Bay of Plenty Regional Transport Demand Management Study

Bay of Plenty Regional Land Transport Strategy Supporting Paper No. 08

Bay of Plenty
REGIONAL COUNCIL

Contents

Part 1: Introduction

Bay of Plenty Regional Council has commissioned McCormick Rankin Cagney (MRC) to undertake the *Bay of Plenty Demand Management Study.* The outcomes of this study will inform the review of the Regional Land Transport Strategy (RLTS) that is currently underway. Demand management measures are especially important in rapidly growing regions, such as the Bay of Plenty, where the opportunity exists for policies to influence the structural determinants of travel demands, such as urban form and land use patterns.

While the scope of this study does not extend to the types of infrastructure that should be delivered in the Bay of Plenty region, it does consider how transport infrastructure can be delivered in a way that contributes to overall demand management objectives. One of the underlying aims of this study is to provide insight into a broader range of demand management measures than have been considered and delivered in the past.

1.1   Introduction to Demand Management

Demand Management (DM) refers to various policies and programs that both allow and encourage people to manage their demand for (i.e. consumption of) infrastructure. As New Zealand continues to grow, demand management is expected to play an increasingly important role in achieving economic development, social well-being, and environmental sustainability objectives. Demand management is particularly important to encourage more efficient consumption of water (Water NZ, 2009), electricity (Concept Consulting Group Limited, 2008), and transport (National Infrastructure Unit, 2010).

New Zealand's economic development has been underpinned by investment in relatively affordable infrastructure. Looking forward, it will become increasingly difficult to meet the transport and energy demands associated with current development patterns and lifestyles in a cost-effective and sustainable way. The growing need for DM measures in the transport sector is acknowledged in the Government's recently developed *"National Infrastructure Plan,"* which provides the following comments on transport funding and pricing:

> *While there are immediate opportunities to improve key corridors in the roading network to provide better service levels at current and future traffic volumes, in the longer term building our way out of road congestion is unlikely to be an affordable or efficient strategy. As with any type of infrastructure investment, evidence of a capacity constraint does not automatically imply that more capacity should be built. With road transport, once a certain reasonable level of capacity is provided, the problems of limited land supply and environmental constraints point to the need for smarter solutions.*

As referenced in the extract above, instead of responding to demand by simply increasing capacity, DM examines the primary drivers of demand and considers how these may be managed in a way that reduces total demand, especially at peak times. An example of these drivers may be transport pricing, which the *"National Infrastructure Plan"* discusses as currently not contributing to effective DM outcomes:

> *Current charges (particularly Fuel Excise Duty) are relatively unsophisticated and weakly targeted. For example, the charges don't discriminate on type of road or time of day. Use of the transport system should, ideally, be based on more accurate price signals to enable users to make informed decisions about which corridor delivers the best outcomes for the cost. Once this occurs,*

current infrastructure will be used more efficiently and, where additional investment is required, those investing will have a greater degree of confidence in the value generated by their investment.

Indeed, demand management measures tend to be most effective when there are large and transient (daily or seasonal) peaks in demand. For example, in Stockholm, Sweden, drivers are charged a variable fee to drive into the city centre according to the time of travel (Hugosson & Sjöberg, 2006). The fee comes into effect at 6.00 am on weekdays and rises approximately every half an hour in 50 cent increments to reach a peak of approximately NZ$3 during the most congested times. Since the implementation of the scheme, Stockholm has seen a 15-25% reduction in peak period vehicle volumes, with queues almost disappearing entirely (Hugosson & Eliasson, 2006; Richard, 2009). Research suggests that the benefits of the scheme, particularly faster and more reliable travel-times for high-value travel, such as commercial vehicles, exceed the costs. Furthermore, retail activity in the city centre does not appear to have declined, which was one of the key arguments by opponents of the scheme (Daunfeldt, Rudholm, & Rämme, 2006; Eliasson, 2007).

The aim of most of demand management measures consists of one or more of the following objectives:

- Increase transport options

- Prioritise travel so higher value trips and more efficient modes are given priority over low value travel and less efficient modes.[1]

- Improve the effectiveness, efficiency, and/or reliability of the transport system

The suite of measures developed should address all these objectives to ensure a robust overall demand management strategy.

Finally, it is worth distinguishing between demand management and traffic management. While DM addresses the strategic drivers of travel demand, traffic management is primarily concerned with reduction of vehicle traffic volumes and speeds, usually to improve network performance and safety through operational changes. Ultimately, DM measures seek to reduce the total amount of travel that occurs by examining the underlying need for travel, whereas traffic management aims to minimise the impact of traffic increase the efficiency of the existing transport network through measures to control traffic flows.

1.2   Structure of this report

The following sections of this report are structured as follows:

- *Section Part 2: Background to this Study:* This section assesses the planning and policy framework as well as the local issues that will influence the development of a DM plan for the BOP. It also reviews the previous DM strategy to set the context of how the DM measures outlined in this current strategy are likely to extend on the progress that has already been made in the region.

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[1] The prioritisation of high value trips will take the resulting benefits and cost into consideration. Based on this definition, high benefits and low cost trips will be prioritised over low benefit, high cost trips.

- *Section Part* 3: *Evaluating Demand Management Measures:* This section outlines the measures that have been analysed as part of this study and the evaluation criteria used. It also presents a summary of the prioritisation of the measures at each package level.

- *Section Part 4: Recommended Demand Management Packages:* Using the prioritisations in section 3, this section recommends both a strategic DM direction for the region, and develops packages of recommended measures for urban areas, town centres, and rural communities.

- *Section Part 5: Performance Monitoring:* This section identifies the targets that would be required to evaluate the success of the DM strategies within each of the packages. It also recommends monitoring measures in addition to what is currently being undertaken that would need to be undertaken to track performance.

- *Section Part 6: Summary and Recommendations:* This section summarises the package details and recommends improvements that could be made to the DM development process moving forward.

Part 2: Background to this study

There are a number of background factors that will shape the development of an effective demand management strategy in the region, namely:

- *Planning and policy framework:* What central, regional and local policies need to inform this DM strategy?

- *Local issues:* What are the pressing local and regional issues that this DM strategy can help address?

- *Past DM strategies:* How have previous strategies been formulated and implemented, and what has been the impact of these strategies? What successes and lessons can be learnt from past experiences?

These three areas are summarised below, with further details available in Appendices A to C.

2.1 Planning and Policy Framework

A number of planning and policy documents will inform the development of DM strategies. The key planning and policy frameworks in place are:

Central Government level: The Government policy statement (GPS2) details the Government's desired outcomes and funding priorities for the *National Land Transport Fund*. The Government's priority is that land transport supports national economic growth and productivity through direct investment in infrastructure projects and transport services. There is emphasis placed on projects that enhance efficiency, contribute to the easing of congestion, improve travel reliability and provide better access to markets. One of the key funding priorities is the seven roads of national significance, one of which is the Tauranga Eastern Corridor (State Highway 2). These outcomes and objectives must be taken into account when developing a regional-level DM strategy.

Regional Government level: The Regional Land Transport Strategy (RLTS) outlines the transport strategies, desired outcomes and targets at a total regional level. The current vision of the RLTS is to provide *"an integrated, safe, sustainable land transport system that meets the current and developing needs of the people of a vibrant and* growing *region"* (Environment Bay of Plenty, 2007). Other relevant documents include the Regional *Land Transport Programme* (RLTP) which describes the strategic context affecting land transport investment, the *Walking and Cycling Strategy* which targets active mode share and safety aspects. The RLTS must be consistent with other regional policy statements, in particular the Regional Policy Statement (RPS), to ensure effective implementation of DM measures alongside existing initiatives.

Local Government level: The six local authorities in the Bay of Plenty region all have various transport planning objectives that are supported by DM. With the larger local authorities there is an increased focus on integrated transport strategies and active mode strategies. Local councils also specify directions in relation to urban development, economic growth, and transport demand management. The development of RLTS must take into account the district plans of the local authorities.

A number of relevant documents have been reviewed in the development of this report. A full list of these is included in Appendix A.

2.2   Local issues

Through the development of this report, initial consultation was undertaken with of local authorities in the Bay of Plenty. These discussions revealed several key planning issues and objectives, some of which were local in nature and others which were common across the region. These issues both affect and are affected by DM strategies and should therefore be considered in DM planning and evaluation. These issues include:

- *A need for the integration of the wider transport network:* It will be critical to address how the continuing development of different transport options (roads, public transport and active modes) are linked, to ensure that a robust transport network enables travel options across the region;

- *A growing and aging population:* The population of the Bay of Plenty region is both growing and ageing, which raises concerns around accessibility and changing transport needs and demands in the future, particularly for public transport;

- *Different land use patterns across the region:* High growth is expected in the western Bay of Plenty with low growth or decreasing populations in many of the smaller towns and rural areas. This presents a challenge for the regional council in responding to the diverse transport needs that these growth patterns present;

- *Reliance on car-based travel and fuel prices:* With a majority of trips in the region dependent on private car travel, there are concerns about how large fuel price rises might impact on welfare;

- *Parking management:* Both urban and town centres in the region could benefit from improved parking management, in particular minimum parking requirements present a threat to effective development patterns in town centres;

- *High seasonal movements:* The agriculture and tourism sectors generate significant economic development in the region, but drive significant seasonal demands on the transport network; and

- *A lack of monitoring of transport issues:* Several local authorities commented on the lack of funding available to monitor the outcomes of their initiatives, which undermines their ability to develop and implement effective DM measures.

A discussion of the issues within each of the local areas within the region can be found in Appendix B.

2.3   The existing Demand Management Strategy

The previous DM Strategy (set out in the 2007 RLTS) sets out packages of measures according to two implementation time frames (0-10 years and 10+ years). The intention is that these time frames integrate with LTCCP planning. The strategy packages are based on six geographic areas and include: Tauranga CBD Smart

Transport; western Bay of Plenty growth area linkage; Rotorua CBD Access; Rotorua-Tauranga linkage; eastern Bay of Plenty; Strategic walking, cycling and wheeled pedestrians. As it has only been three years since these packages were adopted into the RLTS, it is not at this stage reasonable to assess the full effectiveness of these measures. We have, however, evaluated the formulation, implementation, funding and monitoring of these packages, identifying successes seen, and opportunities for improvement.

Formulation: The RLTS identifies integration as a key strategic outcome, which is to be achieved through closely linking land use and transportation. The "Policies and Actions" section (which is intended to guide agencies in implementing the strategy) emphasises the importance of managing travel demand through land use planning. However, this approach does not seem to have flowed through to the development of packages for the geographic areas, with some lack of targeted measures to meet the stated goals. For example, the eastern Bay of Plenty Sub-Region Growth Areas Package includes targets for residential access to bus stops, lengths of cycle lanes and walking routes to new subdivisions, but does not include specific measures or controls to ensure that these improvements occur.

The previous strategy also relies heavily on journey to work (JTW) mode share improvements as the main measure of impact for alternative transport options. While JTW is a significant component of travel demand, there exist opportunities for actions supporting a range of travel purposes (e.g. for education), the impact of which will not be captured by this measure alone. We also note that public transport (PT) does not receive a strong focus in packages outside of Tauranga and Rotorua. While accepting there are challenges to PT in smaller areas, packages that continue to investigate and support effective PT are a critical part of future DM strategies. We believe that the efficient delivery of new PT services to areas such as Whakatāne and Omokoroa, needs to inform decisions on urban structure and land use from an early stage.

Implementation: Components outlined in the packages are generally high level policy and strategy actions. While important, more detail on how the packages may be implemented at a local level would be useful. This would also help to link targets more directly to actions in plan.

Funding: Funding allocations in this package were mainly expected to be delivered through the regional council, Local Councils and Transit New Zealand (now the New Zealand Transport Authority, NZTA). The estimated total investment for the projects to 2015/16 was $57 m. More than half of the funding needed to implement the packages was drawn from existing committed funds in regional and local Council budgets, with $35 m to be funded by Bay of Plenty Regional Council (BOPRC, previously Environment Bay of Plenty (EBOP).

Monitoring, evaluation and outcomes: The main evaluation method was to establish mode share stretch targets for Tauranga and Rotorua for JTW trips. The targets were:

	Public Transport	Cycling	Walking	Total
Rotorua	6.0%	5.5%	6.5%	18.0%
Tauranga	10.5%	5.0%	5.5%	21%

A sole focus on mode share in the larger urban areas of Tauranga and Rotorua ignores the potential for improvements for mode share shifts in smaller towns and rural areas. By focusing only on major urban areas, reduced support and incentives are provided for demand management strategies that encourage a range of travel options across the region.

A full assessment of each of the six individual packages can be found in Appendix C and are summarised in Table 1 below.

Table 1   Summary of 2007 Bay of Plenty Demand Management packages

	Tauranga CBD smart transport	Western BOP growth area linkage	Rotorua CBD access	Rotorua-Tauranga linkage	Eastern Bay of Plenty	Walking, cycling, mobility impaired
Formulation	Limited emphasis placed on planning for increased CBD residential growth	Alternative modes considered including PT and subdivision links No timeframes identified for cycling and walking	Focus on many PT and active transport modes but general targets rather than linked goals	Focus on cycling strategies while remaining unclear as to how it addressed increased travel demand along the corridor	Implies a need for more centralised parking Conflict between a "high level of driver amenity" and support of walkable centres	Focus on linking and improving cycle network to increase mode share Little focus on walkable centres, urban amenity
Funding	Through BOPRC TCC and NZTA	WBOPDC and BOPRC to fund	RDC to fund	Mainly through RDC	Eastern Bay of Plenty councils	Across numerous regional agencies
Implementation	Tauranga City Council and BOPRC primarily, support from NZTA	Spread across agencies, mainly TCC, WBOPDC	RDC primary agency BOPRC support	RDC and BOPRC on nearly all sub-components	Local Councils, BOPRC, WBOPDC	Primarily addressed by BOPRC with NZTA
Monitoring, evaluation and outcomes	Enhancements to PT undertaken. Education and information initiatives incorporated into annual plans Integrated school travel plans developed. Parking, walking and cycling strategies yet to be developed	Development of strategy for Eastern Corridor WBOPDC updated structure plans, working with NZTA to link subdivisions to existing networks	CBD parking review undertaken – policy currently being addressed Improved PT usage in last decade Lack of monitoring does not allow for results analysis	Local and regional public transport enhancements beyond the ten year horizon have begun. Some work has been undertaken on walking and cycling strategies.	Central parking strategy for Whakatane developed No taxi services in rural area Not clear how land-use assumptions were implemented	Very low tracking in active mode statistics Increase in cycleways in Rotorua, but low levels of mode share Western BOP walking and cycling strategy completed

Part 3: Evaluating Demand Management measures

This section provides an overview of measures we have investigated and evaluated, with a focus on those which are likely to be most relevant and effective in the region. An assessment of the prioritisation of the applicable measures is included, based on both the potential value that each measure may have, as well as the ease of implementation at each package level. The prioritisation assessment forms the basis of the packages outlined in Section 4.

3.1   Strategy areas

The following figure presents a framework for developing and understanding DM measures. It defines six core strategic areas, each of which has importance in addressing a range of issues.

Urban form: Urban form that features good accessibility and connectivity will help to reduce travel demand and improved mode choice. Attention to ensuring integration of a numerous transport choices will be critical, particularly active modes and public transport.

Land use patterns: Land use patterns that are adaptable and responsive to changing infrastructure, technologies and socio-economic preferences impact on the need to travel and the choices available. Achieving diverse land uses and integrating these with the transport network will improve travel outcomes.

Transport infrastructure and services: Delivering both transport infrastructure and services to provide efficient and effective mode choices improves the management of travel demand across the network. There should also be a focus on measures to improve the operational reliability of various modes across the network.

Alternatives to travel: Rapid developments in telecommunications and information technologies have enabled remote access, reducing the overall need for travel, including for employment and shopping. Continuing improvements will strengthen the viability and scope for increased alternatives to travel.

Economic incentives: Implementing a range of economic incentives ensures that people make efficient land use and transport choices. This promotes consideration of both internal and external costs and benefits associated with both the decision to travel and the choice of mode taken.

Social Factors: Raising awareness of transport choices and travel demand management will increase the use of alternative travel modes. A continuous dialogue at the community level on transport choices and networks will further increase the ability to shift behaviour patterns.

3.2   Strategies and measures

Table 2 summarises the range of measures assessed in this study. These measures are grouped under the six core strategies of demand management introduced above. A glossary including the definitions of these measures is provided at the end of this report.

Table 2   Summary of strategic areas and individual measures assessed

Strategies	Measures	
Urban form	• Location of key destinations (e.g. educational facilities, hospitals) • Connected street networks	• Urban design improvements
Land use	• Integration of transport network and growth planning • Mixed-use development	• Removal of minimum parking requirements • Intensification of existing areas
Transport infrastructure and services	• Multi-modal connections • Real time information • Public Transport services, including demand responsive services • Integrated ticketing	• Accessibility of services • Ramp metering • Phasing of signalised intersections • Freight integration measures
Alternatives to travel	• Telecommuting	• Online service access and provision
Economic incentives	• Parking management • Facility pricing (e.g. tolling)	• Regional fuel tax • Cordon pricing
Social factors	• Transport Management Associations (TMAs) • Neighbourhood Accessibility Plans (NAPs) • Travel plans • Ridesharing (car and vanpooling)	• Promotion and marketing of travel options • Tourist travel information • Seasonal and event management • Council leadership

It is important to note that some of the measures identified will address more than one of the strategic areas. For example, parking management will not only involve economic incentives, but also social factors to support the changes to the parking system, as well as altering transport infrastructure. In these cases, we have placed the measures in the strategic area with which they fit best.

3.3 Our approach to Demand Management

As discussed in the introduction, there is a limit to the potential for increasing capacity on the transport network to cater for increases in demand. Capacity increases are becoming increasingly expensive relative to the benefits derived. The current Government Policy Statement notes the importance of enhancing efficiency and lowering the cost of transportation; increasing accessibility to markets and employment; ensuring a secure and resilient transport network; and improving road safety. These objectives are unlikely to be reached through capacity improvements alone.

3.3.1 Prioritise higher value travel and more efficient modes

The demand for free (or subsidised) travel will usually exceed the finite capacity of the transport network so DM must ensure that the use of the finite capacity of the network is prioritised to "high value" trips. This term "high value" can be slightly unclear and is often dependent on the state of the current network situation and economic climate. For example, the current GPS states that the *"priority is for land transport investment to* support *national economic growth and productivity"* by directing *"investment into high quality infrastructure projects and transport services that encourage the efficient movement of freight and people."* Freight movements are currently considered to be a high value based on it direct contribution to the economy and GDP, but it is possible that the priority accorded to freight (or any other mode) may change in the future as relative values change.

Giving priority to more efficient modes can improve the overall efficiency of the transport network and can benefit other modes. For example a reduction in single occupancy vehicles is likely to improve journey times and reliability of freight vehicles.

3.3.2 Direct travel costs

The Transport Futures Study (MRC, 2010) modelled mode choice in the Bay of Plenty using regression models based on the 2006 census to understand the future performance of the transport system under a range of different future scenarios. These models were developed to predict the percentage of people (at the census area unit level) who travel to work using different transport choices.

This study identified that "push" factors, such as parking reforms and road pricing, not only deliver considerable benefits, but they also have effects on travel patterns that are more significant, in orders of magnitude, than investment in transport infrastructure and services alone.

In particular, the Transport Futures Study found that **direct costs of travel are a major driver of travel decisions (where, when and how people travel)***.* The modelling investigated changes in fuel prices and parking costs and found that these had noticeable impacts on travel demands. Fuel prices had a larger regional impact, because they affected all vehicle travel within the region. Parking costs, in contrast, affected only trips to central areas where parking reforms were included in the modelling[2]. When applied together, fuel prices and parking costs caused a 35% increase in demand for active modes (walking, cycling and mobility impaired travel such as wheelchairs) and public transport, with an associated 19% reduction in

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[2] Naturally, if the scope of parking reforms was extended beyond these areas then the effect of parking costs on travel demands could be expected to increase, subject to the availability of transport alternatives.

drive-alone vehicle trips. This concept of using direct travel costs to influence demand has been applied in our evaluation of potential demand management techniques.

3.4   Packages

The DM strategies and recommended measures are set out in four packages which reflect the region's diverse land use characteristics and transport issues as identified in the Transport Futures Study 2010. They also acknowledge the increasingly divergent rural and urban travel patterns emerging in the Bay of Plenty. It is recognised that there is potentially some overlap in the package areas, particularly urban centres and town centres. This is a reflection of the rapid growth that is occurring in the areas surrounding Tauranga City. The overarching emphasis of the following packages is on creating land use patterns that support a range of travel options

The four packages are:

- *Bay of Plenty region: these measures are most applicable at a regional level*

- *Urban centres: these measures are most applicable in the two main urban centres, Tauranga and Rotorua*

- *Town centres: these measures are most applicable in current town centres, including Whakatāne, Te Puke, Ōpōtiki and Kawerau and identified urban growth areas such as Katikati, Omokoroa*

- *Rural areas: these measures are most applicable in rural areas with predominantly agricultural and horticultural land uses and small settlements such as Paengaroa and Matatā.*

3.5   Evaluation method and criteria

Given the range of measures available, a set of evaluation criteria is essential to ensure that the correct measures are identified and prioritised at each package level.

The objectives of prioritising high-value travel, increasing travel options and improving the effectiveness of the transport system guide this evaluation process. The initial step in the evaluation is to filter the list of measures by three criteria: applicability; feasibility; and strategic fit, as per Figure 1.

Applicability — **Which package levels (regional, urban, town, rural) is it best applied at?**

Feasibility — **Is the measure feasible on a cost and/or scale factor in the region?**

Strategic fit — **Does it fit with the current and future strategies of the areas?**
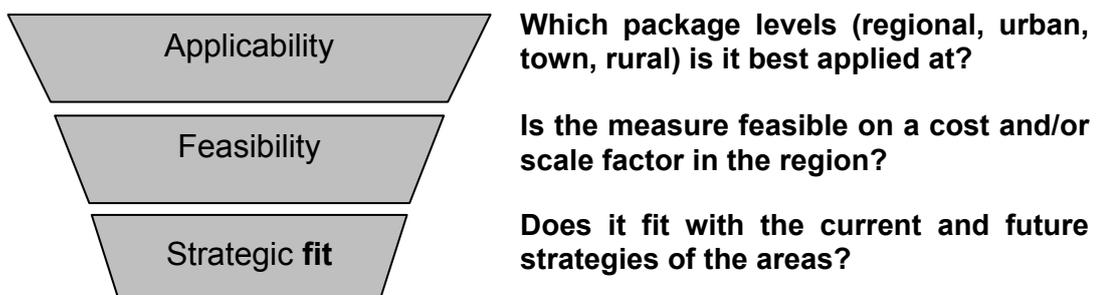
Figure 1   Evaluation method for prioritising measures

Applying this filter to the list of measures helps to determine which of the measures should be further evaluated at each package level. This shortened list of measures is assessed against two important principles to determine the overall priority level of each measure. The measures are assessed relative to the each other rather than by an absolute value:

- *Value and effectiveness: How useful will each measure be in achieving demand management goals, and what is the total potential scope of impact?*

- *Ease of implementation: How easy will each measure be to implement in terms of cost, resources and organisational complexity?*

The final prioritisation of each individual measure has been determined by a combination of the assessments of these two principles, as detailed in Table 3. It is important to note that the prioritisations of individual measures may differ at the various package levels, dependent on how the assessments of value and ease of implementation differ at the various levels across the region.

Table 3   Prioritisation determination for individual measures

		Ease of implementation		
		High	Medium	Low
Value	**High**	HIGH	HIGH	MEDIUM
	Medium	HIGH	MEDIUM	LOW
	Low	MEDIUM	LOW	LOW

3.6   **Evaluation of measure priorities**

Summarises the priorities of the measures for the various package levels. A discussion of each of the full list of the assessments for each measure and their final prioritisations is included in Appendix D. Areas with no priority rating are considered not applicable at the package level.

Table 4   Prioritisation of Demand Management measures by package level

Strategy Area	Measure	Region	Urban	Town	Rural
Urban form	Connected street networks		MED	MED	MED
	Intensification of existing areas		HIGH	LOW	
	Urban design improvements		MED	MED	LOW
	Location of key destinations	HIGH	HIGH	HIGH	HIGH
Land use	Integration of transport and growth	HIGH			
	Parking reforms		HIGH	HIGH	MED
	Mixed-use development		HIGH	HIGH	MED
Transport infrastructure and services	Multi-modal connections	HIGH	HIGH	MED	MED
	Real-time information		MED	LOW	
	Priority measures for specific modes	HIGH	HIGH	HIGH	LOW
	Public transport services	HIGH	MED	MED	LOW
	Integrated ticketing	MED			
	Accessibility of services	MED			
	Freight efficiency improvements	HIGH			
Alt. to travel	Telecommuting	HIGH			
	Online service access and provision	LOW			
Economic incentives	Parking management		HIGH	HIGH	LOW
	Facility pricing	HIGH	HIGH		
	Regional fuel tax	LOW			
	Cordon pricing		LOW		
Social factors	Transport Management Associations		MED	MED	LOW
	Neighbourhood Accessibility Plans		MED	MED	
	Travel plans		HIGH	HIGH	HIGH
	Promotion/marketing of travel options	HIGH	HIGH	HIGH	
	Tourist travel information	LOW	LOW	LOW	LOW
	Seasonal/event travel management	MED	MED	MED	MED
	Council leadership	HIGH	HIGH	HIGH	HIGH
	Ridesharing (car and van pooling)	MED	MED	MED	MED

Urban form

Urban form refers to land use factors such as development density, mix and design. Our evaluation of urban form measures has found that these measures are of high to medium priority for the region. The measures included have been shown to reduce overall vehicle use and increase non car-based travel mode share (Litman, 2006). The location of key destinations plays a large role in determining how far people need to travel to access amenities (including employment, education and health) and what transport mode they will use to get there.

Connected street networks and universal design measures are a medium priority, reflecting the speed of future development. Settlement patterns occur over a long time period and have long lasting impacts on travel demand into the future. It is therefore essential that measures to improve transport options and outcomes are embedded in the urban form growth patterns now to maximise the potential positive outcomes.

Land use

Land use measures have been highly prioritised by our assessment, recognising the important role that efficient land use can have in shaping travel patterns. At a regional level, an integration of the transport network with growth patterns will be critical to ensure that growth in the region is supported by adequate transport choices, reducing the number of areas left reliant on minimal transport options.

At an urban, town centre and rural level, a number of planning measures should be undertaken to ensure that new developments and changes to existing areas align with this goal of improved transport choices. Mixed use zoning, intensification of existing areas and the removal of minimum parking requirements will help to stimulate alternative travel options across all settlements in the region, but are likely to have the largest impacts at an urban centre level.

Transport infrastructure and services

Our analysis has determined that there are a number of measures relating to transport infrastructure and services that should be highly prioritised in the DM packages. In particular, multi-modal connections, demand-responsive services and managed priority lanes are likely to lead to significant increases in the perception and viability of travel alternatives, and improve travel choices across the region. A more connected transport network, which links PT services, active modes and private vehicle travel will provide greater access to more destinations, and cater to a wider variety of travel needs. The feasibility of integrated ticketing and real-time information should be investigated as demand grows for alternative travel options.

At the urban level, improving priority measures for selected modes may improve travel options. This could include improving pedestrian phasing in central areas to improve the image of the walkability of the city, and an investigation into the potential for managed priority lanes for various travel options (e.g. PT, HOVs, cycles and freight).

The alignment of service provision to demand (e.g. flexi-bus or taxi services in rural areas, increased PT for specific events) is also likely to be useful in promoting alternative transport methods in the larger cities. Services at a rural level, though important from an accessibility perspective, are not likely to impact significantly on travel demand, therefore they have been given a low priority for implementation.

Freight management is of high importance at a regional level. Freight load sharing services is an efficient way to work with the private sector to improve the utilisation of current freight services, combining movements for various suppliers and customers in the region. Existing optimisation solutions in the market could provide gains with increased regional council facilitation and represent a large opportunity to reduce the total level of travel on regional roads. Route security of both roads and rail will also be important to ensure the reliability of freight services in the future.

Alternatives to travel

Telecommuting and delivery services can often substitute for physical travel, for example, when people telecommute (work from home rather than driving to a worksite, use the Internet for banking, or have goods delivered rather than driving to a store. These have been assessed as a high priority. The *Transport Futures Study* forecasted that this measure is likely to have a noticeable impact on travel demand and may also play a particularly important role in rural areas. However, we recognise that there is a reliance on central Government policy direction and the private sector to improve the viability of these measures, which limits the ability of regional council to influence this.

Economic incentives

The economic incentives that have been investigated focus on parking and pricing measures. The priority of parking management was determined to be high as these measures have been shown to be one of the most effective ways to reduce vehicle travel (Litman, 2010). Parking management measures are relatively low cost in terms of implementation and have many other benefits including reduced development costs associated with the mandatory provision of parking, making this a very effective strategy area. Many of the initiatives related to parking management are already being considered by Councils in the region, which suggests that the value of this is already becoming apparent.

Facility pricing was also seen as being highly applicable in the region, is economically efficient and has the potential to be highly effective in shaping travel behaviour. It should be considered for key traffic routes as a means of funding for new transport programmes. This pricing can be targeted for higher impact by focusing on time-of-day or vehicle type differentials, to address the goals of the wider demand management plan.

While a fuel tax was seen as potentially having a high value, the difficulty in implementing this measure, due to a lack of national level support, means that, for the short to medium term, it is not seen as feasible. Similarly, cordon pricing was not seen as strongly beneficial to the Bay of Plenty at this point.

Social factors

Facilitating behaviour change through education and marketing of travel options in the region will be one of the most important ways that the region can meet its DM goals. Measures such as improved, marketing and information about PT services and active mode infrastructure, and working at urban, town and rural levels to develop travel plans will help to increase perception and awareness of travel options. All Councils should also take a lead in promoting transport alternatives for staff and visitors through supporting telecommuting, alternative work schedules, and carpooling which would help to establish the viability of such measures for other large organisations in the region, and communities in general.

To date school travel plan initiatives, including walking school buses and cycle safety education programmes have been well-received in Tauranga. This has led to an increase in the number of primary school children walking and cycling to school.

Our analysis suggests that education and support for behaviour change in travel demand management is most effective when undertaken at a local level. Effective education and support involves determining transport needs and creating plans by involving a variety of partners, to target behaviour change within communities and for individuals. These policies were also found to be highly effective and relatively easy to implement. The marketing of travel options to tourists, while easy to implement, was seen as low value, especially as existing demands on intra-regional travel infrastructure is low.

The development of Transport Management Associations (TMAs) and Neighbourhood Accessibility Plans (NAPs) should also form a core part of demand management packages as these measures can help to address wider DM goals at a local level. TMAs can be used to manage access to parking resources; engage and educate stakeholders; promote travel demand management; and if appropriate administer parking revenues. Membership of a TMA is often a mix of public and private stakeholders, such as business associations.

Services that the TMA could provide include:

- *Community outreach and education – The TMA could disseminate information on the new parking paradigm to community stakeholders, including property developers, business owners, landowners, transport professionals, and real estate agents*

- *Parking Brokerage Services – The TMA could help act as a "broker" for off-street parking, by assisting those who need parking connect with those people who have surplus parking*

- *Transport Planning Services – The TMA can assist with transport planning services, such as travel plans, over-flow (peak) parking plans*

- *Allocation of parking revenues – The TMA can liaise with local businesses and the wider community to gather and process feedback on the allocation of funds from increased parking revenues and report this to the relevant Council committee responsible for spending revenues on relevant projects in the areas from which they are collected*

Initiatives such as car sharing, carpooling, and alternative work schedules at local levels can be better implemented through working directly with large organisations and communities through the region. Given the nature of these, they are most applicable at urban and town centre levels, but could be implemented successfully wherever there is community support for improving transport options.

Part 4: Recommended Demand Management Packages

This section outlines the recommended demand management packages for the Draft Bay of Plenty RLTS. It draws on the analysis undertaken in section Part 3: to provide a range of measures that can be implemented at a regional and local level.

4.1 Strategic approach

Our analysis has identified numerous DM measures that may be included in the Draft RLTS. We suggest that DM at a regional level should focus on setting the strategic direction for the priority of measures, establishing the desired outcomes and monitoring the effectiveness of the DM measures. At a local (TA) level, the focus should be on the implementation of measures through an action orientated approach.

This distinction will be important because it acknowledges the need for a comprehensive and collaborative approach to address some of the key issues surrounding DM in the region. The monitoring of effectiveness is seen as a core component of the DM strategy and we suggest that given the limited resources of local councils, and the need for a consistent approach, the responsibility for monitoring the effectiveness should lie with the regional council.

While the responsibility of implementation lies at the local level (either rural, town, urban or regional), the strategic guidance of the regional council will help to ensure that an integrated approach to DM is taken across the region.

4.2 Bay of Plenty regional package

This package consists of DM measures that are most applicable at a regional level. These measures focus on both strategic and implementation measures. Implementation of some measures may require high level negotiation and coordination with relevant agencies including NZTA, KiwiRail and Government agencies such as the Ministry of Education.

The objective of this package is to ensure that the regional transport network is managed to maximise the efficient use of the existing infrastructure and services and prioritise high-value travel.

Land use

Regional councils have limited direct influence on land use patterns. However, given the significant impact of land use patterns on travel demand patterns it is suggested that, where possible, the Council supports effective land use patterns, and provides input into large-scale planning decisions that will impact on travel demand.

- *The development of an integrated growth and transport strategy that spatially and/or visually links the transport network with growth areas at regional level: This could build on existing work being completed for the draft RLTS or be done as a separate strategy, but would ensure connected transport networks link efficiently with expected growth.*

We suggest that regional level involvement is needed in order to ensure that an integrated approach to transport and growth is implemented throughout the region. This may involve:

- *Providing input into decisions about the location of key destinations such as health facilities and education facilities, large scale developments, shopping centres and community facilities: We recognise that the regional council may have limited opportunities to directly influence the decision making process but consider it important that these inputs are made where possible. This could be supported through the Regional Policy Statement.*

Transport infrastructure and services

Within the region there are a number of agencies involved in the management of transport infrastructure and services. The recommended measures may require multi-agency implementation, with strategic guidance from the regional council. This includes measures that maximise the use of the existing transport network.

- *Multi-modal connections: At a regional level this involves strategic input into the location of public transport terminals and interchanges and the development of Park 'n' Ride facilities where applicable. This measure might also involve input from the regional council into the development of strategic rail investment and development.*

- *Demand-responsive transport services: This could include investigations into the feasibility of flexi-bus services for rural areas, night services in urban centres, and seasonal peak travel demand services to deal with tourist influxes and seasonal employment peaks. This may require an increase in the number of public transport services and routes provided.*

- *Integrated ticketing: This is already available in some areas, but could be extended across all services which would provide more flexibility for PT passengers.*

- *Accessibility: Universal design of public transport services should be implemented to ensure access to as many users as possible (this is especially important in areas with high proportions of older people and those with limited mobility). This would be coordinated with public transport service providers.*

- *Freight integration: This could include encouraging the use of load sharing organisations[3] in order to increase the utilisation of truck capacity. This may be implemented through travel plans with businesses.*

- *Freight priority measures: Improvements on strategic inter- and intra-regional freight routes will help to increase freight journey reliability. This would require coordination with NZTA, Waikato Regional Council, Gisborne District Council and KiwiRail.*

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[3] An example of a freight load sharing organisation is: www.sharetheloads.com. There are several other New Zealand based companies offering this service.

Alternatives to travel

We note that considerable work has been undertaken to improve the reach of broadband infrastructure at a regional level. Where possible, we recommend on-going regional level input into broadband initiatives.

- *Telecommuting, supported by on-going broadband improvements: The investment in broadband infrastructure is mostly beyond the control of the regional council but given the forecasted impact that this can have on travel demand we recommend that the regional council support initiatives to invest in telecommunication infrastructure and promote telecommuting.*

- *Improved online access to services such as banking and home delivery that reduce or remove the need to travel. This would be led by the private sector, but Councils could also look at improving service access online such as online dog registration or LIM Applications.*

Economic incentives

We recommend that where and when necessary guidance is provided at a regional level on economic incentives including:

- Facility pricing, such as tolling, and time of use pricing: Time of use pricing can be *used* to manage demand for key strategic routes during peak travel periods, whereby a higher price is charged during the peak. This could be a very effective measure to prioritise high-value trips (such as freight) in the region and we recommend that the regional council initiate a discussion on facility pricing for the region.

Social factors

These measures build on existing work undertaken by Councils. We suggest that Councils across the region can provide leadership on travel demand management to encourage others to review their choices. Education and support can help raise awareness and improve understanding of travel options through measures such as:

- Promotion and marketing of travel options: Building on existing promotion of car-share, PT services and active modes. This may involve on-going promotion of services at key destinations (such as malls, airports, city centres).

- Council leadership: In the form of improving workplace travel options within regional council offices, development of regional council travel plans, decoupling vehicle travel with employment packages, encouraging mode choice for staff.

- Seasonal and event management of travel demand: This may include the promotion of travel options for region-wide events and partnering with local council and business to improve travel decisions when demand is at peak levels.

The following table summarises the agencies involved with the implementation of the regional package and the role of Council.

Strategy area	Responsibility of:	Role of regional council
Land use	TAs, Private sector, Government agencies	Strategic
Transport infrastructure and services	NZTA, TAs, regional council	Strategic/Implementation
Alternatives to travel	Private Sector, TAs and regional council	Strategic
Economic incentives	NZTA, regional council, TAs	Strategic/Implementation
Social factors	regional council	Implementation

4.3 Urban Centres Package

This package applies to the two main urban centres in the Bay of Plenty, Tauranga and Rotorua. These measures will be implemented by Tauranga City Council (TCC), and Rotorua District Council (RDC). These measures are most applicable to these centres as they respond to urban-centric issues such as high population growth and large-scale development. We acknowledge that some of the measures are already being implemented by the urban area councils. This package aims to build on the achievements to date and support on-going implementation and action of demand management measures.

The main objective of this package is to facilitate urban form and land use patterns that support increased travel options, including public transport, walking and cycling, car-sharing, and multi-purpose trips.

Urban form

We suggest that urban form measures have a high priority in urban centres. Poorly connected street networks and fragmented site development contribute to an urban environment where it becomes easier to travel by vehicle than by other modes. Some of these measures are already in place in some areas but may be extended, such as:

- *Connected street networks to improve accessibility and route options: This should be implemented through district plans and network improvement programmes. This facilitates the efficient movement of goods and people and access to services.*

- *Urban design enhancements: This should focus on creating safe and attractive links between centres and activities. This may be focused on enhancements in key centres (such as local shopping centres and city centres), in transport corridors and other public spaces that are used as transport links.*

- *Intensification of existing urban areas: To maximise patronage of existing services and reducing the need to travel.*

Land use

Councils play a significant role in influencing travel demand and patterns is urban areas through land use patterns. Dispersed land use patterns limit travel options and increase journey length. Relevant measures to address land use goals include:

- *Mixed use zoning: Encourages development that provides a range of activities including residential, retail and employment in walking and cycling distance in district plan.*

- *Planning for the strategic location of key destinations: Optimising the use of existing transport network when determining strategic locations for amenities such as education and health facilities, large-scale retail and commercial developments. This would be implemented through district plans and growth strategies and allows for greater travel options.*

- *Investigate the removal of minimum parking requirements: This will influence land use patterns in urban areas, and is implemented through district plan changes. It should be supported by urban form measures to maximise the potential benefits.*

Transport infrastructure and services

This includes measures that maximise the use of the existing transport network such as:

- *Multi-modal connections: At an urban level this may involve identifying and developing locations for public transport terminals and interchanges (this may include Park and Rides), stops and shelters, and improved walking and cycling networks.*

- *Real-time travel information: Identifying where this would be applicable for public transport and parking facilities. Public transport real-time information would normally be funded and implemented by regional council and relevant local Council.*

- *Priority measures for specific modes: This may include: pedestrian priority at intersections, bus and freight advance signals, bus and HOV lanes within identified areas and ramp metering. The implementation of these measures will vary depending on location and strategic routes.*

Economic incentives

We have identified pricing as an effective measure for demand management within urban areas. This could be in the form of pricing of strategic routes where there is a need to improve journey reliability for high-value modes. Potential measures are:

- Parking management: This may include shared parking and/or using pricing as a tool to manage demand for parking in key locations where demand for parking is high.

- Facility pricing: This could include tolling, and time of use pricing on key routes. This may require co-ordination with NZTA.

Social factors

At a local level, opportunities exist for Councils to work more directly with communities, building on existing relationships to provide education and knowledge around travel options and demand management. This includes measures such as:

- Transport Management Associations: These could be through existing business *associations* or as standalone organisations. This would have staffing impacts as it could require a dedicated staff member to work with businesses. This could be co-ordinated at a regional level.

- Neighbourhood Accessibility Plans: Some work has been undertaken in this area already (such as the Greerton NAP) and this could be extended to other neighbourhoods in Tauranga and Rotorua.

- Travel plans for business and education facilities: This could be done with larger business and organisations to encourage alternatives such as carpooling, telecommuting, flexi-work hours, and facilities for cyclists.

- The success of school travel plan initiatives, including walking school buses and cycle safety education *programmes* could be built on.

- Promotion and marketing of travel options particularly for local events and destinations: This draws on *existing* information and education resources and budget.

- Council leadership in improving workplace travel options within the organisation: We identify *this* as being important for all Councils in the region, including local Councils to improve the view of travel alternatives within the community.

4.4 Town Centres Package

This package applies to the town centres in the Bay of Plenty of Whakatāne, Ōpōtiki, Kawerau and Te Puke. This package takes advantage of the opportunities to increase active travel modes within the townships. It also acknowledges that there is a need to provide choice in commuter travel over longer distances as car based travel is currently the most viable option for many people travelling long-distances to access employment. To address commuter travel demand there is a need to provide programmes that support more efficient travel patterns. Many of the measures needed for town centres are similar to those needed in urban centres albeit at a different scale and with a different level of priority.

The main objective of this package is to create town centres in which the easiest way to get around is by walking and cycling and to increase travel options for people travelling long distances to access employment.

Urban form

We suggest that urban form measures have a high priority in maintaining the existing character of town centres that make these centres safe and accessible for active mode users such as pedestrians and cyclists. Measures to support this include:

- Maintaining and continuing development of connected street networks: The focus should be on *maintaining* safe and attractive links that support travel options. This is implemented through district plans.

- Urban design *enhancements*: In selected town centres, improvements such as footpath upgrades and streetscape design can help to prioritise different travel modes.

Land use

Land use patterns are important in all centres as these have significant impacts on travel options. Measures may include:

- Planning for the strategic location of key destinations: The location of key destinations (*such* as education facilities, retail and commercial development) can have greater impacts on travel demand in small towns by ensuring that links to the existing transport network allow for increased travel options. This is particularly true for the location of retail and commercial facilities outside of existing town centres. This is implemented through district plans and growth strategies.

- Mixed-use zoning: Town centres inherently have more mixed use areas due to their compact nature. This can be protected through district plan objectives.

- Parking reform: The removal of minimum parking requirements will have a noticeable impact on the character of small town centres and mode choice within the centre. It is therefore recommended that local Council investigate the feasibility of parking reform.

Transport infrastructure and services

At a town centre level the focus is on multi-modal connections for commuting and inter- and intra-regional travel. This includes:

- Multi-modal connections: Where applicable this could be the provision of inter- and intra-*region* public transport terminals (which may include Park and Rides). At a local level, there should also be walking and cycle network improvements.

Economic incentives

We have identified that pricing may be applicable in some town centres; however, it may not need to be implemented in the short or in some cases even in the medium term.

- Parking management: This may include improved utilisation of existing parking through shared *parking* and the pricing of on-street parking within the central business area to manage demand where appropriate.

Social factors

Local councils play a key role in supporting travel options at a town centre level and the focus should be on improving choices for longer commuting trips. Measures that would support this goal include:

- Transport Management Associations: These could be developed through existing business *associations* or as standalone organisations. As in urban centres, this would have staffing impacts as it could require a dedicated staff member to work with businesses. Again, this could be co-ordinated at a regional level.

- Travel plans for *business* and education facilities: This could be established with larger business and organisations to encourage alternatives such as carpooling, telecommuting, flexi-work hours, and facilities for cyclists.

- Promotion and *marketing* of travel options: This draws on existing information and education budget resources.

- Council leadership: Taking a local lead on improving workplace travel options within the *organisation* and the community.

4.5 Rural package

This package applies to areas that are made up of predominantly agricultural land uses, small settlements and undeveloped areas in the Bay of Plenty. It will be implemented by all Councils with rural areas. This package takes into account the impacts of growth and development in rural areas and small settlements, where population increases are occurring. It also acknowledges the individual characteristics of these areas, and the need for increased travel options, flexibility in service provision and affordability given smaller population bases.

The main objective of this package is to provide increased travel options to rural residents and to encourage active modes of travel in small settlements.

Urban form

Urban form is just as important in smaller settlements, as development patterns can have wide reaching effects on transport network and streetscapes.

- Connected street *networks* in small settlements: This will maintain the ability to take short trips by active modes.

Transport infrastructure and services

This includes measures that maximise the use of the existing transport network such as:

- Multi-modal connections: At the rural level this may be park 'n' rides and the integration of regional and national walking and cycling networks. Investigation may be made into the future feasibility of extended PT services. This could also include improved roadway shoulders to facilitate walking and cycling on rural roadways.

- Demand-responsive transport services: This could include PT improvements, seasonal peak travel demand services and taxis to service the smaller populations of rural areas.

Social factors

Education and support can help improve understanding and knowledge of travel options, even in small communities, where the focus will likely be on changing individual travel patterns as part of community-wide initiatives. These measures may include:

- Travel plans: The *ability* to complete travel plans may exist with large travel generating businesses such as the dairy industry, as well as school trip management, and the community more generally.

Seasonal and event travel management: Initiatives such as such as cycle hire programmes, *organised* vanpools or shuttles, promotion of car-free tourism.

Part 5: Performance monitoring

The previous section has identified our recommended demand management packages for the region. If these packages are to be effectively implemented, it is important to develop and track some key performance indicators (KPIs) to be able to monitor the progress and benefits associated with these initiatives. While it is important that KPIs measure the most relevant economic, social, and environmental data, it is also critical that they are easy to understand and cost-effective to monitor. The Council also has a legislative requirement, under Section 77 of the Land Transport Management Act 2003, to include in the RLTS, measurable targets to be achieved to meet the objectives of the RLTS.

In creating KPIs for the region, it is important to take a broader perspective as to what we are trying to achieve and measure through the development of these targets. Noting that transport – the physical movement of people and goods – is a means to an end rather than an end in itself; the ultimate goal of transport investment should be to increase the ease with which people can access goods and services that they value. Litman (2010) defines accessibility as follows:

> *"... people's ability to reach goods, services and activities, which is the ultimate goal of most transport activity. Many factors affect accessibility, including mobility (physical movement), the quality and affordability of transport options, transport system connectivity, mobility substitutes, and land use patterns. Accessibility can be evaluated from various perspectives, including a particular group, mode, location or activity."*

As such, the primary benefit of DM measures is that they improve accessibility without necessarily requiring more mobility. This view of accessibility should act as a guiding principle in the development of targets to measure transport effectiveness across the region. It is important to note that the indicators and targets recommended in the section are intended specifically for the monitoring of DM strategies within the region not the overall RLTS.

The first step to identify appropriate indicators and monitoring procedures for the region is to assess the existing processes and available data, and identify their appropriateness for managing demand within the region. Currently, the regional council reports on a number of transport related indicators in the RLTS Annual Report, which are summarised in Appendix E. Several of the key indicators normally used for monitoring DM are reliant on census data, particularly those surrounding population demographics and travel to work data. This limits the ability of Bay of Plenty Regional Council and TAs to regularly monitor the effectiveness of the strategies being implemented, relying on data being updated every five years.

5.1 Indicators and data collection

This section identifies indicators and potential data sources that are not currently utilised by the regional council in their RLTS annual reporting. We believe that these will be important to monitoring the effectiveness of DM measures.

5.1.1 Performance of key routes

We suggest that improved monitoring should focus first on multi-modal counts on key routes. From our discussions with the regional council, we understand that strategic routes are currently being developed as part of the RLTS. We recommend that detailed counts be conducted on these identified routes to provide useful information on the relative contributions of different modes. There is value in

synchronising the location at which counts are undertaken, so that information can be compared between different transport modes. The same process could be applied for freight movements, at least in those places where road and rail infrastructure operate in parallel.

Following the implementation of the measures identified in this demand management strategy, we would expect the relative contributions of alternative transport modes to total travel demands would increase. Similarly, we would also expect the rate of growth in peak hour vehicle traffic to subside, with higher rates of growth observed in off-peak periods and/or in the non-peak direction.

The strategic importance of freight has been recognised at the national and regional level. The reliability of journey time (i.e. variability of journey times) is considered to be an important indicator particularly on strategic freight routes. Travel time surveys can be expensive and difficult to arrange, however, it is expected that is information can be readily extracted from the GPS monitoring currently implemented by freight operators. We therefore recommend the regional council together with NZTA work with freight operators to regularly extract and monitor this information.

5.1.2 Funding

Funding is considered to be an important indicator of effectiveness of the implementation of TDM measures. Our investigations have it found it difficult to clearly identify whether actual expenditure (at the regional and TA level) was in line with the funding allocated to specific measures. It is recommended that the regional council implement processes to more carefully monitor the implementation of DM measures through reporting on expenditure. Where certain measures are found to perform well over a sustained period of time then there may be a case for reallocating funds from other DM measures that are not having such a large impact.

We recognise that this may increase reporting requirements for the regional council and TAs however, there are significant benefits as over time this process will increase the accuracy of the cost estimation process and clearly identify packages and targets which may not be receiving the planned level of expenditure. With current reporting requirements where total expenditure in transport is reported, the progress on individual packages is not clearly identifiable.

5.1.3 Household travel survey

One of the key outcomes of DM initiatives, and transport activities in general, is improved accessibility. The recent *Transport Futures* project considered future trends in the kilometres travelled and number of trips taken by various modes. These trends have in part been developed from data collected during the Ministry of Transport's annual *Household Travel Survey (HTS).* We suggest that an effective DM strategy would reduce the kilometres travelled (though improved urban form and land use outcomes), without necessarily reducing the trips taken. Basically this means the same number of trips would be undertaken but the distance travelled would be shorter. This could be a result of people living closer to work or increased mixed use development and intensification.

Based on this, we suggest that two of the key DM indicators should be total kilometres travelled and number of trips taken. We would expect to see ongoing reductions in both indicators, although the kilometres travelled indicator is likely to be more important, and may be expected to reduce more rapidly. In terms of modal outcomes, we would expect the relative proportion of travel undertaken in single occupant vehicles to decline over time.

In relation to this, one of the limitations of the HTS is that it does not collect data on the uptake of alternatives to travel, such as home-delivery and telecommuting which would reduce both trip numbers and total kilometres travelled. Another limitation is the limited sample size of the HTS which may not allow for accurate assessments of individual cities and town centres. We do note that the Ministry of Transport's website has stated that *"Environment Canterbury, Christchurch City, Waimakariri and Selwyn Districts have contributed funding for an expanded sample in those areas during the 2008/09 and 2009/10 years."*

We suggest that the regional council investigates the collection of data that would capture this information to determine the impact of measures relating to these initiatives, as they would be expected to reduce the number of trips taken. In the long run, we recommend the regional council engage with the Ministry of Transport and advocate for increasing the sample size and the inclusion of questions on alternatives to travel within the HTS.

5.1.4 Parking data

We have identified parking management reform is a key factor in influencing travel demand. We appreciate that this can be an emotive issue for many communities. Minimum parking requirements, and other historical practices, have intentionally sought to provide "free" parking which can create deeply ingrained cultural expectation for universally free parking. This expectation is likely to generate significant and emotional opposition when parking reform is proposed.

It is therefore considered important that the data surrounding parking levels is collected to be able to build a cohesive argument for the need for parking reform. This includes information on parking utilisation and time-of-day demand as well as supply surveys to understand the changing levels of parking availability. For example, opposition for the removal of minimums may be less, if parking surveys indicate that that the occupancy of the total existing off-street parking never exceeds 50%. Similarly if surveys indicate that demand in certain areas is low, justification is then provided to removing (or reducing) pricing in these areas.

5.2 Identifying performance targets

This section makes recommendations of the targets and indicators that should be included in the RLTS to most effectively monitor the impact of the recommended packages across the region. It is important to recognise that a combination of factors (not limited to the TDM measures) will contribute to each target. Recognising the legislative requirements in setting targets, we recommend that the regional council seek to include a number of targets surrounding balanced travel options, strategic choices and total travel demand.

5.2.1 Travel demand

As stated in the previous section, relating to key indicators of effective travel demand management it is suggested that targets be set to:

- Reduce average per capita *private* vehicle kilometres travelled from 2010 levels;

- Reduce the number of private *vehicle* trips taken per capita from 2010 levels; and

- Introduce TMAs in the region and *annually* increase the number of businesses involved in TMAs.

5.2.2 **Strategic routes**

The Bay of Plenty Regional Council should also focus on travel impacts along strategic routes as identified through high traffic levels, or key corridors relating to route security. The following targets may be adopted to address this:

- Travel time on the identified strategic routes will remain at or below the average of 2006-2010 levels for the identified strategic transport mode;

- Mode share of alternative *modes* on identified strategic routes increases from the average of 2006-2010 levels;

- Single occupancy vehicle *trips* on strategic routes will remain at or decrease from 2006-2010 levels; and

- Increased use of transport *infrastructure* (especially roads and public transport) in off-peak periods, which would be consistent with peak spreading.

5.2.3 **Balanced travel options**

A measure of effectiveness of the DM packages will be in the way that it is able to provide viable alternatives to single occupancy vehicles. It is recommended that the region have targets to:

- PT mode share to *increase* on strategic PT routes;

- Maintain current rates of *growth* in PT patronage levels;

- Increase the proportion of *active* mode trips on identified key routes;

- Cycle volumes will increase *on* strategic cycle routes;

- Pedestrian volumes will *increase* on strategic pedestrian routes; and

- In areas where parking *reform* has been implemented, parking utilisation will be maintained at targeted levels (usually approximately 85%).

Part 6: Summary and recommendations

We have defined demand management as practices that both allow and encourage people to manage their demand for (i.e. consumption of) infrastructure. Demand management measures have one or more of the following objectives:

- Increasing transport *choices*;

- Prioritising high-value *travel*; and

- Improving the overall *efficiency* of the transport network.

Methodology

In undertaking this study, we undertook the following tasks:

- Reviewed existing strategic *documents* at central, regional and local level;

- Conducted preliminary *consultations* with stakeholders in order to ascertain an understanding of local and regional issues relating to demand management;

- Assessed relevant demand management strategies and measures in view of their applicability to the Bay of Plenty, value *and* ease of implementation;

- Developed regional guiding transport management principles and implementation packages for the four area *levels* by determining the highest priority measures;

- Identified *the* appropriate targets and monitoring processes needed to track the effectiveness of the packages on travel patterns and made recommendations on additional areas for monitoring and targets.

Strategic areas

In developing this study, we have identified the following strategic areas that are important to the development of the regional demand management strategy;

- The impact of urban form;

- Parking management reform;

- Support for alternative transport modes, particularly public transport and active modes;

- Freight Prioritisation to support national and regional economic growth objectives; and

- Travel planning with large businesses and key organisations in the region.

Implementation packages

Packages at four levels (regional, urban, town and rural) were developed, with each comprising a series of measures that reflect the differing priorities for demand management within the region. It is important that these packages contain action-orientated initiatives to ensure that they can be monitored and tracked.

We recognise that there will be costs associated with the implementation of these measures, in the form of staffing requirements, CAPEX and OPEX operating costs. It has been difficult to calculate the additional costs of implementing measures with existing demand management funding information. Costs will also depend on which measures selected for implementation. It is important that all Councils undertake further investigations in to costing implications before implementing any new initiatives in demand management.

Key recommendations

This development of this study has revealed a number of key issues for demand management in the Bay of Plenty region. This has informed the following key recommendations for the regional council:

- There is a need for a regional commitment to parking reform which may include removal of minimum parking requirements, priced parking to manage demand and facilitation in the development of parking brokerage services.

- At a regional level discussion on road pricing as a means to manage demand should be undertaken. Possible mechanisms to consider should include tolling and time-of-use pricing.

- Council should discuss with the Ministry of Transport the possibility of increasing the Household Travel Survey (HTS) sample size and advocate for the inclusion of questions on alternatives to travel within the HTS.

- Identify strategic transport routes in the region to allow for monitoring of the effectiveness of demand management measures. This will improve evaluation of demand management when used in addition to the HTS and census data. We also recommend that mode share targets be set for these specific routes.

- Implement processes to improve monitoring of the implementation of demand management measures through reporting on expenditure. This will also improve the ability of the regional council to estimate costs of demand management measures.

- Coordinate with NZTA to engage with freight operators to regularly extract and monitor information on the performance of the freight network including travel times and reliability.

Part 7: Glossary of Terms

Demand Management Measures

Urban form

Location of key destinations: Encourage the location of educational, health, community and retail destinations to reduce travel needs. This measure will also need to ensure that a number of different transport modes are accommodated and encouraged through the location of amenities.

Connected street networks: Ensure that footpath and road networks are connected to reduce the length of required trips and increase viability of active modes.

Urban design enhancements: Urban areas and developments should be as mode-neutral as possible, supporting a wide range of transport options, and accessible for all members of the community (e.g. wheelchair accessible, cycle friendly).

Land use

Integration of transport network and growth planning: Develop a network plan of all transport modes linked to regional residential and employment patterns.

Mixed-use zoning: Support a diversified mix of land uses within local areas to reduce the number of trips required (e.g. integrated retail in residential areas is likely to reduce household car trips).

Removal of minimum parking requirements: Remove minimum parking requirements for developments in district plans to reduce the market distortion towards private vehicle use, and allow for more effective land-use particularly in urban and town centres.

Intensification of existing areas: Infill existing areas with new land uses to ensure that new residential areas have minimised trip lengths and can access key locations in a number of ways.

Transport infrastructure and services

Multi-modal connections: Improve the integration of PT services, active modes and private transport options to build a more connected transport network, that not only improves the accessibility of a number of locations, but increases the travel options to reach these.

Real-time information: Establish real-time technology that provides information on relevant transport situations, including route information at bus stops, and parking availability.

Managed priority lanes: Convert general traffic lanes along existing road corridors with high traffic levels to managed priority lanes. These could include priority for PT, HOV's, cyclists or freight and include a time-of-day component to improve trip time reliability at peak for alternative transport users.

Demand responsive services: Encourage the development of services that address emerging areas of demand, such as flexible bus or taxi services in rural areas, or the resetting of public transport routes in urban centres to improve the catchment area.

Integrated ticketing: Introduce a ticketing scheme that can be used for the transport system across the region. There is potential to extend this to retail opportunities and Council services.

Accessibility: Ensure that all transport infrastructure and services are accessible for all users (including the mobility impaired)

Ramp metering: Use signal lights to regulate the flow of vehicles onto motorways or major arterial routes.

Phasing of signalised intersections: Streamline the phasing of pedestrian lights in areas where there are high pedestrian flows to improve the perception of active modes, particularly in urban and town centres.

Freight integration: Facilitate higher efficiency of current freight movements through working with freight providers to facilitate higher utilisation on freight services and reduce total trips in the sector.

Alternatives to travel

Telecommuting: Encourage working from home with advances in communication infrastructure to reduce the total level of work trips required.

Online services and provision: Increase the opportunities for completing other tasks via the internet, such as online shopping, banking and completion of Council services.

Economic incentives

Parking management: Improve the control and management of parking across all settlements. This could include priced parking in areas of high demand, time limits in lower demand areas, guidelines for parking facility design and monitoring of utilisation of parking facilities.

Facility pricing: Price section of transport infrastructure to fund other demand management measures. Focus should be on roads with significant congestion and applicability can be varied to meet transport goals through differences in time-of-use and type-of-vehicle charges.

Fuel tax: Implement a regional fuel tax to provide funding for regional transport projects.

Cordon pricing: Charge vehicles that travel on roads within a certain area. This type of charge is generally applied to CBD areas and is implemented to address congestion within areas at peak times.

Social factors

Travel Management Associations (TMAs): Develop TMAs to promote travel options and drive efficiency. These may include initiatives such as improving public transport routes, implementing car sharing or carpooling schemes, and developing alternative work schedules to reduce peak hour travel.

Neighbourhood accessibility plans (NAPs): Work with communities to develop NAPs to identify the barriers to improved travel options. This may include working with the regional council to determine effectiveness of public transport routes and managed priority lanes, as well as identifying urban form and active mode infrastructure that would increase travel options.

Travel plans: Work with individual businesses, schools and community groups to develop new travel plans affecting large travel numbers of trips.

Promotion and marketing of travel options: Increased awareness and promotion of the multitude of transport options that exist through improved marketing of public transport options, greater publicity of active mode infrastructure, and initiatives to reduce the number of trips taken.

Tourist travel information: Improve awareness of alternative transport modes targeted at the seasonal influx of tourists, particularly at a smaller town centre and rural level where transport options may not be as well known.

Seasonal and event management: Working with seasonal employment levels and individual events to ensure that there are a number of travel options available.

Car-free tourism: The promotion of car-free trips to an area with the aim of reducing traffic associated with tourism. This may also include creating car-free streets for events, car-free travel discounts, and trip packages. An example of this can be found at: http://www.sfwebconsulting.com/carfree/index.php

Council leadership: All Councils in the region should take a lead on adopting alternative travel options (e.g. flexible work schedules, reduced number of Council cars) to illustrate the viability of such initiatives to other large organisations in the region.

Ridesharing: refers to carpooling and vanpooling, in which vehicles carry additional passengers. Carpooling generally uses participants' own automobiles. Vanpooling generally uses rented vans (often supplied by employers, non-profit organizations or Government agencies). Most vanpools are self-supporting – operating costs are divided among members. Vanpooling is particularly suitable for longer commutes.

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Appendices

Appendix A – Background documents

The planning and policy documents that have been reviewed to complete this TDM are:

Central Government documents:

- Government Policy Statement on Land Transport Funding 2009/10 – 2018/19

Regional Government documents:

- Bay of Plenty Regional Land Transport Strategy (RLTS) 2007

- Bay of Plenty Land Transport Programme 2009/19 – 2011/12

- Bay of Plenty Demand Management Plan 2006

- Bay of Plenty Regional Freight Study 2010

- Upper North Island Freight Study 2010

- Bay of Plenty Regional Walking and Cycling Strategy 2008

- Key Research Bus Satisfaction Monitor Report 2010

- Public Transport Stocktake Study 2009

- Bay of Plenty Rail Strategy 2007

- Bay of Plenty Transport Futures Study 2010

Local Government documents:

- Tauranga City Integrated Transport Strategy

- Smart Growth Strategy 2004

- Tauranga City Centre Strategy 2007

- Rotorua Integrated Transport Strategy 2006

- Rotorua Transport Demand Management Strategy 2007

- Western Bay of Plenty Walking and Cycling Strategy 2009

- Western Bay of Plenty Built Environment Strategy 2007

- Whakatāne Urban Growth Strategy 2010 (draft)

- Kawerau Regional Growth Advantage Strategy 2005

Appendix B – Key stakeholder issues

This section will give an overview of specific stakeholder issue identified in consultation with NZTA and Local Authorities. It provides a summary of specific issues that will impact on the type of demand management strategies that may be deployed in different parts of the region.

The New Zealand Transport Agency

The New Zealand Transport Agency plays an important role in developing and maintaining the region's road network and addressing the integration of land use planning and transport. There are a number of significant roading projects planned or currently underway in the Bay of Plenty, including the Tauranga Eastern Link (Te Puke bypass) and the Tauranga Northern Arterial route upgrade. The National Land Transport Programme also states that new transport centres to complement the bus networks in Rotorua and Tauranga have been included in the three-year programme. These are subject to an assessment of contribution to the Government policy statement.

NZTA is also working closely with SmartGrowth representatives to address issues of land use and transport integration, which is particularly important in the western Bay of Plenty due to growth rates. High growth rates in the western Bay has added additional pressure to managing existing networks and developing appropriate new routes at a regional and local level.

Tauranga city

Tauranga is a high growth urban centre with a population of about 111,000. This population growth is expected to reach 141,000 people within the next ten years. Growth management and targets are set out in the SmartGrowth strategy – a joint strategy between Tauranga City Council, BOPRC and Western Bay of Plenty District Council. Tauranga has a higher than average number of people over the age of 60 years old at 21.9% (Census, 2006). However, there are also an increasing number of families with children moving to Tauranga. The specific needs of the elderly and young children need to be considered when identifying DM policies.

Tauranga City Council already has a number of initiatives that are helping to improve transport options in the city, including school travel planning, walking school buses, cycleway and footpaths upgrades and integrated land use policies as outlined in the Integrated Transport Strategy. The Council has identified a desire to create a fully integrated cycle network in the city, to increase linkages for school trips, commuting and recreation. Funding has been identified as a barrier to the success of this project. Concerns about the impact of future increases in vehicle costs, including volatile fuel prices have also been cited as a concern for the city due to its reliance on vehicle based travel. The Council is also grappling with the potential transport and economic impacts on the CBD of dispersed retail and employment development that has resulted from rapid growth in the city and across the western bay.

Rotorua district

Rotorua is a mainly urban district with approximately 67,000 people, 23% of the population live in rural and the surrounding lakeside settlements. Rotorua is also a popular tourist destination with up to 8,500 visitors staying in the district on any given day.

Rotorua has identified key issues related to demand management in its Demand Management Study and has already began work on a many of these projects. The town has an extensive walkway network and a developing integrated cycleway. The creation of a public transport terminal in the city centre is seen as a key project to promote and improve PT services. Rotorua is also moving forward with parking management policy that will have a particularly significant impact on parking and urban form in the city centre.

Western Bay of Plenty

Western Bay of Plenty consists of both rural and urban areas surrounding Tauranga city and extending north-west towards the Coromandel. There are six townships in the district and several smaller semi-rural settlements. Many of these settlements act as satellite towns with many people commuting to Tauranga City and other parts of the Bay and out of the Bay for work. Agricultural based employment also creates seasonal variations in travel patterns across the district. Commuter traffic also competes with heavy vehicle freight movement across the district.

Peak demand is also experienced during school starting and finishing times, with many rural parents driving children to schools in towns. This is partly explained by limited school bus services and multi-purpose trips often involving after-school activities and shopping. Equally important is the need to address travel in off-peak periods where fewer travel options are available and PT services are infrequent.

Managing parking has been identified as a growing issue in small towns, where there is a need to manage land carefully. In particular current minimum parking requirements are in some cases impacting negatively on main street development in smaller towns. Blanket requirements also do not reflect the different needs of urban areas within the district.

The western bay is experiencing significant growth in the form of greenfields residential development and intensification around some townships. This growth has significant implications for travel demand management in the district, particularly where residential development is not coupled with development that generates more employment and school trips.

Whakatāne district

The township of Whakatāne has a population around 18,000 and is the centre of the district that has a total population of 33,297. The rest of district's the population is dispersed between several small towns and rural areas (about 27% of the population). Inter and intra district commuting is common, particularly to some of the larger employers such as the Kawerau Pulp and Paper Mill.

Some of the key issues currently being considered in the Whakatāne district are about the location of future residential and industrial growth areas. This will impact on the location and scale of long-term travel demand. Whakatāne township has one bridge connecting the town to the north-west side of the district heading towards Tauranga and Rotorua currently, with limited capacity and very little space for walkers and cyclists. Whakatāne District Council are planning for a second river crossing to increase capacity and provide better route security. This investigation is on-going in conjunction with NZTA recognising that there may be other options for improving access to Whakatāne.

Whakatāne has also identified peak traffic congestion, parking management and providing for walking and cycling as other issues of importance. The Council has recently announced the extension of existing cycleways to provide safer routes for a growing cycling community.

Ōpōtiki district

Ōpōtiki is a predominantly rural district that is spread over an area of 160 kms. Ōpōtiki township located near the western end of the district and has a population of around 4,300. The rest of the population live in smaller outlying farming and coastal settlements, some with limited roading access.

A significant harbour project is planned for the western end of Ōpōtiki township that will service a developing aquaculture sector, and potentially forestry and horticulture transport. There is only one access road to the harbour site which will also serve as access to a proposed holiday accommodation facility and the start point of a coastal cycleway and a walkway that encircles the township.

Balancing the needs of the roading network, particularly heavy vehicle movements and community safety is an ongoing issue for the district. The Council has recently funded footpath improvements around schools, increased parking around the college and is formalising an existing walkway network around the town. Bus services are improving in the district, with the regional council working to develop a new coastal service. The potential for a new bus terminal that will provide a hub for passengers travelling through the region is also being explored. There are issues in the east regarding servicing dispersed, mainly rural, settlements and also with route security

Kawerau district

Kawerau district consists of a planned township built in 1953 to service the Pulp and Paper Mill. It is home to around 7,000 residents. The township has a good level of public transport and a walkable urban environment. The pulp and paper mill attracts a high number of employees from outside of the district each day. There is also a large number of people travel to Whakatāne for work each day.

Large volumes of freight are moved by road and rail (50% share for each mode) from the district to the Port of Tauranga. Kawerau district has identified itself as a hub for industry development, central warehousing and distribution. However issues exist around route security and speed, particularly the railway line, which has been frequently affected by slips and flooding. Addressing these issues is seen as key to attracting economic growth in the district.

Appendix C – Previous Demand Management Strategy Review

The previous DM Strategy, set out in the 2007 RLTS, is based on the DM plan which sets out packages for two implementation time frames (0-10 years and 10+ years) based on LTCCP planning. The strategy packages are based on six geographic areas, with two packages created for the Tauranga and Rotorua CBD areas. The packages are:

- *Tauranga CBD SmartTransport*

- *Western Bay of Plenty growth area linkage*

- *Rotorua CBD access*

- *Rotorua-Tauranga linkage*

- *Eastern Bay of Plenty*

- *Strategic walking, cycling and wheeled pedestrians*

This appendix details the formulation, funding, implementation and evaluation outcomes for each of the individual packages stated above.

Tauranga CBD SmartTransport Package

Overview

The goal of the Tauranga CBD package is "to support the ongoing development of civic, commercial, recreational and employment activities in the CBD."

Formulation

Limited emphasis is placed on planning for increased residential growth in the CBD which would support a desire for linking land use planning with travel demand. However, some key package components have the ability to greatly impact on travel patterns and urban form.

Funding

Funding allocations in this package were mainly expected to be delivered through the regional council, Tauranga City Council (TCC) and the NZTA. Tauranga City Council was expected to increase funding on demand management projects by 92% in the LTCCP 2006/7-2015/16 round.

Implementation

Tauranga City Council and the regional council are responsible for the majority of the components of this package, particularly surrounding alternative modes, education and information and 'Living Streets'. NZTA will assist on walking and cycling strategy and further data collection and monitoring.

Monitoring, evaluation and outcomes

Of the sub-components included, progress has made on PT service enhancements, living streets, data collection and monitoring, and education and information initiatives. Work is still to be completed on a central area parking strategy, walking and cycling strategy. Some work has been undertaken on the promotion of ride share and travel plans, although the plan does not identify an agency responsible for ensuring this happens. The following outcomes have occurred since the publication of this strategy:

- *PT Service Enhancements have been undertaken*

- *A Parking Strategy and Walking and Cycling Strategy are yet to be developed, although work has been started on policy around these areas*

- *Education and Information initiatives have been incorporated into Annual Planning and Strategy Documents. For example, Tauranga City Council has been working on promoting public transport*

- *Limited improvements of PT infrastructure in the CBD area have been completed*

- *An integrated school travel plan programme has been established*

Western Bay of Plenty Growth Area Linkage Package

Outline

This package is focused on providing for residents in growth areas in the Western Bay of Plenty. The package for this area also aligns with plans for a potential future airport at Paengaroa, the Tauranga Eastern Arterial (now known as the Tauranga Eastern Link) and provision for public transport.

Formulation

Sub-component packages includes, a tolling strategy for the Tauranga Eastern Link, PT corridor protection and provision for an interchange, cycleways and walkways in new subdivisions and structure plans and road hierarchies to link subdivisions. We note that the provision of cycleways and walkways is not identified as either a 0-10 year or beyond 10 year programme (see Figure 9 of the RLTS, p.47). This is an important element of urban form design, especially when linked with structure plans. These elements could also be linked to provision for a transport network plan to ensure that walking and cycling ways are connected to PT routes and the interchange.

Funding

Western Bay of Plenty District Council (WBOPDC) will see costs of $1.3 m to 2015/16 to address this package. Funding will also come from other organisations stated below.

Implementation

The components of this package will be spread across a number of agencies. These include the TCC (corridor protection for PT), WBOPDC (structure plans, active modes) and NZTA (PT interchanges, tolling strategy and assistance on structure plans).

Monitoring, evaluation and outcomes

There is not a clear link between how the package components will link to the benefits and targets set out in the strategy. The current achievements seen since the publication of this DM include:

- *Development of a strategy for tolling of the Eastern Link*

- *Western Bay of Plenty Council have updated their structure plans to ensure the inclusion of walkways and cycleways, are have worked with NZTA to link subdivision with the existing road network*

Rotorua CBD Access Package

Outline

The goal of the Rotorua CBD Access package is "to sustain the existing good level of service for access to the centre of Rotorua to support ongoing development."

The sub-components focussed heavily on public transit and active transport modes. These included infrastructure improvements, integrated ticketing, and walking and cycling strategies alongside a parking review. The majority of these were slated to occur in the next 10 years, aside from some infrastructure improvements and data collection and monitoring.

Formulation

The package outlines a number of targets surrounding public transport usage and expenditure, and active mode targets but has not mentioned specific goals along these metrics. Similarly, the data required to monitor these has been noted, but the plan does not identify an agency responsible for ensuring this happens.

Funding

Limited information on funding is available, but the Rotorua District Council was expected to contribute almost $3 m of costs through to 2015/16 across all packages, of which the CBD Access package will be a large component.

Implementation

Responsibility for the implementation of the components of the package lies primarily with the RDC. The Bay of Plenty Regional Council also supports the package in the areas of public transport service enhancements, integrated ticketing and data collection, in conjunction with NZTA.

Monitoring, evaluation and outcomes

There are indications that RDC and the regional council have worked to address a number of the components in this package to improve the access to the central area of Rotorua. In particular, significant steps have been taken on a CBD parking review – moving to address the poor perception of parking in the CBD and improve the utilisation of alternative transport modes. A number of active mode strategies are being addressed more generally across the region which may have impacted on central Rotorua.

However, there has been a distinct lack of tracking and monitoring of public transit and active mode transportation usage since the packages were released in 2006. The 2009 Annual Report states that a 55% increase in bus passenger kilometres has been seen since 2001, but the proportion of that attributable to the package is unknown. There appears to have been no data collected on commuting transport choices or improvement of active mode amenities in the city centre since 2006.

Rotorua – Tauranga Linkage Package

Outline

Since the development of this package, the emphasis on the Rotorua to Tauranga linkage has decreased in growth documents. Sub-components of this package were mainly focused on walking and cycling in Tauranga and Rotorua, meeting rural transport needs, regional inter-city public transport services and recreational cycling. The goal was to develop growth corridors that increase access while minimising the impact of urban vehicle traffic.

Formulation

While a recreational cycling strategy is desirable it is not clear how this will address increased travel demand resulting from growth corridor development. There is no component in relation to urban form or connectivity despite this area being a high growth area and the importance of integrating land use and transportation planning.

Funding

Funding will be split across a number of agencies to achieve the goals of this project, but these are not explicitly stated in the DM documents. The majority is likely to fall with RDC, and form part of the $3 m of costs forecasts through to 2015/16.

Implementation

Rotorua District Council and BOPRC are collaborating on almost all of the components of this package, including walking and cycling strategies, PT enhancements and rural transport strategies. The only exception is rural transport strategy in Tauranga that will see assistance from the TCC.

Monitoring, evaluation and outcomes

Local and regional public transport enhancements were believed to be components to address beyond the ten year horizon. However, service enhancements have already been undertaken ahead of this schedule, resulting in increased patronage on Rotorua bus services.

Eastern Bay of Plenty Package

Outline

This package sets out components for Whakatāne, Kawerau and Ōpōtiki districts. The goals for this package are set out in the Demand Management Plan and form the basis for the programme of actions.

One important goal of this package is to provide transport services to meet the needs of dispersed rural populations and transport disadvantaged areas within the sub-region. This is a very important policy direction for the eastern bay, and provides recognition of the issues facing rural populations in the sub-region.

A secondary goal is also set out for the sub-regional which to develop the central area of Whakatāne in a way that maintains "the high level of driver amenity for conducting business in the central area" (DMP, 2006, p20), which includes future car parking provision. The resulting package components based on this is to create a strategy for providing future central area parking in Whakatāne. We suggest that this package component raises a number of issues. In particular, it implies that access to the central area will continue to be centred on car based travel.

Formulation

Although it is not specifically stated, the package appears to imply a need to provide more parking at a centralised point. We question the grounds for this assumption, especially given that in many New Zealand town centres, there is an over-supply of under-utilised parking. Without detailed parking utilisation data it is not possible to predict future parking demand.

There is also potential conflict between providing a high level of driver amenity in the town centre and providing a high level of pedestrian amenity needed to support the high number of people walking in the shopping area. We would suggest that emphasis should be placed on pedestrian amenity not driver amenity in the central area.

Funding

Whakatāne, Ōpōtiki and Kawerau District Councils are expected to spend almost $600,000 through to 2015/16 achieving the goals in this package alongside the other five packages. The current estimates note that this would require no new funding from these councils.

Implementation

The implementation of these projects falls across the numerous local district councils (Whakatāne, Ōpōtiki and Kawerau) for public transport and commercial services. Eastern Bay of Plenty and the Western district provide support on parking and land use implementation strategies.

Monitoring, evaluation and outcomes

Bay of Plenty Regional Council has been working closely with district councils and local communities to develop targeted scheduled services. The results since 2006 have been mixed, with some successes alongside lack of progress in other areas:

- *A central parking strategy has been developed for Whakatāne CBD*

- *No taxi services have been developed for rural towns*

- *It is not clear as to how land use implementation strategies for growth areas have been implemented, if at all.*

Strategic Regional Walking, Cycling, Wheeled Pedestrian Package

Outline

The goal of the Strategic regional walking, cycling and wheeled pedestrian package is "to provide a safe and convenient walking and cycling network, and facilities that meet the needs of both rural and urban users". Improvements for cycling mode share increases are prioritised in the package, with four of the six components specifically addressing cycling.

Formulation

The sub-components focus on linking and improving cycles routes both for commuters and across the entire network. There is very little discussion on walking and wheeled pedestrian initiatives other than walking school buses. This may reflect the fact that cycle improvements are more in line with more traditional transport projects. This may make them easier to formulate than walking components which require a more thorough consideration of urban form rather than rights of way.

The focus of the next decade is on design and assessment standards, and education strategies for cycle routes.

Funding

Funding will be split across a number of agencies to achieve the goals of this project, but these are not explicitly stated in the DM documents.

Implementation

Responsibility for the implementation of the components of the package lies primarily with the regional council in conjunction with NZTA, particularly around developing standards and assessments of commuter routes. Local districts are responsible for strategic cycle networks, education strategies and facilities on commuter routes, in the larger centres.

Monitoring, evaluation and outcomes

There seems to be little tracking in active mode statistics, but there are promising moves in the development of a walking and cycling strategy for the western Bay of Plenty. Rotorua tracks a few statistics, including satisfaction with footpaths (no change in the last five years) and amount of cycleways (17 km) although notes that only 3% of working-age residents use a bicycle as their main mode of transport to work.

Without more thorough tracking and monitoring of alternative transport modes, it cannot be determined what the impact of these package initiatives are on addressing the goal of improving conditions for walking and cycling transport users.

Appendix D – Assessment of individual DM measures

Urban form

Urban form plays a significant role in determining the effectiveness, sustainability and demand on a transport system around settlement centres. Implementing planning policies that directly affect future development and growth patterns will lead to urban form that enables more choice in transport modes, such as walking and cycling, and can support an efficient public transport network, while also minimising demand for car based travel.

There are many types of land use strategy approaches including new urbanism, transit orientated development (TOD), and location efficient development. In particular, ensuring that key destinations (such as educational, health, employment and retail services) encourage a diverse mix of travel options and are supported by a connected and accessible transport network for all users will be critical in shaping future travel patterns.

These measures are considered to have a medium to high level of priority for all areas, because urban form measures lie at the heart of DM and are seen as some of the most effective measures. The following table summarises the suitability these measure in a BOP context:

Measure	Applicability	Feasibility	Strategic fit	Priority
Connected street networks	Important to all settlement areas	Can be incorporated in district plans, structure plans as they are developed	Fits with several strategies such as Smart Growth Strategy, and Built Development policies and strategies	Urban: MED Town: MED Rural: MED Urban form is one of the largest influences on travel demand
Intensification of existing urban areas	Is most applicable to urban centres and towns where both opportunities for intensification and demand exist	Led at a regional level and incorporated into district plans and structure plans (e.g. SmartGrowth)	Most relevant to the built environment strategy and policies	Urban: HIGH Town: MED Encouraging housing demand to infill rather than urban sprawl
Urban design improvements	Important to all areas, particularly larger centres	Can be incorporated in District Plans, Structure Plans as they are developed	Most relevant to the built environment strategy and policy	Urban: MED Town: MED Rural: LOW Ability to promote and encourage all travel modes
Location of key destinations	Important to planning at all levels, depending on function of destination and relationship to PT and road network	Incorporated into district plan zones, structure plans. May require work with Ministry of Education, land owners, NZTA, developers	Fits with several strategies including: Smart Growth Strategy, Built Development policies and strategies	Regional: HIGH Urban: HIGH Town: HIGH Rural: HIGH Location of key sites drive total travel demand

Land use

Integrated land use planning is a key strategic outcome sought by the Bay of Plenty Transport Strategy. These measures aim to manage transport demand through land use patterns that minimise travel by improving pedestrian connectivity, and provide balance between access and mobility.

The effects of land use patterns on travel behaviour can be seen in a number of metrics. These include declining car based trips per capita when: population and employment density increase; land use is mixed; and when safe, connected and attractive street networks exist. Public transport increases are also likely to be seen with high-density developments and strong pedestrian networks.

These measures are considered to have a high level of priority in most areas of the Bay of Plenty. The lower priority of these measures on rural settlements reflects the smaller size of settlements and hence more limited impact that these measures may have. However, land-use planning measures are very complementary to urban form initiatives and can have a large influence on travel patterns. The following table summarises the suitability these measure in a regional context:

Measure	Applicability	Feasibility	Strategic Fit	Priority
Integration of transport network planning and growth planning	Would need to be implemented at a regional level, but would require input from all levels	Requires the development of a network plan to link with residential and employment growth patterns. Barriers may be inter-regional co-ordination, funding	Could be developed as part of the RLTS and implemented through the revision of key growth documents	Regional HIGH Should be an essential part to ensure integrated land use and transport development
Removal of minimum parking requirements	Should be applied to all areas of the Bay of Plenty	This can be implemented as a specific plan change or as part of district plan review processes	Fits with current reviews in Rotorua. It also fits with desired growth patterns, and long-term demand management	Urban: HIGH Town: HIGH Rural: MED Increasing market determination of parking reduces travel options distortions
Mixed-use zoning	Is applicable in all settlements, although larger centres provide more opportunities	Can be incorporated into district plans and structure plans	Most relevant to the built environment strategy and policies	Urban: HIGH Town: HIGH Rural: MED Diverse land-use reduces total travel needs

Transport infrastructure and services

Transport infrastructure and service improvements are traditionally seen as the most important measures in improving travel options amongst different modes. While true that high quality infrastructure and services are required to facilitate and encourage travel options, it is important to ensure that these measures are supplemented by improvements in all other strategic areas. This will ensure that awareness and demand for alternative travel modes is supported by infrastructure improvements rather than relying on new services to stimulate demand.

Infrastructure supporting a variety of travel modes has the ability greatly influence travel patterns. In particular improving the connections of the transport network with key destinations, and other transport options can increase the perception of ease of mode shift, and should be complemented with increased information, ease of use (e.g. integrated ticketing) and services that are in line with local demand.

The design of the transport network can also reduce the travel distances between origins and destinations, for all forms of transport, including active modes and PT. Technology and traffic management are also able to increase demand for high-value trips through mechanisms such as priority phasing (for pedestrians for example) and ramp signalling. Freight services form a significant level of travel demand and utilisation management should be included when considering the measures that Councils may take to reduce travel trips in the region.

The priority of these measures varies, reflecting differences in primarily the value that these may have on improving the viability of travel options across the region. Improving both service levels and connected infrastructure is a high priority, as are targeted measures to improve travel times for high value travel. Some of the lower priority measures reflect the current low level of alternative travel currently seen in the region, and these would provide value as these increase. The following table summarises the suitability these measure in a Bay of Plenty context:

Measure	Applicability	Feasibility	Strategic fit	Priority
Multi-modal connections	This is applicable for infrastructure connections at all levels	Feasible for all Councils to implement, a need to work with regional council on PT connections	Aligns with measures on land use and urban form, ensuring that all travel modes are catered for	Regional: HIGH Urban: HIGH Town: MED Rural: MED High value for increased options
Real time information	Requirement for high frequency routes limits applicability to urban and town centres	Only adds high value in areas with multiple operating services, or on high frequency routes	Helps to improve reliability and user information of the bus network	Urban: MED Town: LOW Current frequency of services unlikely to warrant cost of implementation
Priority measures for specific modes	Most value would be derived from urban city roads	Investigation with NZTA would be needed on potential demand; alignment; funding.	Ability to increase reliability and reduce travel times for high value travel types	Regional: HIGH Urban: HIGH Town: HIGH Rural: LOW Ability to improve option perception
Public transport services	Relevant for the regional council for PT services, with input from local areas to ensure services aligned with local demand. Other travel types implementable at local levels	This is dependent on funding and viability of new services. Would need investigation and monitoring into the latent demand for travel services	Fits well with the existing strategic direction of Regional and many TAs	Regional: HIGH Urban: MED Town: LOW Rural: MED Should be implemented as need, demand and funding opportunities arise
Integrated ticketing	Applicable at a regional level as the provider of PT services	Some integrated ticketing already exists in the region	Improves access to services and reliability	Regional: MED Could build on existing ticketing systems

Measure	Applicability	Feasibility	Strategic fit	Priority
Accessibility	Relevant for the regional council at all levels	Bus design has already addressed with provider, station and stop improvements completed with maintenance	This measure fits within policy objectives around accessibility	Regional: MED This can be implemented over time, as services develop and stations and stops are maintained
Freight efficiency improvements	Applicable for freight travel across the region, leadership should be taken at a regional level	Current options exist in the private sector to link freighters and encourage higher utilisation rates	Improving freight efficiencies in the transport network are in line with goals and could reduce trip times for many users	Regional: HIGH Potential for high value, but private sector involvement may be critical

Alternatives to travel

The two measures analysed here represent measures that focus on the reduction in the number of trips taken in total, rather than achieving modal shift or reducing trip length. Initiatives to reduce the total number of trips rely primarily on the ability to complete tasks that would have previously required travel, remotely. This means that these are likely to require high quality telecommunications infrastructure to facilitate this remote access and that the regional council should ensure continued input to the development of this infrastructure in the region.

While these measures may have limited impact in comparison with broader reaching measures discussed in previous sections, they represent opportunities to stimulate thought on the need for travel in the region. In developing demand management policies, Councils should take advantage of measures that are able to make users re-think their travel patterns and change their behaviours accordingly. The following table summarises the suitability these measure in a Bay of Plenty context:

Measure	Applicability	Feasibility	Strategic fit	Priority
Telecommuting	Focus for regional council - potential depends on required telecommunications infrastructure provided by Central Government	Work with central Government to improve communication infrastructure	Fits with flexibility of options in transport and work	Regional: HIGH Relies on central Government investment. Council should ensure input to central Government policy
Online service access and provision	Highest reach likely if supported at a regional level	Council services could be a platform for local businesses or online payments	Likely to be outside of current goals of the Council	Regional: LOW Impact likely to be low in reducing travel levels

Economic incentives

Economic incentives have the potential to have a significant impact on travel options by improving the attractiveness of alternative modes by improving price signals in the transport market. The aim of these measures is not to favour one travel option over any others, but more to reduce distortions in the market to ensure that users face the true cost of their transport costs, including the externalities of pollution, reduced development opportunities and impact on other transport users.

The Transport Futures Report reviewed in this study found that direct costs were able to influence travel demands. The modelling identified priced parking and increases in fuel prices as means of increasing demand for walking, cycling and public transport. Further, facility pricing could represent an opportunity to improve travel along key routes by improving travel times and reliability for those travel types which are viewed to have a lower externality cost and/or higher economic value, including PT, cycling or full freight services.

The measures listed could be strongly beneficial to the region. Parking management should be a regional-led focus, recognising the distortions that current parking policies have in favouring private vehicle travel in the majority of situations in the region. A number of Councils in the region are already considering initiatives around parking management, so a DM plan should build on this momentum. Facility pricing should be considered for key traffic routes though as a means of funding for new transport programmes. Regional fuel taxes and cordon pricing are considered to be low priority as a result of the difficulties in implementation that present. The following table summarises the suitability these measure in a Bay of Plenty context:

Measure	Applicability	Feasibility	Strategic fit	Priority
Parking management reform	Implementation occurs at a local level, and is important for all levels. Regional guidance may be useful	This requires a comprehensive approach at a regional and local level	Parking is a core component of the transport network and can represent a key driver of transport choices	Urban: HIGH Town: HIGH Rural: LOW Improved management leads to increased network integration
Facility pricing	This is most applicable at the regional or urban level depending on the location of the facility	Tolling is currently in place for Route K in Tauranga and is being considered for Tauranga Eastern Link	Implementation of time-of-use road pricing is expected to improve transport system performance and increase economic competitiveness	Regional: HIGH Urban: HIGH Recommended that investigations be made into where facility pricing would be appropriate
Regional fuel tax	This would need to be implemented at a regional level	Not considered to be feasible without introductions in surrounding regions and support from central Government	Fuel prices are a significant factor in influencing travel demand, so would be an appropriate part of demand management	Regional: LOW Given issues associated with feasibility and implementation
Cordon pricing	This would only be applicable at the urban level	Requires large technological investment. Although feasible, this has not been implemented in New Zealand	Not considered to be strategically in line with urban development strategies in the area	Urban: LOW Congestion levels are not sufficient in urban centres to warrant public support for cordon pricing

Social factors

Measures that focus on behaviour change to reduce demand on the transport network should form a strong base for the rest of the measures discussed in this report. Ensuring that transport users are not only aware of, and understand the range of travel options available to them, but also the full costs associated with each of these options, will improve the ability of users to pick the option that best meets their needs.

Building understanding and knowledge of transport options are as important as providing the services and infrastructure to support them. In order to promote and tailor transport services a well-developed understanding of travel patterns and behaviour, including consumer needs and preferences is needed.

Programmes can be developed to provide incentive and encouragement towards utilising transport more efficiently. These programmes can include, marketing of services, travel plans, neighbourhood accessibility plans, car-share and Transport Management Associations (TMAs). In many cases transport options are under-utilised when people are not aware of a service or do not know how to use it. For example, people may be reluctant to use a car pooling service when they do not know who they may travel with. Therefore, services that utilise existing community networks are more likely to be successful.

There are many ways to promote transport choice and behaviour change. These programmes are most applicable at a local level as they require direct communication with communities and individuals. Therefore, the most applicable programmes are those that are targeted to particular communities. Also it is often easiest to implement these programmes at a local level because it is easier to affect travel behaviour change using an incremental and targeted approach. These programmes will have funding implications at a TA level as they often require a high level of staffing. At a regional level, there is an opportunity to extend on existing programmes and support implementation at a local level.

A number of these measures would be highly beneficial if supported by various levels of Council in the Bay of Plenty. By increasing awareness and promotion of alternative transport modes, there is likely to be a shift towards more sustainable travel. The following table summarises the suitability these measure in a Bay of Plenty context:

Measure	Applicability	Feasibility	Strategic fit	Priority
Transport Management Associations (TMAs)	Given the need for a critical mass of users, this is most applicable at urban and town centre level, but could be extended to rural areas	This service needs to be implemented at a local level through Councils. Could build partnership with existing business associations and neighbourhood groups	TMAs play an important role in promoting travel options and creating an efficient transport network	Urban: MED Town: MED Rural: LOW Most likely to be dependent on funding levels and the ability to mobilise communities
Neighbourhood Accessibility Plans (NAPs)	Most applicable at an urban and town centre level, where Councils can work with individuals and communities. Focus on options like carpooling; car sharing; alternative schedules among communities	In many cases this is an extension of existing consultation and discussion with communities in order to identify transport needs	Promoting individual travel behaviour change is a key part of any travel demand management programme	Urban: MED Town: MED Would require additional funding and staffing requirements
Travel plans	Important to all levels	Could be implemented alongside TMAs or NAPs to work with large organisations to develop more sustainable travel plans	Aligns with strategic directions and goals to promote awareness and use of alternative travel modes	Urban: HIGH Town: HIGH Rural: HIGH Working with large groups is likely to have a large impact and spread awareness

Measure	Applicability	Feasibility	Strategic fit	Priority
Promotion and marketing of travel options	This is most applicable to the larger centres	This is already being undertaken at local Council level. It can often fit with existing IE funding	This fits well with existing programmes and the strategic directions of Councils	Regional: HIGH Urban: HIGH Town: HIGH Active mode promotion is important for increased awareness of travel options
Tourist travel information	Applicable at a regional level, in working with local Councils to ensure local tourism promotion	Existing tourism websites and information services provide a channel for promotion.	Tourism is a key part of the regional economy and there is scope to promote an eco-friendly approach	Regional: LOW Urban: LOW Town: LOW Rural: LOW Important and would take little effort, but limited impacts given existing service provision level
Seasonal and event travel management	Applicable for all areas in the Bay of Plenty	Working with communities to understand times of peak demand, and the issues that arise from these and the most effective ways to address these	Alignment with recognising the seasonal nature of much of the region and ability to show sustainability focus in the region	Regional: MED Urban: MED Town: MED Rural: MED High value around peak times to improve travel outcomes
Council leadership	Would be required at all levels of Council	Few barriers, but requires Council to take strong lead in developing and implementing new ideas. Ensure that this includes a range of potential options for improving travel options	Good opportunity for Council to show innovation and policies in line with strategic goals	Regional: HIGH Urban: HIGH Town: HIGH Rural: HIGH Council lead could improve perception of viability
Ride sharing (car and van pooling)	Applicable for all areas in the Bay of Plenty	In many cases this is an extension of existing programmes, but may involve further liaison with business in the region	Promoting individual travel behaviour change is a key part of any travel demand management programme	Regional: MED Urban: MED Town: MED Rural: MED

Appendix E – Current indicators collected in the Bay of Plenty

It is important to note that this table contains only those reported by the regional council in the RLTS Annual Report and does not include indicators and data collected by TAs.

Table 6   Transport related indicators used in the Bay of Plenty Annual RLTS Report

Indicator	Source	Collection	
		Annual	Five years
Resident populations	Statistics NZ (Census)		✓
Household numbers	Statistics NZ (Census)		✓
Household size	Statistics NZ (Census)		✓
Motor vehicle access	Statistics NZ (Census)		✓
Number of licensed vehicles	NZTA	✓	
Travel to work outside district/city	Statistics NZ (Census)		✓
Number of interchanges	BOP Regional Council	✓	
Percentage of integrated public transport tickets sold	BOP Regional Council	✓	
Crash rates	Ministry of Transport	✓	
Number of casualties	Ministry of Transport	✓	
Percentage of "excellent" bus service ratings	Regional bus users' satisfaction survey	✓	
Modal split for travel to work	Statistics NZ (Census)		✓
Modal split for freight	Port of Tauranga	✓	
Vehicle occupancy	Statistics NZ (Census)		✓
Annual bus trips per person	BOP Regional Council and operators	✓	
Pedestrian / cycle counts on key routes	Local authorities	✓	
Traffic volumes on key congested routes	Local authorities	✓	
Travel times on key congested routes	NZTA		
Volume of exports at port	Port of Tauranga	✓	
Quantity of fuel sold	BOP Regional Council	✓	
Access to bus services	BOP Regional Council	✓	
Percentage of accessible buses	BOP Regional Council	✓	
Levels of carbon monoxide/particulate matter	BOP Regional Council	✓	
Length/amount of traffic on unsealed roads	Local authorities	✓	