Greater Wellington Regional Council

Draft Wellington Regional Land Transport Strategy: Environmental Performance Review.

Prepared For:

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1 INTRODUCTION

Environmental Management Services Ltd has been commissioned to undertake a Strategic Environmental Assessment of the Draft Regional Land Transport Strategy. This is to be undertaken in parallel with a Health Impact Assessment to be undertaken by Quigley and Watts.

There are a number of important interrelated projects that will form the overall regional policy framework for the RLTS. This includes directly contributing projects as well as the important Wellington Regional Strategy.

The aim of the brief is to assess the extent to which the draft WRLTS contributes to the objective of environmental sustainability and to identify any changes that should be considered.

In November 2005 a scoping report and methodology was prepared for this assessment and a report prepared. The methodology was considered and endorsed by the WRLTS Reference Group.

The scope of assessment includes consideration of energy issues, carbon emissions, natural and physical effects, social effects and land use interrelationships. It will also gives specific consideration to sustainability principles, and relevant national policy.

The methodology identified a framework for assessment and analysis that builds on the Land Transport New Zealand framework to provide three forms of assessment;

- Assessment against issue specific areas and relevant criteria.
- Assessment against environmental sustainability principles
- Assessment against existing relevant national and regional policy frameworks.

A basis for assessing the significance of the effects and issues identified was also developed in the Scoping Report.

2 PROJECT OBJECTIVE AND METHODOLOGY

The Regional Land Transport Committee has identified six specific objectives for the review of the RLTS under the overall vision of *"To deliver an integrated land transport system that supports the regions prosperity in a way that is economically, environmentally and socially sustainable."*

The brief for the SEA and HIA is to *"check that it contributes to the draft RLTS objective 4 (promote and protect public health) and objective 5 (ensure environmental sustainability). If found deficient, appropriate changes are to be recommended, taking account of the other RLTS objectives."*

The focus therefore is to assess the draft RLTS contribution towards environmental sustainability, while the HIA focuses on the promotion and protection of public health acknowledging that these areas overlap to a degree.

The proposed process involves the following steps

Step 1: Develop framework and criteria.
Step 2: Collate baseline information.
Step 3: Predictive assessment of effects of strategy using best available existing information and modelling.
- Identify risks

- Identify uncertainties

Step 4: Assessment against criteria, framework and policy mapping.
Step 5: Analysis of "could do better areas" and mitigation.
Step 6: Report and recommendations

3 CURRENT BASELINE

Two recent reports prepared by Greater Wellington provide a helpful summary of the current environmental baseline of the region. Firstly the report Measuring Up is a report on the state of the regions environment released in 2006 and provides useful information on the health of the regions natural and physical resources. Its preparation is part of the review of the Wellington Regional Policy Statement and seeks to assess the extent to which RPS policies are being achieved.

Secondly, Greater Wellington's latest Regional Land Transport Strategy Annual Monitoring Report 2004/5 provides information on identified indicators including environmental sustainability indicators.

The transport context for the preparation of this new strategy can be summarised by picking out some of the key points from the WRLTS Monitoring Report. These include:

- In 2004/5 the region showed strong economic growth of 5.5% higher than the national average of 3.4% and higher than other metropolitan centres.
- Traffic congestion levels continue to rise across all periods of the day; all day average congestion increased a significant 8% between 2004 and 2005.
- Regional public transport patronage continues to grow, peak trips growing by 200,000 in 2004/5, although most of this is bus patronage growth. Off peak passenger trips in all modes also grew by a significant 5%.
- Road crash numbers continue to increase through out the region, although regional casualties per 100,000 remain lower than other major centres.
- Total mobility passenger numbers increased 13.5% in 2004/5.
- Inter island freight movements have seen significant growth of 45% between 2002 and 2005 while rail freight continues to decline.
- The private car continues to be the dominant mode of transportation.

Similarly the Measuring Up report considers a wide range of monitoring indicators. Focussing on environmental sustainability the monitoring report comments on five main indicators as follows:

Fuel Consumption:

- Regional fuel consumption increased by 1.6% between 2003 and 2004 increasing transport related greenhouse gas emissions, and reversing the previous years decrease.
- Increase in the Wairarapa was as high as 2.3%.
- However the more recent major fuel price increases and short term spikes may have been sufficient to trigger behavioural change with indications of significant increases in public transport patronage, reduced vehicle trips and shift to smaller more fuel efficient vehicles.

Air Pollution

- Motor vehicle emissions, while being only one source of air pollution, have been attributed to aggravating existing health conditions and causing premature death through cancer, cardiovascular and respiratory disease. The region experiences air pollution problems in locations such as Upper Hutt and Wainuiomata and, while transport related emissions contribute to air pollution, the levels are fairly low along the major transport corridors.

- Monitoring has been limited to a single site, being the Vivian / Victoria Street intersection in central Wellington, chosen because it is likely to represent the maximum transport related air pollution situation in the region. The level of particulates (PM10) is a more significant problem than Carbon Monoxide levels but levels vary significantly with weather conditions of temperature and wind and rarely exceed an established target of 66% of the National Environmental Standard.

Noise

- Indications from initial noise monitoring along side major transportation corridors are that noise levels average from 57 dBA at Vivian Street to 66 dBA at Mana Esplanade.

Land Use Patterns

- New Urban growth is occurring at Kapiti, Porirua East, Whitby, northern Wellington and western Upper Hutt. While infill and redevelopment are occurring in central Hutt City and central and suburban Wellington.

This picture is largely mirrored in the "Measuring Up" report but takes a wider approach more closely linking the relationships between land use and transportation. As part of this it considers the environmental quality of our urban areas through the urban design aspects of character, connectivity, density, and the calibre of the public realm. Character is regarded to have noticeably improved, while the region has natural connectivity advantages through its linear compact form which makes for efficient transport but "also means snarl ups if a corridor is blocked". The region has also progressed in the direction of higher densities with Central Wellington having the second highest resident population density in the country at 1.381 people per square kilometre. Recent surveys have also suggested a positive public attitude to the perceived state of the natural environment in towns in the region and that significant improvement has been achieved in the last five years.

4 THE DRAFT STRATEGY: BUILDING BLOCKS AND FEATURES

The WRLTS has important strategic relationships with a range of important policy initiatives at both the national, regional and local level. However, the most import relationships in terms of effectiveness are with the Wellington Regional Strategy, which is a non statutory initiative, and the review of the Wellington Regional Policy Statement, a document prepared in accordance with the Resource Management Act.

While both these other two documents are actively being developed they are not yet in a form where the synergy and integration of the three tools can be fully tested.

The WRLTS has been developed from a number of building blocks of region wide sub strategies and plans and corridor plans. The document includes overarching policies linking to vision objectives and outcomes. There is also discussion of the role of different modes linking to key strategic aims for each and there are sections on the evaluation of strategic options, pressures and issues. A number of the sub strategies and plans have been prepared over the

last few years and some have been through public consultation stages and have been adopted by the Council. Others sub strategies have been included in the draft with little prior scrutiny.

The strategy policies include policies under the heading of "Environment and public health" which must be considered before looking at the more detailed strategies. This includes policies relating to:

- Best practice in design construction and maintenance of projects to mitigate impacts on the environment
- Improving bus emission standards
- Support for investigations into alternative fuel options and eco efficient vehicles.
- Development of the network in a way that minimises the use of non renewable resources.
- Support for new stock truck effluent sites.
- Ensuring new infrastructure minimises community severance issues.
- Reducing greenhouse gas emissions.

While these appear laudable they do not provide an understanding of what courses of action will be taken, how resources will be allocated over the period for what projects and priorities.

The features of the Sub Strategies and Plans are summarised below:

Regional Road Safety Strategy

This strategy relies heavily on other agencies particularly road controlling authorities, LTSA Police, and Transit. Its focus is on management systems and plans such as safety management systems, road safety action plans, road safety coordinators and advisors, and risk targeted patrol plans.

Regional Cycling Strategy

This strategy focuses on improving the level of service for cycling, promotion of cycling and improving the safety of cycling. Notable programme actions from an environmental sustainability perspective include:

- Improving facilities on inadequate sections of the regional cycling network.
- Improving level of service through best practice improvements to local networks such as traffic calming measures, bicycle detection at traffic signals, bicycle parking, priority on road networks, etc.
- Integration with public transport through carriage on train services and fare structure review.

The strategy, or at least that part of it included in the WRLTS, does not consider the role of cycling in initiatives to promote travel plans to employees and educational institutions. This will be discussed further later.

Regional Pedestrian Strategy.

This is equivalent in form and aims to the cycling strategy. Key actions include:

- Reviews of pedestrian access to buildings and facilities.
- Reviews of pedestrian access to public transport.
- Promote pedestrian accessibility in land development
- Consider expanding walking school bus/safe routes.
- Funding advocacy

As with the Cycling Strategy there is a rather business as usual feel to the programme with little consideration of integration with other initiatives to contribute to reductions in vehicle travel

demand. It is noted that the Wellington Transport Strategic Model (WTSM) being a strategic model does not readily pick up within zone walking trips and therefore there is little evidence of an understanding between journey to work trips, recreation trips or just healthy exercise.

Regional Travel Demand Strategy

This is a compulsory element of the strategy required under the Land Transport Management Act. It is a key element in the overall strategy in terms of environmental sustainability. This section includes performance indicators with forecast outcome, desired outcome and strategy targets which do not appear to have been integrated into the rest of the strategy. This largely involves seeking to achieve by 2016 the same levels of travel demand, greenhouse gas emissions, fuel consumption, road congestion, mode split, as that in 2001.

The actions proposed include:

- Development and implementation of an integrated network management plan to maintain an agreed level of service.
- Develop and implement action plan to TDM for the state highway network.
- Implement awareness campaign on full costs of travel.
- Integrate more fully land use and transportation.
- Travel plan programme for businesses, schools and communities.
- Undertake perception surveys.
- Advocate for road pricing and investigate regional schemes further.
- Develop a national rideshare tool and programme.

Regional Passenger Transport Plan

This is currently a separate document but is to be revised and incorporated into the overall draft strategy. The Plan includes consideration of its strategic fit with the New Zealand transport Strategy and the other parts of the Regional Land Transport Strategy.

Key planks of the plan include:

- Growing commuter capacity to maintain at least 30% public transport mode share.
- Improving and promoting off peak public transport to increase patronage by 50%.
- Improve accessibility of elderly and disabled to public transport.
- Promote the benefits of public transport to business and community stakeholders.

In terms of service management there are objectives relating to:

- Route coverage
- Timetables
- Taxis
- Capacity
- Journey time and reliability
- Network reliability
- Vehicle quality
- Track and signalling
- Infrastructure quality
- Fares and ticketing
- Information standards
- Promotion and special events
- Procurement monitoring
- Safety security and access for customers
- Emissions and noise and vibration.

With regard to the last item above the Plan seeks to:

- Increase the proportion of public transport services operated by low emission vehicles, and;
- Cap total CBD noise and vibration levels from buses at 2005 levels.

The Plan also includes sustainability objectives which include:

- Advocating land use patterns that can be served by public transport.
- Investigating road pricing.
- Developing a pilot public transport friendly land use project.
- Strategic market research
- Real time information technology.

In terms of major capital project the plan includes proposals to:

- Improve rolling stock: including completion of refurbishment of 36 cars, 18 replacement Wairarapa carriages, 70 further electric multiple unit cars.
- Track and Station Improvements including lowering of tunnel floors on Johnsonville line, station upgrading, new Porirua bus rail interchange, double tracking between Pukerua Bay and Waikanae, electrification Paraparaumu to Waikanae, new stations at Raumati and Lindale.
- Bus service improvements including 60 low floor trolley buses, new bus stop shelters,
- Ongoing bus service level reviews.
- Implementation of new fares policy and electronic ticketing project.

Although these projects have been included in the Plan it is identified there is a significant funding shortfall for a number of the major proposals.

Freight Strategy

Initiatives proposed in the freight strategy part of the overall strategy includes:

- Upgrading of roads between:
    - Grenada and Gracefield.
    - Petone and Centreport.
    - Porirua and Centreport.
- Facilitate rail based transport of logs to Centreport.
- Improve long haul rail efficiency.

Western Corridor Plan

This plan is the result of an extensive study and associated consultation and hearing process. It incorporates some of the public transport proposals identified above. Other key projects include:

- Transmission Gully Motorway
- Grenada to Gracefield Stage 1
- Pukerua Bay and Paekakariki safety improvements
- Otaihanga Interchange
- Western Link Road.

Policies place emphasis on integration of land use and intensification of land use around transport nodes but relies on the Wellington Regional Strategy for direction.

TDM measures refer loosely to ATMS and HOV proposals with emphasis on maintaining mode share by managing travel demand south of Tawa.

Passenger transport proposals are in line with the Passenger Transport Plan and seeking to provide a 15 minute frequency of rail services. The Porirua Rail Station Upgrade is identified as

a long term project along with rail improvements between Paekakariki and Pukerua Bay, and electrification extension to Waikanae.

Roading policies provide support for TGM, improved links to the Hutt Valley, alternative routes for emergencies and congestion relief south of Tawa. There is also stated policy support for managing SH1 as a long term scenic access route.

In the table showing long term projects the Waikanae Upgrade has been relegated from within the ten year plan and is identified with the upgrade of SH58 and possible improvement to Tawa Interchange.

Hutt Corridor Plan

This Plan seeks to provide balanced investment to provide a safer, more reliable and consistent road and rail corridor. Specific projects proposed include:

- Construct reversible HOT lane Petone to Ngauranga
- Investigate rail speed and frequency to 10 min peak service and 15 minute interpeak.
- Extend electrification beyond Upper Hutt.
- Grenada to Gracefield road link
- SH2/SH58 interchange
- Dowse / Korokoro interchange
- Melling and Kennedy Good interchange upgrades.
- Petone to Ngauranga cycling and pedestrian facility

Wairarapa Corridor Plan

This Plan seeks to provide a safer more reliable road and rail corridor. The specific proposals include:

- Facilitating a log storage and transfer site at Waingawa.
- Replacement of all Wairarapa rail line carriages, upgrade rail stations and provide improved bus services.
- Improve Muldoons corner.
- Replace Wiohine River Bridge
- Passing lanes between Masterton and Carterton
- Seal on local roads with tourist or forestry significance.

Further improvements to the Rimutaka Hill Road to achieve a 70 kph standard are identified as a long term project along with a further log transfer site at Featherston.

Wellington CBD Corridor Plan

This is an important corridor within the region that is currently the subject of specific study.

Projects provided for in the overall programme which are subject to the outcome of the study include:

- Land use development reinforcing Johnsonville to Airport Growth Spine
- Bus priority measures and real time information.
- Waterloo Quay rail grade separation.
- Terrace Tunnel capacity improvements
- Ngauranga / Aotea capacity improvements
- Basin Reserve Interchange
- Basin to Airport capacity improvements beyond 10 years.

5 OVERALL STRATEGY PERFORMANCE.

Before considering the assessment criteria and sustainability principles it is appropriate to outline the information available on the overall performance of the draft strategy. The key tool used for testing and developing packages of measures is the Wellington Transport Strategic Model (WTSM) this provides a range of modelled information which can be considered against the baseline information discussed earlier in the report.

It is appropriate to focus on the morning peak period as indicative of overall performance, with a base measure at 2001 and baseline and strategy performance based on 2016.

Measure	2001 Base	2016 Baseline Change	2016 Strategy Performance
Car driver trips	121894	+12.4%	+11.8%
Car passenger trips	32,987	+10.5%	+9.7%
PT passengers	28,061	+13.1%	+19.6%
Total trips	182,933	+12.2%	+12.6%
Journey to Work Mode share PT	31.4%	+0.6%	+2.1%
Journey to Work Mode share PT to CBD	45.1%	+3.5%	+5.2%
Car driver distance	1279669	+12.5%	+13.1%
Car passenger distance	294875	+9.9%	+10.7%
PT passenger distance	409445	+19.9%	+28.2%
Total distance	1983989	+13.6%	+15.9%
Strategic network at LOS E / F	41.3%	+5.4%	-8.4%
Strategic network Average LOS	0.617	+2.2%	-1.2%
Strategic network Av Speed	70.5	-2.1%	+1.3%
Fuel consumption	97220	+22.1%	+20.4%
Emissions CO	15569	-25.3%	-49.6%
Emissions NOx	3207	-5.6%	-6.7%
Emissions PM10	331	+29.6%	+28.1%
Emissions VOC	2042	-32.4%	-64.8%
Emissions CO_2	234.1	+24.3%	+22.5%
PT passenger average trip time	40.4	+1%	-1.7%

While the model can provide additional data the above indicators are the most relevant to consideration of environmental performance.

The key messages from the above are:

- The strategy successfully protects and indeed improves the passenger transport mode share, although morning peak car driver trips increase by nearly 12% and car passenger trips by nearly 10%.

- The overall performance of the strategic network is improved.

- The total morning peak distance travelled is expected to increase by a significant 16% which exceeds the 2016 baseline of 13.6%. However, the car driver distance increase is considerably smaller at just over 13%, although this still marginally exceeds the baseline.

- Public transport passenger distance is expected to increase by a substantial 28% showing significant growth in public transport patronage.

- The overall service across the strategic road network will be significantly improved

- Fuel consumption takes a significant increase of 20% which exceeds the increase in car driver distance.

- Emissions affecting air quality improve over time except for particulates.

- Greenhouse gas emission of CO_2 takes a significant rise of 22.5% which is only marginally less than the 2016 baseline.

6 CRITERIA ASSESSMENT

The assessment methodology identified various environmental criteria for considering the overall strategy. While the overall strategy is a complex jigsaw of actions, proposals and investments, it is necessary to take something of an overview with regard to environmental sustainability criteria and to identify potential risk areas, that need to be had regard to in developing projects.

- ***Landscape / townscape***

Generally the strategy is not expected to have significant adverse effects on landscape and townscape. Any of the major projects with potential for effects already have land use related resource management authorisations where landscape effects have been carefully scrutinised and conditions set. There is also likely to be further scrutiny of landscape and town scape issues through outline plan approval. This includes Transmission Gully Motorway (TGM) and Western Link Road.

The significant exceptions which have potential for adverse landscape and visual effects are:

Grenada to Gracefield Stage 1: The detailed route of this project has yet to be determined but could either be highly visible to the coastal environment and lower Hutt Valley as it descends to the Petone area or could adversely affect landscape values of the Korokoro Stream Valley and southern end of the Belmont Regional Park. This project also has urban design implication in terms of urban growth in the vicinity.

Basin Reserve Interchange: This has potential landscape / townscape implications as it is likely to involve grade separation. However, with imaginative design and mitigation it is expected that a townscape feature can be created rather than creating adverse effects.

- ***Heritage, archaeological and cultural values.***

There remain concerns about the archaeological and cultural effects of Western Link Road at specific locations and archaeological authorities will be required. The proposal to advance TGM avoids significant potential heritage, cultural and archaeological risks associated with upgrading the existing highway corridor. Grenada to Gracefield is not expected to raise major issues in this area although there is one heritage site in Cornish Street. There are also some significant heritage values associated with the Basin Reserve and some nearby buildings that will require sensitive design. The Basin Reserve is an area of former maori settlement and gardens and as with all major projects will require consultation with iwi during consenting and design stages.

- ***Biodiversity***

TGM affects a number of significant streams and areas of terrestrial habitat in the Pauatahanui catchment. It is important that budget management does not reduce the level of mitigation previously proposed. Regional consents are still to be obtained for this project which will include stream realignment, discharges during construction and management of

sedimentation. The level of earthworks involved will require innovative approaches above the level of current "best practice" to achieve an acceptable level of risk management from sedimentation. The Pauatahanui Catchment is continuing to be degraded from urban development and discharges and the construction of TGM represents a further threat. However once in operation traffic flows around the inlet are expected to significantly reduce. There is a need to consider in a more integrated way the sustainability of this catchment and particularly stormwater related discharges from urban areas and transport infrastructure.

In preparing for regional consent for discharges for TGM there is an opportunity to look more widely at stormwater treatment in this catchment and to investigate suitable technologies such as wetland treatment serving urban areas as well as strategic roading stormwater.

Grenada to Gracefield as noted above has potential to adversely affect the Korokoro Stream and southern end of Belmont Regional Park. The development of this project will need to have particular regard to this issue and if a route is selected that affects this stream catchment then a high level of mitigation will be required with consequent construction cost implications.

- ***Noise and vibration***

The TGM project will have significant noise and vibration benefits for the Western Corridor. However it is important that the route is used to its maximum potential. This is assisted by the policy of managing the former State Highway as a "scenic access route". However the imposition of tolls on TGM will work against this.

It is therefore important that there are mechanisms in place to ensure that the network can be managed to ensure that positive effects such as noise and vibration are realised. In the case of TGM a road pricing scheme that actually encourages use of TGM as compared with the existing highway rather than charging solely for TGM use would achieve this result. This is discussed further later in this report.

The strategy also includes investment in more eco-friendly busses, along with further investment in trolley buses. This is positive in terms of noise reduction. However rail, and particularly rail freight also contributes to adverse noise and vibration effects. The effects are greatest where rail is located close to open areas such as coastal water and also in proximity to communities such as in the vicinity of the Porirua Harbour.

- ***Air Quality***

As discussed in earlier sections air quality is largely only a problem in Wainuiomata, Upper Hutt and the Wairarapa when temperature inversions combine with particulates from domestic wood burners and transport emissions. The Wairarapa Corridor Plan signals the long term vision of bypasses of the major towns which will have air quality benefits. Upper Hutt is largely bypassed already by SH2.

Greatest gains over time are likely to arise from vehicle emission improvements and increased adoption of hybrid and other low emission technologies. However it should be noted that risk of air quality effects along the western corridor are reduced with the TGM proposal and the stages further development of the Wellington CBD to Airport corridor will also assist.

Along side this Travel Demand Management initiatives can be expected to positively contribute to emissions. Greater gains however could be achieved with a Pricing System that was capable of taking into account individual vehicle model emission performance.

The model results show that over the whole region improvements are expected in most transport emissions with the exception of particulates and CO2 despite 20% increase in fuel consumption.

- ***Greenhouse gases***

The situation with greenhouse gas emissions from transport is a serious one. It is expected that with the implementation of the proposed strategy, including travel demand measures, the increase in CO2 emissions from regional transport will increase by 22.5% in the morning peak. The TDM strategy identifies a strategy target of retaining emissions at the 2001 level. This is clearly a long way from being achieved and this in itself is considerably above the 1990 levels that Government is required to target as being a party to the Kyoto Protocol.

Climate change is one of the greatest environmental challenges facing New Zealand and the rest of the world. While it requires a global response it also requires national, regional, local and individual responses. While the travel demand strategy does promote a travel plan programme this needs to be more vigorous and assertive and be based not just on travel demand but on the CO_2 emissions challenge. The programme should make the software tools available to schools, businesses and individuals to develop and monitor the achievements of their plans which should be based at least around a 2001 target level. This could include financial incentives or awards for leading performers. The travel plans would be focussed on reducing emissions by:

- Adopting more fuel efficient vehicles.
- Promoting uptake of hybrid vehicles
- Use of public transport and particularly emissions or fuel efficient public transport
- Avoidance of congested periods
- For employers increased home based offices
- Car sharing
- Cycling and walking

Subject to developing the tools for a programme this strategy can be implemented with out delay. In addition to this further financial incentive for greenhouse gas emissions eductions must be vigorously pursued through a comprehensive road pricing strategy. Studies to date have focussed on congestion pricing and the revenue that can be generated. The focus needs to be much wider to develop the systems necessary for a Kyoto pricing not just congestion pricing. In other words the system needs to incorporate financial incentives to all the aspects discussed in the travel plans above not just penalising car travel at peak periods.

- ***Water environment***

There are a number of projects that potentially affect the coastal environment. These include the Centennial Highway Median Barrier, Petone to Aotea Quay improvements and Grenada to Gracefield.

While the Pukerua Bay to Paekakariki coastline is sensitive in terms of recreation, cultural and ecological values, the median barrier is not expected to alter the form of the existing coastal structures to any great extent. However, careful assessment, consultation and some mitigation expenditure may be necessary. The Petone to Aotea Quay coastal edge is largely man made, however it is used for fishing. Improvements along this coast should have regard to safe access to the harbour edge taking into account the railway.

None of the proposals are expected to have any significant adverse effects on coastal processes. However, TGM involves massive earthworks and as discussed above has the potential to have significant adverse effects on the Pauatahanui Inlet catchment if there is significant discharge of sediment to the inlet affecting feeder streams as well as shellfish and spawning grounds in the inlet. The health of the inlet is already at risk from other

discharges and a comprehensive approach to the sustainability of the catchment is required.

- ***Effects on non renewable resources***

The strategy expects that there will be an increase in fuel consumption of 20.4% by 2016. However the baseline prediction is higher at 22.1% growth. At this stage it is not entirely clear what assumptions have been used in terms of fuel price and availability of new technologies. There is evidence that the recent fuel price increases have seen both mode shift as well as increased interest in more fuel efficient cars. The availability of the early generation of hybrid cars is also improving. As recognised early adopters of new technologies, New Zealanders can expect to take to new technologies where they are price competitive.

There is a need to vigorously promote the take up of more fuel efficient technologies and this could be promoted through a comprehensive road pricing system. Given the level of taxation on petrol, hybrid cars already have a significant operating cost advantage even though they have the potential to contribute to congestion to the same extent as any other vehicle. A comprehensive pricing regime would need to be capable of dealing with all relevant variables to ensure the long term sustainability of the system.

- ***Natural Hazards and risk***

Climate change is expected to bring more extreme weather patterns as well as sea level rise. New infrastructure can be designed to accommodate sea level rise but more extreme events place a wider range of the more vulnerable parts of the network at risk. This includes rail as well as roads. The biggest risk is land slip and flooding which has the potential to affect a considerable part of the strategic transportation network. While TGM opens a new highway route along a large part of the Western Corridor it will also be subject to land stability risks in extreme events. It is quite conceivable that both TGM and the existing SH1 could be affected by future extreme events, however, notwithstanding this, the development of a new route does reduce the risks.

The region also faces the prospect of a severe seismic event in the next 50 years. This is likely to have a significant impact on key corridors and facilities. New structures and projects are able to be constructed to modern design standards and there has been significant work on existing structures in recent years. Similarly, the construction of TGM will provide an additional strategic route albeit one that will be at risk of closure with a major event. The only planned improvement on the Rimutaka Hill Road over the next ten years is at Muldoons corner and although there have been improvements in recent years, particularly the Kaitoke section, the route remains at high risk from natural hazards and seismic events.

- ***Recreation and Public Access***

TGM affects the margins of Battle Hill Regional Park and Grenada to Gracefield could affect the southern end of Belmont Regional Park. However the TGM effects will have already been taken into account in designation of that route.

The completion of TGM will enable greater access to the coastline along the existing highway along with greater emphasis on cycling facilities. As noted above, the improvements adjacent to Wellington Harbour need to have regard to recreation access where appropriate.

- ***Social and Community Effects***

The recent hearings on the Draft Western Corridor Plan showed strong support for TGM on the basis of adverse social and community effects of the alternative upgrade of the existing

highway. TGM also avoids the significant community disruption that would be involved during construction of improvement projects along that corridor.

However, as stated above, it is important to ensure that the full social and community benefits of TGM are realised through management of the highway as a scenic access route as proposed in the strategy, and also through appropriate pricing on the two route options.

The Waikanae Upgrade is intended to be designed to reduce growing severance effects between two parts of that community and all projects will need to have careful regard to cycling and pedestrian facilities.

Community safety is proposed to be enhanced by the programme for upgrading rail stations. The Petone Station upgrade is a good example of what can be achieved together with careful security design.

- ***Land use planning and policy***

TGM enhances access to the Hutt Valley via SH58 and, together with Grenada – Gracefield, will improve accessibility for both private and commercial trips. TGM bypasses the centre of Porirua but provides extensive connections into Porirua from the south. There are not expected to be any significant adverse effects on local centres from implementation of the strategy.

There will, however, be new land use pressures arising from the accessibility opportunities associated with new projects. Granada - Gracefield will need to be planned along side the staged urban development of this area which is expected to include a significant area of industrial development. Of greater concern is the land use pressures arising from TGM. The focus of this is again the future sustainability of the Pauatahanui catchment. The development of Whitby is now at an advanced stage. While there is a limited land resource available, TGM will result in significant additional pressure for development north of the Inlet, along Paekakariki Hill Road and the SH58 corridor to the east.

It is essential that firm policies and controls are in place to manage these pressures in advance of completion of TGM and preferably at the next review of the Porirua City District Plan. The development of a corridor management plan for SH58 is identified in the Western Corridor Plan along with the need for review of District Plan land use controls in both Porirua, Kapiti and Wellington City. This is strongly supported, however the Wellington Regional Strategy may not provide sufficient guidance in this area and may justify a stronger approach in the RLTS and in the Wellington Regional Policy Statement.

In addition to pressures arising from accessibility is the need to maximise opportunities for high density development around public transport nodes. While the Travel Demand Management Strategy and Western Corridor Plans identify the need to promote high density development around nodes, there is a need to strive for a more integrated approach to transport investment and the facilitation of high density opportunities.

While the Wellington CBD corridor plan is still to be completed there is emerging a concept of a north / south high density transport investment corridor between Johnsonville and the Airport. This concept has merit in terms of the future vision for public transport in Wellington City but needs to be bolted down through current planning processes and transport improvements considered along side staged density increases. Changes of this nature may be resisted by communities. A proactive approach is therefore necessary to promote this strategy and to maximise community support. Such an approach is likely to be critical to the long term sustainability and development of public transport infrastructure.

Wellington City has made considerable progress with redevelopment of central areas and a massive growth in inner city living. This has reduced the need for peripheral growth in

recent years and has consequently reduced the growth in travel demand that would otherwise have occurred.

A further opportunity exists in the areas of Paremata, Mana and Plimmerton where three rail stations are located in close proximity to a desirable coastal location, town centre facilities at Porirua, and Plimmerton Beach. With these characteristics, the areas have considerable potential for high density development based around the rail stations. These opportunities should be identified and promoted within the strategy and be actively pursued with the relevant territorial local authorities.

7 SUSTAINABILITY PRINCIPLES ASSESSMENT

As a second level of analysis the methodology identified a set of sustainability principles that have been considered in the context of the proposed strategy as follows.

- *The energy performance of the transport fleet is improved.*

  The strategy itself is not in a position to make a significant impact on the energy performance of the transport fleet without additional tools such as a comprehensive road pricing scheme. Fuel consumption is expected to increase by 20.4%. The total distance travelled by car drivers and commercial vehicles is expected to increase by 16.2%. This suggests in fact that the energy performance of the fleet is to deteriorate rather than improve. If this is correct it further supports the need for tools to influence energy performance improvements through road pricing.

- *Transport generated air, noise, vibration, exhaust emissions, waste, other contaminants are reduced.*

  The modelling suggests that there will be significant improvements in emissions with the exception of particulates and CO_2. Technological developments continue to improve vehicle emission and noise performance and hybrid cars are a major step change in this direction.

- *Transport uses land and other resources more effectively.*

  By international standards Wellington has a high public transport mode share which is further improved by the proposed strategy. However projects such as TGM consumes a considerable land resource and exposes new environments to the adverse effects of transport. This is however in order to gain significant benefits along the existing corridor. The TDM strategy seeks to use the transport infrastructure more efficiently. This is to be applauded but is unlikely to make major gains without a comprehensive pricing tool. As stated earlier the strategy could be enhanced with the more aggressive marketing of sustainable travel plans.

- *The negative impacts of transport on natural, cultural and heritage values are minimised.*

  This has been briefly explored earlier. The effects of the proposed strategy on cultural and heritage values is not considered to be a major adverse effect, but close partnership with iwi through implementation is required. The Pauatahanui Catchment remains at risk and joint initiatives with Porirua City Council should be pursued to ensure that there are integrated land use, infrastructure and transport related initiatives to ensure the long term sustainability of this catchment.

- *The need to travel is reduced.*

The TDM strategy sets targets for travel demand of reduction to 2001 levels. This is unlikely to be achieved by the current strategy and requires greater focus on integrated land use / transport initiatives, a major promotion of sustainable travel plans and the demonstration to Government of the effectiveness of a comprehensive road pricing system.

- *There is integration and promotion of public transport.*

  The strategy involves significant investment in public transport and it is simplistic to just argue for a greater proportion of the budget to public transport. The aim of a 15 minute service to Paraparaumu is a significant threshold in terms of providing the level of service that will increase patronage. Initiatives along the CBD corridor remain uncertain and the potential of a high density corridor from Johnsonville to the Airport needs to be further explored in terms of the feasible transport investments that could be associated with this.

  There are also major initiatives for greater integration of bus and rail services and new rail stations at Raumati and Lindale. It is important that these improvements are fully in place before TGM is completed. This is intended but needs to be made clearer to readers of the strategy by being given the status of specific policy.

- *There is integration of land use and transport strategy.*

  While there is significant recognition of the importance of land use interrelationships in the strategy there is also considerable reliance on the Wellington Regional Strategy for specific direction. This may in fact not materialise and in that event the strategy should be more forthright on these issues and work closely with the Regional Policy Statement on appropriate policy direction.

- *Risk to regionally significant environmental resources is avoided.*

  The risks to the Pautahanui catchment has been previously identified. This can only be avoided with significant effort to address the effects of both transport and urban development on the catchment and can only be pursued closely with Porirua City Council. In particular the benefits and feasibility of treatment of stormwater from new and existing transport infrastructure and urban run off should be explored.

- *The effect of transport on communities is reduced.*

  The TGM proposal once constructed makes a significant contribution to the reduction of the effects of transport on communities. Further reductions can potentially be achieved through a comprehensive pricing system that is able to accommodate a wide range of variables.

- *Growth in greenhouse gas emissions is reduced.*

  This is a major shortcoming of the strategy and has previously been discussed. The inability to achieve anything other than significant growth in CO_2 must be communicated to Central Government. There is potential for the Region to demonstrate what can be achieved with a comprehensive pricing system through enhancement and expansion of existing models and behavioural survey going significantly beyond the form of pricing considered in recent studies.

- *Provision of effective alternatives to the car.*

  The region has an advanced public transport system with both bus and rail. The rail asset has deteriorated in recent times and this is being addressed. The potential for travel to work by cycling and walking is limited by topography and climate. However this

can be enhanced with inner city living and integration of land use development with pubic transport.

- *Long term adaptability and shock resilience.*

  The TGM and Grenada - Gracefield projects add significantly to the overall transport infrastructure of the region. Rather than just improving existing routes they add to the network and consequently increase adaptability and shock resilience. The Western Link Road also provides an additional route and Waikanae River crossing. However, the nature of the Wellington topography, structure and seismic risk profile means that there will remain significant consequences of any major shock.

8 POLICY MAPPING

There are a number of central government policy documents that are relevant to assessment of the performance of the proposed strategy.

Documents that have been considered include:

- ***New Zealand Transport Strategy (NZTS)***

The NZTS was produced in 2002 and is the current policy statement on how Government will seek to achieve the aims of the Land Transport Management Act 2003. The governments overall vision for transport is that "By 2010 New Zealand will have an affordable, integrated, safe, responsive and sustainable transport system. Environmental sustainability is one of the four principles on which the strategy is based. The strategy has two broad approaches in this area:

The transport system will have to reduce its negative impacts on land, air, water, communities and ecosystems.

The transport system will have to make more efficient use of its resources, reduce its non-renewable resources, and shift over time from non-renewable to renewable resources

The actual strategy to achieve this is largely based on a series of further investigations and reviews. These include a review of the relationship between Regional Land Transport Strategies, the Resource Management Act and other strategic and planning documents, and investigation into more sustainable settlement forms.

From a preliminary review of the NZTS there is little to suggest that the draft WRLTS is not supportive of its general strategic direction.

- ***New Zealand Coastal Policy Statement (NZCPS)***

The NZCPS sets out the policy priorities for protecting the natural character of the coastal environment. This includes the characteristics of the coast that are of special value to the tangata whenua and the promotion of public access to and along the coast.

The Draft WRLTS has a number of proposals within the coastal environment. However, its adoption of TGM avoids the challenges of upgrading the existing state highway along the Western Corridor. Projects such as the centennial highway median barrier and Petone to Aotea Quay improvements are largely within the existing transportation corridor.

The Draft WRLTS is generally supportive of the policy aims of this national policy statement.

- ***National Energy Efficiency and Conservation Strategy (NEECS)***

The NEECS contains numerous initiatives targeting government, energy supply, industry, buildings and appliances and transport sectors. The transport objectives include:

- Reducing energy use by reducing the need for travel.
- Improving performance of the transport fleet
- Increasing use of low energy transport options

The modelling predicts that fuel consumption will increase by over 20% by 2016 even with a travel demand management strategy impact of 5%. The WRLTS includes significant investment in public transport but this is not sufficient to address energy. The EECA strategy supports road pricing initiatives which are a focus of concern in this report. However, work has recently commenced on the preparation of a replacement NEECS.

- ***New Zealand Biodiversity Strategy***

This strategy was prepared in 2000 and establishes a framework for action to conserve and sustainably use and manage New Zealand's biodiversity. It is a wide ranging strategy based around ten themed action plans. The future management of the Pauatahanui Inlet has been identified as an area of concern and there are specific issues associated with individual projects that will need to be addressed during design stages. However, if measures are taken to address the future management of the Pauatahanui Inlet then the Draft WRLTS is not contrary to the New Zealand Biodiversity Strategy.

- ***New Zealand Tourism Strategy 2010***

This strategy was first launched in 2001 and has recently been updated. It represents a partnership between the private sector, maori and government. The new strategy places considerable weight on environmental protection. However, there is little policy direction in terms of transportation and therefore little direct relevance to this policy assessment.

- ***New Zealand Climate Change Policy***

Government policy on climate change is currently under active fundamental review. A review of policy has been reported to Cabinet. The Review Report states that *"This review anticipates that, in order to meet the long-term objectives for sustainable transport, the Government will need to consider a move to a system of comprehensive electronic road pricing. Such a system would charge for both time of use / place of use by kilometre to cover the cost of infrastructure construction and maintenance, and respond to localised congestion concerns. In addition the environmental and social costs of the choice of motive power would be internalised in the cost of fuel."*

The report acknowledges the potential synergies to achieve environmental, social and emissions policies. However the November 2005 Cabinet Paper recommended a work programme including:

- Transferring a proportion of rates costs and road related ACC charges to fuel excise and road user charges.
- Creating incentives for the purchase of vehicles with high fuel economy / low CO_2 emissions.
- Promotion of vehicle fuel economy information
- Evaluating a mandatory sales target for biofuels.
- Programmes for vehicle emission controls
- Ongoing financial support for travel – demand initiatives and public transport.

- ***Vehicle Fleet Emission Control Strategy***

The Vehicle Fleet Emissions Control Strategy (VFECS) was designed to develop a rational and measured process for managing the impacts of vehicle emissions on local air quality

based on New Zealand conditions. The final report was published in December 1998. In addition to carbon monoxide it analyses the other pollutants of concern from all vehicle types and presents a comprehensive range of policy initiatives addressing local air quality, vehicle fleet performance and traffic network performance.

Review of the Strategy did not identify any fundamental conflicts with the Draft WRLTS.

9 SIGNIFICANCE ASSESSMENT

The major issues identified in the discussions above that relate to the environmental sustainability objective of the strategy and their significance are discussed below:

Grenada to Gracefield Stage 1: This project requires careful investigation and route selection to ensure it contributes fully to the network while avoiding adverse environmental effects. The significance of these risks are tempered by the need for the project to secure designation through the processes of the Resource Management Act.

Basin Reserve Interchange: This project also has significance in terms of risk to townscape and heritage values. There is potential for mitigation with innovative design and like the project above will need to be processed through designation and resource consent processes.

Western Link Road: This has been a heavily challenged project through the Resource Management Act. It has finally cleared these hurdles but Historic Places Act archaeological authorisation remains and may yet be a contested process.

Transmission Gully Motorway: This project has extensive public support if it can be funded and implemented within the strategy period. The potential effects on the Pauatahanui Inlet remain significant and should be considered in a holistic way with other urban effects. This is of high significance if the environment sustainability of the catchment is to be secured.

Travel Demand Management, efficiency use of the network, emissions and greenhouse gases: The assessment identifies that there is potential for a comprehensive pricing system to address a wide range of environmental sustainability and network efficiency issues. Indeed it is considered that the greenhouse gas emissions issue can only be confronted with a mechanism of this nature. This is an issue of the highest significance, accepting that it is a global issue that requires leadership at a national level. It is also a mechanism needed to ensure that the environmental benefits of TGM are realised.

Travel Plans: Pricing mechanisms are likely to be more widely effective than the promotion of travel plans. However, in the short term the vigorous promotion of travel plans in the context of Kyoto responsibilities is important. While this is identified in the strategies its significance to environmental sustainability needs to be elevated.

Land Use Integration and Initiatives: A major challenge is to strive to ensure the fully integrated planning of regional infrastructure with local land use development. This issue is of high significance and requires strong leadership. If this does not emerge through the Wellington Regional Strategy then the WRLTS and RPS need to ensure that clear targets are set before future related transport investment is made. This is particularly material to the emerging Wellington CBD corridor plan, to protection of land in the Pauatahanui Catchment, and to exploring other opportunities for transit oriented development in the Paremata/Plimmerton area.

10 RECOMMENDATIONS

The specific recommendations arising from this assessment are as follows.

Road Pricing and Environmental Sustainability

1. That the strategy state in clear terms that:

    a. It is expected that CO_2 emissions will grow in the region under the stewardship of this strategy.
    b. That the tools are not available to manage transport demand and behaviour to control growth of CO_2 emissions.
    c. That a comprehensive road pricing system has the potential to address growth of emissions, and in conjunction promote public transport use, take up of fuel efficient and low emission technology vehicles, improve air quality, minimise congestion and ensure that new routes such as TGM are appropriately used.
    d. That the existing proposed advocacy of road pricing be elevated to promoting a study in Wellington on a comprehensive pricing system to demonstrate the potential benefits more clearly.
    e. That Greater Wellington should lobby Government to urgently provide law changes to facilitate comprehensive road pricing and to establish a work programme to introduce technology as it becomes available.
    f. That the strategy further strengthen the role and profile of travel plans by linking them to wider environmental benefits including climate change and that they are championed through the provision of tools and high profile promotion.

Environmentally Sensitive Environments

2. That the strategy include additional policies and actions for a catchment study, to be undertaken jointly with Porirua City Council. The strategy is to consider, amongst other matters, how the environment will be protected during construction of TGM and also to consider whether, and if so how, stormwater discharges from urban areas and transport infrastructure should be treated before discharged to the catchment.

Land Use Integration

3. That existing policies and actions be strengthened, in conjunction with policies in the Regional Policy Statement, to ensure that effective land use protection measures are put in place at the earliest opportunity at Pauatahanui. Also that progress is made on planning for high density development opportunities around public transport nodes before major investments in associated facilities are made.