as a building block to better real-time information for travellers. • Gather information on best-practice real-time information systems currently used in New Zealand and overseas and, working with regions, identify opportunities for additional or improved systems.
Maintenance	• Scope a road surfacing strategy which covers the safety, environmental, noise and lifetime cost/benefits of surfacing options.

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66.   This action is listed in the New Zealand Energy Efficiency and Conservation Strategy (NZEECS).

INVESTING IN CRITICAL INFRASTRUCTURE AND PEOPLE	
Targeted network enhancements	• **Work with local authorities and relevant organisations to identify critical infrastructure including economically important routes, ports, airports and inter-modal terminals.** • **Ensure that the Funding Allocation Process for transport activities is consistent with this Strategy in the current review of that process (including the New Zealand Transport Agency's Economic Evaluation Manual).**
Investing in Auckland	• Consider the forthcoming Auckland road pricing advice in the context of the goals and options in this Strategy. • Investigate the feasibility of progressing the Waterview Connection section of Auckland's Western Ring Route as a public private partnership. • Continue strong investment in public transport. • Support the development of the *One Plan*[67] for Auckland. • Consider the transport-related government decisions following the report of the Royal Commission on Auckland Governance.
Transport workforce development	• Research current labour shortages, labour market constraints and future skill demands in the transport sector in partnership with industry training organisations and private sector transport agencies, with a view to developing a strategic approach.
Freight	• **Complete the National Freight Study by mid-2008 and use it to improve freight policy, including specific ways to move towards the identified freight targets.** • Implement the actions set out in *Sea Change* regarding sea freight. • Investigate options, in addition to the trial for heavier vehicles, to improve supply chain efficiency.
Transport sector resilience	• Provide transport agencies and local authorities with a methodology to assist them in assessing the durability of their strategies, plans and major decisions around transport over the long term.

67. The first *One Plan* for Auckland is being developed by the Regional Sustainable
     Development Forum and is due for completion in September 2008. The plan will
     provide a single, strategic framework and plan of action for the Auckland region.

INCREASING THE AVAILABILITY AND USE OF PUBLIC TRANSPORT, CYCLING, WALKING, AND OTHER SHARED AND ACTIVE MODES

Public transport	• Develop a set of objectives outlining the outcomes sought by government, so that public transport can be evaluated as to whether it is value for money or not. • Work with Regional Transport Committees to review regional passenger transport mode share targets. This will be achieved through scheduled reviews of Regional Land Transport Strategies, and Regional Public Transport Plans, by 2012. • Investigate the need to revise funding procedures for public transport activities to ensure all costs and benefits of such projects are accounted for in their assessment[68].
Walking and cycling	• Work with Regional Transport Committees to review regional cycling and walking mode share targets through scheduled reviews of Regional Land Transport Strategies, by 2012. • Investigate the need to revise funding procedures for walking and cycling projects to ensure all costs and benefits of such projects are accounted for in their assessment[69]. • Review legislative barriers to improving transport choice and achieving a shift to walking and cycling. • Continue to implement initiatives outlined in the walking and cycling strategy's *(Getting there – on foot, by cycle)* implementation plan, for example the 'Model Communities' initiative and 'Bikewise'[70]. • Develop and introduce a further *'Getting There'* Implementation Plan for walking and cycling. • Explore the implications and practicality of applying a 'road user hierarchy' to transport planning systems.

CONSIDERING OPTIONS FOR GENERATING REVENUE FOR INVESTMENT IN TRANSPORT INFRASTRUCTURE AND SERVICES

	• **Identify the current and expected full costs and charges for road, rail and sea transport so they can be taken into account in future funding allocation and charging.** • Consider the potential for improving charging systems by examining the social, economic, environmental and financial characteristics of different options, taking into account regional differences and viable pathways to any new system. This evaluation should be based on best-practice from countries that are already actively pursuing more sophisticated charging strategies. This should include consideration of technological developments, costs and lessons on implementation. • Monitor progress against the targets and the expected trends from measures applied under the current charging system. This will provide an indication of the possible timings for moving to a more sophisticated system. • Develop criteria for determining the conditions under which possible changes to charging may be required, taking account of the forthcoming Auckland road pricing advice.

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68.   This action is listed in the NZEECS.
69.   This action is listed in the NZEECS.
70.   This action is listed in the NZEECS.

USING NEW TECHNOLOGIES AND FUELS

- Develop an action plan that coordinates the initiatives required to address vehicle fleet objectives. This includes achieving the target for reducing CO_2 emissions from vehicles, and actions in other areas such as improving vehicle safety and reducing harmful emissions.
- Identify and remove any barriers to the uptake of vehicles using new fuels and technologies provided they meet appropriate safety standards. This includes plug-in hybrid, full electric, hydrogen, liquified petroleum gas, compressed natural gas and compressed air technologies.
- Continue to work with manufacturers on issues relating to the biofuel compatibility of used and new vehicles.
- Monitor future vehicle technology developments through the Vehicle Energy and Renewables Group[71], and contribute to international dialogue on the role and potential of alternative fuels.
- Introduce biofuels as a 2.5 percent proportion of all petrol and diesel in 2012.
- Review the Biofuels Obligation in 2010 to establish all aspects of the obligation after 2012, including obligation levels.
- Continue to work with the New Zealand-based aviation industry, and within international forums, to encourage the use of more fuel-efficient practices and aircraft.

MAINTAINING AND IMPROVING INTERNATIONAL LINKS

- **Negotiate an open aviation market with the European Union.**
- Facilitate the International Civil Aviation Organisation audit of aviation security in New Zealand (scheduled for 2011) and act on its findings.
- Prepare for compliance with new United States aviation and maritime cargo screening requirements.

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71. This group is made up of nine industry and research experts. It is responsible for promoting the use of renewable energy in transport, particularly in the areas of electric vehicles and biofuels.

OTHER ACTIONS	

Safety	• **Develop a road safety 2020 strategy** including:
	  – a vision that describes New Zealand's long-term aspirations for road safety
	  – targets for reducing deaths and serious injuries to 2020
	  – targets and initiatives for reducing the number of crashes involving specific road users
	  – the measures that will be taken to achieve these targets.
	• Develop a rail safety 2020 strategy.
	• Implement the Safe Ship Management Development Programme and the National Recreational Boating Safety Strategy.
	• Update the *Maritime Transport Act 2004* to implement relevant international conventions and to reinforce the Port and Harbour Safety Code.

Air quality	• Improve national air quality monitoring and modelling capacity to allow better understanding of the location and extent of exposure to harmful pollutants, as well as the targeting of action to address these issues. • Scope the development of a transport air quality management strategy.
Noise and vibration	• Improve national noise monitoring and modelling capacity to allow better understanding of the location and extent of harmful exposure to noise/vibration from traffic, as well as targeting of action to address these issues. • Develop a framework for the management of land transport noise. • Finalise New Zealand Standard NZS 6806 which will contain noise criteria for new and substantially upgraded roads.
Other environmental effects	• Scope the development of a national framework for managing the local effects of transport on the environment. • Consult Regional Councils and other stakeholders on the adoption of Transit New Zealand's stormwater guidelines as national good practice and possible development into a New Zealand Standard. • Develop a fleet commitment and driver training programme for the commercial transport sector.

PART C: MONITORING AND REVIEW

Accountability for delivery of this Strategy.

The **monitoring** framework.

How **gaps in knowledge** will be dealt with.

Proposals for **strengthening targets** including setting interim targets.

A **review** cycle for the Strategy.

ACCOUNTABILITY, MONITORING, REPORTING AND REVIEW

Looking to the future, it will be important to **monitor progress** in delivering the targets and actions set out in this Strategy, and to **review** it on a regular basis. This Chapter sets out proposals for doing so.

6.1 Accountability and delivery

This Strategy has been prepared to shape the future of transport in New Zealand to 2040. As such it will guide the actions of the government and of Crown entities responsible for different aspects of regulating transport and providing infrastructure. The government, and the Ministry of Transport in particular, will be accountable for the Strategy's delivery by 2040.

However, as noted earlier, many other organisations (such as local authorities and private transport providers) and the users of transport services will be involved. The government alone is not able to ensure that the objectives defined in this Strategy will be achieved and it is essential for its success that others within the sector 'buy into' the vision, targets and actions set out in this document.

The relationship between local authorities and central government is particularly focused on funding and planning. These sectors need to work together to tackle the many challenges facing New Zealand over the next 30 years.

Private companies have a complex relationship with the government through regulations and contracts. However, decisions made by the private sector are largely driven by the market and the commercial interests of those companies. The government will seek the best arrangements to ensure that businesses can thrive and respond to changing market conditions, but also that their contribution supports the delivery of the Strategy's objectives. This document, with a timeframe to 2040, provides a basis upon which long-term investment decisions can be made.

Finally, success will depend on the everyday transport decisions and choices of individuals – where to live and work, what type of vehicle to purchase (if any) and how to travel. Behaviour change by New Zealanders will be essential if the growth in carbon emissions and other adverse effects of transport are to be reduced. As set out in section 3.1, the government will continue to review the use of social marketing and education, the provision of infrastructure and services, charging for transport use, and regulation and enforcement to ensure that the necessary changes in behaviour are achieved in a way that still allows for affordability, social networking and social equity.

6.2 Developing the target framework and filling gaps in knowledge

This Strategy has established, for the first time, a set of targets for achieving the transport vision. However, the framework of targets is not complete – insufficient data in some cases has meant it has not been possible to set a specific target. Other targets set the broad direction for progress, but have yet to be refined into measurable targets. Interim targets need to be developed to enable the measurement of progress in the short to medium term. Finally, further work is required to complete the assessment of the difficulty, urgency, costs and benefits associated with each target.

Work to develop the target framework will be undertaken by the next update of this Strategy in 2010, in collaboration with transport stakeholders. The Government Policy Statement (GPS) will set some interim targets for the land transport sector.

More broadly, the government will work collaboratively with Crown entities, local authorities and the wider transport sector to build a better understanding of transport trends and the factors underpinning them, as well as to model the likely impacts of new policy measures.

To aid this process, and make sure that research is done efficiently and in a way that supports this Strategy, the government is also committed to updating the Transport Research Strategy. A new research strategy is planned for 2009. The government will also undertake a review of research throughout the transport sector including processes for commissioning, funding and evaluation.

6.3 Encouraging wider debate within the sector

The stakeholder feedback on *Sustainable Transport* (the discussion paper that preceded this Strategy) expressed support for the process of engaging others in the debate on the future of transport in New Zealand, but at the same time there was concern that this debate had been too limited. In particular, concern was expressed about the lack of opportunity for external agencies to comment on the actions proposed in this Strategy.

One of the important benefits of using the next two years to refine and complete the targets and actions in this Strategy will be more time and opportunity to widen and deepen the dialogue with stakeholders. The government will seek wide transport sector input into the next review of this Strategy in two years.

6.4 Dealing with change and uncertainty

Chapter 2 highlights some of the key drivers of change for transport – external factors that New Zealand has little control over. These are likely to affect New Zealand's current and future transport system and could have a profound impact on the delivery of this Strategy. However, the future remains uncertain. Issues such as the price and availability of oil, the level of threat posed by terrorism, the effects of climate change and swings in the global economy cannot be predicted with any degree of certainty. This is a significant challenge for this Strategy, which is looking ahead more than 30 years. For this reason, it is important to review the assumptions on such issues and regularly re-evaluate this document. The government's intention is that this should happen, as part of a full review of the Strategy every six years, after 2010.

6.5 Monitoring and reporting performance – the Transport Monitoring Indicator Framework

The government will closely monitor and report progress in achieving the targets set within this Strategy. Where insufficient progress is being made, measures carried out by the government will be adjusted to bring performance in that area back on target.

The monitoring and publishing of performance will be undertaken by means of the Transport Monitoring Indicator Framework (TMIF). The outputs from the TMIF are accessible via the Ministry of Transport website at **www.transport.govt.nz** and will be updated and published on an annual (or more frequent) basis.

6.6 The review cycle

Every third year, the results of performance monitoring against the targets will lead to a review of the actions required over the next three years. This review will be used by the government to determine whether funding is being targeted at the various activity classes in the most effective way, and whether the right balance between policy measures is being achieved. This review will feed directly into both the next action plan and the GPS.

The review cycle for the Strategy may therefore be summarised as follows:

YEAR	STRATEGY REVIEW	3 YEAR REVIEW OF PERFORMANCE	ACTION PLAN	GPS
2010	✓	✓		
2011			✓	✓
2013		✓		
2014			✓	✓
2016	✓	✓		
2017			✓	✓
2019		✓		
2020			✓	✓

APPENDIX A

VISION FOR TRANSPORT – PRINCIPLES

AFFORDABLE TRANSPORT

- places an acceptable financial demand on central and local government, regions, households, businesses and individuals
- takes into account available funding sources
- considers costs including those that occur in other sectors
- requires that all investments in transport are cost-effective and represent value for money.

INTEGRATED TRANSPORT

- recognises the need for end-to-end solutions for people and freight
- has effective links within and between modes with each playing its appropriate part
- complements and does not compromise decisions or interests in other sectors
- considers funding throughout planning processes
- ensures that transport interests are incorporated into, and contribute to, broader planning initiatives.

SAFE TRANSPORT

- meets expectations for levels of acceptable risk
- protects key transport routes and services (in the event of natural or other disasters)
- values the health and safety of all transport users, workers and operators equally
- is based on design, operating and maintenance standards that protect life, property and nature.

RESPONSIVE TRANSPORT

- recognises that people and freight need to move at different times and use different transport modes
- recognises the direct effect transport has on people and their quality of life, and takes into consideration the diverse characteristics of communities and regions across the country (eg in rural areas)
- has the flexibility to react to economic, social, environmental and technological changes
- is prepared for, and recovers well from, unforeseen events.

SUSTAINABLE TRANSPORT

- enables the country's economic, social, environmental and cultural goals to be met in a way that is affordable and meets the needs of current and future generations
- enables the access and development needs of individuals, businesses and communities to be met safely and with an appropriate mode of transport
- enables the wellbeing of individuals and communities, and seeks to create opportunities to reduce transport inequalities
- contributes to a carbon neutral future and operates within its environmental limits, using finite reserves of non-renewable resources wisely and, where possible, substituting them with renewable resources
- safeguards New Zealand's ecosystems and land for generations to come
- means individuals understand their role and responsibility in contributing to sustainable transport for New Zealand and make transport choices accordingly.

APPENDIX B

TRANSPORT SECTOR OUTCOMES

The transport sector outcomes that relate to each objective are:

ENSURING ENVIRONMENTAL SUSTAINABILITY

- the transport system is actively moving towards reducing the use of non-renewable resources and their replacement with renewable resources
- negative impacts of transport are reducing in terms of human and natural environments.

ASSISTING ECONOMIC DEVELOPMENT

- growth and development are increasingly integrated with transport
- transport users increasingly understand and meet the costs they create
- New Zealand's transport system is improving its international and domestic linkages including inter-modal transfers
- the effectiveness of the transport system is being maintained or improved
- the efficiency of the transport system is continuing to improve
- the negative impacts of land-use developments on the transport system are reducing.

ASSISTING SAFETY AND PERSONAL SECURITY

- New Zealand's transport system is increasingly safe and secure
- the transport system is improving its ability to recover quickly and effectively from adverse events.

IMPROVING ACCESS AND MOBILITY

- the transport system is increasingly providing affordable and reliable community access.

PROTECTING AND PROMOTING PUBLIC HEALTH

- negative impacts of transport are reducing in terms of fatalities, injuries and harm to health.

APPENDIX C

RATIONALE FOR TRANSPORT TARGETS

The following table sets out the rationale for the transport targets:

HALVE PER CAPITA GREENHOUSE GAS EMISSIONS FROM DOMESTIC TRANSPORT BY 2040[72]

- Greenhouse gas emissions from transport increased by 64 percent in the period 1990-2006 and currently make up 18 percent of New Zealand's total emissions.

- This target was set in the New Zealand Energy Strategy 2007 (NZES), as part of New Zealand's wider response to climate change. An extensive body of work has established how this will be achieved. The target equates to a reduction of 60 percent in predicted levels of per capita transport emissions in 2040 because, without action, emissions per capita are likely to increase in the future. The implementation pathway adopts an interim milestone of a 23 percent reduction in per capita emissions from transport by 2020. Section 4.1 sets out the contributions to these targets that will be made respectively by modal shift, technology and fuel changes within heavy and light vehicle fleets. The adoption of this pathway has come from discussion with the transport industry on likely timescales for development and uptake of new technologies, modelling of transport patterns in major urban areas and the expectations for modal shift in existing RLTSs. It is also based on other targets (eg public transport mode share) being achieved.

INCREASE COASTAL SHIPPING'S SHARE OF INTER-REGIONAL FREIGHT TO 30 PERCENT OF TONNE-KILOMETRES BY 2040

- Coastal shipping currently represents 15 percent of inter-regional freight tonne-kilometres.

- The target is based on a series of factors including reasonable assumptions about the capacity of freight that could be moved, trends in international shipping, comparative costs with other modes and estimated growth in the total freight task (estimated to more than double by 2040). The National Freight Study and Understanding Transport Costs and Charges Study, both currently underway, will provide further information that will allow this target to be refined in the future if necessary.

INCREASE RAIL'S SHARE OF FREIGHT TO 25 PERCENT OF TONNE-KILOMETRES BY 2040

- Rail currently represents 18 percent of freight tonne-kilometres.

- The target is based (as for the sea freight target above) on reasonable assumptions about the capacity of freight that could be moved, comparative costs with other modes and estimated growth in the total freight task. As with sea freight, the National Freight Study and Understanding Transport Costs and Charges Study will provide further information that will allow this target to be refined in the future if necessary.

- Rail already transports some intra-regional freight and this will need to continue in the future for both the rail and sea freight targets to be achieved.

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72.   Relative to 2007 per capita emissions.

BECOME ONE OF THE FIRST COUNTRIES IN THE WORLD TO WIDELY USE ELECTRIC VEHICLES

- This target was set in the NZES. Its rationale is based on the fact that the NZES also adopts a target that by 2025, 90 percent of electricity will come from renewable resources. This makes electric vehicles a logical choice in a low carbon transport future, provided the technology becomes available at an affordable price and the relevant distribution and charging infrastructure is available.

REDUCE THE KILOMETRES TRAVELLED BY SINGLE OCCUPANCY VEHICLES, IN MAJOR URBAN AREAS ON WEEKDAYS, BY TEN PERCENT PER CAPITA BY 2015 COMPARED TO 2007

- The predominant users of roads, accounting for about 80 percent of road traffic, are people in cars. About 90 percent of people travelling to work in cars do so alone.

- This target was set in the NZES. It has come from international comparisons of transport objectives and achievements. A per capita measure decouples the target from changes in population.

REDUCE THE RATED CO_2 EMISSIONS PER KILOMETRE OF COMBINED AVERAGE NEW AND USED VEHICLES ENTERING THE LIGHT VEHICLE FLEET TO 170 GRAMS CO_2 PER KILOMETRE BY 2015, WITH A CORRESPONDING REDUCTION IN AVERAGE FUEL USED PER KILOMETRE

- Currently around 18% of new vehicles entering the fleet achieves 170g/km rated CO_2 emissions.

- This target was based on analysis of vehicle standards globally. It positions New Zealand mid-way between Australia and the European Union. The Australian voluntary target for 2010 is an average of 222g/km and the European voluntary target 140g/km by 2008 (although European manufacturers are not expected to achieve this and the European Commission has proposed a mandatory target of 120g/km for 2012).

INCREASE THE AREA OF CROWN TRANSPORT LAND COVERED WITH INDIGENOUS VEGETATION

- The discussion paper *Sustainable Transport* suggested a target of 'no net loss' of indigenous vegetation. Stakeholder feedback suggested this was not ambitious enough, as this would normally be a requirement through the RMA process. The confirmed target recognises that there is potential to increase the area of indigenous vegetation on Crown transport land. However, it is not expressed as a number, pending evaluation of the opportunities and costs over the next two years.

FOR IDENTIFIED CRITICAL ROUTES, IMPROVE RELIABILITY OF JOURNEY TIMES

- Baseline information on journey time reliability is weak and not consistent between different major urban areas. However, stakeholder feedback indicated the importance of reliability and the need for a target. The economic benefits are most important on critical routes and this is reflected in the target. The definition of these routes has yet to be undertaken and is an immediate priority for action within this Strategy (to be undertaken collaboratively between central and local government). Once this process is complete, and baseline monitoring of journey time reliability on these routes has been undertaken, targets will be set and included in the next update of the Strategy in 2010.

FOR IDENTIFIED CRITICAL ROUTES, REDUCE AVERAGE JOURNEY TIMES

- The same rationale applies to average journey times as to journey time reliability above.

REDUCE ROAD DEATHS TO NO MORE THAN 200 PER ANNUM BY 2040

- Road deaths have declined steadily since the late 1980s. However, in recent years the decline in the number of deaths from road crashes appears to be slowing. The road toll in 2007 was 423.

- This target is based on the current world-best road safety rates. A road toll of 200 deaths per year represents 4.5 per 100,000 people, a similar level to the 4.6 per 100,000 people currently achieved in the Netherlands.

REDUCE SERIOUS INJURIES ON ROADS TO NO MORE THAN 1,500 PER ANNUM BY 2040

- Hospital admissions from road crashes have started to increase in the last few years. There were 3,050 serious injuries in 2007.

- As for road deaths, this target is based on New Zealand achieving current world best road safety levels by 2040.

INCREASE OVERALL MODE SHARE OF PUBLIC TRANSPORT TO SEVEN PERCENT OF ALL TRIPS BY 2040 (IE FROM 111 MILLION BOARDINGS IN 2006/7 TO MORE THAN 525 MILLION BOARDINGS IN 2040)

- Public transport use is estimated to have increased by almost 50 percent since 1999/2000. However, the proportion of trips taken by public transport relative to other forms of transport is low compared with earlier decades. Total boardings for 2006/7 were 111 million. This is 28 boardings per capita a year (about one boarding on public transport per person a fortnight, on average). The 2040 target of seven percent of all trips by public transport equates to 117 boardings per person per year, or, just over two boardings a week per person on average. This target is based on two conditions. Firstly, that the projected growth rate of public transport in Wellington to 2016 continues to 2040, and secondly that Auckland and Canterbury achieve the same per capita level of use as Wellington in 2040. The target is expressed as an average figure - the actual contributions of individual cities and regions will be represented in regional targets, which have yet to be developed.

- This target includes travel by bus, train and ferry, but excludes inter-urban coach travel and dedicated school transport.

INCREASE WALKING, CYCLING AND OTHER ACTIVE MODES TO 30 PERCENT OF TOTAL TRIPS IN URBAN AREAS BY 2040

- Walking and cycling currently represent around 18 percent of total trips in urban areas. The trend in recent years has been downwards, having reduced from around 26 percent in 1989/90.

- The walking component of the target was partly linked to the expected rise in public transport usage (ie more trips to and from bus stops) and partly informed by walking targets in a number of major urban areas.

- The cycling component was informed by the targets in a selection of urban cycling strategies (eg from Christchurch and Auckland) and projected to 2040.

- This target refers to travel by people aged five and over, and specifically to travel by residents of Main Urban Areas (ie population centres of over 30,000 people or more, as defined by Statistics New Zealand). Further work will be undertaken to develop separate walking and cycling targets.

REDUCE THE NUMBER OF PEOPLE EXPOSED TO HEALTH-ENDANGERING NOISE LEVELS FROM TRANSPORT

- It has not been possible to set a quantified target, since monitoring of noise is not comprehensive. Further monitoring will be required in the future to set a baseline and from there, to project future targets for improvement.

REDUCE THE NUMBER OF PEOPLE EXPOSED TO HEALTH-ENDANGERING CONCENTRATIONS OF AIR POLLUTION, IN LOCATIONS WHERE THE IMPACT OF EMISSIONS ARISING FROM TRANSPORT IS SIGNIFICANT

- Vehicle emissions in New Zealand have been estimated to contribute to the premature mortality of 500 people annually.

- It has not been possible to set a quantified target, since monitoring of air quality is not comprehensive. Also, it is difficult to differentiate the proportion of air pollution from transport as compared to other sources of pollution in particular locations. Further monitoring will be required in the future to set a baseline and from there, to project future targets for improvements.

APPENDIX D

CONTRIBUTIONS MADE BY THE KEY COMPONENTS TO EACH TARGET

The following table sets out the contribution that each key component will make to delivering the targets:

TARGETS KEY COMPONENTS	Halve per capita domestic transport greenhouse gas emissions by 2040	Increase coastal shipping's share of inter-regional freight to 30 percent of tonne kilometres by 2040	Increase rail's share of freight to 25 percent of tonne kilometres by 2040	Become one of the first countries in the world to widely deploy electric vehicles	Reduce the kilometres travelled by single occupancy vehicles in major urban areas on weekdays by ten percent per capita by 2015 compared to 2007	Reduce the rated CO_2 emissions per kilometre of combined average new and used vehicles entering the light vehicle fleet to 170 grams CO_2 per kilometre by 2015 with a corresponding reduction in average fuel used per kilometre	Increase the area of Crown transport land covered with indigenous vegetation
Integrated planning	Reduced travel demand and journey distances. Public transport, walking and cycling more viable. Integration within transport will support mode shift.	Location of industry and other freight generators near ports. Phasing of port capacity improvements with economic growth.	Location of industry and other freight generators near railheads. Phasing of rail capacity improvements with economic growth. Safeguarding future rail routes in planning documents.		Reduced travel demand and journey distances. Public transport, walking and cycling more viable.		RMA process will identify appropriate mitigation of transport projects.
Making best use of existing networks and infrastructure	Reduced congestion and smoother traffic flows. Improved road surfaces. Freight productivity increases. Priority lanes will encourage mode shift.	Optimising sea freight efficiency, including land access to ports, will increase attractiveness of sea freight.	Optimising rail freight efficiency, including surface access to rail heads, will increase attractiveness of rail freight.		Measures such as high occupancy vehicle lanes increase the efficiency of use of road space, and will help encourage lower single occupancy car travel.		
Investing in critical infrastructure and the transport sector workforce	Reduced congestion on critical routes. Strong emphasis on rail and sea critical routes.	Strong emphasis on sea as critical routes. Addressing workforce issues will improve capacity.	Strong emphasis on rail as critical routes. Addressing workforce issues will improve capacity.	Investing in workforce will be required for new technology such as electric vehicles.	Investment in critical passenger transport routes will help provide alternatives for single occupancy vehicle drivers.	Investing in skilled vehicle inspectors and mechanics will be important for improving the fuel efficiency of the fleet.	

For identified critical routes, improve reliability of journey times	For identified critical routes, reduce average journey times	Reduce road deaths to no more than 200 per annum by 2040	Reduce serious injuries on roads to no more than 1,500 per annum by 2040	Increase overall public transport mode share to seven percent of all trips by 2040 (from 111 million boardings in 2006/7 to more than 525 million boardings in 2040)	Increase walking and cycling and other active modes to 30 percent of total trips in urban areas by 2040	Reduce the number of people exposed to health-endangering noise levels from transport	Reduce the number of people exposed to health-endangering concentrations of air pollution in locations where the impact of emissions arising from transport is significant
Managing travel demand reduces congestion, thereby improving the reliability of journey times. Developer contributions to road infrastructure.	Managing travel demand reduces congestion, thereby improving the reliability of journey times. Developer contributions to road infrastructure.	Good urban design can lead to safer roads by creating walking and cycling-friendly environments, and encouraging safer speeds.	Good urban design can lead to safer roads by creating walking and cycling-friendly environments, and encouraging safer speeds.	Reduced travel demand and journey distances. Location and development along public transport corridors. Design of development for public transport accessibility.	Reduced travel demand and journey distances. Design of inviting walking and cycling friendly environments.	Reduced exposure to noise through better location and design of development near to existing transport corridors (ie avoiding reverse sensitivity).	Reduced exposure to air pollution through better location and design of development near to existing transport corridors (ie avoiding reverse sensitivity).
Improved traffic management and network efficiency reduces congestion with consequent improvements to reliability of journey times.	Improved traffic management and network efficiency reduces congestion with consequent improvements to journey times.	Investing in existing infrastructure will include safety measures such as enforcement and education. Effective maintenance improves safety.	Investing in existing infrastructure will include safety measures such as enforcement and education. Effective maintenance improves safety.	Priority to public transport through high occupancy vehicle lanes can represent efficient use of road space and encourage use of public transport.	Localised measures to improve safety can bring benefits to cyclists and pedestrians.	Smooth traffic flows and well maintained roads reduce noise pollution.	Smooth traffic flows reduce air pollution.
Investing in critical routes will bring direct journey time reliability benefits on those routes.	Investing in critical routes will bring direct journey time benefits on those routes.	Investments in critical routes will often bring safety benefits. High workforce skills levels are required for a safe transport system.	Investments in critical routes will often bring safety benefits. High workforce skills levels are required for a safe transport system.	Critical routes will include strategically important public transport links. Tackling workforce shortages in public transport such as drivers will increase capacity.			

TARGETS / KEY COMPONENTS	Halve per capita domestic transport greenhouse gas emissions by 2040	Increase coastal shipping's share of inter-regional freight to 30 percent of tonne kilometres by 2040	Increase rail's share of freight to 25 percent of tonne kilometres by 2040	Become one of the first countries in the world to widely deploy electric vehicles	Reduce the kilometres travelled by single occupancy vehicles in major urban areas on weekdays by ten percent per capita by 2015 compared to 2007	Reduce the rated CO_2 emissions per kilometre of combined average new and used vehicles entering the light vehicle fleet to 170 grams CO_2 per kilometre by 2015 with a corresponding reduction in average fuel used per kilometre	Increase the area of Crown transport land covered with indigenous vegetation
Increasing the availability and use of public transport, cycling, walking, and other shared and active modes	Increased usage of low emission modes is a major part of reducing greenhouse gas emissions.			There is scope for increasing use of electricity to power public transport (eg trolley buses).	Increasing availability and use of shared and active modes is important in reducing single occupancy of vehicles.		
Considering options for generating revenue for investment in transport infrastructure and services	New ways of charging could be designed to provide incentives for reduced travel and low emission vehicles and fuels.	New ways of charging could be designed to reflect the full costs to society of different freight modes. This may increase freight transport by sea.	New ways of charging could be designed to reflect full costs to society of different freight modes. This may increase freight transport by rail.	Fairer charging systems would allow electric vehicles to contribute to the funding of land transport, but can also reflect its lower externalities.	New charging systems could be designed to provide a financial incentive for more efficient travel choices.	New charging systems could be designed to provide a greater incentive for purchasing low emission vehicles.	
Using new technologies and fuels	The adoption of new technologies and fuels is a major component of the strategy to reduce greenhouse gas emissions from transport.	Technology will help make coastal shipping more efficient.	Technology will help make rail freight transport more efficient.	Electric vehicles are one of the key new technologies that will change land transport in the future in New Zealand.	New technologies such as real time information for public transport and rideshare software make alternatives to single occupancy more attractive.	Improvements to vehicle technology will improve fuel efficiency and rated CO_2 emissions.	
Maintaining and improving international links		Improving international freight links may increase the capacity of coastal shipping.					

For identified critical routes, improve reliability of journey times	For identified critical routes, reduce average journey times	Reduce road deaths to no more than 200 per annum by 2040	Reduce serious injuries on roads to no more than 1,500 per annum by 2040	Increase overall public transport mode share to seven percent of all trips by 2040 (from 111 million boardings in 2006/7 to more than 525 million boardings in 2040)	Increase walking and cycling and other active modes to 30 percent of total trips in urban areas by 2040	Reduce the number of people exposed to health-endangering noise levels from transport	Reduce the number of people exposed to health-endangering concentrations of air pollution in locations where the impact of emissions arising from transport is significant
By reducing congestion on the roads through increased use of public transport, reliability of journey times will improve.	By reducing congestion on the roads through increased use of public transport, average journey times will reduce.	With a reduction in the number of vehicles on the road, road deaths are expected to decrease. Improving walking and cycling facilities will also improve safety.	With a reduction in the number of vehicles on the road, road deaths are expected to decrease. Improving walking and cycling facilities will also improve safety.	Increasing the availability and use of public transport will increase public transport mode share.	Improving facilities for walking and cycling will increase their mode share.	With an increase in walking and cycling, the number of vehicles on the roads will decrease, which may lead to reductions in noise levels from transport.	With an increase in public transport use, walking and cycling, congestion and the associated air pollution levels are expected to decrease, thereby reducing the number of people exposed to harmful levels.
New charging systems could be designed to reduce congestion at peak times, so improving the reliability of journey times.	New charging systems could be designed to reduce congestion at peak times, so reducing average journey times.	New charging systems could provide a greater incentive to purchasing safer vehicles.	New charging systems could provide a greater incentive to purchasing safer vehicles.	New charging systems could provide a financial incentive for more efficient travel choices such as public transport.	New charging systems may emphasise further the fact that cycling and walking, where viable, are cheap travel alternatives.	New charging systems could be designed to reduce congestion at locations where noise impacts are significant.	New charging systems could be designed to reduce congestion at locations where air pollution issues are significant.
Intelligent transport systems including real time and ramp signalling can have major benefits in reducing congestion.	Intelligent transport systems including real time and ramp signalling can have major benefits in reducing congestion.	New technology will continue to play a major part in driving down the road toll.	New technology will continue to play a major part in preventing accidents and protecting vehicle occupants from injury.	New technology such as real time information and smart ticketing can make use of public transport more appealing.	Technology can contribute to improvements in cycling and pedestrian safety, so making these modes more attractive.	Technological developments have some potential to reduce noise levels from vehicles.	Technological Improvements to vehicles are expected to bring further reductions in emissions of harmful air pollution.

APPENDIX E

CONTRIBUTIONS MADE BY THE KEY COMPONENTS TO EACH TRANSPORT OBJECTIVE

OBJECTIVES		ENSURING ENVIRONMENTAL SUSTAINABILITY	ASSISTING ECONOMIC DEVELOPMENT	ASSISTING SAFETY AND PERSONAL SECURITY	IMPROVING ACCESS AND MOBILITY	PROTECTING AND PROMOTING PUBLIC HEALTH
KEY COMPONENTS	Integrated planning	✓✓	✓✓	✓	✓✓	✓✓
	Making best use of existing networks and infrastructure	✓	✓✓	✓	✓	✓
	Investing in critical infrastructure and the transport sector workforce	✓	✓✓	✓	✓	✓
	Increasing the availability and use of public transport, cycling, walking, and other shared and active modes	✓✓	✓✓	✓	✓✓	✓✓
	Considering options for charging that will generate revenue for investment in transport infrastructure and services	✓✓	✓✓	✓	✓	✓
	Using new technologies and fuels	✓✓	✓	✓✓	✓	✓✓
	Maintaining and improving international links	✓	✓✓	✓✓	✓	

✓✓   Key contribution

✓   Makes a contribution

GLOSSARY

The Accessible Journey: Report of the Inquiry into Accessible Public Land Transport – Outlines the results of an inquiry undertaken by the Human Rights Commission into accessible public land transport. The Inquiry was prompted by the experiences and concerns of people with disabilities seeking enforcement of their right not to be discriminated against in the provision of public transport services. The report makes recommendations which range from required changes to legislation, regulations, policies and procedures for funding arrangements to improvements that can be achieved in the short term with minimal expenditure. The report was published in September 2005.

Biodiesel – Diesel fuel derived from plant or animal sources.

Bioethanol – A form of alcohol derived from plant or animal sources. It may be blended in low concentrations with petrol and used in conventional petrol vehicles or used in higher concentrations in specially modified petrol vehicles.

Biofuels – Any (generally liquid) fuel derived from plant or animal sources including biodiesel and bioethanol.

Biomass – Any (generally solid) organic matter. Biomass can be used for manufacturing biofuels. Examples include: dedicated energy crops and trees, agricultural food and feed crop residues, wood and wood wastes, animal wastes and other waste materials.

Carbon dioxide – Carbon dioxide (CO_2) is a naturally occurring gas and also a by-product of burning fossil fuels and biomass, as well as other industrial processes. It is the most significant greenhouse gas.

Climate change – Human activities (such as industry, agriculture and transportation) are increasing the amount of greenhouse gases in the atmosphere. These are causing the Earth to heat up. This effect is known as global warming. Since this warming affects weather patterns and climatic conditions, it is referred to as climate change.

ETS or Emissions Trading Scheme – An emissions trading scheme creates a responsibility for a defined group of emitters to hold tradeable emission units or allowances to match some or all of their greenhouse gas emissions over a specific period. Entities subject to the scheme are able to either reduce their own emissions or trade units or allowances to meet their obligations.

Fossil fuels – Coal, natural gas, liquefied petroleum gas, crude oil and fuels derived from crude oil (including petrol and diesel) are fossil fuels because they have been formed over long periods of time from ancient organic matter.

Freight tonne-kilometres – The product of the weight of goods multiplied by the distances over which they have been conveyed.

Greenhouse gases – Atmospheric gases that retain more energy from outgoing infra-red radiation than from incoming solar radiation. Greenhouse gases include carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). Nearly half of New Zealand's total emissions are produced by agriculture, predominantly CH_4 from farm animals and N_2O from soils and fertilisers. However, the principal growth in New Zealand's emissions comes from increased CO_2, primarily from the energy sector. Most of this increase has come from transport and electricity generation.

ICAO or International Civil Aviation Organisation – ICAO is an agency of the United Nations with its headquarters in Montréal. It codifies the principles and techniques of international air navigation, and fosters the planning and development of international air transport to ensure safe and orderly growth.

IEA or International Energy Agency – An autonomous body within the OECD based in Paris. It was established in 1974 following the first oil crisis (in 1973) and in response to the enhanced power of OPEC (Organisation of Petroleum Exporting Countries).

IMO or International Maritime Organisation – Formerly known as the Inter-Governmental Maritime Consultative Organisation and established in 1948 through the United Nations to coordinate international maritime safety and related practices. With its headquarters in London, the IMO's main objective is to facilitate cooperation among governments on technical matters affecting international shipping, in order to achieve the highest practicable standards of maritime safety and efficiency in navigation.

Kyoto Protocol – A 1997 international agreement under the United Nations Framework Convention on Climate Change to address climate change, the Protocol sets greenhouse gas emission targets for developed countries.

Long-Term Council Community Plan – Each council in New Zealand is required to produce a plan for its community called the Long-Term Council Community Plan. It describes the activities of the council and provides a long-term focus for its decision making. It must cover a period of 10 consecutive financial years though it is prepared every three years.

Low-carbon – Low-carbon technology, fuels or systems are those that minimise carbon dioxide emissions from human activity.

Major Urban Areas – As defined by Statistics New Zealand, these are very large urban areas centred on a city or major urban centre with a minimum population of 30,000.

National Freight Study – The aim of this study is to get a better understanding of both current and future freight volumes and the distribution of import, export and domestic freight movements in New Zealand. It will also identify significant trends relating to freight. The study has been commissioned by the Ministry of Transport, the Ministry of Economic Development and Land Transport New Zealand.

National Land Transport Programme – The three-yearly approved programme of investment in land transport infrastructure and services from the National Land Transport Fund.

New Zealand Transport Agency – Under the *Land Transport Management Amendment Act 2008*, the New Zealand Transport Agency is the new Crown entity replacing Land Transport New Zealand and Transit New Zealand.

NZTS or New Zealand Transport Strategy – Released in December 2002, the original NZTS outlined the government's vision for transport and described how the transport system could respond to the social, economic and environmental needs of the nation. This document replaces the 2002 Strategy, and from the publication date is to be referred to as the New Zealand Transport Strategy 2008.

OECD or Organisation for Economic Co-operation and Development – An international organisation of 30 countries that accept the principles of representative democracy and a free market economy. Since 1961 its mission has been to help its member countries to achieve sustainable economic growth and employment. Its goal is also to raise the standard of living in member countries while maintaining their financial stability, in order to contribute to the development of the world economy. New Zealand joined as a member in 1973.

Public Transport – Passenger transport services available to the general public on payment of a fare. The term includes buses, passenger rail services and ferries, but excludes passenger air services. Other forms of shared transport may be included in the term, although taxis are generally excluded.

Regional Fuel Tax – This is a tool available to regions for high priority projects that would not otherwise get national funding within a timeframe desired by the region. The tax is a supplement to normal fuel excise duty.

Regional Land Transport Programme (RLTP) – The three-yearly (formerly annual) programme of investment in land transport infrastructure and services from the National Land Transport Fund within a particular region. RLTPs are prepared by Regional Transport Committees and, in the case of Auckland, by ARTA.

Regional Land Transport Strategy – Under the *Land Transport Management Amendment Act 2008*, every Regional Transport Committee on behalf of the regional council must prepare, and consult on, a Regional Land Transport Strategy to provide guidance on the land transport outcomes sought by the region. The Regional Land Transport Strategy must be produced every six years and cover a period of 30 years, and it must contribute to the vision set out in this Strategy (and the five transport objectives).

Regional Transport Committee – Under the *Land Transport Management Amendment Act 2008*, every Regional Council or Unitary Authority must establish a transport committee for its region and appoint a range of representatives (including those from Regional Councils, Territorial Authorities, the New Zealand Transport Agency, one representing each of the five transport objectives and one from a cultural perspective). The functions of the Regional Transport Committee are to prepare a Regional Land Transport Strategy and a Regional Land Transport Programme. There is provision in the Act for the Regional Transport Committee to recommend a Regional Fuel Tax for the region.

Sea Change – The New Zealand domestic sea freight strategy. Its broad purpose is to revitalise coastal shipping in New Zealand. It includes an action plan to increase the maritime sector's share of inter-regional freight moved in New Zealand.

Sustainable Transport – This discussion paper was released in December 2007 and set out the issues and challenges facing the transport sector. It proposed a series of specific targets and was used as a mechanism to seek feedback from stakeholders. The stakeholder responses from *Sustainable Transport* have been used to inform the development of this Strategy.

Transport Monitoring Indicator Framework (TMIF) – The TMIF has been developed by the Ministry of Transport in consultation with transport agencies. It provides a national and, where possible, regional framework for the robust and consistent performance monitoring of the New Zealand transport system and the New Zealand Transport Strategy 2008.

Ministry of Transport
TE MANATŪ WAKA