Future Funding: Uses of hypothecated revenue

The Future Funding project is one of three Strategic Projects the Ministry of Transport undertook in 2014. The other two projects are Future Demand, and Economic Development and Transport. These projects consider the changing world and how our transport systems, including funding, can be ‘future proofed’ while adapting to known and uncertain economic, environmental and social changes.

Future Funding addresses land transport funding. The project aims to promote informed and critical thinking among Ministry staff and external stakeholders regarding how much we should invest in the land transport system and how we should raise that money.

The key questions considered in this project are set out in the quadrants of the circle in the diagram below with the key reports produced for each question outlined in the adjacent boxes. This report outlines uses of hypothecated revenue in response to question three.

![Diagram showing key questions of Future Funding and its associated reports](image)

This paper is presented not as policy, but with a view to inform and stimulate wider debate.
1 Introduction

This paper starts a discussion on “what land transport revenues\(^1\) should cover and by what mechanism?” To explore the issue it defines hypothecation\(^2\) and outlines its use in both NZ and internationally. The second part of the paper develops packages of revenue tools and associated hypothecation methods, and assesses these options. Transport systems play a central role in supporting both economic activity and social trip purposes. Transport infrastructure serves society, both in general and in particular for the “transport disadvantaged”. It is also a significant “enabler” of economic development. As an economy grows what we need from infrastructure in terms of location\(^3\), mode, life cycle asset management, safety and levels of service can change. There is a need to balance the changing demands for transport infrastructure expenditure against the revenue available.

This paper considers transport infrastructure (capital and operating expenses) for roads and public transport (as covered by the National Land Transport Fund). Other transport infrastructure is separately funded by the owners from user charges (ports and airports) or by the Government (rail other than public transport).

International methods of funding transport range from generating tax revenues and collecting fees from users, to imposing a cost on a wider group of beneficiaries, beyond the particular users. In New Zealand, Central Government collects tax revenues and fees from users. This is then dedicated, or hypothecated, to road and related expenses (rather than going into general government accounts). Local authorities raise money through general rating for construction and maintenance of local roads. The question of who should pay is fundamental and is related to the most basic questions of how to assess the role and purpose of transport infrastructure improvements.

Finally, the question of funding is complicated by other issues that include the external costs of environmental impacts and the question of whether to distribute the financial burden across generations, through the use of debt instruments or public private partnership structures.

This paper considers the mechanisms that have been used, both in New Zealand and internationally to allocate or hypothecate government revenues to meet transport infrastructure expenditure.

In considering alternative revenue sources for the funding of transport in New Zealand the basic canons\(^4\) of taxation should be borne in mind.

► The canon of equity – citizens should pay taxes in proportion to the revenue which they respectively enjoy under the protection of the state. (In this case, user fees and charges that are in proportion to the transport services used).
► The canon of certainty – the tax that an individual has to pay should be certain and not arbitrary.
► The canon of convenience – the mode and timing of the tax payment should be, as far as possible, convenient to the taxpayers.
► The canon of economy – there should be economy in tax administration i.e. the cost of collection should be lower than the tax collected.

\(^1\) In this paper the term “land transport revenues” includes fuel excise duty, road user charges, vehicle licensing and registration and driver licensing revenues.
\(^2\) See Appendix 6.1 for Definitions
\(^3\) Refer the competition between ports of New Zealand in servicing larger ships
\(^4\) Adam Smith’s Canons of Taxation – Wealth of Nations
In New Zealand all money raised from motorists via petrol excise duty (PED), road user charges (RUC) and motor vehicle registration (MVR) is invested in the land transport system. It is used to cover new build, maintenance and regulation of the system and public transport. In some other countries this revenue is added to the central tax pot. Investments in transport compete with other areas for a share of that pot.

The hypothecated system is a good one as it ensures there is reasonable certainty of funding flows for investment in transport infrastructure. This allows New Zealand to keep its transport infrastructure well maintained and invest in the network to meet changing demands. It also allows essential certainty of funding for investment in infrastructure that can take many years to get in place.

It is easy to justify such a system where the taxes raised from the users are invested back to support their use of the system. Such a fund can, however, lead to a suboptimal policy position if funds from such a ring fenced system are used to cover services which do not benefit those who pay.

This report does not assess the value of hypothecation to fund land transport, that is taken as a given. Instead, it seeks to explore what the hypothecated transport system should cover.

2 Current funding system for land transport

The diagram below reflects the way in which government currently funds operational and capital expenditure in the wider transport sector.\textsuperscript{5}

The largest component is the National Land Transport Fund (NLTF), largely funded by users. It is hypothecated, or earmarked, to land transport expenditures as shown.

In 2008 significant changes were made to the legislation surrounding the NLTF. Previously a

\textsuperscript{5} The principles behind the funding methodology represented in Figure 1 can be found in Appendix 6.2

\textsuperscript{6} Figure 1 is not exact but an estimation at a point in time
substantial proportion of the Customs excise on petrol was retained to the Crown account and not hypothecated. The amount that went to the NLTF was specified in regulations (in 2007/08 it was 23.8 cents per litre of excise and excise equivalent duty, out of a total of 42.5 cents a litre). The revenue retained was available for spending by the Crown for non-transport purposes. However, in 2004/05 the Government began to make appropriations to the NLTF from general revenue to fund specific capital projects, and by 2007/08 these had grown to a level where they more than offset the excise duty retained by the Crown. Full hypothecation of excise duty was introduced on 1 July 2008 and enabled appropriations of general revenue to the fund to be phased out. The hypothecation of specific transport revenues to transport services introduced greater transparency to transport funding.

The distributions shown in Figure 2 from the National Land Transport Fund through the National Land Transport Programme include $306 million for “road policing” and $315 million for “public transport”.

The funds made available for road policing enable the Police to provide an oversight of road safety with emphasis on compliance and reduction of harm. This is consistent with the Government’s commitment to a safer transport system.

The government has a strong commitment to delivering a safer transport system. Road safety is an important part of this because of the social cost of transport deaths and injuries, and the human cost that results from the number of deaths and injuries New Zealand suffers each year on its roads.

The public transport funds are also used to subsidise the operational costs of public road and metro rail transport in Auckland and Wellington. In the case of metro rail the fare box and local authority contribution falls well short of the amount required to meet operational and funding costs. If the contribution from hypothecated land transport revenues was not available then the funding shortfall would have to be met by other mechanisms.

The option of increased PT fares to meet the shortfall would require a fare increase that exceeds 50%. The consequential effect on passenger numbers would then require an additional fare increase. Assuming increased fares are ruled out, the alternative to the current approach of using revenue from sources that fund the NLTF is to meet the shortfall by Crown contribution i.e. from general taxation. The existing system imposes the cost of the public transport subsidy on those using the road transport infrastructure. One justification for this is that such users benefit from public transport through reduced congestion on the road system.

Figure 2 only includes the transport funding and allocations from Government sources and excludes monies raised through local authority rates for roading and transportation (2013 $1.4 billion) or the expenditure by local authorities on the same activity classes (2013 $2.4 billion)\(^7\).

This represents a significant contribution to the local road construction and maintenance. The relationship between rates (at the local level) and hypothecated transport revenues (at a national level) should not be overlooked in the development of funding options for transport.

\(^7\) Source – Statistics NZ – Local Authority Financial Statistics 2013
3 Review of hypothecation in New Zealand

3.1 Primary approach to funding land transport

The core approach to funding land transport (through the National Land Transport Fund) in New Zealand is the use of hypothecated funds within a ‘modified pay-as-you-go’ approach:

► hypothecation means that the revenue raised from the land transport system (that is from fuel excise duties, road user charges, motor vehicle registration and licensing fees, road tolling, and the proceeds from the leasing or disposal of Crown land held for State highway purposes) is put into the Fund, to be used for land transport purposes

► a pure ‘pay as you go’ system is one in which costs (cash outflows) must be met from revenue (cash inflows). This is an historical carry-over from the period when the Government accounts were measured on a “cash basis”. “Pay as you go” systems may be incompatible with the objective of distributing the cost of an investment across generations. The timing of revenue receipts determines the ability to make payments.

► the system applying to the Programme is best described as ‘modified pay-as-you-go’, where some flexibility has been introduced to deal with cash-flow variations and large lumpy projects.

► funding is also sourced for local road construction and maintenance through local rates (2013 rates revenue for roading and transportation of $1.4 billion; roading and transportation expenditure of $2.4 billion)

Together, hypothecation and pay-as-you-go form the foundation for land transport planning and funding. They define a relationship between road users, the Government, and wider society, which is the starting point for informed discussion about what is needed from the land transport system. The terms of the relationship are that:

► transport revenues will be used to create transport benefits

► transport revenues will be set in proportion to the funding needs of the whole transport task

► today’s funding will in general address today’s priority needs including today’s view about the future (e.g. building long life assets); funding will be available tomorrow when other needs become the priority. This can be simplistic where long term infrastructure decisions are involved

► wider Government revenues will be used where wider benefits are sought.

The hypothecation of motor vehicle taxes and charges has some advantages:

► recognition that, although some of the revenue sources are, formally speaking, taxes, they function as charges in that road users pay for roads they use, and related expenditures – as opposed to a normal tax which is spent by the government in multiple ways

► the promotion of financial discipline by ensuring that expenditure is restricted to the amount of revenue raised

► an increased likelihood that road users will accept increases in road related taxes and charges if the revenue generated is allocated to road infrastructure, rather than diverted to general revenue

► a possible benefit to road authorities of not having to argue their case against other areas of government expenditure on an annual basis.

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9 Statistics NZ – Local Authority Financial Statistics 2013
10 Review of Road Pricing in Australia and Overseas BITRE 1985
All four advantages are recognised with the statutory independence of the New Zealand Transport Authority (the NZ Transport Agency). NZ Transport Agency’s independence is, to a degree, counter-balanced by the development of the Government Policy Statement (GPS) that sets out the more strategic transport infrastructure goals.

In practice, the world is more complicated than this relationship allows for. Who benefits from land transport infrastructure and services, who should pay, and over what period of time, are all open to debate. Complexity also makes it hard to predict with complete accuracy how much revenue will be available and when, or the schedule on which expenditure may be incurred.

It could be argued that the National Land Transport Fund is collected by means of various taxes but is applied, in a general sense, as a charge. This raises a strong public (and stronger stakeholder) perception that users who pay for the system should receive a reasonably commensurate proportion of the benefits in return, particularly on a geographic basis. This implies a general principle that expenditure should not be seen to stray too far from the sources of revenue.

### 3.2 Alternative financing

In addition to the primary central government (specific appropriations or loans in addition to hypothecated revenues) and local government funding sources (rates), it is possible to access finance from private financing, through public private partnerships (PPP’s). Loans and PPP’s are mechanisms that allow the cost of an investment to be spread over generations of users.

Any alternative financing proposal will require a business case. Because adopting the proposal will foreclose other options, it must represent the best course of action for the land transport system. Whether using debt or revenue measures, alternative financing proposals also have implications for the Government’s broader fiscal strategy and will need to be considered within an all-of-government context, and be approved by Cabinet in the context of whole of Government financing and borrowing principles.

All proposals involve some form of trade-off between competing principles. Transparency around what is being traded-off in the design and application of an alternative financing measure, and why these trade-offs are being made, is important for good decision making and accountability. Particular tensions that should be explicitly analysed include, but may not be limited to:

- achieving economically efficient investment while preserving the intent behind the user pay approach
- optimising financial efficiency in the present management of the National Land Transport Fund while preserving the flexibility to respond to future opportunities and risks
- adopting measures that are proportionate to the task to be performed without unreasonably curtailing the freedom to manage those who are responsible for doing so.

### 3.3 The matching of expenditure to revenue

The NZ Transport Agency is required to match expenditure to the target expenditure set out in a 3 year GPS funding cycle and 10 year forecast period. However, it is also limited by law to spending no more than the available revenue in the Fund. Because both the timing and level of revenue and
expenditure are subject to uncertainty, the Act provides for an allowable variation to be set in a GPS as a way of managing any imbalances that arise. The requirement to balance revenue with expenditure is a dynamic balance especially where supplemental funding from the Crown might be provided to advance particular projects.

A short-term borrowing facility for cash flow management provides the specific capacity for allowable variation, where expenditure temporarily exceeds revenue. Although this borrowing facility increases the NZ Transport Agency’s flexibility, the Government expects the NZ Transport Agency to manage expenditure in a way that it is fiscally neutral at the end of the 10 year period of a GPS. The specific level and conditions of allowable debt are set by the Ministers of Finance and Transport, in accordance with the principles guiding the use of alternative funding measures.

Where revenue exceeds expected expenditure, the GPS allows expenditure to be scaled to meet the upper end of each funding range and surpluses can be carried forward from one financial year into the next.

Where it is likely that actual revenue levels will vary significantly from expenditure targets (both lower and higher), the Ministry of Transport and the NZ Transport Agency will advise the Minister of Transport on the options for aligning expenditure and revenue.

3.4 Development of the land transport funding structures

The mechanisms for the funding of transport infrastructure in New Zealand have evolved over time from provincial control to centralised control. Refer Appendix 11.2 for a detailed chronology.

In 1954 the National Roads Board (the Board) came into being under the National Roads Act. This established the National Roads Fund which was funded by road taxation paid by users, the private vehicle operator and the commercial user. It was an inviolate fund and, under the legislation that brought it into operation on 1 April 1954, all taxation paid into it had to be immediately available and used for roading purposes.

In effect the National Roads Act provided for an independent fund at the disposal of an independent board and removed the uncertainty associated with the annual appropriation of funds through Parliament from the Crown Account.

Under the National Roads Act the Board was required, on an annual basis, to estimate its income and to make a primary allocation of funds expected to be available. In 1970 the funds were assigned to three sectors:

► Counties – not less than 23% of motor revenue

► Municipalities – not less than 16% of motor revenue

► State highways – not less than 50% of motor revenue

► The remaining 11% was available for allocation to any or all of the above at the discretion of the Board

11 Roads to Resources – Paper presented by PB Allen, Minister of Works, to the Sixth World Meeting of the International Road Federation Montreal. October 1970
12 Road revenues = petrol tax and mileage tax
The National Roads Act was replaced by the Land Transport Management Act in 2003. Under this Act the Government sets out its priorities for areas of funding each three years in the General Policy Statement on land transport (GPS). For the year ended June 2013 the composition of the Crown revenue hypothecated to the National Land Transport Fund is shown in Table 1.

Table 1: Hypothecated Crown Transport Revenue

<table>
<thead>
<tr>
<th>Per Note 2 Financial Statements of the Government of New Zealand</th>
<th>$m</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Excise Duty</td>
<td>1,529</td>
<td>55</td>
</tr>
<tr>
<td>Road User Charges</td>
<td>1,066</td>
<td>38</td>
</tr>
<tr>
<td>Motor Vehicle Fees</td>
<td>174</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>2,769</td>
<td>100</td>
</tr>
</tbody>
</table>

From this revenue some $307 million is allocated to Police for road safety purposes with small amounts allocated to recreational boating.

Over the last 16 years the sources of revenue into the National Land Transport Fund have been as below:

Table 2: New Zealand Transport Revenues

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Petrol Tax</th>
<th>Road User Charges</th>
<th>Registration and Licence Fees</th>
<th>Other</th>
<th>Consolidated Fund</th>
<th>GST Compensation</th>
<th>Refunds</th>
<th>Total ($m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>318</td>
<td>475</td>
<td>157</td>
<td>17</td>
<td>15</td>
<td>131</td>
<td>-42</td>
<td>1,071</td>
</tr>
<tr>
<td>1999</td>
<td>413</td>
<td>500</td>
<td>175</td>
<td>23</td>
<td>15</td>
<td>140</td>
<td>-50</td>
<td>1,216</td>
</tr>
<tr>
<td>2000</td>
<td>433</td>
<td>535</td>
<td>177</td>
<td>27</td>
<td>146</td>
<td>148</td>
<td>-48</td>
<td>1,366</td>
</tr>
<tr>
<td>2001</td>
<td>431</td>
<td>558</td>
<td>181</td>
<td>23</td>
<td>161</td>
<td>148</td>
<td>-48</td>
<td>1,341</td>
</tr>
<tr>
<td>2002</td>
<td>479</td>
<td>609</td>
<td>188</td>
<td>23</td>
<td>161</td>
<td>161</td>
<td>-55</td>
<td>1,460</td>
</tr>
<tr>
<td>2003</td>
<td>601</td>
<td>650</td>
<td>198</td>
<td>32</td>
<td>196</td>
<td>204</td>
<td>-59</td>
<td>1,727</td>
</tr>
<tr>
<td>2004</td>
<td>593</td>
<td>698</td>
<td>211</td>
<td>21</td>
<td>204</td>
<td>204</td>
<td>-59</td>
<td>1,727</td>
</tr>
<tr>
<td>2005</td>
<td>647</td>
<td>745</td>
<td>218</td>
<td>13</td>
<td>196</td>
<td>204</td>
<td>-59</td>
<td>1,727</td>
</tr>
<tr>
<td>2006</td>
<td>727</td>
<td>758</td>
<td>221</td>
<td>22</td>
<td>95</td>
<td>95</td>
<td>-59</td>
<td>1,823</td>
</tr>
<tr>
<td>2007</td>
<td>815</td>
<td>813</td>
<td>223</td>
<td>20</td>
<td>488</td>
<td>488</td>
<td>-61</td>
<td>2,359</td>
</tr>
<tr>
<td>2008</td>
<td>809</td>
<td>881</td>
<td>227</td>
<td>23</td>
<td>474</td>
<td>474</td>
<td>-66</td>
<td>2,414</td>
</tr>
<tr>
<td>2009</td>
<td>1439</td>
<td>901</td>
<td>171</td>
<td>23</td>
<td>851</td>
<td>851</td>
<td>-70</td>
<td>3,385</td>
</tr>
<tr>
<td>2010</td>
<td>1470</td>
<td>952</td>
<td>172</td>
<td>296</td>
<td>851</td>
<td>851</td>
<td>-76</td>
<td>2,975</td>
</tr>
<tr>
<td>2011</td>
<td>1483</td>
<td>1061</td>
<td>173</td>
<td>49</td>
<td>85</td>
<td>85</td>
<td>-82</td>
<td>2,810</td>
</tr>
<tr>
<td>2012</td>
<td>1513</td>
<td>1092</td>
<td>175</td>
<td>41</td>
<td>1</td>
<td>1</td>
<td>-81</td>
<td>2,822</td>
</tr>
<tr>
<td>2013</td>
<td>1119</td>
<td>1570</td>
<td>174</td>
<td>90</td>
<td>3</td>
<td>-94</td>
<td></td>
<td>2,956</td>
</tr>
</tbody>
</table>

The uplift in net petrol tax in 2009 can be attributed to the inclusion of the “Customs equivalent excise duty on imported motor fuel” being hypothecated to transport revenues rather than taken to the Crown account. In 2007/08 the duty on imported fuel amounted to $528m and in 2008/09 to $514m. The Crown contribution from 2006 to 2009 above of $1,908m equates to about four years Customs equivalent excise.

Recognising the importance of our land transport network, over $3.4 billion of New Zealanders’ money is spent through the National Land Transport Fund (NLTF) each year. This investment is accompanied by a further $1.4 billion of local government investment. The Government Policy Statement on land transport (the GPS) sets out the strategy for this investment and the results the Government wants to achieve from it over the next 10 years.

The GPS presents the Government’s land transport strategy in a framework that will guide investment over the next ten years, and provides guidance to decision-makers about where Government will focus resources, consistent with the purpose of the Act. It does this by allocating funding to different types of activities, and identifying results which focus on particular elements of the Act’s purpose. The purpose of the Act is:

“To contribute to an effective, efficient, and safe land transport system in the public interest”14.

To support the achievement of the Government’s results for land transport, funding available for allocation from the NLTF is projected to increase from around $3.4 billion per annum in 2015/16 to $4.4 billion per annum by 2024/25.

This revenue will predominantly be sourced from fuel excise duties, road user charges, and motor vehicle registration and licensing fees. The Government expects that it will need to increase rates of fuel excise duty and road user charges during the period covered by the GPS by the rate of inflation. The Government has committed to a 3 cent per litre increase in fuel excise duty and equivalent increase in road user charges on 1 July 2015. This would be followed by potential annual increases in the order of 1.5 cents per litre, reflecting the forecast rate of inflation.

This revenue is supplemented by contributions from local government to activities included in the Programme. Crown funding may also be made available for specific activities in addition to those directed by the GPS. The GPS allocates funding to activity classes which provide a framework for investment from the Programme.

The following activity classes are proposed for the draft GPS 2015:

► State highway improvements
► Regional improvements
► State highway maintenance
► Road policing
► Local road improvements
► Road safety promotion
► Public transport
► Walking and cycling improvements
► Investment management

14 Section 3 of the Land Transport Management Act 2003
In addition to the activity classes proposed above, five multi-class focus areas have also been created which relate to investment occurring across multiple activity classes. This is intended to be a reporting mechanism to cover expenditure that is embedded in a range of activity classes.

The proposed multi-class focus areas are:

► Auckland
► Resilience
► Road safety
► Environmental mitigation
► Innovation and technology

The allocation of transport revenues to particular projects within a particular activity class is generally achieved through a “weighting process” and a combination of benefit-cost and multi-criteria analysis. The outcomes are influenced by whatever “filter” is applied to determine the desired outcome. That is, should the national outcome prevail over the regional outcome, should cost be the driver, or wider economic benefit, or the intergenerational outcome, or the split between public and private transport?

4 Objective

The high level transport funding objective is a funding system that contributes to an effective, efficient and safe land transport system that supports the public interest. Any approach to hypothecation needs to work toward this objective.

The government has confirmed definitions for the key terms in this objective in the draft GPS 2015, as follows:

► Effective means moving people and freight where they need to go in a timely manner
► Efficient means delivering the right infrastructure and services to the right level at the best cost
► Safe means reducing the harm from land transport
► Public interest means support for economic, social, cultural and environmental wellbeing

5 Uses of hypothecated funds

The broad policy behind hypothecation of revenues from road users (fuel excise duty, road user charges, and registration fees) is that they are used to pay for roads and related services. They function effectively as a charge – the more road services one uses, the more one pays – even if their formal status is that of a tax. For the purpose of this discussion they will be treated as charges.

FED is an indirect charge, levied on fuel rather than road use – it is a proxy for a direct charge. RUCs are more directly related to road use, albeit with averaging across different types of road and within different classes of vehicle. With advancing technology both in due course will be able to be replaced with electronic road user charges (ERUC) which could be used to charge for distance travelled, type and location of road, type or weight of vehicle and time-of-day.
5.1 Principles

General principles for use of revenue hypothecated from road users are:

► most of the revenue should be spent on roads: operating and maintaining them, and capital investment (rebuilding and/or upgrading existing roads and building new ones)
► the revenue should cover related services whose costs are caused by road use, such as the road enforcement aspect of police costs, safety programs, and NZTA overhead costs
► the revenues should contribute to services that result in lower road congestion than would otherwise occur, to the benefit of road users (public transport and bike lanes)
► the revenues should not be used for activities unrelated to road use.

These principles do not cover revenues from other sources that are also used for roads. The two main ones are local authority rates, for local access by road and footpath, and additional road and bike trail projects funded directly by the Crown.

New Zealand’s practices are broadly consistent with the principles. The hypothecated funds are spent on roads, road administration police, safety, subsidies for public transport and bike lanes. Decisions about how much to raise (the subject of a separate paper) and the allocation between categories such as highways, regional roads, public transport etc are made by the government in consultation with stakeholders and are set out in the Government Policy Statement. The hypothecated funds cover all national highways and, through subsidies, part of the cost of local roads.

The process behind these decisions involves much approximation, judgement and scope for debate – for example, the level of the FED, the detail of RUCs applied to different types of vehicle in different circumstances, processes for selecting road projects and for determining maintenance levels, and the level of support for public transport (currently the target is 50% of operating expenses) and bike trails. The policies are being refined with experience, and technical change is opening up scope for further improvement.

5.2 Social services

A grey area is the subsidising of transport services used by the "transport disadvantaged" – generally subsidies for buses and wheelchair-accessible vehicles for people who are too young, old, infirm or poor to have alternatives such as driving or taxis. These are social services that should in principle be funded by general taxpayers, not the subset of them that are road users. To the extent that these people use off-peak services, the true cost they impose may be close to zero as the resources (buses, drivers etc) are already in place to serve peak demand. To the extent that this is not so, there is a case for direct payment by the Crown, as it does with the Super Gold Card. Analysis (potentially difficult) would be needed to establish a basis for deciding the portion of costs to be borne by road users on congestion-reducing grounds and the portion to be born by the Crown for social services.

And there is a broader issue. Subsidising public transport for social reasons is a "blunt instrument" for dealing with deprivation. Many of the beneficiaries of public transport subsidies are people who are not socially deprived. And many of those who are disadvantaged might prefer to have the money to spend as they wish (e.g. on better clothing for their children or heating of their house) rather than having it confined to public transport.
5.3 Other expenditures
There has also been debate on the use of the hypothecated funds for policing and safety. Other safety-related policing (e.g. against violence) and safety promoting programs (e.g. for mountaineering) are paid by the Crown rather than being charged to users (which would often be impractical). However, the justification for the current policies for road policing and safety is that there is a causal link between them and road use.

A new issue is increasing demands from councils and communities to effectively fund local amenity upgrades as Resource Management Act trade-off when building state highway projects.

5.4 Other funding sources
20-25% of land transport funding comes from local rates and is invested in local roads. The traditional justification is that local roads and footpaths are needed for access, not road use per se. Historically all roads were local (and were locally funded) and state highways were added later. Getting the right balance of contribution between road user and home owner is difficult and would vary on an individual basis. The current system works at roughly a 50:50 contribution. This provides the necessary incentive to ensure when a local authority puts forward a case for central funding that funding will be directed to need.

From time to time the Government adds on to what has been decided by the Independent NZTA with Crown funding of road and bike projects it favours for wider policy reasons. These Government funded projects do not undermine the hypothecation process, which can proceed regardless. (An alternative, of Government pressure on the NZTA to fund, from the hypothecated revenues, projects to which the NZTA would give lower priority, would have negative consequences by crowding out projects the NZTA considered to be better).

5.5 Funding urban pressures
A funding issue has emerged with the rapid growth of New Zealand’s urban areas, notably Auckland, as compared with the rest of New Zealand. The consequence is that many of the most needed road and public transport projects are in Auckland (e.g. congestion choke points, additional motorway lanes, improve road and rail port access, infrastructure to support the improved bus network). Although Auckland generates a high proportion of the road user revenue, it may be generating a higher proportion of the worthwhile projects. At the same time regions that are not experiencing growth are still paying hypothecated revenue yet may need little in the way of transport expenditure other than road maintenance. The fact that the National Land Transport Fund is collected as a charge raises strong public (and stakeholder) perception that the users who pay for the system should receive a reasonably commensurate proportion of the benefits in return, including on a geographic basis.

This dichotomy is putting strain on the hypothecation system as it is nationally based; it does not cope with a situation where revenues and expenditures are markedly uneven region by region. Trying to spend more in low growth regions risks wasting resources on unneeded “white elephant” projects or on excessive maintenance. Inadequate spending in Auckland risks increasing strains in the transport system, in turn undermining its role in facilitating economic development and social movement.
There is a case, therefore, for considering changes to the funding system to ensure sufficient investment if made in Auckland. The present hypothecation mechanisms do not offer a fix for that.

Recent past experience with an attempted regional fuel excise duty failed because the oil companies do not work on a regional basis and simply spread the increase across the whole country. Localised higher RUCs would not work because users would avoid them by paying outside the Auckland region. These problems may disappear some years in the future if ERUC is introduced across all the vehicle fleet. In the meantime other Auckland specific measures should be considered; these are discussed in a companion paper on funding tools.
## 6 Appendices

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Appendix 6.1
Definitions

“Hypothecation is the term used to describe the process of assigning tax revenues to a specific end or - in certain cases - ensuring that they are not spent on a particular end. In each case hypothecation contrasts with the funding of all government expenditure from a consolidated fund”\textsuperscript{15}.

Simply put, hypothecation can be described as “earmarked taxation”.

The need for reasonable certainty in the funding of transport infrastructure can be driven by either one or more of the requirements shown in Figure 3. Each of the ‘funding conundrums’ represented in Figure 3 represent different priority trade-offs (or points of emphasis) that need to be considered when evaluating transport options. The ‘funding conundrums” are the dynamic conditions that are present when considering the application of transport revenues. Uncertain and unstable revenues do not fit well with relatively stable expenditure needs.

\textsuperscript{15} House of Commons Briefing Note 2007
Appendix 6.2
Principles behind the funding system

The general concept of “user pay” underpins the allocation of funding for particular purposes. This applies where there is an appropriate connection between the benefit and cost and the service provided. Within the New Zealand economy there are benefits or goods that are provided on a collective rather than an individual basis and, therefore, by the very nature of the collective benefit provided, alternative mechanisms have to be used to recover the cost of providing that benefit.

Treasury guidelines\textsuperscript{16} in respect of this matter are noted in the title to Figure 4. In short, the nature of the good being created reveals the nature of the class of beneficiaries, including the degree to and manner in which they draw benefits and consume assets.

Source: The Treasury

\textbf{Figure 4: Guidelines for Setting Charges in the Public Sector}

The framework set out in this paper is premised on two primary axes for differentiating revenue tools:

- The first axis considers the relationship between the payment and the good received – a spectrum of circumstances ranging from specific payment for a specific benefit/private goods through to a generic payment for no (guarantee of) direct benefit/public goods

\textsuperscript{16} Treasury Guidelines for Setting Charges in the Public Sector
The second axis considers the relationship between the payment and the asset consumed (or harm caused) – a more complex spectrum of circumstances ranging from specific payment for immediate consumption of a direct asset, through payment for the indirect consumption of a direct asset, to direct consumption of an indirect (i.e. non-transport) asset.

**Axis 1: Relationship between payment and goods**

<table>
<thead>
<tr>
<th>Class</th>
<th>Order</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributed</td>
<td>Grant</td>
<td>General purpose payment, from a non-beneficiary</td>
</tr>
<tr>
<td>Aggregated</td>
<td>Tax or duty</td>
<td>General purpose payment, from a class of indirect beneficiaries</td>
</tr>
<tr>
<td></td>
<td>Levy</td>
<td>Purpose specific payment, from a class of indirect beneficiaries</td>
</tr>
<tr>
<td>Targeted</td>
<td>Fee or charge</td>
<td>Purpose specific direct cost recovery payment, from a specific beneficiary</td>
</tr>
<tr>
<td></td>
<td>Contractual price</td>
<td>Purpose specific payment, from a specific beneficiary at a negotiated/contested price</td>
</tr>
<tr>
<td></td>
<td>Penalty or fine</td>
<td>Involuntary/risk-based specific payment for breach, from a specific beneficiary (offender), at an imposed rate</td>
</tr>
</tbody>
</table>

**Axis 2: Relationship between payment and consumption**

The six categories in the following classification are derived from the initial groupings the project group resolved on for distributing responsibility for the further investigation of tools. These have been re-worked to strip out duplicate consideration of matters addressed along Axis 1 of the framework.

<table>
<thead>
<tr>
<th>Family</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causal</td>
<td>Fares and tolls</td>
<td>Payment to meet the marginal cost of consumption of a specific asset</td>
</tr>
<tr>
<td></td>
<td>Use-based rate</td>
<td>Payment in expectation of consuming the asset, scaled to the nature and/or level of use (time, place, amount etc)</td>
</tr>
<tr>
<td>Correlated</td>
<td>Fixed amount charge</td>
<td>Set payment to access the asset, not scaled according to consumption</td>
</tr>
<tr>
<td></td>
<td>Derived income</td>
<td>Payment to consume some secondary aspect of the asset not impinging on its core function or life</td>
</tr>
<tr>
<td>Imputed</td>
<td>Value capture</td>
<td>Payment to recognise indirect benefits enjoyed consequent to others’ consumption of the asset</td>
</tr>
<tr>
<td></td>
<td>Value return</td>
<td>Payment to consume some secondary asset in consequence of consuming the primary asset</td>
</tr>
</tbody>
</table>

---

Figure 5 below combines the two axes and provides an indicative allocation of selected revenue tools across the matrix. The tools in brackets are not transport sector revenue tools by design, although they impose costs/inject revenues into the transport system. The green-shaded boxes represent a possible “hypothecation zone” – a hypothetical set of circumstances under which a transport revenue tool might have its proceeds tagged solely for transport purposes.

<table>
<thead>
<tr>
<th>Distributed</th>
<th>Aggregated</th>
<th>Targeted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant</td>
<td>Tax</td>
<td>Levy</td>
</tr>
</tbody>
</table>

- **Causal**
  - **Fare**
    - (GST)
  - **Use-based**
    - FED
    - Heavy RUC
    - Light RUC
    - Engine-scaled MVR
      - (ACC)
  - **Correlated**
    - Fixed amount
    - MVR
      - (ACC)
    - Derived
      - Space/land rentals
      - Advertising rights
  - **Derived**
  - **Imputed**
    - Value capture
      - (Crown injections)
      - (General taxation)
      - (Rates)
      - Special rates
      - Tax increment financing
    - Value return
      - (Fuel carbon tax)
      - Congestion charging
  - Parking fares
    - (Self-ownership)
  - Traffic / parking / permit infringement notices
  - Road pricing
    - (Insurance)

**Figure 5: Revenue Tools Matrix**

Because the two axes are derived from the same underlying logic model, there is a general correlation between the points forming the two axes. Figure 5 shows this through the general distribution of the example revenue tools along a line from the bottom-left corner to the top-right corner. However, the distribution also shows that significant variability exists nonetheless. The positioning of revenue tools in the matrix is a matter of judgment according to a general understanding of the tool and the specific descriptions set out earlier in this paper.
Appendix 6.3
New Zealand’s Investment in Roads

Source: Ministry of Transport 2014
### Appendix 6.4

#### Land Transport Legislative Chronology

<table>
<thead>
<tr>
<th>Period</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1845</td>
<td>Public Roads and Works Ordinance – Allowed the formation of road districts, election of Highway Commissioners with limited powers to make and repair roads and levy rates upon all land except Crown and native property.</td>
</tr>
<tr>
<td>1853 - 1876</td>
<td>Provinces assumed control of their main roads, 314 roads boards established to construct and maintain local roads. Heavy reliance on central government subsidies. Provinces hampered by shortages of finance and parochial lack of planning.</td>
</tr>
<tr>
<td>1876</td>
<td>Provinces dissolved and road development devolved to county and borough councils under the 1876 Counties Act. Public Works Department contributed to the construction of new roads or provision of grants or subsidies under the 1876 Public Works Act. Revenue sources from ratepayers, central government and ‘special revenues’ i.e. tolls and taxes.</td>
</tr>
<tr>
<td>1882</td>
<td>Roads Board Act divided the country into 319 Road Districts</td>
</tr>
<tr>
<td>1889</td>
<td>Overall responsibility for construction of new roads passed to Department of Lands and Survey.</td>
</tr>
<tr>
<td>1891</td>
<td>Overall responsibility for construction of new roads passed to Department of Roads.</td>
</tr>
<tr>
<td>1905</td>
<td>Motor Registration Act – funding for transport.</td>
</tr>
<tr>
<td>1909</td>
<td>Overall responsibility for construction of new roads passed to Public Works Department.</td>
</tr>
<tr>
<td>1922</td>
<td>Main Highways Act – Established the Main Highways Board (MHB) which subsidised the costs of construction and maintenance for local authorities with funding from tyre tax, registration and licence fees and, from 1927, petrol tax.</td>
</tr>
<tr>
<td>1924</td>
<td>Administration of motorways and main roads transferred to Main Highways Board. The actions of the Main Highways Board were financed by the Main Highways Account, which consisted of the Main Highways Revenue Fund and the Main Highways Construction Fund. The former consisted of &quot;all moneys appropriated by Parliament out of the Consolidated Fund for the purposes of main highways &quot;, including all moneys received as Customs duties imposed on rubber tires, tiring and inner tubes, all moneys received through the licensing of motor vehicles, and all moneys paid to the Board by any local authority for the maintenance and repair of main highways.</td>
</tr>
<tr>
<td>1936</td>
<td>Amendment to the 1922 Act that empowered the MHB to classify any highway as a State highway with the whole cost being borne by the State.</td>
</tr>
<tr>
<td>1947/48</td>
<td>Amendments to the Public Works Act made provision for certain highways to be declared motorways.</td>
</tr>
<tr>
<td>1953</td>
<td>Nation Roads Act disestablished the MHB and established the National Roads Board (NRB). The Act adopted a ‘user pays’ principle for the provision of roading.</td>
</tr>
<tr>
<td>Year</td>
<td>Event</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>1959</td>
<td>Ministry of Works established a Roading Division with engineering and administrative services, and undertook construction and maintenance of State highways.</td>
</tr>
<tr>
<td>1988</td>
<td>Ministry of Works corporatised and the National Roads Board’s operational arm, the Roading Division, was incorporated into the Ministry of Transport.</td>
</tr>
<tr>
<td>1989</td>
<td>Roading Division merged with the National Roads Board and the Urban Transport Council to form Transit NZ. Transit New Zealand was also responsible for construction and maintenance of the state highway system, state highway safety, state highway traffic management and policy development, whilst local roads remained the responsibility of territorial authorities.</td>
</tr>
<tr>
<td>1993</td>
<td>Land Transport Safety Authority established to “undertake activities that promote safety in land transport at a reasonable cost”.</td>
</tr>
<tr>
<td>1996</td>
<td>The funding function of Transit New Zealand was split from its operational role of building and maintaining roading, and a new funding agency, Transfund New Zealand, was created by an amendment to the Transit New Zealand Act 1989 with a statutory mandate to purchase a safe and efficient roading system for New Zealand.</td>
</tr>
<tr>
<td>2003</td>
<td>Land Transport Management Act 2003 and the New Zealand Transport Strategy, there was a statutory focus on a sustainable land transport system with investigations into travel demand management, road tolling schemes, and the formation of partnerships between public and private interests to construct roads. With the introduction of the Land Transport Management Act 2003 and the New Zealand Transport Strategy, there was a statutory focus on a sustainable land transport system with investigations into travel demand management, road tolling schemes, and the formation of partnerships between public and private interests to construct roads.</td>
</tr>
<tr>
<td>2004</td>
<td>Land Transport Management Act disestablished the Land Transport Safety Authority and Transfund New Zealand and established Land Transport New Zealand (LTNZ).</td>
</tr>
<tr>
<td>2008</td>
<td>On 1 August 2008, LTNZ was merged with Transit New Zealand to form the New Zealand Transport Agency, which inherited the responsibility for this function.</td>
</tr>
</tbody>
</table>

**Sources**
- The Public Acts of New Zealand (Reprint), 1908-1931, Volume 3, pp. 689-718
Appendix 6.5
Australian Road Funding Arrangements

### History of Road Funding Arrangements

Prior to Australian Federation in 1901, road construction was primarily the responsibility of local government, with State governments limited to the provision of financial support.

While the Australian Constitution essentially preserved the responsibility of state and local governments for roads, it also enabled the Commonwealth to develop a significant role in relation to road funding.

Federal funding of roads commenced in the 1920s, a decade which saw: the first allocation of road funding to the states; the first specific purpose grant for road construction to the states; and legislation to develop a national roads program.

During the 1920s each of the state governments also established central road authorities to take over responsibility for major roads from local governments.

When it was established in 1933, the Commonwealth Grants Commission took on the role of assessing claims by the states for financial assistance, known as special grants, under section 96 of the Constitution. Special grants were provided at various times to those states which were financially weaker: Queensland, Western Australia, South Australia, Tasmania and the Northern Territory.

In 1937 the Commonwealth introduced legislation which established the level of federal road funding to the states over a ten year period and which was related to tax on petrol as well as customs and excise duties.

Commonwealth road grants, including grants for minor rural roads, increased significantly in the following decades.

Following the introduction of uniform income taxation in 1942, the states no longer had the capacity to raise sufficient revenue to meet their expenditure requirements. From this time, the Commonwealth established the practice of making large payments to the states each year.

Until 1975, general revenue assistance to each state was determined principally by a formula, which was subject to variation through federal-state negotiations. General revenue sharing arrangements were introduced in 1976, under which the total amount of assistance for each state was decided by the Premiers' Conference and allocated among the states using per capita relativities agreed by the Conference.

This is the system that essentially remains in place today, although there have been various changes in the details, particularly in the...
methods used to decide the amount of assistance. In 1974, the Commonwealth assumed funding responsibility for the maintenance of a network of roads defined as the National Highway, which comprised the main links between state and territory capital cities, as well as the Brisbane to Cairns and Hobart to Burnie links.

The Commonwealth gained further control over road investment decisions in the 1980s with the passage of legislation which enabled it to generate standards for National Highways and to fund road construction.

At a series of meetings in 1990 and 1991 the Commonwealth and State Governments agreed that the Commonwealth would assume full responsibility for funding National Highways, while responsibility for all other roads (essentially arterial and local roads) would remain with state and local governments. The Commonwealth also agreed to extend the National Highway to include the Melbourne-Ermine and Sydney-Adelaide interstate highways, as well as the urban road links through Sydney, Melbourne, Brisbane, Adelaide and Perth which connected to the national highway.

In 2004, the Commonwealth Government established the AusLink program which pooled all funding for road and rail and redefined the national highway system and interstate railways as a single land transport network, named the AusLink Network. According to the AusLink White Paper, AusLink was designed to achieve improved national land transport planning, funding and investment decision making.

The Nation Building Program, established in 2008, has retained the approach established under AusLink of defining and funding road and rail as part of an integrated land transport network. Under the Nation Building Program, the former AusLink Network (the roads component of which was previously referred to as the National Highway) was renamed the National Network. The federal government is responsible for road maintenance funding on the National Network and funds construction on a project-specific basis under individual five year agreements with the states and territories. These arrangements are discussed in detail in Chapter Two.

The establishment of Infrastructure Australia and the Building Australia Fund in 2006 represents a significant development in Australia’s road funding arrangements. Infrastructure Australia’s first task was the completion of a national audit of infrastructure investment needs, including roads and the creation of an infrastructure priority list for future investment. The Building Australia Fund was established, with an initial amount of $20 billion in the 2008-09 Commonwealth Budget, as a new source of funding for economic infrastructure, including roads.
Appendix 6.5

In the 2008–09 Budget the Australian Government announced a comprehensive ‘root and branch’ review of Australia’s tax system.

The aim is to create a tax structure that will position Australia to deal with its social, economic and environmental challenges and enhance economic, social and environmental wellbeing.

The Final Report\(^{18}\), contained the following recommendations in respect of road transport taxes. Because it represents a “total perspective” the complete section on road transport taxes is reproduced below.

E3. Road transport taxes

E3–4 How should roads be financed?

Recommendation 65:
Revenue from fuel tax imposed for general government purposes should be replaced over time with revenue from more efficient broad-based taxes. If a decision were made to recover costs of roads from road users through fuel tax, it should be linked to the cost of efficiently financing the road network, less costs that can be charged directly to road users or collected through a network access charge. Fuel tax should apply to all fuels used in road transport on the basis of energy content, and be indexed to the CPI. Heavy vehicles should be exempt from fuel tax and the network access component of registration fees if full replacement charges are introduced.

Recommendation 66:
The revenue-raising component of State taxes on motor vehicle ownership and use should be made explicit, and over time only be used to recover those costs related to road provision. The administrative costs of providing government services should be recovered through user charges where applicable. Quantity limits on taxi licences should be phased out.

The Review has been asked to consider taxation arrangements necessary to deal with the demographic, social, economic and environmental challenges of the 21st century. The best structure of road-related taxes depends on whether roads are funded from general taxation revenue, or whether road costs should be recovered directly from road users.

The congestion and road damage charges suggested earlier in this section would not cover the costs of the entire road network, particularly if the revenue from congestion charges on existing roads is invested in public transport infrastructure, or some other form of community compensation. Because most of the road network is not congested, and the road-wear costs of cars are negligible, efficient usage charges do not generate enough revenue to finance road building.

In addition, there are substantial operating costs that cannot be attributed to heavy vehicle road-wear, including time-related pavement deterioration, routine maintenance (cutting grass, maintaining roadside furniture, clearing drains), traffic management, regulatory and policing costs, and accident-related costs that are not paid for by road users either directly or through insurance (see Box E3–6).

**Uncongested roads as public goods or cost recovery**

Car travel on uncongested roads has the public good characteristic of non-rivalrous consumption — that is, an additional car has negligible impact on other road users and causes no pavement wear (see Section E1 User charging). A price for using a given road deters some people from travelling on the road. Costs of pavement wear associated with weathering are non-rivalrous to all road users, trucks as well as cars. The inefficiency of tolling something that costs nothing to use was first identified by Dupuit (1844), who observed some people going out of their way to avoid a toll-bridge across the Seine River in Paris.

Private network industries (such as electricity, gas and communications) finance the supply of infrastructure by making access to it excludable. They are funded by block tariffs or two-part tariffs (a fixed and a variable charge) set to reflect the financial costs of supply. Most Australian roads, on the other hand, are not specifically excludable, and have been funded over many decades from general tax revenue. Only a few major projects have been funded from specific tolls. The entire road system, however, is excludable, through the requirement that motor vehicles be registered.

New roads, bridges or tunnels built in urban areas are likely to become immediately congested if they are unpriced. Charging a variable congestion toll on these roads would be an efficient way to manage demand for a road, and could also make a contribution to the capital cost of the road itself. Similarly, new roads in development areas might be financed by infrastructure charges, which are discussed in Section E4 Housing affordability.

However, for large parts of the road network, the social opportunity cost of letting another car enter the road is negligible, because there is almost always significant spare capacity. The explanation for this is the nature of road investment — a road must be built or expanded at least one lane at a time, even if it is used by only one car an hour. If roads and cars were perfectly divisible, it would be more efficient to build a cheaper road that is 1/60th of a lane wide but in use almost all the time! Moreover, improvements to road quality to improve safety or travel times (such as straightening roads) also increase their redundant carrying capacity.

**Box E3–6: Efficient road pricing and capital costs**

Prices that lead to efficient use of roads are unlikely to lead to full capital cost recovery. Economic models suggest that revenue from congestion charges set at efficient levels would approximately cover the full costs of the roads to which they apply. However, for most of the road system there is no congestion most of the time and hence no warrant for congestion charges. This is the case for rural roads, suburban streets and major highways outside of cities. If only congestion and road-wear are priced, over large parts of the road network cars would pay nothing and trucks would be charged only for road-wear.
Much of the explanation lies in the economies of scale in road provision. With efficient investment in capacity, short-run marginal cost and long-run marginal cost become equal (or with time-variable pricing, the sum of short-run marginal costs over an entire cycle equals long-run marginal cost for the cycle). Economies of scale mean that long-run marginal cost, and hence the economically optimal price, lies below long-run average cost. If investment in capacity were restricted to the point where the short-run marginal cost price was as high as the long-run average cost, the economic benefit of increasing capacity would exceed the costs of doing so.

Costs of infrastructure along the sides of roads (shoulders, signs, guide posts, drainage ditches) are a source of economies of scale for non-urban roads. For example, a four-lane road requires the same shoulder widths as a two-lane road. Also, because of the greater passing opportunities, a four-lane road has more than twice the capacity, giving rise to economies of scale (Hau 1992).

Economies of scale are exacerbated by capacity–quality interactions. Investment to improve road standards by building a wider, smoother, straighter road with more passing opportunities is often found to be economically warranted based on the value of the time, vehicle operating cost, and crash cost savings to road users. However, these improvements also add to capacity, keeping any congestion price to practically zero (Walters 1968).

For major urban roads, economies of scale are offset by diseconomies of scale. For a network in a given area, the number of intersections increases faster than the number of lane-kilometres of roads. Intersections are land-intensive and often require traffic signals or grade separation (Hau 1992).

There are enormous economies of scale in strengthening road pavements (Harvey 1999). For flexible pavements, the rule-of-thumb is that a 10 per cent increase in pavement thickness results in a doubling of the traffic loading required to produce a given amount of wear. A compounding factor is that a large component of pavement deterioration is due to weather. It is the same regardless of vehicle usage.

Lumpiness in investment is another factor that can inhibit cost recovery with efficient prices. When capacity can be changed only in discrete jumps, long-run marginal cost cannot be finely adjusted to equal short-run marginal cost. The basic two-lane road with shoulders and drainage ditches provides ample capacity for most non-urban roads and so becomes a fixed cost (Hau 1992; Productivity Commission 2006).

In summary, short-run marginal cost pricing on congested urban roads is expected to yield sufficient revenues to cover the full costs of the roads concerned, and may generate additional revenue. However, for most of the road network, short-run marginal cost pricing will lead to major under-recovery of costs.

This means that imposing an additional toll to recover capital costs on each trip, where there is significant redundant capacity, would waste the existing resource. For these parts of the network, there are two main models to recover the capital costs of the road — cost recovery from road users, or financing from general tax revenue.

If the fixed costs are to be recovered from road users, this can be done through a tax. This can be enforced by excluding cars that do not pay, for example through motor vehicle registration charges (a fixed charge) or by imposing a tax related to distance travelled (a variable charge).
Finding
The road system as a whole has historically been excludable on the basis of motor vehicle
registration requirements. In the future, specific roads or road systems may also be excludable using
new technology.

Charges designed only to encourage the most economically efficient use of roads would not recover
their full costs. If governments intend to recover the cost of building, operating and maintaining roads
from road users, it would be necessary to impose a combination of additional fixed or variable
charges above short-run marginal cost. The efficiency costs of specific cost recovery taxes or charges
should be weighed against the efficiency cost of raising revenue from general taxation.

Arguments for and against cost recovery for roads
Market test
If road users do not pay the full cost of a road or network of roads, there is no direct feedback from
the market about whether they are willing to pay for the infrastructure and hence whether the road or
network should be provided at all. It is extremely difficult to make accurate estimates of willingness to
pay because it requires knowledge of consumer demand at price levels that have not been observed.

If total revenue exceeds total costs, we can conclude that users' total valuation of the road exceeds
total costs. The converse, however, is not necessarily true. In practice, a user charge cannot be
designed that perfectly mirrors road users' entire willingness to pay.

Often, the important question is not whether the road should exist, but at what standard it should be
maintained. Each improvement in road standard provides existing road users with savings in time,
vehicle operating and crash costs, as well as generating new users.

Cost–benefit analysis techniques value these savings and compare them with the costs of building,
maintaining or upgrading a road. The revenue impacts of the road upgrade, whether revenue from
network access charges or from variable charges, provide little or no useful information. An upgrade
to a single road would have negligible impact on revenue from network access charges and any
increase in revenue from variable charges would relate to generated traffic only. It would not reflect
the gains to existing users.

Relative economic efficiency costs
Charges above short-run marginal costs, whether access charges or variable charges, impose
economic efficiency costs. The alternative of funding road infrastructure from general tax revenue also
has economic efficiency costs. In principle, the two costs can be compared to determine which policy,
or policy mix, is preferable in terms of efficiency.

Raising the necessary revenue from an increase in general revenue-raising taxes may have a lower
efficiency cost than a variable road user charge, depending on how it operates. The economic
efficiency costs of an access charging system depend on how well it discriminates between road
users whose willingness to pay differs, so as to have minimal impact on people's decisions.
Financial
In some cases, funding constraints may prevent road agencies from undertaking economically warranted investment and maintenance. In these cases, greater certainty about future funding levels could improve the capacity of road agencies to plan for the future. An allocated funding stream might overcome some of this uncertainty.

The downside of allocating revenues from road user charges to road providers is that providers face few natural incentives to control costs they can pass on to users. Processes would need to be put in place to ensure accountability. These could include transparent and consistent cost–benefit analyses and independent post-build project evaluations to ensure that road users are charged only for costs that have been efficiently incurred.

A key issue is that Australia’s roads belong to many different jurisdictional owners. There is little or no link between road revenues and the road owners. The road owners do not receive the economic rewards from road investment. As a result, road investment is largely determined by the competition for the use of tax revenues rather than efficiency criteria. A key issue for future consideration is whether there would be benefits in linking road revenues to road providers, and on what basis.

Uneconomic road spending (for example, investment projects with benefit–cost ratios below one) that is undertaken for broader social purposes should be transparently funded by government through explicit community service obligations.

Principle
Road investment and maintenance decisions that are taken for reasons of social policy, and are shown by cost–benefit analysis to be uneconomic, should be transparently identified as community service obligations and funded from general tax revenue.

Equity
Cost recovery is consistent with the user-pays concept of equity, which aims to ensure that those who receive the benefits from a government-provided service also pay for it. However, in the case of roads it is unclear that the group receiving benefits from road use can easily be distinguished from the entire Australian population. For example, of the 7.1 million dwellings that participated in the 2006 Australian Census (ABS 2006b), only 9.5 per cent did not have a motor vehicle.

On the other hand, there may be greater differences between the population of road users and, say, income tax payers. There may also be large differences between the users of high-cost roads and general taxpayers, or differences between road users in different jurisdictions.

Given the long life of road investments, there is also a question of intergenerational equity. Current road users obtain the benefit of past investment. They may reap only a small part of the benefits of current investment in roads, while people who no longer use the roads directly may nevertheless have paid in the past for investment that benefits road users today. If the road network was a constant size and required stable ongoing investment, these factors would cancel each other out.
However, if investment in road networks is directed to meet anticipated future needs, then debt, to be repaid by future generations, might be a more equitable source of finance than charges imposed on today's users. However, there may be other macro-economic reasons for limiting desirable debt financing by governments.

The user-pays concept of equity ceases to apply where redistribution of income to particular groups is considered desirable or where there are 'merit good' considerations. Stanley and Starkie (1983) argue that the basic access characteristic of rural local roads is regarded as a 'merit good'. This goes some way to explaining why spending on some rural roads exceeds what might be justified under strict economic criteria.

The user-pays concept of equity suggests that much of the cost of local roads used for access to properties could continue to be paid for out of local government revenue from rates. Even households who do not own a car value well-maintained paved roads linking their property with the rest of the road network. Where heavy vehicles traverse local roads, their road-wear charges should be directed to the relevant local government as compensation.

Finding
There are arguments for and against recovering the total costs of the road system from road users. The social opportunity cost of the existing network is in general not subject to charging. Existing users could be charged explicitly for operating and maintenance costs, and for network improvement and expansion. The efficiency loss from raising the required revenue from income or other taxes must be compared with the efficiency loss from the most efficient, practical system of access and variable charges. The full information required to make all these assessments is not presently available.

Cost recovery through network access charges
Existing car registration charges can be thought of as a fixed network access fee, as the annual charge gives access to the entire road network, apart from toll roads. In 2006–07, expenditure on roads by the Australian and State and Territory governments (excluding spending by local governments) was almost $9 billion (BITRE 2009). Excluding an estimated $3 billion for road damage costs, which should be recovered directly through road-wear charges, these costs could be recovered by an average charge of around $500 per vehicle per year.

While these charges have the advantage of not influencing choices about how much and where to drive a vehicle that is already registered, the existence of a fixed charge may discourage some people from owning a car. This is likely to be low-income or low-wealth people and those who travel relatively few kilometres per year.

This effect can be reduced by varying the access charges between groups of users with different willingness to pay. For example, existing car registration charges are discounted for many groups, including pensioners. In some cases, this may reflect a lower than average willingness (or ability) to pay for access to the road network. However, it is doubtful that registration charges that increase with the number of the car's cylinders are closely correlated with the car owners' willingness to pay.
The distance people travel per period of time is related to willingness to pay. People who drive few kilometres per year are more likely to be deterred from owning a car by a flat access charge than people who drive long distances. The most efficient charge for cost-recovery purposes may be a combination of a distance-related charge and an access charge (two-part pricing).

Some variable charging might also be justified on the basis of recovering otherwise unpriced variable costs. The existing fuel tax is an example of a tax that varies with distance travelled. Subject to technology, direct charges based on distance travelled would be an alternative.

The future of fuel tax

Consistent with the principle that transport-specific taxes should be imposed only where they improve social or market outcomes in transport markets, fuel tax as a source of general government revenue should be phased out. However, some fuel tax might be retained as a simple variable charge for variable costs of the road network that cannot be priced directly.

The tax rate would be set by reference to costs efficiently incurred. To ensure its value is not eroded by inflation, the per litre tax rate would be indexed to the consumer price index. Fuel tax credits for off-road use would be retained, to ensure that only on-road use is subject to a charge.

To be an efficient user charge, fuel tax would need to apply to all energy sources used for road transport. This means extending tax to those fuels that are effectively tax-free under current arrangements. These include liquefied petroleum gas, liquefied natural gas, compressed natural gas, biodiesel and domestically produced ethanol. If alternative energy sources for road transport were developed (such as electricity), they would also need to be taxed in their on-road applications. As the energy density of these fuels varies, it would be necessary to tax fuel on an energy-content basis as this is more closely related to vehicle distance travelled (see Recommendation 65).

Different greenhouse emission costs associated with different fuels could best be addressed by price differentials under the Carbon Pollution Reduction Scheme rather than different rates of fuel tax. Similarly, policy relating to energy security or fossil fuel depletion should be more appropriately addressed through specific targeted measures, rather than fuel tax.

Variable charging through fuel tax would not be necessary in cases where technology provides ways to measure usage more directly. For example, as road user charging mechanisms based on mass-distance-location monitoring technology becomes widespread in heavy vehicles, it would be possible to charge heavy vehicles on this basis, and provide full exemption from fuel taxes and the network access component of registration charges (see Recommendation 65).

Other road taxes and charges should be phased out

Governments in Australia impose motor vehicle registration and transfer charges. Some charges relate to the costs of providing government services. In these cases, the charges are likely to have the potential to improve efficient allocation of resources, and should be maintained. However, other taxes impose charges that are disproportionate to any costs that the government incurs in providing the
service. Reliance on revenue from these taxes should be phased out, and replaced with more efficient sources of revenue (see Recommendation 66).

COAG has asked the Review to consider the merit of financial incentives for the purchase of fuel-efficient cars and assess the merits of differential stamp duty and registration regimes linked to environmental performance. The use of these taxes for environmental, rather than revenue purposes, is discussed in Section E2 Taxes to improve the environment.

**Stamp duty on cars is a highly inefficient source of revenue**

State governments do not have the legal power to impose duties of excise, but do tax certain transactions related to goods. In the case of transport, State governments tax motor vehicles by imposing an additional stamp duty whenever a new car is registered, or by requiring buyers of second-hand cars to pay a registration charge on transfer between owners (see Chart E3–3). As stamp duty on housing leads to a misallocation of the housing stock (see Section C2 Land tax and conveyance stamp duty), so vehicle stamp duties impede efficient allocation of vehicles.

Rates of stamp duty vary between States, based on car value and, in some cases, vehicle size or type. Some States apply different rates to passenger and non-passenger vehicles, and some apply tax rates that rise with the value of the vehicle (Australian Government 2008b, p. 86).

These taxes mean that people purchase new vehicles, and scrap old vehicles less often, and reduce the overall demand for cars. They mean that some people will continue driving vehicles not suited to their present needs. For example, an older couple whose children have left home might delay getting a smaller car. Alternatively, a young couple may delay upgrading to larger family car when they have children, because of the additional cost.

**Finding**

Stamp duty on the transfer of motor vehicles is a highly inefficient revenue source.

**Restrictions on the number of taxi licences should be removed**

Taxis form a small but important component of the transport system, providing flexible mobility when other forms of transport are not viable. But taxi fares are up to 25 per cent higher than they need be because of State government taxes (Productivity Commission 1999, p. 16). These taxes are imposed in a relatively unusual way. The States limit the number of taxis then make money by selling licences.

These restrictions are beyond those necessary to maintain safety or service standards and are simply used to raise revenue. For these reasons, accounting standards and economic reasoning recognise the revenue as tax revenue. Taxi licences now sell on secondary markets for up to $470,000. The purchaser expects that future restrictions on the number of taxis will allow this money to be recouped from future taxi customers — with interest.

The total value of taxi licences in Australia is around $6.5 billion (Clarke & Prentice 2009). Because of the tax, taxi services are more costly and waiting times are longer. This has a number of adverse
impacts on Australian society. Businesses pay the taxi tax, or they must use alternative transport less fit for purpose, driving the cost of goods and services up for all Australians.

The taxi tax reduces the ability of Australians to effectively ‘share’ a motor vehicle by taking taxi trips instead of owning their own car. This means the tax falls disproportionately on those who do not drive (perhaps because of cost), should not drive (due to inebriation) or cannot drive (because of disability). The poorest 20 per cent of the community spends more than twice as much as a proportion of income on taxis as other Australians (ABS 2006c). In regional areas, taxis often replace other urban transport systems, such as rail or bus services that are not available. Taxis are therefore one important means by which people continue to participate in society. The tax impacts on some of the most vulnerable in society, either by reducing their incomes or dissuading them from taking a taxi.

Why does such a bad tax persist? Abolishing the tax would mean retaining only those restrictions on taxi licences that relate to safety and service. This would see the value of plates fall nearly to zero. Existing plate holders — who are often not the actual drivers — would lose all the value of their investment. By selling the plates for revenue up front, governments have effectively created a group of people with an interest in maintaining the asset value of taxi plates so they can recoup their investment.

Some of the financial return plate holders earn reflects the risk that current arrangements may change, so whether they should be compensated at all is an open question. There is no doubt, however, that it would be far better for society to cash plate holders out using revenue from other taxes rather than to retain the highly inefficient taxi tax.

Finding

Quantity restrictions on taxi licences are an implicit tax on taxi users, from which additional revenue flows to existing taxi plate holders and State governments.

Quantity restrictions on taxis should be phased out (see Recommendation 66). This could be done by imposing a price ceiling on the price of new taxi licence plates that reduces over time, triggering the automatic release of new plates. Alternatively, existing taxi licences could be bought back by the government. While for efficiency reasons this should funded from general tax revenue, for equity reasons it could be done by replacing the existing implicit tax on taxi fares with an explicit levy on taxi users. This would be imposed for a limited time until the revenue needed to fund the transition has been raised.