Ministry of Transport
TE MANATŪ WAKA

Tackling Congestion in Auckland

AUCKLAND ROAD PRICING EVALUATION STUDY

March 2006

SUMMARY DOCUMENT

ROAD PRICING: TACKLING CONGESTION

Traffic congestion is a significant problem for Auckland, as it is in many large cities. This Government has made addressing congestion in Auckland and other parts of New Zealand a priority, with record spending on new roads and public transport now and over the next 10 years.

However, demands for more expenditure on both roads and public transport in the region are ongoing. Population and vehicle numbers in Auckland are growing. Current projections show that, in spite of investment, by 2016 congestion in Auckland is unlikely to improve without additional measures.

Road pricing has been put forward by the Auckland Mayoral Forum and others in the region as a possible means of tackling congestion.

The Ministry of Transport's *Auckland Road Pricing Evaluation Study* examines road pricing and parking levies as a means of reducing congestion and raising revenue for investment in land transport. The study examines several alternative schemes. These were developed to provide enough information to help decide if any work on road pricing should be progressed. The study makes no recommendations on whether road pricing should be introduced in Auckland: its function is to present analysis and data for members of the public, stakeholders and politicians to consider. Members of the public are being asked for their views about whether road pricing and parking levies should be part of a long term solution to traffic congestion.

Details for those wishing to make a submission are provided at the end of this summary document and can also be found on the Ministry of Transport's website:
www.transport.govt.nz/current/issues

We look forward to working with you on this important issue.

David Parker
Minister of Transport

INTRODUCTION

The question of whether we should sometime have direct charging for road use to control congestion in Auckland is a vexed one. Overseas cities like London and Stockholm have introduced it after finding that spending more money on roads and public transport were not sufficient to address congestion on their own. New Zealand has to decide if this should be tried in New Zealand.

Some preliminary work on road pricing (directly charging for road use) and parking charges was undertaken in 2003 by the Joint Officials Group (JOG), a group of officials from Auckland local government and central government tasked with looking at Auckland transport issues.

After assessing a range of policy options, JOG recommended that road pricing in Auckland should be investigated, given its potential both to reduce congestion and raise revenue for Auckland's land transport needs.

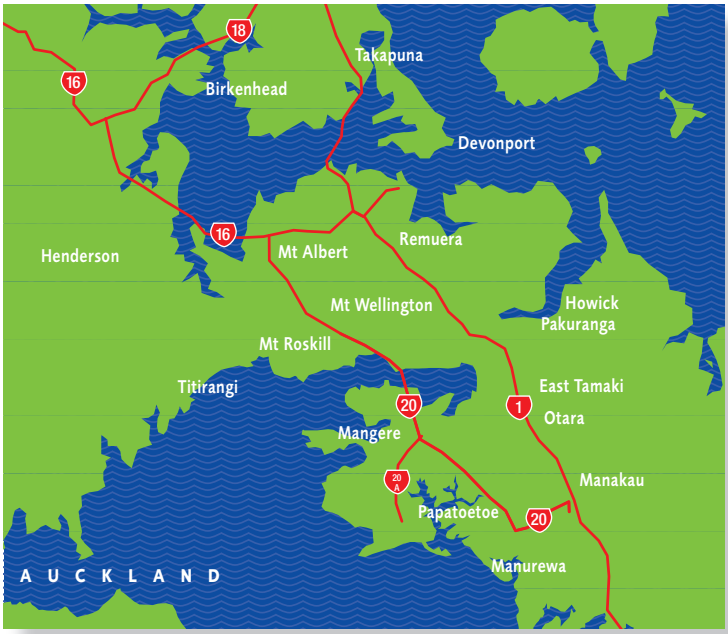
Following JOG's recommendation, in 2004 the Government commissioned the *Auckland Road Pricing Evaluation Study*. The study investigates the congestion reduction and revenue potential of four road pricing schemes and one parking levy scheme. It looks at the potential social, economic and environmental impacts, technical feasibility and public acceptability of each scheme. It also examines ways of mitigating adverse social impacts through enhanced public transport, improved roading and better facilities for walking and cycling.

The study assesses each scheme against the New Zealand Transport Strategy objectives:

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

Auckland's Congestion Problem

Traffic congestion in Auckland is a serious problem and a large amount of additional investment is planned to help address it. Despite this investment in roads and public transport, projections show that the situation is likely to at best stay the same and could get worse in the absence of additional measures.



The underlying causes of congestion in Auckland are varied: low density development, regional growth, geographical and capacity constraints, limited public transport and a high reliance on private vehicles all play a part.

Auckland's geography, particularly its harbours and waterways, impose constraints on the transport system. This means the main transport links are confined to narrow corridors. For many trips, few alternatives are available and providing new routes or additional capacity has significant financial, environmental and community costs.

Ongoing investment in roading and public transport will always be needed in Auckland. But other responses to congestion that complement this investment also need to be considered. Road pricing has proved to be effective in tackling congestion in overseas jurisdictions such as London, Singapore and most recently Stockholm. Now that reliable technology exists, many other modern cities are also giving road pricing serious thought.

Auckland's traffic congestion impacts the quality of life in the city and imposes a burden on businesses and residents through traffic delays. Surveys of Auckland residents conducted for this study found that 94% of people agree that reducing congestion in Auckland is important or very important.

SCHEMES DEVELOPED

Of those surveyed, less than 50% accepted road pricing alone as a solution. However, support increases to 60% if it's clear that the revenue will be spent on transport needs. These results are similar to surveys overseas where road pricing has been successfully implemented.

The road pricing and parking levy schemes were developed for this study with the aims of understanding:

- how much the schemes would reduce congestion during peak times
- how much revenue might be generated by the schemes for investment in Auckland's transport needs
- the positive and negative social, economic and environmental impacts of the schemes and how negative impacts could be mitigated (e.g. through more investment in public transport)
- the technical feasibility of implementation
- the potential consistency of the schemes with national and Auckland transport and growth objectives and policies.

The schemes were developed to provide enough information to help decide if work on road pricing in Auckland should be progressed. They do not represent any firm proposal and there is no recommended scheme resulting from this study.

The scheme designs attempt to balance congestion reduction, revenue raising and social, economic and environmental impacts. The charges between schemes therefore vary significantly and this also affects the outcomes.

All schemes assume that drivers would be charged Monday to Friday between the hours of 6am and 10 am only. This approach reduces congestion in both the morning and afternoon peak periods. All schemes have a maximum charge irrespective of the number of trips made per day.

With the exception of the Parking Levy scheme, all the schemes were developed assuming that the scheme would be implemented using transponders (radio transmitting devices similar in appearance to automatic garage door openers) in cars and/or automated number plate recognition cameras. This is proven and cost effective technology that enables traffic to be charged without slowing it down. It is used in overseas schemes such as the Melbourne and Sydney toll roads and in Stockholm.

The parking scheme relies primarily on officer enforcement.

Five schemes were tested in this study:

Single Cordon – This scheme would charge vehicles travelling into Auckland that cross a single, defined cordon: essentially the Auckland isthmus. Vehicles travelling exclusively within the cordon would not be charged. Vehicles would be charged $6 at the Harbour Bridge or $3 at other charging points - the maximum charge would be $6 per day. The cordon would have a total of 15 charging points.

Charging Points

Double Cordon – This scheme would charge vehicles that cross either of two cordon rings into Auckland. The western section of the outer cordon would fall inside the completed State Highway 20, otherwise it would follow the same boundary as the Single Cordon above. Travel that is entirely within either cordon would not be charged. Drivers would be charged $6 at the Harbour Bridge (where the cordons intersect) or $3 for crossing each of the two cordons. The maximum charge for this scheme is also $6 per day. This scheme would use 50 charging points.

Charging Points Major check points

Area Charge – This scheme would charge all vehicles entering or travelling within a defined area: the Auckland city CBD and inner suburbs. (The Area Charge scheme is similar to the London Congestion Charging Scheme.) Trips would be charged at $5 (this would also be the maximum charge per day).

Charging Points

Strategic Network – The Strategic Network scheme would charge congested links of the motorways and some limited access arterial roads would be charged.

Motorists would be charged per kilometre travelled up to a maximum of $6 per day. Uncongested links would be free of charge.

Parking Levy – This scheme would charge for parking on both public and private property (e.g. parking buildings or businesses) within the Auckland/Newmarket, Manukau, Henderson and Takapuna CBDs. The charges modelled were $10 per day, in addition to any parking charges already in place. The scheme is similar to Wellington's Coupon Parking scheme, albeit more comprehensive, as private and public car parks would be required to pay the charge.

COMPARING THE SCHEMES

The study has attempted to balance congestion reduction and revenue potential with the following important factors:

Social impacts - To meaningfully reduce trip times for other road users, enough commuters must be encouraged to share cars, walk or cycle, use public transport, or to retime or eliminate trips. Where charges account for a comparatively high portion of household income and realistic alternatives to using a private motor vehicle are not available, adverse social impacts could occur.

Economic impacts - Road pricing involves a direct additional charge on businesses and individuals. That said, Auckland's congestion presently costs the economy through direct vehicle operating costs and lost productive time.

Impacts on the environment and land use - Congestion and the growth of the Auckland vehicle fleet increases pollution and puts pressure on the need to use scarce land within the Auckland region for additional infrastructure.

The **Single Cordon** scheme shows good congestion benefits across a range of indicators. It would be the easiest of the road pricing schemes to implement from a technical perspective as it would only need a limited number of charging points. As the cordon forms a ring around the Auckland isthmus, traffic would be less likely to be diverted around the boundary than would be the case under the Area Charge scheme.

Social impacts would be difficult to mitigate effectively for this scheme due to a number of lower-income households (primarily residents in some areas of south and west Auckland) being separated from places of employment inside the isthmus. The study found that improvements to public transport could only partly address this issue because the nature of both trip origins and destinations would be relatively dispersed.

The **Double Cordon** scheme would provide the best overall congestion benefits across a range of indicators. It would also generate enough revenue to cover the costs of suggested mitigation. Some traffic however, would be diverted along the perimeter of the inner cordon. Charges on State Highway 20 would reduce diversion on to this route. Charging State Highway 20 trips, as well as charging points for two cordons, could also add a degree of technical complexity, compared to the single cordon.

Like the Single Cordon scheme, social impacts would be difficult to mitigate due to the difficulty of providing public transport to residents in south and west Auckland travelling to dispersed employment locations within the isthmus.

The **Area Charge** scheme would overcome the key disadvantages of the two Cordon schemes due to its much smaller coverage area. There would not be a significant cost in terms of revenue reduction or impacts on congestion, due to its ability to capture all trips within the Area.

The Area Charge scheme would also shift some traffic just outside the boundary of the charging zone so would be likely to require some mitigation expenditure on the local roads surrounding the charging zone.

Public transport to and within the Area would mitigate most adverse social impacts. In addition, fewer low income households would be impacted than would be the case for the Cordon schemes. This scheme, however, would have a more significant impact on business trips which would be charged up to a maximum of $5 per day for entry into, and movement within, the Area.

The Area Charge scheme is technically more complex than the Cordon schemes and would require both fixed and mobile charge points to be effective.

The **Strategic Network** scheme would make motorways run more smoothly. This scheme would also result in minimal adverse social impacts compared with the other schemes because:

- alternative free routes would be available and
- compared with other schemes, the charges were set low and applied only on the most congested parts of the motorway network.

The main disadvantage of motorway charges would be the potential for traffic to divert onto the "free" local roads, exacerbating congestion on those roads. Consequently, this scheme would be likely to require additional expenditure to enhance local roading capacity.

The Strategic Network scheme would have higher administration costs because it would involve a distance-based charge as opposed to a flat-rate charge. The low charges, higher transaction costs and the extent of mitigation considered necessary for this option, mean the Strategic Network scheme wouldn't generate sufficient net revenue to fund the mitigation measures to make this scheme effective.

The **Parking Levy** scheme would be cheaper to implement than the road pricing schemes. It is a reasonably straight forward model as unlike the other schemes it would rely less on technology. It also has considerable revenue potential but this is, in part, because the charges were set considerably higher than the charges for the other schemes.

The much higher charges relative to the other schemes would be necessary to generate a meaningful impact on congestion. To achieve this impact it would also be necessary to charge private spaces as well as street parking and public parking buildings. Therefore, legislation would be required providing parking officers' access to private property.

The Parking Levy scheme, while successful at raising revenue, was found to be much less successful at reducing congestion than the road pricing schemes because parking charges would not capture through traffic and the parking zones are small, focusing on CBDs as recognised concentrated areas of parking.

Social, Economic and Environmental Impacts

Further information on the social impacts of the schemes is provided below, along with the environmental and economic impacts.

Social

A detailed analysis of the likely impacts on individual households was conducted. The analysis estimates the proportion of total trips per day in the Auckland region that would occur during the scheme hours of operation and the proportion of trips that would be expected to incur the charge. Other impacted trips would either not made, retimed outside the charging period, or diverted to another transport mode such as bus or walking.

TABLE: ANALYSIS OF LIKELY INDIVIDUAL HOUSEHOLD IMPACTS

Scheme	% of households impacted[1]	% of total trips impacted is paid	% of total trips where charge
Single Cordon	13% - 21%	9%	7%
Double Cordon	17% - 29%	12%	8%
Area	19% - 32%	14%	7%
Strategic Network	13% - 21%	10%	8%
Parking Levy	8% - 13%	6%	2%

[1] The percentage of impacted households is given in a range as it was not possible to estimate exactly the number of trips per household.

The Area scheme would affect the highest proportion of households. The difference in number of impacted trips is mostly in how many would be retimed outside the charging period or change mode.

For households paying the charges, the estimated average annual out of pocket cost would range from 1%-3% of annual average household income depending on the scheme.

Economic

Economic impacts for all options would probably be minimal. The study results suggest that the benefits of time savings to road users would generally be offset by the imposition of a new charge. But depending on how revenue from the schemes was spent (either on mitigation such as roads

or public transport or elsewhere), it is likely that the overall net economic effect would be slightly positive. Benefit-cost analysis suggests that, with the exception of the Strategic Network Charges scheme, the benefit-cost ratios are favourable.

The study did not attempt to quantify the productivity gains that might result from the travel time savings. If productivity impacts were to be included this would probably result in more positive economic impacts.

Business travel would be affected differently by each scheme, through suppressing or retiming trips, and through increased costs. However, under all schemes business costs would increase only slightly since transport costs represent a small percentage of overall business costs.

Environmental

All the schemes would have some environmental benefit, with the schemes that suppress the greatest number of trips having the greatest impact. The Double Cordon scheme would have the most positive outcome for the environment.

Environmental benefits would include reductions in the total number of vehicle kilometres travelled in sensitive catchments, reductions in harmful vehicle emissions, reductions in traffic volumes on key local roads and reduced energy consumption.

Reductions across these indicators would range from 3%-18% (although the Strategic Network scheme would result in a 6% increase in traffic on key local roads).

New Zealand Transport Strategy

The study reviewed the schemes against the NZTS objectives:

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

Overall, the assessment based on the modelling used for this study shows that the Double Cordon and Area Charge schemes demonstrate advantages across a number of key NZTS objectives. The Single Cordon, Strategic Network and Parking Levy schemes show lesser advantages in terms of key NZTS objectives.

Consultation and submissions

The Ministry of Transport invites submissions on the Auckland Road Pricing Evaluation Study. In particular, the Ministry is interested in your views on:

- The study and its findings.
- Whether road pricing is a good idea as a means to manage congestion and raise revenue, given its other potential social, economic and environmental impacts.
- If the government were not to enable road pricing, what other feasible alternatives are there to meaningfully manage congestion, acknowledging the significant investment the government is already making in additional roading and public transport?
- If the government were to enable road pricing, are there any areas the submissioner has identified in the report that could be improved or problems that would need to be overcome?

Submissions close on **Friday 28 April 2006.**

Submissions can be:

- Posted to:
  Auckland Road Pricing Evaluation Study
  Ministry of Transport
  PO Box 3175
  WELLINGTON
- E-mailed to: arpes@transport.govt.nz
- Faxed to: 04 495 9788

Further information on the submissions process can be found at www.transport.govt.nz/current/issues