



Regional Travel Demand Management Strategy

December 2005

Quality for Life



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Executive summary

Vision

The vision of the Regional Travel Demand Management Strategy is “to use Travel Demand Management initiatives in achieving sustainable outcomes for the greater Wellington land transport system”.

Process

This strategy has been developed from the policies of the Regional Land Transport Strategy (RLTS) and in conjunction with a technical group comprised of representatives from the Greater Wellington Regional Council Access Planning and Strategic Direction groups, the region’s territorial authorities, Transit New Zealand (Wellington region and national office), Land Transport New Zealand (Wellington region and national office), the Ministry of Transport, The Energy Efficiency and Conservation Authority and Regional Public Health.

Problem framing

An extensive problem framing exercise was undertaken in the preliminary stages of strategy development. It showed that trips by private car currently dominate all modes used, and is the mode of choice for 74% of all peak trips. Furthermore, peak trips are generally longer than interpeak trips, primarily driven by longer home to work commuter trips. If this type of trip making is to be influenced, policies need to target the initial mode choice decision made each day.

Statistics NZ 2002 medium population growth¹ and economic projections show that the greater Wellington region is expected to grow into the future with an associated increased demand for transport. By 2016, the greater Wellington region is expected to have:

- 26,000 more people than in 2001
- 44,000 more cars
- making 37,000 more personal peak time trips as a driver.

This increased activity will result in:

- an additional 558 million vehicle kilometres travelled per annum, contributing to an additional 275,000 tonnes of CO₂ greenhouse gas entering the region’s airshed annually, and
- a 25%² increase of peak period journey times reflecting increased congestion.

Even with network capacity improvements such as eight-laning between Ngauranga and Aotea Quay, increasing travel will lead to a significantly lower level of service on the strategic road network by 2016 during peak periods. This emphasises the importance of developing a cohesive Travel Demand Management Strategy, as increases in supply

¹ Further Statistics NZ medium projection refinements published in February 2005 suggest the region’s population will increase by 40,000 people by 2016. This new population forecast was unable to be taken into account in the analysis, although increased population will only exacerbate the effects reported

² Southern Strategic Network, southbound PM peak

only will not be sufficient, demonstrating that we cannot build our way out of the problem.

The strategy

The objectives of the strategy (in no particular order) are:

- ensure the most efficient use of existing transport infrastructure and services
- increase public awareness of Travel Demand Management and individual travel choices
- encourage integrated land use and transport planning that seeks to maximise transport efficiency
- encourage proactive advocacy that facilitates coordination among lead agencies.

Travel demand is influenced by a number of agencies at local, regional and national levels. The strategy seeks to continue enhancing the proactive and interactive best practice culture which exists among agencies in the greater Wellington region. It does so by clarifying the roles of these agencies in the action programme in working toward the vision, objectives and outcomes.

The strategy action programme is an integrated package of interventions. Greater Wellington Regional Council has a clear role in facilitating and monitoring strategy implementation, however the effectiveness of the strategy relies on commitment from all key agencies.

The strategy action programme extends to 2014/15 and will be monitored against performance measures linked to specific interventions. An annual monitoring programme is also in place to measure system wide indicators for travel demand. The strategy will be reviewed by June 2009.

Benefits of Travel Demand Management

It is anticipated that the effects of travel demand management on network performance can far exceed the relatively small change in vehicular trips. This is due to the heavily congested nature of the major routes leading to the Wellington Central Business District (CBD). At an annual cost of \$3M, the planned travel demand management programmes should achieve at least a 5% reduction in peak period car commuting trips to/from the Wellington CBD. The annual benefit from such an investment is in the order of \$4.6M, producing a Benefit Cost Ratio (BCR) of 1.5 i.e. a return of \$1.50 for every \$1.00 invested. This BCR satisfies the RLTS requirement for any project to be economically efficient.

Part One

Introduction

The Regional Land Transport Committee (RLTC) recognises the potential of Travel Demand Management (TDM) to positively influence travel behaviour and efficiency in the greater Wellington region. This strategy sets out a vision shared by the region's key agencies involved in TDM and sets objectives for the development and promotion of TDM.

TDM is a general term for various measures that increase transportation system efficiency, improve and influence travel choices, and reduce the need to travel, thereby helping to create more sustainable transportation. It was coined almost 20 years ago when government agencies realised the 'predict and provide' transport planning model was unsustainable, and some way of managing travel demand was required.

TDM treats mobility as a means to an end in itself, and so helps individuals and communities meet their transport needs in the most efficient way, which often reduces total vehicle traffic. The ultimate objective of most transportation is 'access'; the ability to reach desired goods, services, and destinations, with motor vehicles being just one way of achieving such access (Litman, 2002).

"TDM seeks to modify travel decisions so that more desirable transport, social, economic and environmental objectives can be achieved, and the adverse impacts of travel can be reduced" (MoT, 2005).

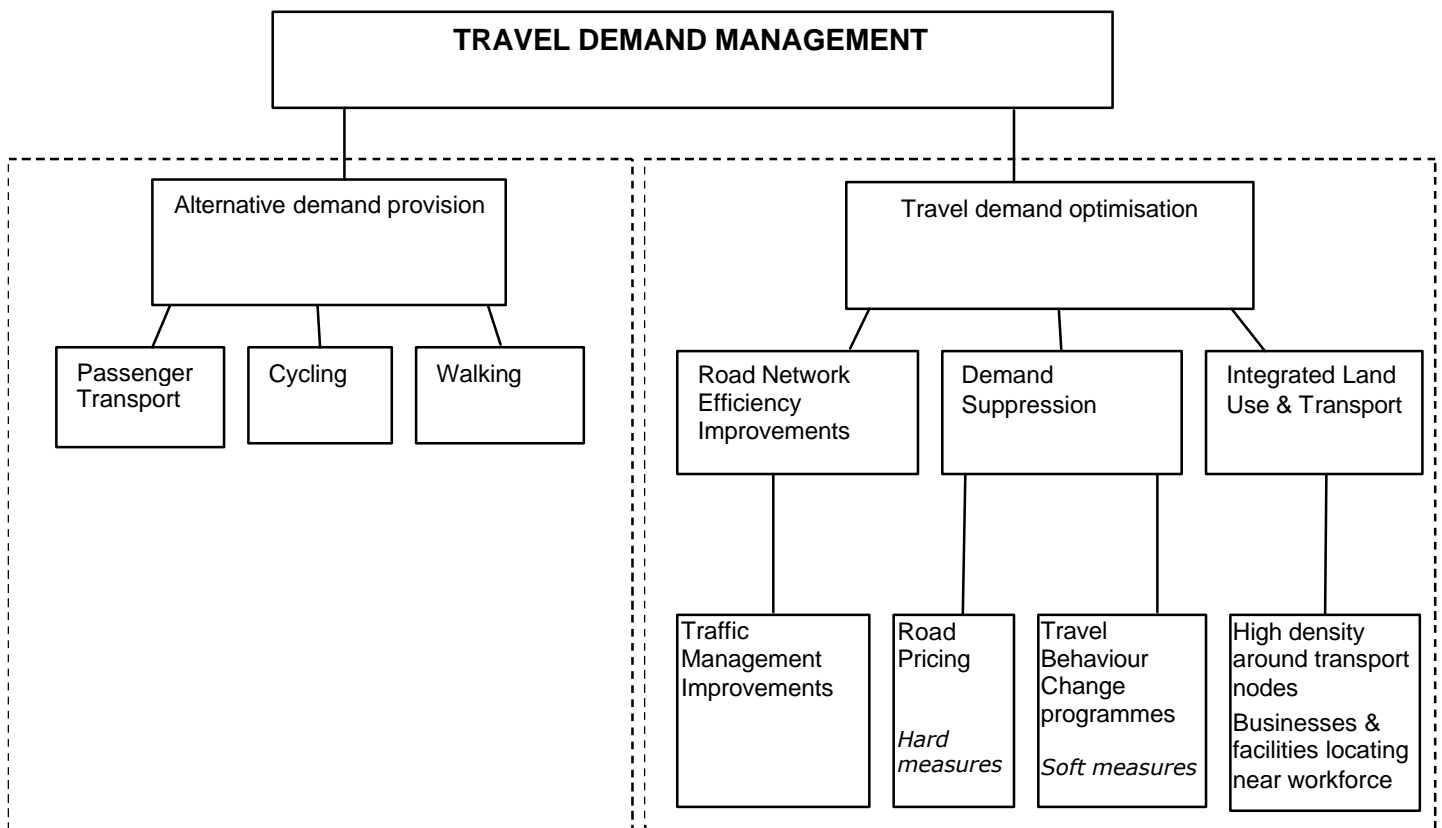
TDM emphasises the movement of people and goods, rather than single occupant motor vehicles. It gives priority to passenger transport, other high occupancy vehicles and active modes, particularly under congested road conditions. Examples of TDM tools include travel plans, ride share programmes, traffic management improvements, road pricing schemes, and land use integration.

Individual TDM programmes can be implemented to address specific transport problems, or a comprehensive TDM strategy can be undertaken to impact on all aspects of the transportation system. Although most individual TDM programmes only affect a small portion of total travel, the cumulative benefits of a comprehensive TDM strategy can be significant (VTPI, 2004).

The following diagram provides an overview of travel demand management as a concept. It identifies which aspects of TDM are addressed under the Regional Travel Demand Management Strategy and the relationship with other regional transport strategies and plans which have an important role in the success of TDM initiatives.

The Regional Travel Demand Management Strategy seeks to address the demand side of transport through initiatives which improve travel efficiency, influence travel behaviour and reduce the need for travel, as set out under travel demand optimisation in the diagram below.

The provision for alternative modes plays a crucial role in supporting the demand optimisation measures included in this strategy by ensuring people have access to a range of attractive alternatives to private car use.



The Regional Cycling Strategy, Regional Pedestrian Strategy, Regional Road Safety Strategy and Regional Passenger Transport Plan promote enhanced infrastructure and level of service for the above modes. Provision for these alternative modes is therefore complimentary to, but outside the scope of this strategy.

The Regional Travel Demand Management Strategy addresses these matters.

Strategy funding

An investment of \$30m in TDM over the next ten years was signalled in the Government's announcement of increased funding for Wellington region's transport needs on 27 January 2005 as part of the Wellington Transport Package. Ongoing discussion with Crown agents will be required to determine funding support on a project by project basis.

When considered as part of the wider transport investment package, TDM projects are relatively "cheap" being less than 1% of the expected \$3.4 billion cost of transport to the region over the next ten years.

The following table outlines the expected ten year strategic transport investment for the greater Wellington region, including the expected TDM component.

Transport investment by component

Component	Planned investment (\$M)
Highway maintenance	200 (6%)
Local roading	800 (23%)
Roading improvements	1060 (31%)
Passenger rail	889 (26%)
Bus services	453 (13%)
Travel demand management	30 (0.9%)
10 year total	3432

Source: RLTS Strategic Options Analysis, June 2005

Strategy benefits

The information in this section identifies the potential benefits to the individual and the community from TDM strategies.

Benefits to the individual

Health benefits

Inadequate physical activity is a major contributor to New Zealand's current epidemic of obesity and diabetes in adults and children (RPH, 2005). Walking and cycling provide practical, alternative forms of activity that can be part of the daily routine for most people. Many TDM initiatives result in an increased uptake of these active modes, either for a complete journey or as part of a trip combined with a journey by passenger transport. Even a modest increase in physical activity is likely to have associated health benefits for individuals (VTPI, 2005).

Several contaminants contained within the emissions produced by vehicles are known to degrade air quality and adversely affect people's health (RPH, 2005). Therefore any reduction in vehicle use and subsequent vehicle emissions resulting from the implementation of this strategy must have positive health benefits to individuals.

Improved safety and personal security

Increased traffic safety and personal security are another potential benefit of the TDM initiatives contained within this strategy. TDM initiatives which reduce the total amount of vehicle travel tend to provide road safety benefits (VTPI, 2005). In addition to a reduced crash rate, increased use of active modes and public transport resulting from implementation of TDM initiatives may also improve overall personal safety. More people on the street walking, cycling or using passenger transport results in increased natural surveillance benefits, which improves an individual's personal security through "safety in numbers".

Travel time improvements

Travel time is one of the largest transport 'costs', hence travel time savings are an important potential benefit of TDM initiatives. Such programmes are often aimed at reducing travel time and unexpected delays for high value trip and priority users, by reducing congestion at peak times. The impact of TDM initiatives on the regional transport network was modelled with reductions in car commuting trips to the Wellington CBD during peak periods. This suggested that investment in TDM programmes could have significant benefits in terms of level of service on the strategic network and therefore improved travel time benefits (GWRC, 2005).

Journey reliability

An issue often identified in relation to travel and congestion is journey reliability. The reliability of the transport network is a significant issue for the greater Wellington region. While a certain level of recurrent or predictable delay due to congestion can be anticipated and planned for, travel time costs tend to be particularly high for unexpected delays (VTPI, 2004). Some TDM initiatives within this strategy aim to provide information about traffic conditions and incidents, allowing travelers to better manage their journey 'around' the congested areas or incidents. The overall aim of these measures being to better manage the potential negative impact on journey reliability during these conditions.

Improved travel choices

TDM initiatives aim to increase the travel choices available to people. This involves providing and promoting reliable, attractive and accessible alternatives to single occupant car travel, and increasing awareness of the different travel options. Uptake of alternatives to the single occupied vehicle is likely to be most successful where people are more aware of the available alternatives and can identify the benefits such as cost savings, time savings, and reliability. Improved travel choices are also likely to reduce the amount of chauffeuring motorists need to carry for family and friends, and may even allow some households to reduce their vehicle ownership (VTPI, 2005).

Reduced vehicle operating costs

The true cost of owning and operating a private vehicle is often underestimated. Car users often consider only the immediate operating costs such as fuel, oil, tyres, and parking. This ignores the additional medium term operating costs such as maintenance, repairs, and depreciation of a vehicles value the more it is driven. The MoT paper

Surface Transport Costs & Charges (March 2005), found that New Zealand spends around \$16.8b per annum on vehicle operating costs (including vehicle capital charges). Therefore, TDM programmes which reduce total travel through ride sharing, trip reduction, or shifting to alternative modes can have substantial cost saving benefits to individuals.

Benefits to employer and employee

Travel Plans form one of the main travel behaviour change elements to this strategy. There are a number of benefits to both employer and employee which can be identified as a result of such programmes. For example, rideshare initiatives result in reduced parking demand and parking maintenance costs to the employer and reduced travel cost and improved social benefits to staff. Improved cycle facilities can increase the numbers of staff cycling to work, resulting in reduced parking demands, healthier staff, and cheaper travel costs. Initiatives such as flexible work hours and teleworking can reduce travel time and travel cost to staff and result in higher productivity and staff retention for employers.

Benefits to the region

A more efficient and diverse transport system

TDM initiatives seek to improve the efficiency of the existing transport network and to provide access to a greater range of travel options. The region is likely to benefit from a more efficient and diverse transport system as a result. Transportation becomes more efficient when people move from travelling by single occupied vehicles to alternative modes or ridesharing, particularly under peak conditions. Trip reduction resulting from programmes such as teleworking or teleshopping also provides efficiency benefits. The benefits to individuals and society of a more efficient and diverse transportation network include travel time and cost savings, and fewer resources used for a given benefit (VTPI, 2005).

Improved network reliability

Reliability of the transport network is a significant issue for the region, affecting passenger transport, private vehicle users, and freight movement. The main commuter route into Wellington's CBD is subject to a relatively high variability in 'expected' commuter times. This is due to the fact that even a reasonably minor event can cause significant delays due to congestion levels and lack of alternative routes to avoid the trouble spot (BERL, 2004).

Network reliability can be improved through TDM traffic management tolls which give us better information about traffic conditions and incidents. In addition, both pricing and non-pricing TDM methods which reduce congestion during peak periods will result in a more reliable and less congested strategic network for high value vehicle trips. There are many examples of high value vehicle journeys such as freight movement, travel for business or medical services. However there are also many low value trips by private car which could be shifted to another time, mode, or destination fairly easily given appropriate incentives (VTPI, 2005).

Regional emissions and energy efficiency benefits

The National Energy Efficiency and Conservation Strategy (NEECS) has a target of 20% efficiency improvement by 2012 (as well as reducing CO₂ emissions to 1990 levels). The transport sector consumes over 40% of New Zealand's energy and currently emits 42% of the country's carbon dioxide emissions, a major climate changing pollutant. Major improvements are needed in the transport sector to meet the NEECS goal.

In addition, the Kyoto Protocol sets targets for the greenhouse gas emissions of developed countries. The first commitment period is from 2008 to 2012. New Zealand is bound by the Kyoto Protocol and has a target to reduce its greenhouse gas emissions to 1990 levels, or take responsibility for excess emissions (NZCCO, 2005). The transport sector needs to play a significant part in contributing towards these targets.

Many initiatives within the TDM strategy seek more efficient travel choices and a reduction in emissions and fuel use through reducing the number of vehicle kilometres travelled. The TDM initiatives encompassed within this strategy therefore have an important role in contributing to national energy efficiency goals and reduction of emissions loading on the regional airshed.

Reduced expenditure on road and parking infrastructure

TDM initiatives often contribute to the more efficient use of the existing transport network and reduced vehicle trips. This has the potential to reduce, or at least delay, the need for investment in new roads and parking infrastructure.

“Demand management avoids the risk that a major capital investment will prove wasteful due to unforeseen changes in transportation needs” (VTPI, 2005).

Land is a major resource cost of building new roads and other transport facilities (Litman, 2000). A TDM strategy which uses the existing network more efficiently can result in economic and environmental benefits by leaving more land available for other productive uses (VTPI, 2005).

Increased passenger transport (PT) patronage

TDM measures often result in an increase in PT use. One of the benefits of this increased patronage is additional revenue, which creates potential for increased investment in passenger transport in the region.

Improved economic efficiency

The ownership and use of the private car is often associated with economic development, hence TDM programmes which reduce the amount of travel by private vehicles are sometimes assumed to have a negative impact on economic development. However, while economic development is influenced by increased mobility, transportation efficiency also plays an important role (VTPI, 2005).

“The economic impacts of transport infrastructure arise from its ability to facilitate enhanced and accelerated economic development, and to enable efficient movement of resources and goods around the region” (BERL, 2004).

By improving overall transport system efficiency, TDM programmes can support and contribute to economic, social, and environmental objectives at the same time (VTPI, 2005).

More efficient and integrated land use

The integration of land use and transport planning is a key element in supporting sustainable travel choices and in reducing the need to travel (DETR, 2000). Therefore, an important action proposed within this strategy is to support integrated land use planning which reduces traffic demand and generates sustainable travel solutions.

An integrated land use and transportation system has many benefits including reducing the need to travel, improved community cohesion, reduced crime, and increased employment opportunities (Alexander, Tomalty and Anielski, 2004).

Improved equity impacts

Social and equity issues in relation to transport arise primarily from a lack of access or lack of travel choices. Having transport options contributes to an individual's independence, access, and mobility. A lack of options can mean individuals are excluded from opportunities such as education, employment, recreation and community facilities (BERL, 2004). While the private car can provide a high level of mobility, this mode of transport is not available to all sectors of the community due to disability, age, or affordability (BERL, 2004). Hence, TDM programmes which increase transportation options and alternatives can play an important part in improving equity impacts.

Another sector of the community is dependent on the private car to access education, employment, and other key facilities. This may be due to where they live, work, the time of day they travel, or the need to carry out multiple tasks during a trip. TDM programmes which reduce congestion can free up the road network for those who are dependent on it. Initiatives such as school and workplace travel plans can also assist with increasing travel options. Careful consideration of road pricing schemes is needed to ensure that car dependent groups are not unfairly disadvantaged as a result (BERL, 2004).

Improved regional road safety

Despite the greater Wellington region making extensive improvements in road safety during the 1990's, casualties over the last four years have plateaued and renewed efforts are needed to help contribute to achieving the national 2010 road safety outcomes (RRSS, 2004). As discussed earlier, programmes that reduce total vehicle travel due to changes in mode, destination or trip frequency tend to provide traffic safety benefits. Therefore, this strategy will provide a positive contribution towards meeting the region's road safety objectives in conjunction with the actions identified in the Regional Road Safety Strategy.

Latent travel demand

It should be noted that the congestion benefits of travel demand management strategies can be affected by a condition known as latent travel demand. These are the potential vehicle trips that are constrained due to congestion.

“Traffic congestion tends to maintain a self-limiting equilibrium where traffic volumes increase to fill available capacity until congestion limits further growth” (VTPI, 2005).

The consequence of latent travel demand is that some TDM measures, such as teleworking or ridesharing, may have a limited impact on long term congestion on their own as each space created by trip reduction may be filled by latent demand. However other TDM initiatives such as HOV lanes, road pricing, integrated land use and PT improvements are likely to have a greater impact as they can reduce the point of congestion equilibrium (VTPI, 2005).

It is important to recognize the existence of latent travel demand to avoid overstating the benefits of any one intervention. While a single TDM initiative is unlikely to have a significant effect on overall regional traffic congestion, a comprehensive TDM program may reduce the point of congestion equilibrium and can result in both congestion and mobility benefits (VTPI, 2005).

TDM effects on the regional transport network

TDM measures seek to change travel behaviour and either collectively or individually change the need, time or form of travel. TDM programmes are expected to result in a reduction in the number of peak period car trips. It is expected that these programmes will be focussed on commuters travelling to and from the Wellington CBD. It is anticipated that the use of TDM can forestall the need for infrastructure investment, which may be only fully utilised during the morning and afternoon peak periods.

To test the effects on the regional transport network, the 2016 year was modelled with reductions in car commuting trips to the Wellington CBD in the AM peak period of 0%, 1%, 2%, 5%, 10%, 15% and 20%. Similar reductions in car commuting trips from the Wellington CBD were modelled in the PM peak period. Key network statistics were then extracted from the modelled results under these TDM reductions.

The total number of car trips removed from the road network is only a small proportion of all car trips in the AM peak period. However, because there are a relatively smaller number of passenger transport trips, the expected mode shift to PT results in a significant increase in the proportion of PT trips. This emphasises the need for sufficient PT capacity during peak periods to meet this increased demand as a prerequisite for TDM to work in the region.

The annual benefits of each TDM level were calculated relative to no TDM effects (the ‘Base’ case). The benefits include travel time and congested travel time savings, vehicle operating cost and congested vehicle operating cost savings, PT travel and waiting time benefits, accident benefits and carbon dioxide benefits.

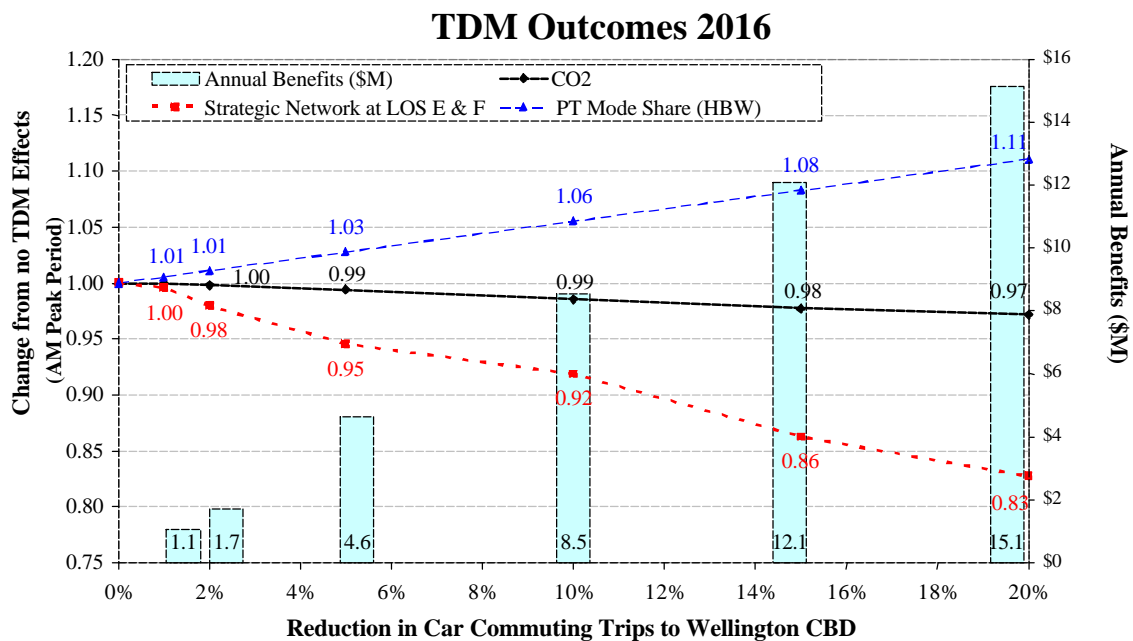
	Net TDM Effect						
	0%	1%	2%	5%	10%	15%	20%
Annual Benefit (\$M)	\$0	\$1.1	\$1.7	\$4.6	\$8.5	\$12.1	\$15.1

The different net reduction in car trips is dependent upon the levels of expenditure on TDM. For the purposes of modelling, a reduction of at least 5% in peak period commuting vehicles to the Wellington CBD is expected under the planned \$3M annual investment in TDM. This is based on the non-pricing methods proposed within the strategy action plan.

The annual benefit from such an investment is in the order of \$4.6M, producing a Benefit Cost Ratio of 1.5 i.e. a return of \$1.50 for every \$1.00 invested. This BCR satisfies the RLTS requirement for any project to be economically efficient.

It should be noted that a major review of non-pricing TDM measures in the United Kingdom (UK DfT, 2004) found that a resulting 10-15% reduction in traffic levels was likely, as a national average. With the implementation of ‘hard’ measures such as road pricing, further improvement could be achieved.

The effects of the various TDM levels are shown in the following graph:



This shows that TDM measures aimed at reducing car travel to the CBD can potentially reduce congestion significantly but may require an increase in PT service capacity. The potential cost of additional PT service capacity is not easily quantified because reduced car trips as a result of TDM measures will not automatically result in a shift to PT. Car trips may be re-timed or involve ride sharing, vehicle travel may be reduced through working from home, and use of active modes may increase. Where reduced car trips do result in an associated shift to PT, any need for capacity increase would depend on trip timing i.e. whether the new PT trips fill existing capacity during the shoulder of the peak, or adds to the peak of the peak demand.

CO₂ output is not significantly reduced as it is dominated by the wider regional travel patterns.

Vision

To use TDM initiatives in achieving sustainable outcomes for the greater Wellington land transport system.

Strategy purpose

The purpose of this strategy is to signal key regional intentions for travel demand management; setting out a blueprint for improving regional travel efficiency.

This strategy seeks to enable a proactive and interactive culture among agencies for the development and advancement of TDM in the greater Wellington region. It intends to clarify and coordinate the roles of territorial authorities, Land Transport New Zealand, Ministry of Transport, Energy Efficiency and Conservation Authority, Transit New Zealand, health authorities and Greater Wellington Regional Council in working toward the vision and objectives.

This strategy frames demand management issues from a regional perspective and identifies key objectives and actions that are:

- directly aimed at resolving regional issues
- achievable at regional and local levels; and
- measurable, to enable an adaptive and ongoing strategy for demand management.

It is important to note that this strategy does not aim to eliminate car use, price people off the road, or to suggest that driving is bad or provides no benefits. Efficient demand management strategies reduce low-value trips while allowing high value trips to continue, often with less congestion and more accessible land use. Given suitable incentives, consumers can drive less and be better off overall as a result (VTPI 2005).

When adopted, this strategy will form a chapter of the Regional Land Transport Strategy (RLTS) and meet the obligations set out in the Section 175(2) of the Land Transport Act 1998 (LTA). The Act states that the RLTS must:

- (c) take into account any national land transport strategy and National Energy Efficiency and Conservation strategy; and*
- (o) include a demand management strategy that has targets and timetables appropriate for the region.*

Strategy development

This strategy has been developed from the policies of the RLTS and in conjunction with a technical group comprised of representatives from the GWRC Access Planning and Strategic Direction Groups, the region's territorial authorities, Transit New Zealand (Wellington region and national office), Land Transport New Zealand (Wellington region and national office), Ministry of Transport, Energy Efficiency and Conservation Authority and Regional Public Health.

Roles and responsibilities

Regional Land Transport Committee (RLTC)

The Land Transport Act 1998³ requires every regional council to establish a Regional Land Transport Committee comprised of representatives as stated in s178(2) of the Act. The RLTC is to prepare a RLTS for approval by the council.

The Land Transport Management Act 2003 further specified that the RLTS must take into account any national land transport strategy and National Energy Efficiency and Conservation strategy and include a demand management strategy that has targets and timetables appropriate for the region.

Greater Wellington Regional Council (GWRC)

GWRC participates in planning and monitoring the regional transport network via the RLTC and subsequent RLTS. GWRC also monitors progress toward implementation of the RLTS, as required by the Land Transport Act 1998. GWRC relies significantly on transport agencies to progress RLTS policies and provisions. This regional TDM strategy stems from the policies contained in the current RLTS (WRC, 2000) which establishes a direction for improving travel demand management in the region.

Whilst GWRC's major role is planning and funding non-commercial passenger transport services, as a result of funding made available in the Wellington Transport Project, GWRC also has a role in coordinating and funding travel planning and promoting travel cost awareness to the public.

Ministry of Transport (MoT)

As the government's principal transport policy adviser, the MoT both leads and generates policy, including the government's New Zealand Transport Strategy (NZTS), which provides the framework within which New Zealand transport policy is developed.

The MoT acts as the Minister of Transport's agent for managing the interface with the transport Crown entities to give effect to the government's vision of an affordable, integrated, safe, responsive and sustainable transport system. This vision is outlined in the NZTS released in December 2002 (MoT, 2002).

Land Transport New Zealand (Land Transport NZ)

Land Transport NZ is a new government agency formed on 1 December 2004 from the merger of Transfund New Zealand and the Land Transport Safety Authority. Land Transport NZ's objective is to contribute to an integrated, safe, responsive and sustainable land transport system and intends to work in partnership with central, regional and local government and other stakeholders to help develop land transport solutions with a focus on optimal use and development of New Zealand's land transport system. (LTNZ, 2005).

TDM, rail and sea freight is an activity class identified in the National Land Transport Programme (NLTP) and provides financial assistance to approved organisations for

³ As amended by the Land Transport Management Act 2003

related activities. This activity class was further refined, with a specific Travel Behaviour Change (TBhC) output group being developed in late 2004 (LTNZ/EECA, 2004).

Energy Efficiency and Conservation Authority (EECA)

EECA works to improve energy choices, both by raising the awareness of energy efficiency issues in the community and by providing businesses and individuals with the tools to make changes. EECA designs and develops programmes to meet the needs of specific markets, often working in partnership with other organisations and is the principal body responsible for helping deliver the government's extensive energy efficiency agenda (EECA, 2001).

EECA's function is to encourage, promote and support energy efficiency, energy conservation and the use of renewable energy sources. EECA has developed the National Energy Efficiency and Conservation strategy in conjunction with the Ministry for the Environment, which must be taken account of when preparing the RLTS. EECA has developed valuable tools for use when developing travel plans.

Road Controlling Authorities (RCAs)

RCAs are responsible for identifying transport needs (including TDM) and implementing remedial measures as necessary on their respective networks. RCAs include Transit New Zealand and territorial authorities.

Territorial Authorities (TAs)

Territorial authorities have a number of regulatory, road safety and planning roles, and ownership interests in transport, largely set out in the Local Government Act 1974. The Local Government Act 2002 also sets out their role in providing for sustainable development in local communities. District and city councils own and operate the local road network which includes the provision of high quality infrastructure that facilitates use by active modes. Their land transport decisions are required to take into account the RLTS relevant to their area. TDM needs represent an integral part of the current RLTS.

Transit New Zealand (Transit)

Transit is responsible for managing the state highway network, and in a similar manner to TAs, must take into account the current RLTS. Travel Demand Management is an essential component of Transit New Zealand's Transport Strategy, and Transit recognises that its design and implementation of a nationally integrated travel demand strategy will contribute towards sustainable management of the state highway network. (Transit, 2005).

Regional Public Health Service (RPH)

Regional Public Health promotes positive health outcomes by supporting healthy public policy, community action, healthy environments and the development of individual skills for wellbeing.

Strategy structure

Part One of this report frames the regional context for TDM, including agency roles, policy context and travel demand issues. Part Two presents the strategy, including the vision and objectives. A detailed action plan describes more specifically how the objectives are to be achieved. The anticipated strategy cost is also outlined. Performance measures are specified to enable monitoring and review of the region's progress toward its objectives and ultimately the vision. Appendices provide further context to the strategy.

Strategy context

Policy context

New Zealand Transport Strategy (NZTS)

Released in December 2002, the NZTS guides New Zealand transport policy at all levels to create a sustainable, affordable, integrated, safe and responsive transport system. The NZTS specifically supports TDM initiatives through all of its objectives:

- Economic development
- Safety and personal security
- Access and mobility
- Public health; and
- Environmental sustainability (MoT 2002).

National Energy Efficiency and Conservation Strategy (NEECS)

Released in September 2001, the NEECS purpose is to promote energy efficiency, energy conservation and renewable energy while moving New Zealand towards a sustainable energy future that will provide all New Zealanders with economic, social and environmental benefits. Travel Demand Management initiatives can help achieve such a sustainable energy future, particularly in CO₂ transport emission reductions that help achieve Kyoto Protocol CO₂ emission targets (EECA, 2001).

Draft Transit New Zealand Travel Demand Management Strategy (TTDMS)

Submitted to the March 2005 meeting of the Transit New Zealand Board, the TTDMS purpose is to set out Transit's goals and objectives, policies and plans, and priorities for managing travel demand on the state highway network. The strategy provides a basis for Transit to consult and work with other transport agencies (especially local authorities), on measures for managing travel demands. These measures include reducing road traffic growth and actively managing the use of the road network to balance supply and demand (thereby achieving sustainable levels of service) (Transit, 2005).

It is intended that the principles of this strategy and the above work are consistent.

Regional Land Transport Strategy (RLTS)

The Land Transport Act 1998 requires regional authorities to produce regional land transport strategies that contribute to the overall aim of achieving an integrated, safe, responsive, and sustainable land transport system. The RLTS must also include a demand management strategy that has targets and timetables appropriate for the region.

The RLTS has responded to these needs in all of its objectives and are further detailed in subsequent policy themes.

Objective 1	Accessibility and economic development
Theme 1.1	Expand and enhance urban public passenger transport
Theme 1.2	Improve the effectiveness of the strategic road network
Theme 1.3	Influence total travel demand by well considered land use
Theme 1.4	Expanding and enhancing walking and cycling routes
Objectives 2 & 3	Economic efficiency and affordability
Theme 2.1	Price the strategic transport network to encourage its efficient use
Theme 2.2	Contain the growth of commuter road traffic
Objective 4	Safety
Theme 4.1	Improve the safe operation of the transport network
Objective 5	Sustainability
Theme 5.1	Minimise the impact of transport on the environment

Additional TDM related draft policies being considered in the RLTS review include:

- Policy 1** Reduce the reliance on private motor vehicles, particularly single occupancy vehicle use, for short trips.
- Policy 2** Encourage high quality and appropriately located land development and ensure integration with transport planning.
- Policy 3** Encourage the development of travel plans for key institutions and educational facilities.
- Policy 4** Advocate for government policy to allow road pricing.
- Policy 5** Encourage the uptake of cycling and pedestrian travel, particularly for short trips.
- Policy 6** Encourage increased use of passenger transport.
- Policy 7** Ensure the availability of reliable information on the transport system and choices available.

A number of GWRC documents have been developed which also assist the implementation of the TDM strategy. The documents are the regional:

- Passenger transport plan

- Cycling strategy
- Pedestrian strategy
- Road safety strategy; and
- Policy statement.

This strategy intends to develop and respond to the needs, objectives and themes detailed above. The strategy’s action plan highlights the fact that behavioural approaches along with developing information and communication technology now play a significant role in TDM (Austroads, 2002).

Wellington Transport Project

During 2004, officers from the MoT, Treasury, LTNZ, the Ministry of Economic Development, Transit, GWRC and the region’s territorial authorities met to discuss the apparent greater Wellington region funding gap. A sub-group of the project specifically discussed issues pertaining to TDM in the greater Wellington region. The January 2005 Wellington Transport Project final report announced a \$225 million boost for regional land transport over ten years, with approximately \$30 million specifically allocated for the implementation of TDM initiatives (including walking and cycling).

Framing regional demand management issues

An extensive issue framing exercise was undertaken in the preliminary stages of strategy development by GWRC. Key sources of data included the Household Travel Survey (WRC, 2001), undertaken as part of the 10 yearly calibration of the Wellington Transport Strategic Model (WTSM), which surveyed 2000 households and analysed 7000 trips. The data has been used to build an accurate, up to date picture of the region’s travel demand.

Using WTSM, further analysis was undertaken to build a picture of the likely regional travel demand in the future. *Wellington Region’s Travel Demand Profile* (GWRC, 2005) provides a detailed report on the regionally significant TDM issues that were identified, while a summary is outlined below.

The GWRC Household Travel Survey (2001) shows that currently in the greater Wellington region:

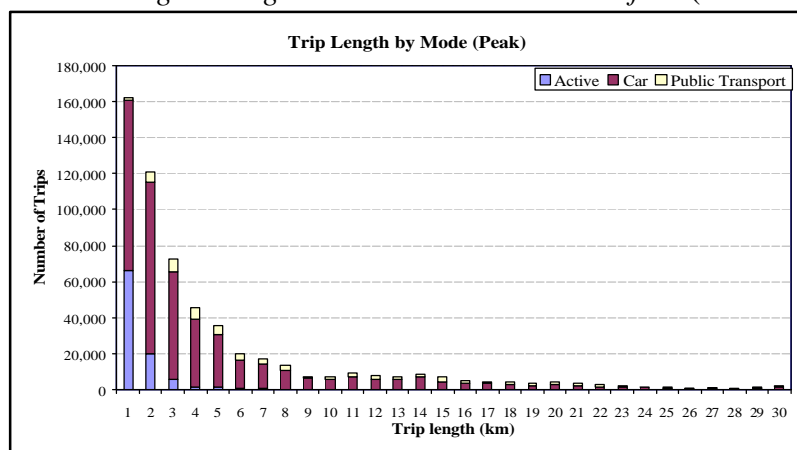


Figure 1: Personal peak trip length by mode. Source: GWRC Household Travel Survey 2001

- Trips by private car dominate all modes used, and is the mode of choice for 74% of all peak trips.

- Active modes (primarily walking) account for approximately 40% of all very short peak trips up to 1km in length trips and 50% of all very short peak commuter trips.

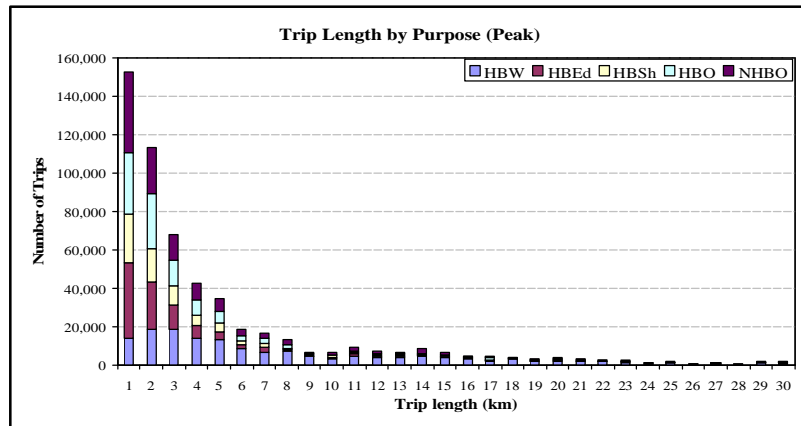


Figure 2: Personal peak trip length by purpose. Source: GWRC Household Travel Survey 2001

- Passenger transport market share is minor, accounting for 10% of all peak period trips and 6% of all interpeak period trips. Despite this, passenger transport mode share on the critical strategic corridors is approximately 30% in the AM peak, and is the highest passenger transport mode share seen in any region in the country.

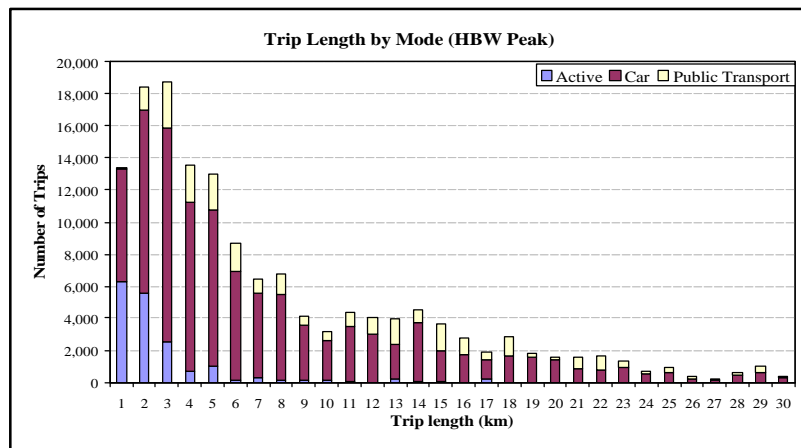


Figure 3: Personal peak trip length by mode (home - work). Source: GWRC Household Travel Survey 2001

- The region's average and 85th percentile peak trip lengths are 2–3km and 8–9km respectively while the region's interpeak average and 85th percentile trip lengths are 1–2km and 5–6km respectively. This indicates existing efficient travel patterns and compact land use, and
- That peak trips are generally longer than interpeak trips, primarily driven by longer commuter trips.

Statistics New Zealand (2002) medium growth population and economic projections (BERL, 1997) show that the greater Wellington region is expected to grow into the future with an associated increased demand for transport. Further Statistics NZ medium projection refinements published in February 2005 suggest the region's population will increase by 40,000 people by 2016. This new population forecast was unable to be taken into account in the analysis, although increased population will only exacerbate the effects reported.

This and other data entered into the Wellington Strategic Model forecasts that by 2016, the greater Wellington region is expected to have:

- 26,000 (6%) more people than in 2001
- 44,000 (20%) more cars
- making 37,000 (14%) more peak time trips as a driver.

This increased activity will result in:

- An additional 558 million (18%) vehicle kilometres travelled per annum, contributing to an additional 275,000 tonnes (26%) of CO₂ greenhouse gas entering the region's airshed annually, and
- An increase of peak period journey times reflecting increased congestion, with a resulting decrease in network level of service.

For example, the Southern Strategic Network section of the network which runs from the Basin Reserve can be expected to attract almost 25% more travel time delay than 2001 as a result of the increased congestion levels.

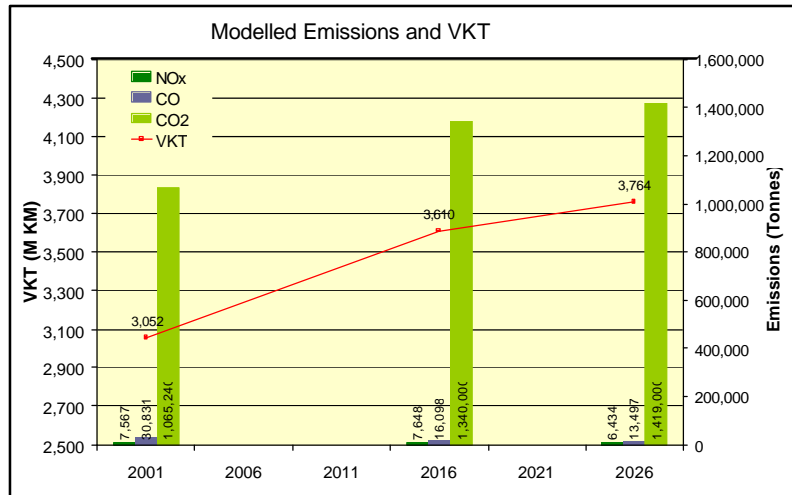


Figure 4: Projected regional air quality (NO_x, CO and CO₂) versus vehicle kilometres travelled. Source: GWRC WTSM, MOT vehicle fleet emission model

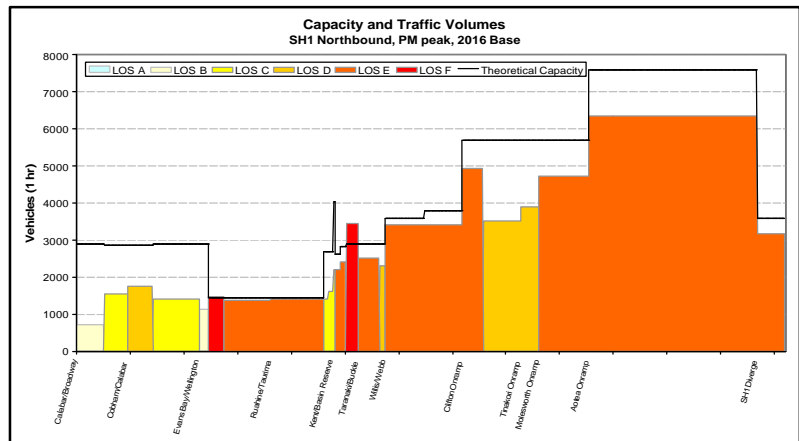


Figure 5: Southern Corridor strategic network capacity and traffic volumes (2016 northbound, PM peak). Source: GWRC WTSM

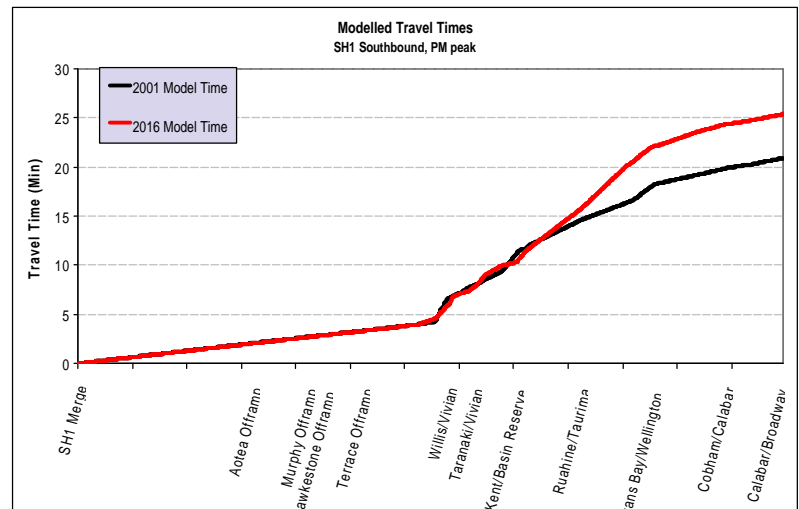


Figure 6: Southern Corridor strategic network modelled travel times (2001 and 2016 southbound, AM peak). Source: GWRC WTSM

Strategy implications

Despite network capacity improvements such as eight-laning between the Ngauranga Gorge interchange and Aotea Quay and an upgrade of the Basin Reserve, increasing travel will lead to a significantly lower level of service on the strategic road network by 2016 during peak periods, demonstrating that we cannot build our way out of the travel demand problem.

Four regionally significant TDM issues have been identified:

- excessive travel demand problems (particularly congestion at peak periods)
- low car occupancy (particularly for the traditional commuter home to work trips)
- inefficient trips
- transport emissions loading on the region's airshed

Trips by private car are also of concern, as personal private car trips dominate all transport modes used in the region, and is the mode of choice for 74% of all peak trips. It is clear that if this type of trip making is to be influenced, interventions need to target the initial mode choice decision each day.

The issues identified above are addressed in the action programme section of the strategy.

Rising Oil Prices

The strategy addresses the above issues based on the current trends, however it is important to acknowledge the issue of 'peak oil' and its potential impact on the transport system.

Peak oil refers to the likely peak in global oil production in the future, followed by a decline. The timing of such a scenario is still widely debated, with predictions ranging anywhere from 2 years to 50 years. There is little doubt however that the cost of fuel will increase over time.

While it is difficult to predict to what extent people's travel behavior will change in relation to rising fuel prices, some demographics and communities in the region are likely to be affected more than others. It will therefore be important that people are given access to a range of efficient travel options wherever possible and travel demand management initiatives will support this.

Part Two

The strategy

Vision

To use Travel Demand Management initiatives in achieving sustainable outcomes for the greater Wellington land transport system.

Outcomes

The main outcomes sought from the regional TDM strategy are as follows (in no particular order):

- limit car traffic growth particularly at peak times, while maintaining accessibility
- maintain journey to work mode share
- improved integration between transport modes
- reduced greenhouse gas emissions
- reduced fuel consumption
- reduced road congestion
- increased vehicle occupancy
- increased resident satisfaction
- more efficient land use (to be defined by the WRS process)
- no adverse impact on economic development (to be defined by the WRS process).

Appendix 1 illustrates the linkages between the strategy's outcomes and actions.

Objectives

The objectives of the strategy (in no particular order) are:

- ensure the most efficient use of existing transport infrastructure and services
- increase public awareness of TDM and individual travel choices
- encourage integrated land use and transport planning that seeks to maximise transport efficiency
- encourage proactive advocacy that facilitates coordination among lead agencies.

Travel Demand Management methods

A wide range of measures exist to achieve desired travel demand management outcomes. These can be identified as pricing and non-pricing measures. A comprehensive TDM programme which includes a combination of both pricing and non-pricing measures is likely to achieve the best overall results for reducing traffic congestion and CO₂ emissions.

Non-pricing methods

Non-pricing TDM, often known as ‘soft’ measures, include initiatives such as travel planning programmes which are designed to inform and motivate people to change how, when, and where they travel. Other non-pricing methods involve improving the efficiency of the existing network through various traffic management tools or reducing the need to travel through integrated land use programmes.

Integrated land use and transportation

Travel behaviour can be directly influenced by land use development. New subdivision and development which is located a distance from passenger transport or local facilities can increase people’s dependency on the car. Likewise, inappropriately designed or located transport infrastructure can result in a reduction of active mode use and greater reliance on private vehicles due to severance effects.

The need to travel can be reduced by encouraging mixed use development, encouraging businesses to locate in areas close to the workforce, and ensuring critical infrastructure and services are located in high density residential areas. Land use development can also improve travel choices for individuals if high density development is encouraged around transport nodes. Whilst land use development decisions themselves fall outside the scope of this strategy, making submissions on land use development through district plan changes or resource consents hearings forms an important element of the strategy.

Traffic management tools

Traffic management tools include real time traffic monitoring, advanced traffic management systems (ATMS), advanced traveller information systems (ATIS), incident management systems, selective vehicle priority, and traffic signal linking. These are all tools which improve the efficiency of the existing network through infrastructure improvements which:

- provide information about traffic conditions, alternative trip routes, and travel time comparisons⁴
- give priority to passenger transport or high occupancy vehicles (HOV)⁵
- meter traffic entering the motorway at on-ramps to avoid flow breakdown
- coordinate traffic signals to improve traffic flow
- give priority to passenger transport and active modes through signal, lane, and right of way priorities and traffic calming measures.

⁴ From: Transit NZ Southern Motorway TDM consultation document, 2005

⁵ As above

Travel behavioural change

Travel behaviour change programmes are designed to inform and motivate people to change how, when, and where they travel. There are a variety of methods used to achieve behavioural change including:

- **Travel plans:** A travel plan is a package of measures to manage travel demand, tailored to the needs of individual sites. Examples might include schools, tertiary institutes, hospitals, government organisations and businesses.
- **Awareness and marketing campaigns:** These are primarily aimed at making people aware of their travel choices and the real costs and benefits of those choices. They seek to change peoples travel behaviour away from inefficient and unsustainable trips.
- **Ride sharing:** Ride sharing tools aim to reduce the number of single occupied vehicle trips by encouraging drivers to share a journey with others who make a similar trip. Examples include carpooling, vanpooling, shuttle buses, and guaranteed ride home.
- **Variable work hours:** The aim of variable work hours is to reduce traffic congestion at peak times by spreading commuter journey's over a greater period. Examples are staggered work hours, flexible work hours, and compressed work week.
- **Working from home, teleworking, teleconferencing, telebanking, teleshopping:** The above methods seek to remove or reduce the need to travel to work, shop, etc. Such initiatives reduce the demand for travel whilst providing substantial time and cost benefits to those involved.

TDM non-pricing methods together with public transport, walking, and cycling improvements reinforce each other and are prerequisite to any future move to road pricing, to ensure an alternative is available.

This TDM strategy focuses on non-pricing methods, which we currently have the ability to implement, and which can be effective in achieving the previously identified outcomes without significant risk or cost. The non-pricing methods within this strategy will allow for early and effective gains against the NZTS and RLTS objectives while further investigations into the feasibility, costs, and impacts of road pricing for the region are undertaken.

Road pricing

Background

The RLTS has for some years contained policies and strategies that refer to the need for road pricing at some stage in the future. Introduction of the Land Transport Management Act 2003 foresaw the introduction of new toll roads, however central government legislation does not yet provide for charging for the use of existing roads.

An interest in road pricing at a national level continues, with the MoT conducting a road pricing study in Auckland. It is expected that changes to legislation at the central government level to allow road pricing on existing roads in New Zealand may happen in the medium term.

Non-pricing 'soft' TDM mechanisms, such as travel planning, are only anticipated to influence travel demand at the margins. While this is enough to realise some noticeable benefits, it is important to send very strong signals to the community that use of single occupied cars for commuter trips is an inefficient use of the network. This is why the introduction of 'hard' TDM mechanisms in the form of road pricing must be considered, in conjunction with the soft measures since they support the mechanisms by which individuals can make more informed travel choices. Once introduced, it is anticipated that road pricing would significantly influence peak travel demand on the region's network, with the added benefit of generating revenue for transport improvements.

Road pricing methods

Road pricing is the framework within which drivers pay the true costs of using roads. This includes the social, economic, and environmental costs such as accidents, pollution, time delays, currently borne by the community or economy.

The alternatives then become relatively more attractive and more road users are likely to change their mode or time of travel. The resulting improvements in journey time mean that bus services become quicker and more reliable and travel time is reduced for high value trips and priority users.

Road pricing tools may include the following:

- Cordon charges: fees paid by motorists when crossing a boundary around a particular area.
- Congestion pricing: higher prices under congested conditions and lower prices at less congested times and locations.
- Toll roads: a fee for use of a new or improved road or bridge.
- High Occupancy Toll (HOT) lanes: high occupancy vehicle lanes that allow lower occupancy vehicles to use the facility if they pay a toll.
- Area charges or licenses: fees charged or licences issued for driving in an urban area.
- Distance or time based pricing: a fee based on the distance a vehicle is driven.
- Parking charges: increased charge for parking in city centres or congested areas.

Developing a road pricing scheme for Wellington may involve one of the above methods or a combination of the above to create a scheme which best addresses the issues and characteristics of our region.

Current road pricing investigations

In 2004, a transport consultant was contracted to carry out a road pricing study for the region, to answer the question of whether a road pricing scheme would have benefits for the Wellington regional transport network and what form this would take. The study also examined what specific transport issues road pricing might address, the pricing level appropriate for Wellington, and what the impacts would be.

A technical group, comprising officials from the Ministry of Transport, Transit New Zealand, local authorities and GWRC, was convened to provide direction and context for the project. The group concluded early in the study that the key objective for road pricing should be to reduce congestion on the regional road network. The study investigated whether a pricing scheme could be found that would achieve this objective, be economically and financially viable, and would contribute towards all the objectives of the RLTS.

The work completed so far has investigated cordon charges at screenlines as the most practical option available with currently proven technology. Other possibilities, such as full network charges, with varying prices depending on route and time of travel throughout the network will be available in future as technological advances take place.

The outcome of the initial phase of the study suggests that a road pricing scheme can be designed for the greater Wellington region which would be financially self-sustaining, reduce congestion and provide other environmental, economic, and safety benefits. It is estimated that modest surpluses would be generated by such a road pricing scheme, which could be reinvested back into the transport network. However, there are many issues to be resolved which could significantly impact on the application and acceptability of road pricing, which need further assessment before such a scheme can be adopted.

The next steps for road pricing

The next step of the study will need to refine the concepts developed to date and review the social, equity, economic and environmental impacts of road pricing in more detail. A key aspect of the next stage of the study will be to review the acceptability of road pricing within the wider community. Also, further work to identify the system administration and technological issues needs to be completed, including a robust risk assessment.

Overseas experience shows that to accept road pricing, people need to be confident that it would deliver a solution to an issue that they can see needs addressing. People need to be confident that road pricing is designed to deliver transport and other benefits, rather than as a means of raising more revenue.

The Regional TDM Strategy addresses road pricing by setting out the steps that will pave the way for the introduction of road pricing in the region. The strategy authorises the further work needed to fully investigate road pricing options for the region. Consideration of pricing proposals will form a separate process at a later stage. The timeframe for the introduction of road pricing will depend on when the necessary changes to legislation take place to allow for road pricing on existing roads in New Zealand, and the completion of investigations into a road pricing scheme which will be appropriate for the greater Wellington region and acceptable to its residents.

System wide performance indicators and targets

To meet the obligations set out in Section 175(2) of the Land Transport Act 1998 (as amended), the RLTS (and any subsidiary strategies like the draft regional TDM strategy) must:

- (c) *take into account any national land transport strategy and National Energy Efficiency and Conservation strategy; and*
- (o) *include a demand management strategy that has targets and timetables appropriate for the region.*

According to the National Energy Efficiency and Conservation Strategy (NEECS), New Zealand is aiming for a 20% improvement in *economy-wide* energy efficiency (as well as reducing CO₂ emissions to 1990 levels). This is not a mandatory requirement but establishes a benchmark to aim for.

The system wide indicators table on the following page first sets out a number of 'desired outcomes' which take account of NEECS and seek to achieve improvements to indicators such as vehicle kilometres travelled (VKT), CO₂ and fuel consumption in line with Kyoto Protocol targets at a regional level.

The desired outcomes related to greenhouse gas emissions are particularly ambitious and would undoubtedly have adverse impacts on the regional economy if Wellington was out of step with the rest of New Zealand's transport industry. Taking account of this, and the need to set targets 'appropriate for the region' as set out in (o) above, the table also provides a series of targets which are more likely to be achievable.

2001 levels are used as a base year because it is the latest Census year, therefore independent objective data is available and revisions can be tied into future Census years. The strategy targets optimistically seek to hold the line at the 2001 base levels which will be challenging. In some cases they will require an improvement in the strategy's indicators of more than 15% compared with the 2016 forecasts. However, New Zealand has made a commitment to the sustainable development principles of Agenda 21 and such targets are important to ensure we are contributing to those principles at the Regional level.

Highlighted in the system wide indicators table is the strong interdependent relationship between vehicle kilometres travelled, fuel use and CO₂ emissions. The dramatic predicted increase in diesel usage, identified in the table, means that even with improvements in vehicle fuel efficiency, the impact of increasing VKT and fuel consumption will have an increasing adverse impact on CO₂ emission levels unless measures to reduce the demand for travel are implemented.

System Performance Indicators

Performance indicator	2001 base	Forecast outcome by 2016	Desired outcome	Strategy target
Reduced traffic demand Strategic roading network VKT (annual million kilometres)	1,008	1,192	900 ⁶	1,008
Reduced greenhouse gas emissions CO ₂ (annual kilotonnes)	1,065	1,345	877 (1990 level ⁷)	1,065
Reduced fuel consumption Petrol sales (million litres per annum) Diesel sales (million litres per annum)	300 142	304 245	293 ⁸ 77 ⁶	300 142
Reduced road congestion Strategic roading network travel time (annual million hours) Strategic roading network average speed (PM peak, kilometres per hour)	16.7 49	20.1 46	Better than now Better than now	16.7 49
Maintain journey to work mode share Active Passenger transport Car	10% 17% 73%	9% 18% 73%	More active and passenger transport	Maintain current mode share
Increased vehicle occupancy Vehicle occupancy (Wellington CBD cordon)	1.4	1.4	Increased	1.5
Increased resident satisfaction Perception of congestion	2004: 62% felt congestion had got worse	Significantly worse than now	Better than now	60%
More efficient land use	N/A	Awaiting WRS	Higher density, especially near PT nodes	To be determined
Economic development	N/A	Awaiting WRS	Outside scope of TDM strategy	To be determined

Note: The data given in the above table are best estimates based on the best information available to GWRC's Transport Division, and due to the methodologies used to derive many of the numbers, they are best seen as estimates rather than firmly established figures.

⁶ Calculated from fuel use, using standard conversion factors, driven by CO₂ target.

⁷ As per Kyoto Protocol. 1990 baseline CO₂e target being the average of emissions during the 1998-2012 commitment period.

⁸ Calculated fuel use, driven by CO₂ target. Estimated by back casting from 1998 – 2003 sales data.

The demand management initiatives set out within this strategy aim to achieve improvements in the forecasted levels of CO₂ emissions and road congestion by influencing the above indicators in a positive way.

Action programme

The following section details the strategy action programme which is an integrated package of interventions to achieve the outcomes and objectives stated above. The action programme focuses primarily on non-pricing initiatives which can be implemented in the short term, and signals the introduction of pricing in the medium term.

Regional travel demand is affected by a number of agencies and the strategy seeks to continue and enhance the proactive and interactive culture which exists among agencies in the greater Wellington region as well as clarifying the roles of these agencies in working toward the vision and objectives.

Actions associated with regional passenger transport, active modes and road safety (all of which are essential elements for TDM) are detailed in the regional passenger transport plan and regional cycling, pedestrian and road safety strategies, respectively. These documents address the alternative demand provision element of travel demand management and are essential complementary documents to this strategy, which focuses on the demand optimisation element. It is expected that, when implemented, the actions within this strategy will have a direct impact on the numbers using these alternative modes and on road safety.

“Ensuring that walking and cycling are viable, desirable transport options is important to support TDM activities and objectives. At the same time, TDM activities undertaken within a broader sustainable transport framework can play an important role in increasing the desirability of walking and cycling in relation to car use” (MOT, 2005).

An action identified by the technical working group during the strategy’s development was one of investigating rationalisation of fringe benefit tax rules. This has not been included in this strategy, as such an action sits at a national level, and as such, is better dealt with by government agencies such as the MoT and EECA.

We expect to see positive outcomes over all indicators discussed above, as a result of successful implementation of the interventions detailed in the action programme. However, several issues make a comprehensive evaluation of the effects of the TDM initiatives challenging. These include:

- Many TDM initiatives are designed to influence small portions of the population. Such small-scale initiatives mean it can be difficult to measure the success of these initiatives at a strategic level.
- It is hard to separate out external travel demand influences, such as changes in the price of fuel and changes in economic conditions.
- Many TDM initiatives involve multiple TDM measures which make it problematical to isolate the effects of any one measure.

The funding assessment contained within the action programme tables is indicative only. Land Transport NZ advise that funds will be allocated annually by Land Transport NZ on a project initiative basis. The Financial Assistance Rates (FAR) shown in the tables represent Greater Wellington's expectations and will require special consideration by Land Transport NZ.

Objective: Efficiency

Ensure the most efficient use of existing transport infrastructure and services

Actions	Responsibility & role	Timing	Cost	Funding	Target	Individual action performance measure
Integrated Network Management Plan Develop and implement an integrated network management plan to maintain an agreed LoS on the strategic road network. Plan to include ATMS, Ramp Metering, ATIS and HOV lanes	Transit NZ (lead) TAs GWRC Access Planning	Plan developed by end of 2006/07	\$15-\$20 Million	Transit NZ (100% LTNZ)	Regional plan in place by 2006/07	Plan is developed and reported to RLTC
Transit New Zealand TDM Strategy Develop & implement a travel demand management action plan for the regional state highway network, consistent with this strategy and Transit's TDM Strategy.	Transit NZ (lead) GWRC Access Planning TAs	Plan implemented by 2006/2008	Administrative	Transit NZ (100% LTNZ)	Plan is implemented by Transit NZ	Plan is implemented

Objective: Awareness

Increase public awareness of TDM and individual travel choices

Actions	Responsibility & role	Timing	Cost	Funding	Target	Individual action performance measure
Awareness campaign Develop and implement a campaign to raise public aware of the full costs of their travel and mode choice decisions, including the environmental, social and economic costs	GWRC (lead) EECA LTNZ Transit NZ	Ongoing	\$100,000 per annum	GWRC (25% LTNZ and 75% Crown)	Campaign commences in 2006/07	Campaign implemented

Objective: Planning

Encourage integrated land use and transport planning that seeks to maximise transport efficiency

Actions	Responsibility & role	Timing	Cost	Funding	Target	Individual action performance measure
<p>Integrated Land Use & Transportation Support and advocate for integrated land use and transportation planning which reduces traffic demand, generates sustainable travel options and reduces the need to travel (including district plans, the regional policy statement, and the Wellington Regional Strategy). Encourage sensitive location and design of new transport infrastructure in relation to existing land use and communities to minimise adverse effects.</p>	GWRC TAs Transit NZ	Ongoing	Administrative	GWRC Administrative budget (25% LTNZ) TAs	Improved planning documents which facilitate increased urban densification, infill around transport nodes, localised job opportunities, facilities and services.	Submissions made to reviews
<p>Travel plans Develop and implement a travel plan programme to encourage the uptake of business, school, community and individual travel plans and associated travel behaviour change initiatives such as ridesharing, teleworking, flexible work hours, walking school buses, etc</p> <p>Develop and implement a travel plan for organisation's offices</p>	GWRC EECA TAs	CCDHB by end of 2005/06 Ongoing	\$525,000 for 2005/06 \$900,000 per year	GWRC (75% LTNZ) GWRC (25% LTNZ and 75% Crown)	Number of businesses, schools and community groups with a travel plan in place by 2010 (to be determined as plan developed)	Number of plans in operation
	GWRC, TAs, Transit NZ, EECA, MoT, RPH and LTNZ	Each agency to have a travel plan developed with implementation started by 2006/2007	Each organisation's administrative budget		All agencies to have operating travel plan in place by 2006/2007	Number of plans in operation
<p>Perception survey Undertake surveys to determine regional perceptions of issues related to TDM</p>	GWRC Access Planning	2 yearly	\$8,000 per survey	GWRC Regional Land Transport Strategy Annual Report budget	2 yearly	Survey completed and results reported in Annual Report

Objective: Advocacy

Encourage proactive advocacy that facilitates coordination among lead agencies

Actions	Responsibility & role	Timing	Cost	Funding	Target	Individual action performance measure
<p>Road pricing Advocacy to central government for the introduction of legislation allowing for road pricing of existing routes.</p> <p>Undertake further investigations into an appropriate road pricing scheme for the greater Wellington region which will refine the concepts developed to date, review the social, equity, economic and environmental impacts of road pricing in more detail, and identify the system administration and technological issues, including a robust risk assessment.</p>	<p>RLTC GWRC TAs</p> <p>GW</p>	<p>Ongoing until introduced</p> <p>2005/2006</p>	<p>Administrative</p> <p>\$250,000</p>	<p>GWRC TAs</p> <p>GWRC (25%) LTNZ (75%)</p>	<p>Legislation introduced in the medium term</p> <p>Study completed and reported to RLTC by end 2005/2006.</p>	<p>Advocacy undertaken</p> <p>Study completed.</p>
<p>Regional participation at national level Actively participate, where appropriate, in national level programmes/strategy development that have regionally significant impacts upon Travel Demand Management such as the Travel Behaviour Change Advisory Group</p>	<p>GWRC Access Planning Transit NZ</p>	<p>Ongoing</p>	<p>Administrative</p>	<p>GWRC Administrative budget (25% LTNZ)</p>	<p>Every opportunity to participate taken</p>	<p>Participation in policy development opportunities</p>
<p>National Rideshare programme</p> <p>1. Development of a national rideshare tool</p> <p>2. Actively support national level programmes that seek to develop and implement a national rideshare programme</p>	<p>LTNZ</p> <p>GWRC Access Planning</p>	<p>As soon as possible</p> <p>Ongoing</p>	<p>Administrative</p> <p>Administrative</p>	<p>LTNZ</p> <p>GWRC Administrative budget (25% LTNZ)</p>	<p>Introduction of scheme as soon as possible</p> <p>Every opportunity to support taken</p>	<p>Scheme developed</p> <p>Participation in national rideshare programme development opportunities</p>

Anticipated strategy cost

The anticipated strategy cost is expected to start at \$2,275,000 in the first year, increasing to \$2,525,000 per year for future years, as per the Wellington Transport Project TDM funding. Appendix 2 gives a breakdown of this cost. There is an expectation that government agencies and TAs will contribute to the funding of initiatives relevant to their areas.

Monitoring and review

GWRC and Transit will have primary responsibility for all monitoring. Progress with strategy actions will be monitored against respective performance measures on an ongoing basis. Reporting will be in the RLTS Annual Monitoring Report (AMR) and back to an annual meeting of the regional TDM technical group. The strategy will undergo a full review by June 2009, however as developments occur (such as the introduction of road pricing), it might be necessary for a full review of the strategy at an earlier time.

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Appendix 1

Outcome and action links

This table shows that most of the strategy's actions are expected to contribute positively to some degree to all of the outcomes sought. It should be noted that there are complex relationships involved. This will make evaluation of the effectiveness of individual interventions impossible to determine.

Outcomes	Reduced traffic demands	Reduced congestion	Improved access and mobility	Reduced land transport loading on regional air quality	Reduced CO ₂ emissions	Reduced non-renewable fuel use	Minimised undesirable social, environmental and safety impacts	Improved economic efficiency	No adverse impact on economic activity
Actions									
Efficiency									
Transit NZ TDM strategy	✓	✓	✓	✓	✓	✓	✓	✓	✓
Integrated network management plan	✓	✓	✓	✓	✓	✓	✓	✓	✓
Awareness									
Awareness campaign	✓	✓	✓	✓	✓	✓	✓	✓	✓
Land use planning	✓	✓	✓	✓	✓	✓	✓	✓	✓
Planning									
Travel plans	✓	✓	✓	✓	✓	✓	✓	✓	✓
Perception survey									
Advocacy									
Road pricing	✓	✓	✓	✓	✓	✓	✓	✓	
Regional participation at national level									✓
National Rideshare programme	✓	✓	✓	✓	✓	✓	✓	✓	✓

Appendix 2

Anticipated strategy cost 2005 – 2015

Strategy actions	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015
Integrated network management plan	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000
Travel plans	\$525,000	\$925,000	\$925,000	\$925,000	\$925,000	\$925,000	\$925,000	\$925,000	\$925,000	\$925,000
Awareness campaign	-	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Road pricing study	\$250,000	-	-	-	-	-	-	-	-	-
Total anticipated cost	\$2,275,000	\$2,525,000	\$2,525,000	\$2,525,000	\$2,525,000	\$2,525,000	\$2,525,000	\$2,525,000	\$2,525,000	\$2,525,000

Appendix 3

Glossary of terms

Accessibility: The ability to obtain desired goods, services and activities.

Active modes: (also known as *Non-motorised Transportation*) includes walking, bicycling, small-wheeled transport (skates, skateboards, push scooters and hand carts) and wheelchair travel.

Advanced Traveller Information System (ATIS): ATIS provide drivers with realtime information about traffic conditions, accident delays, roadwork and route guidance from origin to destination. Some of the methods used for providing drivers with this information include traffic information broadcasting, pre-trip electronic route planning, on-board navigation systems and electronic route guidance systems.

Advanced Traffic Management System (ATMS): An array of institutional, human, hardware, and software components designed to monitor, control, and manage traffic on streets and highways.

CO₂e: Carbon Dioxide equivalent

Congestion pricing: Road pricing that varies with the level of traffic on a congested roadway. Congestion pricing is intended to allocate roadway space efficiently.

High-Occupancy Vehicle (HOV): a passenger vehicle carrying more than a specified minimum number of passengers. HOVs include carpools, vanpools, and buses. HOV requirements are often indicated as 3+ (three or more passengers required) or 4+ (four or more passengers required).

HOV lane: This is a traffic lane limited to carrying high occupancy vehicles (HOVs) and certain other qualified vehicles.

Intelligent Transport System (ITS): An umbrella term for advanced automation in mobile vehicles.

Level of Service (LoS): A qualitative concept used to describe operational conditions within a traffic stream, and their perception by motorists and/or passengers (including congestion and other factors such as travel time, speed, freedom to change lanes, convenience, comfort and safety).

Mobility: The movement of people and goods.

The National Land Transport Programme (NLTP): The mechanism through which LTNZ allocates funds to approved organisations.

Ramp metering: The use of a traffic control signal on a motorway on-ramp to control the rate at which vehicles can enter the motorway network.

Regional Land Transport Strategy Annual Monitoring Report (RLTS AMR): The annual report produced by GWRC to monitor how well we are doing to achieve the objectives set out in the RLTS.

Road pricing: The framework within which drivers pay the true cost of using roads. This includes the social, economic, and environmental costs such as accidents, pollution, time delays, normally borne by the community. Examples include cordon charges, congestion pricing, tolls roads, distance based pricing.

Single Occupied Vehicle (SOV): A vehicle that only has one person in it.

Travel plan: A travel plan is a strategy by which a business or institution can reduce the environmental impact of journeys made by its staff and clients. Travel plans provide options to encourage the use of sustainable forms of transport such as walking, cycling, public transport and car sharing.

Travel Demand Management (TDM): Various strategies that influence our travel decisions and increase transport system efficiency to achieve specific objectives such as reduced traffic congestion, road and parking cost savings, increased safety, improved mobility for non-drivers, energy conservation and pollution emission reductions. Also called *Mobility Management*.

Vehicle Kilometres Travelled (VKT): A term to describe the combined vehicle kilometres over specified section of road.

Walking school buses: A technique where groups of up to 30 children walk together to school accompanied by 2+ adult volunteers. Volunteers are usually teachers, or caregivers who would have been driving children to school anyway.

Wellington Regional Strategy (WRS): The WRS addresses concerns about the region's future direction and the population's wish to maintain their quality of life at a time when the region's rosy economic position might be vulnerable to a lack of growth. The WRS is expected to be released in draft format later in 2005.

Wellington Transport Strategic Model (WTSM): The Greater Wellington Regional Council strategic transport Emme2 computer model.

Water, air, earth and energy: elements in Greater Wellington's logo that combine to create and sustain life. Greater Wellington promotes **Quality for Life** by ensuring our environment is protected while meeting the economic, cultural and social needs of the community.

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